

Sustainable Urban Mobility in 'Anglophone' Sub-Saharan Africa

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List of acronyms and abbreviations

| | |
|-------|---|
| ASSA | ‘Anglophone’ Sub-Saharan Africa |
| BRT | bus rapid transit |
| km | kilometre |
| m | metre |
| UITP | International Association of Public Transport |
| US\$ | United States of America dollar |
| UTODA | Uganda Taxi Operators and Drivers Association |
| WHO | World Health Organization |

1. The Crisis of Sustainability in Urban Transport

Urban populations rising rapidly due to natural growth and in-migration/‘urbanization’ in the countries of ‘Anglophone’ Sub-Saharan Africa (ASSA)¹ are boosting the demand for urban transport services, facilities and space. Populations growing at between 4 per cent and 5 per cent per year generate considerable new current movement, let alone future movement. Cargo traffic transiting through port cities and inland capitals constitutes an added increase. Indeed, ASSA cities face an unprecedented crisis of passenger and goods movement. Urban populations are forecast to increase in ASSA for the foreseeable future extending the problems of urban transport provision and intra-city mobility. By 2015, the population of the Lagos metro is projected to be about 25 million, making it the third-largest in the world.² The populations of Abuja (Nigeria), Accra (Ghana), Kampala (Uganda), Dar es Salaam (Tanzania) (2.5–3 millions), Kumasi, Lagos, Mombasa, Nairobi, and Maputo are forecast to more than double between 2000 and 2025, and to triple by 2050.³ Crucially, many ASSA cities are dominated by the **number** but not the **influence** of the poor, as has been remarked of Nairobi.⁴

Citizens, entrepreneurs and city and national governments in ASSA countries face the challenge of meeting the rising demand for urban travel and freight movement at the same time as they need to deal with backlogs of infrastructure maintenance, rising traffic congestion, increased fuel costs and noxious vehicle emissions. Congestion slows down efficiency and economic growth. In Dakar, it is estimated that 1 million working hours are lost per day due to congestion.⁵

In the major ASSA cities, these problems are aggravated by the shortage of skills and capacity in government that hampers efficient service delivery, by public expectations of achieving better personal mobility through car ownership, and by settlement in unplanned, unregulated informal spaces, which maximize the need for private transport.

African cities are conspicuously absent in a list of worldwide cities having ‘best practice’ urban mobility that is socially inclusive, environmentally friendly and economy promoting.⁶

A major challenge for ASSA urban areas is to improve the working and living conditions of urban populations by meeting their transport needs in an economically, environmentally and socially sustainable manner. Transport provision has to be affordable to suppliers and users, and investments today cannot burden future generations with unrealistic repayments or maintenance charges.

Similarly, the unintended costs or externalities of existing mobility must be minimized. One of these hidden costs is the loss of productive lives in traffic accidents, the loss of time due to hospitalization and injury, the damage to family and friendship networks, and the harm done to long-term life chances because of curtailed or abandoned health care and schooling, for example.

1. In this report the ‘Anglophone’ Sub-Saharan countries (and their major cities) are: Angola (Luanda), Botswana (Gaborone), Eritrea (Asmara), Ethiopia (Addis Ababa), Gambia (Banjul), Ghana (Accra), Kenya (Nairobi, Eldoret), Lesotho (Maseru), Liberia (Monrovia), Malawi (Lilongwe), Mauritius (Port Louis), Mozambique (Maputo), Namibia (Windhoek), Nigeria (Lagos), Saint Helena, Seychelles, Sierra Leone (Freetown), Somalia (Mogadishu), South Africa (Johannesburg, Cape Town, Durban), Swaziland (Mbabane), Uganda (Kampala), Tanzania (Dar es Salaam, Morogoro), Zambia (Lusaka), Zimbabwe (Harare).

2. Kumar and Barrett, 2009, p.77.

3. ComHabitat, 2010, p.37; UN-Habitat, 2010a.

4. Howe and Bryceson, 2000, p.34.

5. Kunieda and Gauthier, 2007; Pendakur, 2005,

6. United Cities and Local Governments, 2009, p.17.

ASSA cities have high accident death and injury rates.⁷ For example, it is estimated that road fatalities are costing South Africa an estimated US\$5.73 billion per year. Children, pedestrians, cyclists and the elderly are among the most vulnerable of road users. The death or maiming of breadwinners can start a devastating cycle of inter-generational family and personal impoverishment.

The key characteristics of the current urban transport crisis in ASSA vary across cities, but include traffic congestion, pollution and accidents. These are the most obvious characteristics of the crisis. The state of urban transport infrastructure is another conspicuous measure of urban transport. The condition of roads and railways ranges from highly capitalized new infrastructure to ageing and dilapidated forms. More or less derelict transport lorry, bus and taxi parks, railway stations and bus stops, potholed and badly drained roads, missing or broken traffic and directional signs, and dysfunctional street lighting are common elements of urban transport in all ASSA cities. These much photographed, even iconic transport elements, and the poorly regulated and managed transport space (including pedestrian pavements) helps explain unreliable public transport and chaotic traffic.

In comparison with cities in the developed world, urban mobility is very low. It varies from 1.7 trips per person per day in Morogoro (Tanzania), to 1.9 in Dar es Salaam, 2.2 in Kinshasa and Nairobi, and 2.7 in Eldoret (Kenya). Several studies indicate that low mobility leads to low urban productivity (and presumably also weaker health care, education, nutrition and civil society). Much of the low mobility is a result of poverty in ASSA cities.⁸ The average trip rates hide immobility in ASSA cities. This disadvantage affects poor people, women, children and the elderly disproportionately.

Committing public funds to build more road space and buy newer, more serviceable motor vehicles is a familiar but flawed response. This narrow (engineering) specification of 'the urban transportation problem' addresses symptoms rather than causes. It has resulted in too little attention being paid to tackling the multidimensionality and root causes of a complex transport crisis. Too much attention has been paid to promoting motorized mobility. Increasingly, however, emphasis is being directed at affordable, socially equitable accessibility using appropriate technology in line with the principles of sustainable development.

7. http://www.who.int/topics/injuries_traffic/en/.

8. Pendakur, 2005, p.147.

2. Non-Motorized Transport

Non-motorized transport technology uses animal power or human power rather than machine power. Non-motorized transport includes walking. For most definitional purposes, non-motorized transport in cities excludes leisure mobility by devices such as skateboards and roller skates. The carriage of passengers and goods in ASSA cities occurs via both public non-motorized transport (pedicabs, bicycles, animal-drawn carts, etc.) and private non-motorized transport (walking, bicycles and animal-drawn carts).

2.1. Relative importance of non-motorized transport

Non-motorized transport, especially walking, is an extremely important – but neglected – form of mobility in ASSA cities. This is especially true in poor households. In most ASSA cities, the overwhelming dependence on non-motorized transport, particularly walking, means that it is reasonable to assume that walking trips account for about half of all trips.⁹

In Nairobi, three surveys reveal that just under half of all trips are made on foot.¹⁰ Other data show that 46 per cent of people walk and 3 per cent cycle in Dar es Salaam; 42 per cent and 3 per cent walk and cycle respectively in Harare.¹¹ Among working adults in Nairobi, just over 65 per cent walk to work (about 2 per cent use bicycles for their commute; the remaining 32 per cent use *matatu*). Among school-going children, 96 per cent walk (4 per cent use *matatu*). Data from a 2004 study show that most people living in the slums of Nairobi do not have travel ‘choices’: they walk because they cannot afford motorized transport. Women and children are disproportionately affected.¹² In Ibadan, Nigeria, walking accounted for a shade less than 30 per cent of the modal split of surveyed citizens, on par with bus use.¹³

Studies conducted in African cities during 1992–2002 indicate that walking accounts for 70 per cent in Addis Ababa, 67 per cent percent in Morogoro, 63 per cent percent in Harare, 48 per cent in Eldoret, 47 per cent in Nairobi, 45 per cent in Dar es Salaam.¹⁴ Walking has been reported as the main mode for 61 per cent of daily trips by low-income people in Cape Town, South Africa, and for approximately 62 per cent in Ugandan and Zimbabwean cities.¹⁵

The importance of walking for specific trip purposes has been studied in Durban. There it was found to account for 14 per cent of all **work** trips in low-income localities (far behind the 73 per cent of trips made by minibus in 2003. But the share of walking did exceed that of car (7 per cent among men and 4 per cent among women).¹⁶

Cycling is not common in large ASSA cities, despite cost and time savings (see Box 1). Cycling accounts for less than 2 per cent of all daily trips in Nairobi and Harare, for instance. It amounted to 3 per cent in Dar es Salaam. However, cycling is more popular in the smaller cities: 12 per cent of all daily trips in Eldoret and 23 per cent in Morogoro.¹⁷ There are low rates of non-leisure cycling in all South African cities, especially in Cape Town and Durban

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9. Pendakur, 2005, p.147.
 10. Gonzales et al, 2009, p.4; Mbara, 2002; van Vliet and Kinney, 2007.
 11. Mbara, 2002.
 12. Salon and Gulyani, 2010.
 13. Ipengbemi, 2010.
 14. Pendakur, 2005, p.10.
 15. Salon and Gulyani, 2010; Venter et al, 2007.
 16. Venter et al, 2007, p.662.
 17. Pendakur, 2005, p.148; Rwebangira, 2001.

where topography is hilly and weather uncertain.¹⁸ In Jinja (Uganda), there are some 10,000 ‘bicycle taxi’ operators.¹⁹

Box 1. Cycling in Pretoria, South Africa

Many cyclists choose to use bicycles and are not captive users. Cyclists save on average about 20 per cent to 45 per cent of their monthly household income if they go by bicycle instead of using public transport. Male cyclists in Pretoria average 34 years of age, have a low level of education and work mainly as labourers and domestic workers, such as gardeners. A third said they would change to public transport if they could afford it. Half of the cyclists appreciated the low-cost of cycling and the exercise. Few riders used it as a mode to access public transport. A lack of cycling infrastructure does not hinder the current cyclists, but also does not encourage more people to start cycling.

Source: Bechstein, 2010.

2.2. Conditions and trends: Non-motorized transport

Walking is a common way of moving about in ASSA cities, not least inside and between low-income settlements. This is partly because publicly provided transport has failed, and partly because small-scale private sector transport operators provide inefficient, geographically fragmented services which poor people find expensive and avoidable.²⁰

In some instances people walk because they are excluded from public buses: some *dala dala* operations in Tanzanian towns oblige students to walk because drivers prefer to load their vehicles with full-fare passengers.²¹

Typically, in ASSA cities there are few segregated traffic facilities for pedestrians and non-motorized transport. For example, walkways, bicycle paths, zebra crossings, footbridges, underpasses and pedestrian signs and markings are the ‘missing links’ on many city streets. As a result, people dependent upon non-motorized transport share the same space with motorized transport and the situation is resulting in an increased number of accidents on city streets.²² The welfare of pedestrians is often sacrificed to planning for the faster flow of vehicles.²³

In Lagos the space for non-motorized transport is poorly protected.²⁴ In Kampala, over 60 per cent of the surveyed network had no footpath on either side. Where footpaths are provided they are often taken over for commercial purposes forcing pedestrians back into the carriageway.²⁵ The same is true of Ibadan where pedestrians compete with moving traffic for the use of roads.²⁶

The main reason for low cycling rates in large ASSA cities is also because it is dangerous in mixed and congested traffic where cyclists are not segregated, have no right of way, and are harassed by motorists.²⁷ Dar es Salaam is but one city where cyclists have been intimidated off the roads. The effect is that poor people are not able to use potentially cheap and flexible transport.²⁸

18. Venter et al, 2007, p.662.

19. BBC Africa News, 2001a.

20. Pendakur, 2005.

21. Howe and Bryceson, 2000, p.70.

22. UN-Habitat, 2009b, p.12.

23. Pendakur, 2005, p.10.

24. Mitric, 2008, p.50.

25. Gleave et al, 2005, p.101.

26. Ipengbemi, 2010, p.286.

27. Pendakur, 2005, p.148.

28. Howe and Bryceson, 2000, p.49.

Cycling in ASSA cities is most popular in compact cities where there is less motor traffic. In these settings bicycles even operate for hire. For example, bicycle taxis in Kisumu promote an inexpensive way of commuting. Kisumu's bike-taxi commuters cross town for half the price of a *matatu* ride and arrive at their destinations faster because these bicycles manoeuvre easily through traffic. The bikes are non-polluting and provide income.²⁹ In Eldoret, bicycle and motorcycle services match the small parcel nature of passenger and goods demand among poor residents. They have the ability to penetrate into areas that motor vehicles cannot go and at costs that poor people can afford. Also, they are able to service low density demands that would render the use of larger vehicles uneconomic. They also support an industry of operators, mechanics, and beverage and food stalls.³⁰ In Bukoba, Tanzania, some residents cycle commercially on their *esekidos* to supplement their wages.³¹

In Eldoret, Nairobi, Morogoro and Dar es Salaam trials have been held with dedicated walkways, measures to prevent motor vehicles from driving and parking on road shoulders and walkways, construction of missing links (e.g. non-motorized transport-only bridges), short cuts, bicycle lanes and dedicated cycle tracks. Traffic calming measures included intersection re-design of some intersections to increase their safety and efficiency for non-motorized transport, speed humps, raised zebra crossings, pedestrian crossing islands, medians, road narrowing with bicycle slips, and bus bays. The supply side interventions (limited to the smaller cities) included bicycle sales on credit and on discounts, introduction of women's bicycles, cycling lessons to secondary school students, encouragement of bicycles for hire micro-enterprises and organized bicycle parking.³²

The non-motorized transport 'missing links' are cost effective and used intensively by low-income households. It is possible to design and implement appropriate non-motorized transport infrastructure facilities in ASSA cities. However, these investments are not sustainable unless there is adequate maintenance and proper enforcement regarding encroachment by street traders and minibuss operators.³³

2.3. Impacts/challenges of non-motorized transport in urban areas

The impacts and challenges of non-motorized transport in ASSA cities include minimizing the environmental impacts of mechanized urban transport and easing vehicle congestion.

Non-motorized transport makes few high-intensity energy demands: the recycling which non-motorized transport makes possible is a significant saver of resources. The non-motorized transport sector also offers significant numbers of unskilled jobs, especially in small businesses such as cycle repair.

For most urban residents, personalized, flexible, inexpensive mobility is a clear advantage of non-motorized transport. Any increase in urban mobility would be achieved by improving the efficiency and safety of non-motorized transport, enabling lower-income people to increase the ownership and use of bicycles, and produce perceptions of safe travel.³⁴

Given the overwhelming dependence on non-motorized transport, particularly on walking, there is an urgent need to alleviate the arduous and unsafe conditions by providing physical infrastructure dedicated exclusively for walking and bicycling. Urban transport

29. Herro, 2006.

30. Howe and Bryceson, 2000, p.42.

31. *Daily News* (Tanzania), 10 December 2009.

32. Pendakur, 2005.

33. Pendakur, 2005, p.xiv.

34. Pendakur, 2005, p.48.

efficiency, including that of non-motorized transport, has major impacts on urban productivity and labour market efficiency, which affects all urban residents and not just poor people.³⁵

Short-term measures to boost non-motorized transport include the provision of sidewalks and more pedestrianized areas for the young and elderly population, and many women, since many of their trips are short distance. Organized sidewalks for pedestrians are currently either non-existent or have been taken over by street trading especially in medium and high density areas.³⁶ Maintaining sidewalks better would assist walking: open manholes and trenches, resulting from vandalism and the incomplete activities of various public utilities – water, electricity, telecommunications, sanitation – are recurrent complaints. Paving bare earth sidewalks would ease walking in the rainy season, and keep pedestrians off streets. Widening sidewalks would signal prioritization of people over vehicles. Cleaning sidewalks of dumped trash and parked vehicles would help promote walking.

Another suite of ‘pro-walking’ interventions would involve shortening pedestrian routes by eliminating detours, e.g. by building footbridges across rivers and swamps, and lifting access prohibitions across government or private land. Where road crossings are unavoidable there are few segregated places to prevent conflicts with motor vehicles. This is a major cause of accidents and discourages people from walking, especially on major roads where there are few gaps between vehicles that will permit a safe crossing on foot. Pedestrians and cyclists usually account for about half of accident victims.³⁷

A major challenge for the future of non-motorized transport in ASSA cities is the ignorance and carelessness among other road users, notably motorists and truck drivers, which makes walking, cycling and carting dangerous. Another challenge is the obstructive attitude of city officials who are hostile to ‘primitive’ forms of transport (many of which are unlicensed).

Despite its promise, many politicians and transport and infrastructure professionals in ASSA cities ignore the needs of non-motorized transport users because it is deemed non-/anti-modern. Accordingly, non-motorized transport has not been embraced institutionally as ‘transport’ in ASSA cities. The challenges for urban walking and cycling remain the same, if not worse because of motorization, as in the 1990s in four Kenyan cities, including overcoming negative images of non-motorized transport.³⁸ In South Africa, there has been insufficient national and street level policy advocacy for non-motorized transport, and planning mechanisms have not made non-motorized transport an imperative. There is no national non-motorized transport policy or provincial master plan which allowed the integration of non-motorized transport into the transport system and into infrastructure and land-use planning, or which compels the development of road design and maintenance standards that recognize non-motorized transport as a traffic component and thereby allowing for the reduction of pedestrian and cyclist fatalities.³⁹

35. Pendakur, 2005, p.147.

36. Ipengbemi, 2010.

37. Howe and Bryceson, 2000, pp.69–70.

38. de Langen and de Tembele, 2001.

39. Gwala, 2007.

3. Public Transport

Public transport refers to **formal** (regulated) motorized urban surface transport available to members of the public. In ASSA cities the most prominent public transport types are passenger taxis, buses and trains. Public road transport is more extensive and prominent than urban rail service, but commuters in several ASSA cities are served by urban and national rail services. Public transport is also usually scheduled transport, but that can be nominal in many ASSA cities. Private operators may provide public transport, and commonly do so in the bus and taxi sectors. Emergency public transport (e.g. ambulances, police vehicles, fire trucks) are an important but understudied element of the public transport mix.

3.1. Relative importance of public transport

The contribution of formal transport in ASSA cities can be measured in various ways. According to one source, the modal share of public (bus) transport in ASSA cities ranges from an estimated 35 per cent in Addis Ababa to 7 per cent in Nairobi.⁴⁰ Other figures for Nairobi show a much higher share of public transport (36–40 per cent) but these figures presumably including informal transport.⁴¹ Similarly, other figures about public transport's share (formal and informal) report Nairobi 45 per cent, Dar es Salaam 44 per cent and Harare 38 per cent.⁴² In Lagos, the public transport share of motorized **trips** is approximately 77 per cent.⁴³ Privately owned buses and taxis dominate. They contribute to the standing of Lagos as the city with the highest accident rate in the world. The low-quality and unsafe services, congestion, and poor transport infrastructure are a major constraint to the city's productivity.⁴⁴

There are notable (sub)urban rail services in South Africa's Gauteng metropolitan area (including Johannesburg and Pretoria). In Cape Town, suburban commuter rail service remains the dominant mode in the city, supplying some 54 per cent of the daily public transport passenger market (as against 29 per cent supplied by minibus-taxis and 17 per cent by scheduled bus services).⁴⁵ Nairobi's loss-making commuter train served approximately 20,000 passengers in 40 carriages each day ten years ago, and there are plans for an upgrade (see below).⁴⁶

Bus rapid transit systems have been started in several ASSA cities, including Lagos, Johannesburg and Cape Town. The Lagos BRT (bus rapid transit) cost relatively little at US\$1.7 million per km and started in 2008. The first corridor is a 22km segregated curb-side bus lane. The 'BRT-Lite' system in Lagos is now carrying almost 200,000 passengers a day. Within its first 100 days, the system carried 9.7 million passengers, and within its first six months of operation 29 million passengers. The BRT-Lite system currently carries over a quarter of all the trips recorded along its corridor (or 37 per cent of public transport trips), even though BRT-Lite vehicles represent just 4 per cent of vehicles on the route.

The formal, metered sedan taxi sector occupies a minor niche in ASSA cities. In South Africa it accounts for approximately 10 per cent of the taxi industry. In the context of the growing costs of private car purchase and use, traffic congestion, business and holiday tourism development, the sector could grow to provide 13,000 jobs by 2016.⁴⁷

40. Kumar and Barrett, 2009, p.xi.

41. van Vliet and Kinney, 2007, p.4.

42. Mbara, 2002.

43. Mitric, 2008, p.50.

44. Mitric, 2008.

45. Wilkinson, 2010.

46. BBC Africa News, 2001b.

47. Lowitt, 2006.

Public service/emergency vehicles (and associated workforce) play a vital role in ASSA cities but are little researched.⁴⁸ The response times of postal, ambulance and fire services, and private security operators, are reduced by street congestion and, in informal settlements, by poor physical accessibility. For example, the inaccessibility of Nairobi's informal settlements makes it difficult to provide public services such as toilet emptying and garbage collection, fire fighting emergencies, and the evacuation of people who are critically ill.⁴⁹

3.2. Conditions and trends: public transport and related transport infrastructure

Studies note the erosion of scheduled municipal bus services and their replacement by privatized minibus taxis throughout ASSA cities in the 1980s and 1990s. Privatization and deregulation started with decline of government-owned transport companies. Progressive deregulation of the sector created competition between private operators in an over-supplied market. One result was non-compliance with safety rules, and inefficiencies in fare structures.⁵⁰

A trend accompanying privatization and deregulation (by stealth or default rather than planned) has been the demise of western-style stage bus services running on fixed routes, schedules and fares, and with prescribed stopping places. Their operations have even replaced – or undermined – by informal sector shared minibus taxi services called *matatu* in Kenya and *dala dala* in Tanzania.⁵¹ In Lagos the public-sector bus company failed under the weight of low fares and unsustainable subsidies. Its role was taken over by informal operators offering low quality services.⁵² The Lagos midi-buses (*danfos*) are affordable, but are also known locally as over-crowded 'flying coffins'.⁵³

City-wide data are difficult to obtain on average trip lengths in ASSA cities, and matters such as the number of mode changes, waiting time and in-vehicle travel time. Nevertheless there is considerable user dissatisfaction about the state of public bus transport in ASSA cities (see Box 2, for the case of Dar-es-Salaam). In South African cities, this dissatisfaction had occasionally spilled over into violent user reactions. Passenger violence is a serious obstacle to passenger recruitment and retention, and adds to vehicle repair costs.

Box 2. Public transport conditions in Dar es Salaam, Tanzania

Dar es Salaam's central business district is congested with traffic resulting from a poor road network, insufficient traffic signs and lights, a shortage of parking spaces, and inadequate public transport. Commuter services were traditionally offered along the city's arterial roads and served only a small percentage of the population. Outside the central business district, vast areas receive poor road and transport services. In areas where services are offered, bus lay-bys are often inadequate. Security on private buses is also at risk. Passengers are often intimidated by the aggressive language and behaviour of the bus operators. Many citizens in Dar es Salaam have complained that the bus drivers are reckless and ignore traffic regulations. The buses are often overloaded and do not operate according to accepted standards.

Source: UN-Habitat, 2009b, p.12.

48. Nafukho, 2001.

49. Howe and Bryceson, 2000, p.36.

50. Rizzo, 2002.

51. Howe and Bryceson, 2000, p.28.

52. Mitric, 2008, p.49.

53. BBC Africa News, 2001c.

The change in passenger service providers from stage buses to share taxis created many transport driver jobs in ASSA cities but resulted in the loss of cross-subsidies on low-demand routes, the ending of service there (or inflated pricing), and the effective withdrawal of fare reductions to school children and (probably) to other concessionaires.⁵⁴

In general, there is little or no co-ordination amongst the different modes of public transport in ASSA cities. The small-scale private sector is the major supplier of urban transport services and is under-capitalized and fragmented. Typically, traffic conditions are chaotic. Uncontrolled parking often makes it difficult for passengers to find the appropriate buses. In addition, street vendors occupy between a quarter and a third of road space, worsening an already bad situation.⁵⁵

In Kampala and Nairobi the public transport network is determined by private sector operators without the intervention of any organization responsible for route planning. In practice the private sector operators tend to operate a basic route structure and have shown little innovation in developing new routes. In practice, the operator associations effectively control the routes operated and determine which operators are permitted to provide services on them. Experience suggests that the operators concentrate on high volume, usually radial, routes, and ignore the requirements of passengers wishing to make cross-town trips.⁵⁶ A minor service with higher fare and service quality and comfort has been started in Nairobi to appeal to car commuters and higher-income passengers.⁵⁷

A noticeable trend in some ASSA cities is the gradual re-regulation of public transport. As Lagos shows, the trend across large ASSA cities from municipally controlled and provided public buses towards largely unregulated private minibuses is ending. One clear new trend is toward midi-bus services, also called 'bus-rapid transit' (BRT).

The Lagos BRT was operational within the relatively short time of 15 months after conception. After two years of operation the Lagos BRT has helped reduce accident rates and has enhanced passenger safety and satisfaction. But it still has bottlenecks associated with general road transport operation despite moving on dedicated lanes. The scheme still has to contend with traffic congestion, overloading of buses, occasional accidents, reckless driving attitudes among some drivers in the scheme, and long waiting time at bus stops. There is a need to offer reduced student/scholar fares, and to introduce a park and ride scheme as very few car owner use the scheme.⁵⁸

South Africa's Integrated Rapid Public Transport Network (IRPTN) programme envisaged that 12 cities would embark on phased programmes to overhaul public transport by implementing integrated networks reliant on new BRT trunk routes and motorized and non-motorized feeder services. Johannesburg's 'Rea Vaya' is a 100km, median aligned, segregated bus way, with pre-paid fare collection, and at-level boarding. Both Johannesburg and Cape Town's integrated rapid transit (IRT) systems have commenced operation.⁵⁹ As the resulting networks will replace a substantial portion of existing minibus operators, the policy stipulated that they would have an opportunity to bid trunk services, as well as offer crucial feeder services.⁶⁰ This is the same as in Dar es Salaam's where rapid bus transit (DART) over 21km includes *dala dala* operators.⁶¹ A BRT project is under consideration in Accra.

54. Howe and Bryceson, 2000, p.10.

55. Pendakur, 2005, pp.5–6.

56. Gleave et al, 2005, pp.38–39.

57. Gleave et al, 2005, p.13.

58. Kolawole, 2010.

59. Hertel, 2008.

60. Schalekamp and Behrens, 2010.

61. Schalekamp et al, 2009.

BRT projects are 'light' transit. They cost less than mass transit rail projects and are quicker to implement. There are two examples of 'heavy' transit being implemented in ASSA cities. The furthest developed is the 'Gautrain' that joins South Africa's industrial and commercial capital (Johannesburg) to the nearby administrative capital (Pretoria) and the international airport (O.R. Tambo International). The region is home to approximately 7 million people, and has sufficient population density, wealth and size to merit the project (see Box 3).

Box 3. The 'Gautrain' rail rapid transport system, South Africa

The section of the Gautrain to and from the airport is already running in Gauteng province, South Africa. It is currently the largest construction project on the African continent. At an estimated cost of some US\$3 billion, it will create a rapid rail link between Johannesburg, Pretoria and the country's principal international airport. The total route length of 80km comprises 15km in tunnels in Johannesburg and about 10.5km on viaducts along various sections of the route. Gautrain is being developed by the Provincial Government through a public-private partnership with an international consortium in construction, public transport vehicle manufacturing, and operations. Construction over a period of four years to 2011 will have created ten stations. The concessionaire will operate the full system for 15 years, after which the Province will assume the responsibility.

Source: du Plessis, 2009.

A second heavy rail project (170km) is under tender for Nairobi city. Comprising mostly upgrades to existing commuter locomotives, rolling stock, track, station redevelopment, and provision of park-and-ride facilities, the project also includes a 7km railway branch to the airport.⁶² The project will expand social and economic opportunities for all residents, introducing modern efficient equipment and reducing congestion in and around Nairobi.

3.3. Impacts/challenges of public transport

In the 1980s and 1990s, the *de facto* privatization of bus passenger services in ASSA cities was said to have a positive influence on the livelihoods of poor urban residents by increasing service capacity and efficiency, and by generating unskilled employment opportunities.⁶³ Mobility gains have been reduced by extra congestion and struggles between bus companies.

The BRT and integrated rapid transit systems that have started to transform the face of public transport in ASSA cities show what can be done with political will and determination. Since the start of the BRT-Lite system in Lagos in 2008, the new system has brought about many positive changes to a city of 17 million people, the sixth largest in the world. More than 200,000 commuters use this bus system daily. Passengers enjoy a reduction of 30 per cent in average fares, and a reduction of 40 per cent in journey time. The BRT has cut average waiting time by 35 per cent. This has been made possible by the introduction of discipline in operations (route franchising), the increase in average running speed using dedicated lanes (from less than 15 km/hour to 25 km/hour).⁶⁴

In another major ASSA metropole, the airport leg of the Gautrain project has been opened and has been an instant success. It has diverted many private car journeys onto rail, substantially reducing the time spent accessing the airport, reducing parking congestion there and vehicle emissions en route. In its first three months of operation in 2010 the Gautrain carried one million passengers, including intra-urban commuters.

62. *Daily Nation*, 5 July 2010.

63. Howe and Bryceson, 2000, p.10.

64. Mobereola, 2009, p.vii-viii.

Investment in new vehicles, and redesign of bus stops and termini, is one way to make public road transport more attractive. A glaring instance was in South Africa in 2010 when preparations for the 2010 FIFA World Cup football tournament were used to leverage massive investment in public transport: improved services and facilities have contributed to a change in the public transport outlook, if not its use. The causes of deterioration in roads and terminals are heavy use and under-maintenance. The symptoms include potholes, poor deteriorating traffic control signage, and inhospitable terminals and stops. In Cape Town, road maintenance budgets are under-spent due to lack of clerical tender-issuing and processing capacity, while road repair firms remain idle.

Relatively simple infrastructure improvements would help make public transport work better. In Kampala and Nairobi there have still been few efforts to set up priorities for public transport at junctions.⁶⁵ In better regulated services, fares and timetables need integrating. Arrangements need to be made to issue discount passes for frequent commuters, and concessions for the elderly or young. Once services are better integrated, there is a need for through-ticketing services.

Passenger overloading is encouraged by financial rewards to use seatbelts, but it is hard to enforce 'no-standing' regulations. In Kenya, the Ministry of Transport has recently managed to impose and successfully enforce regulations to prohibit overloading and to require that all seats were fitted with seatbelts and that all passengers had to use them. It also managed to enforce a regulation forbidding standing passengers on Bus Track buses. It is proposed to introduce and enforce similar regulations in Kampala. Although there has been some criticism of these regulations, particularly the ban on standing passengers which increases the costs of public transport provision, it is clear that, given the political will, regulations can be effectively enforced.⁶⁶

In Ibadan there are few designated bus stops. The available ones are those informally created by bus drivers. There is the need to construct some designated bus stops with acceptable spacing standards. Also, a sizeable proportion of the elderly interviewed complained about the absence of seats, benches and shelter at bus stops. In view of the failing physical and health conditions of elderly people, it is important that the government in partnership with the private sector provides shelters with comfortable seats at designated bus stops.⁶⁷

In South African cities, subsidized formal bus companies have generally responded positively to incorporation into proposed integrated rapid transit services. But operators of unscheduled public transport services that typically utilise midi-buses, minibuses and smaller vehicles do not favour these schemes. Many claim lack of consultation and insufficient evidence of improved business and employment prospects. The deadlock in negotiations, initially limited to the three cities where construction on BRT infrastructure has commenced (Johannesburg, Cape Town and Nelson Mandela Bay metropole), has escalated into a national issue, with both the national government and national paratransit representative structures intervening.⁶⁸

In Kampala, attempts to encourage high occupancy public transport systems face similar problems. Government authorities drag their feet either for lack of a vision for the city or for selfish interests. There may have been blackmail from the major taxi body Uganda Taxi Operators and Drivers Association (UTODA), which worried that high occupancy vehicles

65. Gleave et al, 2005, p.xiv.

66. Gleave et al, 2005, pp.21–22.

67. Ipengbemi, 2010.

68. Schalekamp and Behrens, 2010.

would push them out of business and create unemployment among hundreds of drivers and conductors.⁶⁹

The success factors behind the Lagos BRT are a significant and consistent political commitment, a capable, strategic public transport authority (LAMATA), a scheme definition that concentrates on user needs, and deliverability within a budget and program. Also important was engaging with key stakeholders: a community engagement program assured citizens that the BRT-Lite system is a project created, owned, and used by them.⁷⁰ Community engagement was crucial as Lagos residents had little knowledge of organized public transport might be like. Because of a history of poor delivery of transport improvements, and with systems that sought to ensure that profit was directed to the already well-to-do, there was scepticism and suspicion of motives and intentions.⁷¹

69. Mukwaya, 2007, p.10.

70. Mobereola, 2009.

71. Mobereola, 2009, p.23.

4. Informal Motorized Transport

In ASSA cities a considerable proportion of passengers and goods are carried by motorized urban transport services which operate outside the formal laws and regulations governing the urban transport sector. This informal motorized transport is dominant in cities where formal public transport systems are either inaccessible to the majority of urban residents or are inadequately developed. The divide between formal and informal motorized transport is not always clear in ASSA cities. For example, minibuses may be registered with a taxi association which has a nominal role in managing vehicle, route and driver licensing, and which oversees driver recruitment and pricing. But many minibuses (e.g. *matatu* and *dala dala*) are not part of these organizations and are run as unregistered, cash-based businesses. In South African cities, taxi associations spawn and fragment during negotiations with authorities muddling industry representation and destabilizing and discrediting agreements.

4.1. Relative importance of informal motorized transport

The vast majority (about 80 per cent) of public transport trips in Nairobi are carried by unscheduled, shared public transport minibuses called *matatus*. Nairobi's *matatus* carry approximately three quarters of Nairobi's passengers and constitute 36 per cent of traffic volume.⁷² Estimates range between *matatu* capturing 70 per cent and 80 per cent of the public transport market, or 700,000 passengers per day.⁷³ The minibuses provide more than 90 per cent of the total supply of public transport in Nairobi and provide tens of thousands of jobs directly and indirectly in servicing, repairing and cleaning.⁷⁴ In Lagos, informal, small-scale private operators dominate public transport, running 75,000 vehicles. These are mostly minibuses whose role is increasing, medium-size buses whose role is declining, and passenger-carrying motorcycles (*okada*). The mixed-traffic operation has poor stopping and terminal facilities. Fares are set by government. Profit margins are low.⁷⁵

The Ministry of Transport in Harare (Zimbabwe) estimates that the minibus fleet there accounted for 90 percent of the market.⁷⁶ There are an estimated 20,000–25,000 *matatus* in Kampala (Uganda), double the number of officially registered *matatus*. They have been estimated to employ between 40,000 and 60,000 people: drivers (70 per cent), owners (20 per cent) and conductors (10 per cent).⁷⁷ In Kenya approximately 40,000 *matatus* provide 80,000 direct and 80,000 indirect *matatu* jobs, mostly urban.⁷⁸ The importance of the minibus sector for work livelihoods is illustrated by experiences among Kenya's *matatu* drivers⁷⁹ and in Malawi where the government's ban on 'call boys' on minibus taxis adversely affected the socio-economic status of marginalized Malawians in Zomba Municipality and Blantyre City.⁸⁰

In metropolitan areas in South Africa minibuses have an estimated public transport modal share of around two-thirds of daily work trips (see Box 4).⁸¹ In Durban, South Africa's third largest city, minibus taxis were the dominant mode of work transport across all low-income localities in 2003 (73 per cent of trips).⁸²

72. Gonzales et al, 2009; van Vliet and Kinney, 2007, p.4.

73. Howe and Bryceson, 2000, p.37.

74. Gleave et al, 2005, p.119.

75. Mitric, 2008, p.50.

76. World Bank, 2001.

77. Kamuhanda and Schmidt, 2009.

78. Chitere and Kibua, 2004.

79. Nafukho and Khayesi, 2002.

80. Tambulasi and Kayuni, 2008.

81. Schalekamp and Behrens, 2010.

82. Venter et al, 2007, p.662.

Box 4. Minibus operations in South African cities

In South Africa, minibuses ‘kombi taxis’ account for 65 per cent of daily commuter trips by public transport, the majority of which can be presumed to be in cities. Approximately 127,000 minibus taxis (including illegal imports) operate on fixed commuter corridors, charging a fixed local rate. Kombis, the majority of which are not owner-driven, officially carry a driver and 15 passengers. The total number of employees countrywide is around 185,000, including drivers, rank marshals, car washers and fare collectors. Of these, 2 per cent are women. Only 20 per cent of taxi workers belong to a labour union. Approximately 150,000 jobs are indirectly associated with this sector, mainly in motor manufacturing, fuel, spare parts and maintenance. The average South African kombi taxi carries fewer passengers per day than its counterparts in other countries and travels considerably greater distances – reflecting a market that is over-subscribed and a legacy of apartheid city planning, with substantial distances between workers’ townships and their workplaces.

Source: Barrett, 2003.

Motorbikes are part of the informal motorized transport sector in several ASSA cities. In three modestly sized Nigerian cities they account for between 40 per cent and 60 per cent of work trips.⁸³

4.2. Conditions and trends: informal motorized transport and related transport infrastructure

A key trend in minibus operation involves attempts to re-regulate the sector which began with hope and promise but which degenerated in many places (for Gaborone, see Box 5). In Dakar, re-regulation followed the declining standard of bus services. There the government started financing renewal of the minibus fleet using public sector finance to benefit private sector operators and leveraging this financing to formalize bus operations. The minibus renewal program began in 2005 and was designed to formalize and professionalize the provision of public transport services. In addition, the program was intended to reduce the air pollution (particulate emissions) produced by the old minibuses.⁸⁴

Box 5. Minibus operations in Gaborone, Botswana

The government saw the emergence of the minibus system as empowerment of the small entrepreneurs, and as a way of reducing unemployment. But the usability of minibuses is undermined by the absence of signs, maps, stops, and shelters. The unofficial roadside drop-offs have led to deterioration in the road network and roadside drainage system. Drivers tend to make U-turns wherever they find enough passengers to fill their minibus. During peak periods people from distant high-density residential areas do not get service and they have to queue for a long time. Drivers want to make maximum profit at a short period of time and to reduce mileage. This leads to overloading and speeding to beat competitors, and stopping suddenly to collect extra passengers along the route, endangering passengers and other road users.

Source: Vokolkova, 2002.

A similar taxi re-capitalization project has been underway in South Africa where the government finances renovated vehicles at subsidized rates. Behind this minibus scrapping exercise is the intention to improve road safety (and reduce passenger deaths and injuries) by giving owners incentives (a hefty vehicle scrapping allowance) to decommission old, un-roadworthy vehicles. Protest arose around the value of the allowance, and the prospect of job

83. Olawole et al, 2010.

84. Kumar and Diou, 2010.

losses.⁸⁵ An allied option is to use larger-capacity vehicles (which are safer, pollute less, and cause less road congestion), as in integrated rapid transit practices, and to integrate the informal sector into these. Gradual professionalization of the sector is required, and development of formally organized businesses.

The informal sector in Kampala and Nairobi provides a generally dense and frequent transport service, but levels of comfort and safety are low, and the services are generally viewed as disorderly and unreliable. In Kampala and Nairobi regulations require regular inspections of public service vehicles. Yet, it is clear that inspection is, at best, casual, and many vehicles are visibly in poor condition.⁸⁶

There is user dissatisfaction about the state of informal motorized transport (especially minibus taxis) in ASSA cities. Research among users of Nairobi's *matatus* reveals that difficult urban travel experiences are common topics of conversation. Disgruntled passengers find it therapeutic comparing experiences. These range from distasteful verbal and physical abuse to bodily violence.⁸⁷

In Nairobi and Kampala, passengers like to know the fare they will be charged before they board a vehicle. Passengers complain about how minibus drivers change their mind about routes if heavy congestion threatens to prolong journeys and if they spot more profitable options elsewhere. Passengers, especially women, also complain that they felt less safe on minibuses and were more likely to be subject to harassment. Passengers were also concerned about road congestion, which leads to extended journey times and would have preferred there to be a wider selection of destinations available without the need to change vehicles.⁸⁸ Passengers in Kampala complain about *matatu* conductors not having change, and about reckless driving and overcrowding.⁸⁹ Passengers dislike the practice whereby the *matatu* fares vary according to the strength of the demand and the nature of the weather.⁹⁰

Journey speeds are slow in Kampala and Nairobi as a consequence of congestion. Journey times are extended by changing modes or routes at congested interchanges in city centres. In Nairobi and Kampala passengers complained about the minibus operators not leaving terminals until a vehicle is full which means that passengers wishing to board beyond terminals often wait a long time. The concentration of all services in the central taxi park in Kampala also meant that many passengers have to walk long distances to the taxi park to ensure that they can get a seat in a minibus⁹¹ (see also Box 6).

Box 6. Minibus operations in Kampala (Uganda) and Nairobi (Kenya)

In Kampala and Nairobi it is normal for owners to be investors, rather than owner-drivers. Ownership is dispersed: most owners have less than four vehicles. Owners usually hire out the vehicle for a daily fee to a principal driver, who may employ a second driver and one or more conductors. The driver keeps the revenue collected but is responsible for paying the costs of fuel, use of the minibus terminals, the wages of any second driver and conductors, as well as any fines extorted from him by the police or the route associations. Drivers work very long hours, with shifts averaging more than 12 hours a day usually for six or seven days a week, although driving hours are normally nearer 7 to 8 hours. So as to maximize the revenue from each trip the minibus driver will not normally leave the terminal until the vehicle is full. This means that at off-peak times vehicles wait very long times at the

85. Barrett, 2003, pp.15–17.

86. Gleave et al, 2005, pp. xiv and xvi.

87. Mungai and Samper, 2006.

88. Gleave et al, 2005, p.23.

89. Kamuhanda and Schmidt, 2009.

90. Gleave et al, 2005, p.121.

91. Gleave et al, 2005, p.24.

terminal. It also means that vehicles tend to be full at adjacent points where passengers might wish to board. With the current pattern of operations there is a clear oversupply of minibuses at off-peak times, with vehicles waiting for between one and two hours to load at the terminals.

Source: Gleave et al, 2005, p.14.

Driver behaviour (particularly of minibuses) has been criticized as erratic and dangerous and many vehicles are barely roadworthy.⁹² Fare-cheating among the minibus conductors in Kampala, for instance,⁹³ aggravates the travel experience (see Box 7 on problematic *dala dala* services). Despite its disorderly nature, the informal transport in these cities is also flexible, efficient and resilient. It also generates considerable employment. *‘Efforts to suppress the informal sector are likely to be ineffective and Governments will have to work with (and not against) the informal sector, if they wish to improve the quality of public transport’.*⁹⁴

Box 7. *Dala dala* services in Tanzania

Use of relatively small vehicles leads to inefficiencies for trunk corridor services relative to conventional stage buses. These include relatively high operating costs, increased congestion, less economic road space utilization, and lower comfort levels. The majority of *dala dala* are imported as reconditioned vehicles or bought second-hand from Japan and the Middle East. Driver pay is generally not fixed, but commission based. Other operators stipulate revenue targets to be achieved by their drivers. Both methods encourage speeding, overtaking, poor parking and frequent vehicle stoppages to pick up or drop passengers on their way to anticipated destinations. Most of the drivers employed in the business are very young. There are no procedures laid down for driver recruitment. For example, a driver discharged by one operator can be re-engaged by another operator in a matter of hours without even ascertaining the reasons for dismissal. Consequently, driver turnover is very high. For the majority of drivers there are no training programs. The majority of *dala dala* operators have an operating fleet of fewer than 15 vehicles and lack proper maintenance facilities or programs. Vehicle maintenance for minor repairs is carried out at backyard workshops after a persistent outcry from the driver about a particular fault. Major repairs are undertaken at external workshops, the majority of which belong to friends.

Source: Howe and Bryceson, 2000, p.48.

In Nairobi protest and marginalization is a likely result of a move to integrated rapid transit. Authorities in Nairobi have announced that from January 2011 (14-seater) *matatu* will be phased out in the central business district in favour of larger public transport vehicles (25 seats and more) operated by larger, better regulated owner-driver ‘societies’. It is anticipated that it will take six years to phase out the 15,000 city *matatus* operating approximately fifty routes.⁹⁵

Informal motorized transport in ASSA cities also includes motorbike ‘taxi’ services. In Uganda these are known as *boda boda*.⁹⁶ In Kisumu, Kenya, there are about 21,000 of these two-wheel bicycle taxi riders.⁹⁷ In Kampala, residents resort to these services despite fares four to six times higher than taxis: the nippy, quick, no-wait *boda boda* avoid delays due to motor traffic congestion.⁹⁸ More needs to be done to protect the public and to enhance the *boda boda* operators’ professionalism.⁹⁹ Reformed criminals operating a spontaneously

92. Gleave et al, 2005.

93. Kamuhanda and Schmidt, 2009.

94. Gleave et al, 2005, p.xviii.

95. *Daily Nation* (Nairobi), 20 October 2010.

96. Howe and Davis, 2002.

97. UN-Habitat, 2010b.

98. Kamuhanda and Schmidt, 2009.

99. Kisaalita and Setongo-Kibalama, 2007.

organized motorbike taxi service in, around and out of Korogocho ('Dirt Island') in Nairobi¹⁰⁰ are not necessarily the best trained or most responsible service providers.

4.3. Impacts/challenges of informal motorized transport

The major favourable impact of informal motorized transport in ASSA cities has been improved mobility of poor residents, and faster journey speed and flexibility than aboard public buses and via walking. But, in overtraded markets (routes), and on congested streets, there are some negative aspects to minibus taxi use, including reckless driving, extortion and violence. This is the counterpoint to the extensive mobilization which minibus taxis have brought to masses of relatively poor people when public transport failed, and when public servant strikes cripple bus and rail services.

For cities such as Nairobi, where a large number of residents use some form of public transport, the focus of transportation policy should be on passenger throughput as opposed to vehicle throughput. One policy option that would require relatively little new infrastructure is dedicated lanes for buses or *matatus*.¹⁰¹

Steps need to be taken to control the operations and the extremely long working hours of some minibus drivers.¹⁰² Interventions may undermine further the drivers' tenuous job security. But interventions may also curb the negative effect that collisions involving minibuses have on an urban economy and health sector. Kenya's *matatu* crashes (3,000 deaths annually, many in urban areas) mostly impact on passengers, pedestrians and economically productive adults.¹⁰³

Law enforcers and policy makers often try to ban or prevent the expansion of informal transport in the interest of conveying a 'modern' image of their cities, and because the informal transport sector features poor vehicle roadworthy standards and lack of insurance, both compromising safety.

In the informal motorized transport sector, compliance with road traffic law can indeed be a challenge. Everyday observation of reckless taxi driving is widespread in ASSA cities. A study of 300 commercial motorcyclists in Igboora (Nigeria) showed that the most of the young male operators were poorly informed about road laws and paid them little attention.¹⁰⁴ Similar concerns attend commercial motorbike use. In three modestly sized Nigerian cities 80 per cent of users felt they were risky.¹⁰⁵

There are major financial and political issues to be confronted concerning financing and replacement of the minibus vehicle fleet in circumstances in which there is considerable reliance on self-financing derived mainly from personal or collective savings.¹⁰⁶ Management practices focus on low wages (no social security, long work hours), tax evasion, bribes for the police, and economizing on maintenance (at the expense of safety). In the circumstances, it will be tough a policy that advocates replacing old vehicles, often in poor repair, with new vehicles that cost their operators more.¹⁰⁷

100. Bradshaw, 2010.

101. Gonzales et al, 2009, p.28.

102. Gleave et al, 2005, p.24.

103. Odero et al, 2003.

104. Amoran et al, 2005/2006.

105. Olawole et al, 2010.

106. World Bank, 2001, p.32.

107. World Bank, 2001.

5. Private Motorized Transport

ASSA cities are participating in the unprecedented global expansion of private motorized transport. An increasing number of urban residents transport themselves to and from work in single or shared occupancy motor vehicles which they own. Giving lifts is a way of sharing the costs of fuel and/or parking (and a way of performing acts of kindness, exercising social obligations and paying debt). In addition, an increasing number of well-paid employees transport themselves without charge in company-owned vehicles at either end of a work day. An increasing number of people in ASSA cities use private vehicles for personal shopping, business and leisure activities at other times. Lower paid (shift) workers in the cleaning, hospitality and health sectors who travel at unsociable hours can seldom afford such convenience.

5.1. Relative importance of private motorized transport

Relative to cities in the developed world the level of private motorization in ASSA cities is low (less than half of trips are by car). There are few systematic, sustained and comparable synoptic or time-series data about car registration, car ownership, and car use (including sharing) in ASSA cities. Statistics about urban trip lengths, trip numbers and trip duration have been collected erratically and unevenly, and are biased toward men's daily work trips by private or formal public vehicle.¹⁰⁸

The modal share of private transport in ASSA cities ranges from an estimated 35 per cent in Kampala to 18 per cent in Abidjan, 13 per cent in Accra, 10 per cent in Dar es Salaam and 7 per cent in Addis Ababa.¹⁰⁹ Two Nairobi surveys show only 7 per cent of citizens using a private vehicle for transportation. One shows 6 per cent of trips made by private transport in Dar es Salaam and 17 per cent in Harare.¹¹⁰ Another record that 16 per cent of the nearly 4.8 million trips made each day in Nairobi in 2004 were made in private vehicles.¹¹¹ In Durban, the car is used as a mode of transport in only 7 per cent of men's work trips and 4 per cent of women's work trips.¹¹²

There is a negligible number of motor cycles/scooters used exclusively for as private transport in ASSA cities, but their number is increasing as cheaper Chinese imports become available, and as urban residents try to reduce out-of-pocket transport costs and avoid traffic congestion. Rating highest of any ASAA city, 20 per cent of transport in Kampala is said to be by motorcycle (some as paying passengers).¹¹³

In ASSA cities the share of private transport is small compared with other modes. The share of private vehicles is obviously growing but access to private motor vehicles is not the same across all social groups or geographical areas. For example, approximately 20 per cent of Nairobi households own cars, but virtually no households in informal settlements own cars. Shared car use show better mobility: over 80 per cent of Nairobi households have at least one member who regularly uses motorized transport, but the proportion is less than half this (38 per cent) among households in informal settlements.¹¹⁴ The 2003 average of one car for every two households in each of South Africa's seven metropolitan areas conceals big geographical variations in ownership within cities.¹¹⁵

108. Kang, 2006.

109. Kumar and Barrett, 2009, p.xi.

110. Mbara, 2002; van Vliet and Kinney, 2007, p.4.

111. Gonzales et al, 2009.

112. Venter et al, 2007, p.662.

113. Kumar and Barrett, 2009, p.xi.

114. Salon and Gulyani, 2010.

115. Lombard et al, 2007.

5.2. Conditions and trends: Private motorized transport and related infrastructure

Despite relatively low levels of motorization in ASSA cities, there has been a rapid increase in motorization rates and in auto-dependency. A great deal of this growth involves imported and previously-owned vehicles. Relatively poor car purchasers in ASSA cities prolong the car-life/serviceability of vehicles, and evidence is that ASSA private vehicle ‘fleets’ are aging. ‘Hand-me-downs’ are encouraged by the absence of incentives to scrap old vehicles (which contribute to road-side breakdowns that snarl traffic). Whereas private cars transport only 22 per cent of Nairobi’s passengers, the second-hand private vehicle fleet constitute 64 per cent of total vehicular volume.¹¹⁶ It is a common argument that the carbon emissions from cars ASSA cities are high partly because only about a small proportion (8 per cent in Ghana) of the imported cars are new; 92 per cent could be second-, third-, fourth- or even fifth-hand cars.¹¹⁷ However, it is possible that inferior fuel quality explains carbon emissions better than vehicle age.

Car ownership in ASSA cities has grown for the same reasons as elsewhere. These include economic, demographic and urban spatial expansion, the rise of the consumption-oriented middle classes, and persistent inefficient, inconvenient and expensive public transport. In South Africa, 725,000 newly manufactured cars (including imports) were registered in 2003. In 2004 the figure fell to 618,000 units. Volumes of motor financing rose 17 per cent per annum between 2002 and 2006.¹¹⁸ There were steep declines in new-vehicle sales during the 2008/2009 recession.¹¹⁹

A potentially explosive growth in car ownership has been forecast for historically disadvantaged areas of South African cities as middle-class incomes grow.¹²⁰ The road network in the poly-centric Johannesburg-Pretoria metropolis has to cope with an annual traffic increase of 7 per cent. There are 1.8 million drivers and 2.8 million vehicles registered in the region. The average travel time to work there has increased from 42 minutes in 1995 to 50 minutes in 2003, a 17 per cent increase over eight years.¹²¹

One consequence of rapidly expanding private vehicle growth is growing street congestion. Urban road geographies in ASSA cities have not kept pace with the rapid expansion of motor vehicle use, and the dominant urban street patterns remain a radial network of single lane roads focused on the historic city centre (see Box 8 on Nairobi). Orbital links suited to private car traffic types and volumes are rare, and cross-town trips must pass through the centre, creating congestion and slowing journeys. Nairobi’s orbital road currently under construction scheme is intended to deflect throughway traffic loads.

Box 8. Road transport infrastructure, Nairobi, Kenya

Nairobi, a city of roughly 4 million inhabitants, has few streets to serve traffic demand relative to cities of similar size in countries with more motorized traffic. Arterials are mostly radial; the lack of circumferential roads forces many peripheral trips through the central business district. There are no signalized intersections outside of the central business district. The few streets and key traffic funnels into and out of the central business district mean that small, localized incidents can have widespread effects on traffic flow. The relatively high rate of pedestrian fatalities due to road traffic collisions is partly due to the lack of alternative infrastructure for pedestrians. The absence of sidewalks forces

116. van Vliet and Kinney, 2007, p.4.

117. Yeboah, 2000, p.76.

118. Lowitt, 2006, p.8.

119. <http://www.naamsa.co.za/flash/press.htm>.

120. Mokonyama and Venter, 2007.

121. Chakwizira, 2007.

pedestrians to walk along the shoulders of busy roads. The crowded infrastructure is aggravated by the encroachment of markets and commercial activities onto streets. This puts diverse modes (from pedestrians to private automobiles) on an even narrower road space.

Source: Gonzales et al, 2009.

Generally, however, road design has also been slow to change in ASSA cities. Where roads have been widened, one lane is often claimed by pedestrians and parked vehicles. Intersections are spaced closely together and are ill-designed for turning.¹²² Widespread illegal parking poses a hazard to traffic flow, and pedestrian safety.¹²³ In Ibadan (Nigeria) the roads are bad and there is near absence of ancillary facilities such as road shoulders and walkways. On most of the road sections there are either no road signs or they are in poor condition. The absence of public parking facilities means that vehicles are parked indiscriminately on road shoulders (where available) and carriageways, causing traffic disruption and congestion.¹²⁴

5.3. Impacts/challenges of conditions and trends of motorization

The adverse effects of rising car ownership in ASSA cities include rising congestion and attendant increases in pollution and decline in public health, including stress. Motor vehicle collisions are also associated with high rates of hospitalization, death and injury. The causes of dangerous motorized urban transport include speeding, recklessness, unlit and unmarked roads. Poor vehicle roadworthiness and poor enforcement of driver and vehicle licensing and re-testing are also to blame.

Alcohol abuse is a major contributor to motor vehicle collisions. Drivers are often culpable, but not solely. In Cape Town, alcohol intoxication among injured adult pedestrians is high. Attention needs to be given to creating safe and convenient crossing points, good lighting and education with regard to the wearing of reflective clothing after dark.¹²⁵ In Durban, although only a small proportion (5 per cent) of traffic accidents studied were serious or fatal, pedestrians are disproportionately involved more as fatalities and drivers as casualties. The immediate implementation of a road safety strategy is recommended for the reduction of the high pedestrian fatalities.¹²⁶

In the short term, urban authorities need to manage motor vehicle use and road space better. A conventional response to congestion is to build more space for vehicles, including roads and parking. Traffic calming measures reduce high motor vehicle speeds, collisions and fatalities. They do not necessarily reduce average route speed, because smoother traffic flow reduces delays at intersections.¹²⁷

Road provision and maintenance cost recovery by toll charges is still unusual in ASSA cities, and is likely to be effective only if back-office administration is made compatible and effective. Automated vehicle charging and collection will rely on number plate identification or chassis encoding which requires effective vehicle licensing. The technology is probably out of reach of city authorities in many ASSA cities where even traffic lights are scarce, and where automated traffic control at street junctions is rare and unreliable. Cost recovery of automobile infrastructure in ASSA cities still relies heavily on parking fees; in some cases

122. Kumar and Barrett, 2009, pp.29–33.

123. Gleave et al, 2005.

124. Ipengbemi, 2010, p.286.

125. Peden et al, 1996.

126. Olukoga, 2008.

127. Pendakur, 2005, p.xiii.

charging scales are being altered from flat rates, fee collection is becoming more effective (often by privatization) and parking regulations are being better enforced.¹²⁸

Rapid motorization has significant implications for the financial sustainability of urban public transport services, and also for the environment. Public transport services show signs of being deserted by the poorest urban residents (who have to walk when their wages are used up) and by the middle classes who seek better service. As a result, services are withdrawn, routes are abandoned, and fares are raised to cover operating posts. A cycle of decline sets in.

Traffic demand management which aims to shape and reduce car use is unusual in ASSA cities. Managing car and driver licensing better and eliminating unlicensed drivers and unroadworthy vehicles is a challenge.

In the medium term, a major challenge for ASSA cities is to update aging fleets, reverse the rapid growth of private vehicle ownership through charging and land use. Charging the real social and environmental costs of motor car use is a long-term aim. In the long term, ASSA cities confront a major political hurdle if they are seen to be denying the aspirations of individuals and social groups on the verge of being able to own their own motorized vehicles that enable them to achieve flexibility, freedom from constraints of public transport, and express personal success and status. Urban residents need persuading about the non-sustainability of unrestrained car use.

128. Gleave et al, 2005, p.xiv.

6. Commercial Goods Transport

The revenue-earning delivery and collection of goods within urban areas involves carriage of foodstuffs (including bottled water in some instances), building materials, energy supply (coal and wood) and consumer durables such as office and household furniture and furnishings. Also included are manufactured products (including packaging), and delicate shipments of medical and computer equipment. Freight transport through ASSA cities en route to other destinations also enters the mix of urban traffic. Urban commercial and household waste disposal by transport forms a significant transport sector but is one that still needs to expand. For example, 35 per cent of solid waste in Addis Ababa is not collected.¹²⁹ In Lusaka, a city of 2 million people, only 15 per cent of solid waste is collected.¹³⁰ In ASSA cities the transport of goods for payment includes carriage by non-motorized transport.

6.1. Relative importance of commercial goods transport

Surveys of trucking and logistics in ASSA countries are seldom at the city scale. Compared with passenger transit, commercial goods transport has been neglected by urban transport researchers and policy makers in ASSA cities. Yet, it is extremely important for the social and economic viability of cities. Commercial goods transport also has widespread ramifications for the environment, transport infrastructure and overall trends of movement and mobility. Mostly, freight logistics and freight policy receive attention at the scale of nation state and region, not city.¹³¹

As the number of people living in cities in ASSA increases, the volume of goods to be carried increases. As these cities spread geographically, so the distances increase over which goods have to be carried to markets and retail stores, for example. Crucially, larger urban populations also generate more dry waste which needs collecting, consolidating and hauling away to either landfill sites or, preferably, to recycling depots for compaction and burning to generate electricity.

There is little published data that make it possible to analyse the differences in commercial goods transport between ASSA cities according to their size, wealth, or location. Some information is collected systematically and published about the size of the metropolitan freight transport sector in terms of vehicles bought, sold and registered. Data for South Africa show that commercial vehicles account for one third of all vehicle registrations (light delivery vans account for 67 per cent of commercial registrations and minibuses 10 per cent).¹³² Information about employees, fuel bills, revenues and jobs in urban commercial goods transport is scarce. Indicatively, however, the South African Transport Workers Union counts 9,600 members in the road passenger and taxi sector and 28,000 in the road freight sector.¹³³

Non-motorized transport is quite heavily used for intra-urban freight traffic in ASSA cities. Devices include three-wheel platform rickshaws (Dar es Salaam's *gudrum matatu*) and handcarts; they are an important source of employment as well as a means of goods transport for personal or occupational reasons. Studies in Nairobi found 65 per cent of handcarts serving the main central markets, 24 per cent around bus terminals, and the remaining 12 per cent on the streets. The location of such concentrated activities puts them in conflict with officials who see their main responsibility as maintaining the flow of motorized traffic.

129. UN-Habitat, 2008.

130. UN-Habitat, 2007.

131. Pedersen, 2001.

132. <http://www.enatis.com/>.

133. <http://www.satawu.org.za/about-us/sectors>.

Handcarts are in demand because they are cheap. Many licensed hawkers and retailers (many of them women) depend on handcarts to ferry heavy and bulky goods; the carts cost a fraction of motorized pickups.¹³⁴

In Accra, non-motorized transport is used by individual waste cart pushers (*kayabola*).¹³⁵ Donkey and horse-drawn carts operate in South Africa's low-income urban townships. Speed is not essential, and ability to operate across rough surfaces is an asset. Non-motorized transport has the advantage of being able to penetrate into markets and congested areas. Animal hauled carts are used for waste picking, scrap metal haulage (recycling), and coal delivery.¹³⁶ Much animal haulage makes use of motor vehicle parts such as rear axles and wheels, seats and truck bodies or platforms (itself recycling).

Informal goods transport occurs over short distances within ASSA cities (and there are observations that services provided by non-motorized goods vehicles have generated unskilled employment opportunities),¹³⁷ but there is no published evidence for deliberate practices and policies aimed at encouraging or discouraging low-technology, small-scale freight movement. These would include daily short-haul store-to-market movements on hand-trolleys in informal clothing, luggage, and tourist craft markets. Micro-research shows that handcart operators in a small Malawian town offer useful short-distance small-freight services.¹³⁸

The informal (spontaneous, unregulated) circulation of foodstuffs, building materials and household commodities on small motorized vehicles, bicycles, animal drawn carts and handcarts, and by head-loading, are an essential support to petty hawking and trading in ASSA cities, not to mention to the subsistence of city populations.¹³⁹ This is particularly in the congested, narrow, irregular streets inside city slums.

6.2. Conditions and trends: commercial goods transport and related infrastructure

Goods transport by commercial motor transport increased in ASSA cities as motorization grew, as street and parking provision improved, and as the geography of economic activities sprawled. Motor trucking is now a significant contributor to economic activity (production and consumption). Street congestion is a considerable barrier to effective freight movement and handling (loading and offloading).

6.3. Impacts/challenges of commercial goods transport

There is no published evidence about efforts to reduce the daily traffic mix by confining commercial traffic to out-of-hours times, which would effectively re-capacitate the urban road network by spreading its use over a 24-hour period instead of an 8-hour period. There is the possibility of extracting more use out of minibuses (and roads) by using these privately-owned vehicles for night-time freight service.

Commercial goods transport faces with a number of challenges, including competition with passenger transit for urban space and infrastructure. Indeed, the sustainability of passenger transit in cities can not be reviewed without consideration of commercial goods

134. Howe and Bryceson, 2000, pp.37–38.

135. UN-Habitat, 2009a.

136. Langenhoven and Dyssel, 2007.

137. Howe and Bryceson, 2000, p.10.

138. Jimu, 2008.

139. Howe and Bryceson, 2000, p.41.

transport. The contribution of commercial goods transport to urban congestion, road surface decay and air pollution has yet to be surveyed in detail in ASSA cities.

The challenges facing commercial goods transport in ASSA seaport and airport cities are associated with distributing imports and exports efficiently with least interference to the other city traffic. Internal circulation of urban freight concentrates in formal industrial and retail areas. But there is also a significant difficulty accessing high density informal settlements and the use of informal small scale transport using donkey carts, handcarts, and bicycles for instance. Street width and surface quality is a considerable barrier to effective freight movement and handling (loading and offloading).

From the perspective of poor people, measures to suppress the non-motorized providers of goods services are misguided. They have a strong relationship to the petty hawking and trading activities that sustain their livelihoods. They are likely to be joined by two-wheeled providers – motorized and non-motorized – of passenger services that are abundant in Uganda and some West African cities, since these provide the flexibility of service the poor need.¹⁴⁰

140. Howe and Bryceson, 2000, p.12.

7. Land-Use and Transport Planning

Any major investments, policy changes or trends in transport will influence urban land-use development patterns. Conversely, any major land-use development initiative will have implications for transport demand and travel behaviour. Land-use policies should consider the implications for the transport system, and similarly, an urban transport strategy must take into account its relation to and effects on public and private decisions pertaining to residential, employment and service location. Yet, integrated land-use and transport planning remains a challenge in many of the world's cities. Most urban areas in ASSA have failed to establish institutional arrangements and governance systems for integrated land-use and transport planning.

7.1. Conditions and trends

Many contemporary ASSA cities originated in the colonial era when land-use planning was dominated by segregationist principles and when poor people were directed to live on the edges of cities. Three key conditions and trends regarding land use in ASSA cities that have affected transport ever since: urban sprawl, uncontrolled slum development, and urban infill.

Urban sprawl is a condition which burdens transport in most ASSA cities. In Dar es Salaam, for instance, a large majority of the population lives within 10km of the centre, but this is nonetheless a considerable distance given the radial structure of the existing road network. The spatial dispersion of new residential areas is a source of particular problems as jobs and the main urban facilities are highly concentrated in the central business district or nearby. The main commercial district, the largest market, the main hospital, the industrial zone and the port are all close to the centre.¹⁴¹ Surveys in 1999 indicated that there were about 54 informal settlements widely distributed throughout the most urbanized parts of the Dar es Salaam region. Their distance from the central business district (up to 24km)¹⁴² can be used to express remoteness from services, but this is ameliorated by proximity to arterial transport arterial routes and local facilities.

In Nairobi, most but not all poor people live in overcrowded formal settlements. Others are scattered throughout the more wealthy areas as house servants, watchmen, messengers, etc. Notwithstanding this, the most visible symbols of poor communities remain the more than 100 informal settlements where the vast majority of the poor reside. Excepting for the infamous 'old' Kibera slum close to central Nairobi, many of the largest informal settlements are the most remote, being in the range 12km to 18km from the main employment and service centres in the central business district and industrial zone.¹⁴³

Partially because the poorest people in cities like Nairobi do not enjoy reduced transit fares, many try to live as close to employment centres as possible so that they can walk to their jobs. This situation results in many people with little money living in crowded, unsafe, and unsanitary conditions near the centre of town – infamous Kibera slum is one such place. A more affordable transit system with good coverage of poor neighbourhoods would allow more residents to move away from the slums and still access the same labour market. In contrast to many other cities, the transit system in Nairobi is physically accessible for residents of poor neighbourhoods, but affordability remains a constraint.¹⁴⁴

141. Olvera et al, 2003.

142. Howe and Bryceson, 2000, p.44.

143. Howe and Bryceson, 2000, pp.31–32.

144. Salon and Gulyani, 2010.

A common complaint in ASSA cities is that the route structure is too concentrated on radial routes out from the city centre. Even, in Nairobi and Kampala, where the open market structure would appear to permit, if not encourage, transport route innovation, there was a perceived lack of circumferential routes. In Kampala, this is partly due to the role of UTODA in requiring all minibuses to use a centrally located taxi park.¹⁴⁵

The informal settlements' overcrowding creates special internal access problems, which cannot be dealt with through conventional transport planning approaches or implementation mechanisms.¹⁴⁶ Physical layouts are relatively haphazard making it difficult to introduce (drained) roads, and pathways.¹⁴⁷

Little has changed since a 1992 Nairobi survey found only 39 per cent of the urban transport network surfaces were in a good or adequate condition. The remainder were poor or very poor requiring resurfacing or reconstruction. Drainage conditions were even worse: 56 per cent were poor (under-designed) or very poor (non-functional) and 17 per cent had no roadside drains or culverts. There are few by-passes or circular routes by which long distance traffic can avoid the centre of the city. The result was road congestion in the peak hours, even at comparatively low levels of car ownership.¹⁴⁸

In the last twenty years the peri-urban zone of Dar es Salaam has been characterized by infill rather than further linear expansion along roads; by densification of existing linear settlement; and by limited spatial growth to the south of the city. Access improved due to greater competition in the public transport sector and increased access to private transport.¹⁴⁹ Informal privatization of transport services reduced the former radial orientation. Feeder transport also helped produce a more dense pattern of urban settlement. Densification has also been facilitated by government provision of car and housing allowances as a way of raising incomes in the public sector.¹⁵⁰

The case of Cape Town is interesting in relation to proposed residential densification and possible re-use for affordable housing of under-utilized transport infrastructure spaces such as the inner city railway marshalling yards. City planning hopes to curb 'greenfield' development (on cheap but distant land) and to limit spontaneous settlement.¹⁵¹

As has been remarked for Dar es Salaam, poor urban public transport restricts people's activity schedules, complicates access to services ever further, limits the use of urban space, and places considerable pressure on household budgets. Consequently, the poorest individuals tend to retreat into their neighbourhood. The low-quality urban facilities there do not help the development of human and social capital and economic opportunities: neither poverty nor social exclusion are alleviated.¹⁵²

7.2. Impacts/challenges for the integration of land-use and transport

Institutional reform is a prime requirement for city forms that integrate land-use and transport better. The challenges include reducing fragmentation in urban planning authorities, and resisting political pressures and property development interests which undermine urban

145. Gleave et al, 2005, p.21.

146. Howe and Bryceson, 2000, p.12.

147. Howe and Bryceson, 2000, p.34.

148. Howe and Bryceson, 2000, p.35.

149. Briggs and Mamfupwe, 2000.

150. Howe and Bryceson, 2000, p.10.

151. Behrens and Wilkinson, 2003.

152. Olvera et al, 2003.

planning.¹⁵³ Citizen consultation is crucial; resistance can jeopardize projects. In 2004, residents of Kibera, Nairobi, debated a controversial government plan to demolish the slum to make way for a road.¹⁵⁴

Mega-transport projects especially, while generating engineering contract income, votes, and jobs, can promise more than they deliver, and entrench social and geographical disadvantage. For example, there are anxieties about the negative impact of Gautrain on 'greenfield' sites, and on partial and preferential mobility in urban South Africa. It has been argued that the new urban corridor city form will perpetuate spatial segregation (and essentially social exclusion) rather than promote integration, the aim of numerous post-apartheid policies.¹⁵⁵ The mammoth project has also been criticized for diverting investment resources from other needed projects, especially as costs inflate to more than seven times the original estimates.¹⁵⁶

Transport and city planners need to take care in limiting progressive residential location policies to land close to the old central business district. Designating all peripheral land as undesirable locations for low-income housing would be an error in view of the diversity of housing needs in increasingly polycentric cities in which the importance of the traditional urban core is diluted and non-formal jobs are widely dispersed across the metropole. Women, especially, work more in the service and informal employment sectors, and generate more diffuse trip patterns and trip timings than those traditionally served by formal public transport.¹⁵⁷

Transit-oriented development is a potentially fruitful way of addressing important current policy concerns about the interaction of public transport and land-use patterns in ASSA cities.¹⁵⁸ It is not clear how much urban planners have tried to use BRT/integrated rapid transit and heavy-rail developments in ASSA cities to create new urban land-use patterns. Land uses, and the property market, are certainly affected.

Reactive land-use responses include those in Nairobi where railway 'reserves' alongside the track of the new urban railway have been encroached on by many shantytown residents who have received eviction notices. Kenya Railways has received money under the Relocation Action Plan funded by the World Bank to build a wall along the railway line and construct stalls on the land side of the wall to be leased out to residents. The Railway company will also put up houses away from the line to accommodate those living close to the track and provide them with community centres, water and waste management facilities.¹⁵⁹

The transport sector has a major contribution to make improving the lives of slum-dwellers, particularly their access to public services and work opportunities. These informal settlements are home to 80 per cent of urban populations in most Sub-Saharan African countries and will continue to expand. Community efforts to upgrade local roads and paths, and to secure more adequate transport services from these shadow cities to places of employment and social services need active support. Transport agencies have to work directly with land-use planners and other municipal services to prepare sufficient quantities of space for new residential areas to develop gradually without recreating the problems of access to work and services that are faced by many slum-dwellers.¹⁶⁰

153. Krynauw and Cameron, 2006.

154. <http://news.bbc.co.uk/2/hi/africa/3671837.stm>.

155. Donaldson, 2006.

156. Chakwizira, 2007.

157. Venter et al, 2007, p.658.

158. Wilkinson, 2006.

159. *Daily Nation* (Kenya), 5 July 2010.

160. AU and UNECA, 2005, p.3.

Slum residents' poverty sets tight constraints. In Dar es Salaam the daily purchase of a single roundtrip minibus ticket would amount to 10 per cent of total expenditure by a household in the lowest income quintile, and 5 per cent even for the next quintile. Locating new employment, school and health centres to match the changing geographical spread of population will help to reduce average walking distance. Facilitating non-motorized transport, such as bicycle taxis, has been an important contributor to employment generation, as in Kisumu, Kenya. An important by-product of greater security of tenure for slum-dwellers is increased interest in contributing to community improvements, with high priority often attached to introducing roads. Government technical advice is usually required, and financial assistance needs to be provided to the poorest slum communities which are not capable of carrying out the work entirely on a community self-help basis.

Small interventions can make a big difference to the time and energy dedicated to transport and travel, e.g. siting basic services such as schools, health centres, markets, and water standpipes with a view to reducing the distances that must be covered. The time thus freed up, and the reduction in fatigue, would help promote the participation of women in gainful activities as well as the enrolment of children in school.¹⁶¹

The transport sector can also play a role in eliminating the emergence of additional slums. Success will depend crucially on much more effective cooperation than in the past between municipal land-use planning and road/transport planning. Attention has to be given to locating residential, educational, health, commercial, industrial, civic and leisure facilities to minimize the need for motorized travel, and to reserve land for roads and paths between areas that will be made available for housing.¹⁶²

161. World Bank, 2004, p.8.

162. World Bank, 2004, p.3.

8. Social Sustainability of Urban Transport

The social sustainability of urban transport refers to the social (mal)distribution of the benefits and costs of transport services. In ASSA cities, income inequalities are most likely to lead to – and be reproduced by – the differentials between the access which wealthy and poor people have to transport. The mobility disadvantages faced by poor people translate quickly into mobility disadvantages facing all marginalized urban residents, namely, women and children, elderly and disabled people, and those living on the urban fringe. ‘Pro-poor transport’¹⁶³ aims to correct all these inequities. There is also need to grapple with the way politically and economically disempowered people are most often displaced by new transport infrastructure projects, and with the way the adverse health and safety problems created by transport are shouldered disproportionately by poor urban residents.

8.1. Evidence of impacts on the social sustainability (accessibility and affordability) of urban transport

There is relatively little directed and systematic empirical research into the social sustainability of transport in ASSA cities. Income, age and gender are key discriminants of transport exclusion.

A sample study of more than 4,000 slum residents in Nairobi shows that most could not afford any motorized transport options in the city. They cope by limiting their travel outside their settlement and, if they do travel, by often ‘choosing’ to walk. The burden of inaccessibility and reduced mobility is borne disproportionately by women and children. Policy aiming to improve mobility and transport access for the poor needs to grapple not only with the crucial issue of affordability but also with specific constraints faced by women and children.¹⁶⁴

Gender can moderate public transport choice. In Durban, where almost three-quarters of work trips and half of other trips (excluding trips to school) are regularly made by taxi, women use taxis more frequently than men. Taxi flexibility is better suited to the more dispersed travel patterns of female travellers for both work and non-work trips. However, in certain areas women pay more for taxi service than men (on a per-kilometre basis); evidence suggests this is precisely because of the dispersion of women’s destinations, which are either served through lower-volume (higher priced) routes, or via multiple routes requiring transfers (and payment of multiple fares).¹⁶⁵

In low-income areas of Durban, women are more likely to engage in non-formal employment and more likely to depend on the taxi and walking modes to get to work. This is not surprising – these modes are more suited to the dispersed, non-radial travel patterns associated with non-formal employment than traditional public transport modes.¹⁶⁶ Accordingly, women in Durban’s low-income households in peri-urban and peripheral localities suffer the greatest travel burdens. Urban development strategies are needed to benefit the urban poor while promoting gender equity. These include greater emphasis on the provision of social and educational infrastructure closer to peripheral residential areas, coupled with better pedestrian access.¹⁶⁷ The problem has been linked with recommendations to ease women’s travel burdens by facilitating bicycle hire by women.¹⁶⁸

163. Behrens, 2004.

164. Salon and Gulyani, 2010.

165. Venter et al, 2007, p.675.

166. Venter et al, 2007, p.664.

167. Venter et al, 2007.

168. Pendakur, 2005.

Women use commercial motorcycles less than men do in intermediate size Nigerian cities.¹⁶⁹ Similar gender differences have reported for Ibadan.¹⁷⁰ There are significant gender differences in travel flexibility and trip substitution in Lagos. There, women appear more vulnerable to mobility stress than men. Sources of stress include long-waits at bus stops, lengthy travel time, and uncomfortable and expensive travel. Indeed, women had less access to and utilization of comfortable transport services and are therefore more transport-insecure than their male counterparts. One explanation is the bias toward private automobile ownership among men, and their claim to priority use.¹⁷¹

Social inclusion and exclusion in mobility in ASSA cities is also evident regarding people of different ages. In Lusaka, for example, interviews with low- and middle-income youth leave a bleak picture: in a context of spiralling economic decline and rising HIV/AIDS rates, the restricted daily mobility patterns of young people links to their limited livelihoods.¹⁷² Similar lessons emerge in urban Ghana.¹⁷³

Young people's experiences and perceptions of mobility and mobility constraints in poorer urban areas of Ghana, Malawi and South Africa create inter-generational frictions. These impact on young people's access to services and income and their participation in the social networks and peer culture, all of which shapes their life chances and life trajectories.¹⁷⁴

Research in Durban reports the vulnerability of young pedestrians to traffic, and indicates a need to improve pedestrian visibility, design safe routes to schools, and develop practical roadside skills.¹⁷⁵ The gendered experience in one ASSA city (Johannesburg) points to other difficulties: female university students there stressed their experiences of inaccessibility, crowding and fear of crime that limited their mobility.¹⁷⁶

8.2. Existing policy, practices and programmes on urban transport accessibility and affordability

In ASSA cities it is hard to find evidence of innovative and successful practices and approaches for improving urban transport accessibility and affordability for women, the youth, the elderly and the disabled. Rare research shows that urban public transport in Nigeria is neither accessible nor convenient for an ageing population which cannot afford private transport. They may be considered very vulnerable pedestrians. Their trip making is mostly day-time and off-peak. Their exposure to environmental emissions, collisions, congested seating, and protracted journeys impacts negatively on their quality of life.¹⁷⁷ Comfort and safe passage on public transport, on the streets, and at terminals affects the elderly too, but not exclusively. Unaccompanied children and women are also vulnerable. In South Africa, measures to improve safety on-board public transport vehicles involve crime prevention and detection by closed circuit cameras and security personnel.¹⁷⁸

169. Oyesiku and Odefuwa, 2002.

170. Asiyanbola, 2002.

171. Olufemi, 2008, p.132.

172. Gough, 2008.

173. Langevanga and Gougha, 2009.

174. Porter et al, 2010.

175. Hobday and Knight, 2007.

176. Seedata et al, 2006.

177. Olufemi, 2006.

178. Page et al, 2001.

8.3. Challenges for future policy on urban transport accessibility and affordability

Key challenges for future social policy directed at facilitating transport equity and inclusion are raising civic consciousness about the importance of starting to redress or even eradicate gender, age and ability differences in transport access and mobility, including physical access, treatment, price, and safety.

A much-ignored aspect of public transport is its sociability. In ASSA cities public transport use clearly provides some glue to community life that is fracturing for many reasons. Finding hard empirical evidence is difficult. Observation and anecdote all reveal the value of social contact made in buses, taxis and trains.

9. Urban Transport and the Environment

There is very little empirical information about either the immediate or the long term direct and indirect environmental impacts of urban transport in ASSA cities. Very little monitoring has occurred. But there is awareness in some quarters that explosive rates of motorization have created unsustainable dependence on non-renewable fossil energy sources, and that greenhouse gas emissions from transport pose a health and climate hazard. Energy preserving and climate mitigation actions and technologies appear to be incidental elements of other transport policies. But in many cases, land use still sprawls, and agricultural and natural habitats are being destroyed for housing. This ecological dimension of urban transport is under-researched. Even in ASSA cities where transport infrastructure is often of poor quality, is inadequately maintained, and is therefore vulnerable, there is no evidence of planning for the impact of climate change on urban transport infrastructure damage, for the attendant delays and abandoned trips, and for rocketing fuel prices or shortages.

9.1. Evidence of environmental impacts of urban transport

A major environmental problem associated with public transport in ASSA cities is air pollution from vehicle exhausts. These emit particulates which are a serious health hazard wherever leaded and high sulphur fuels are still in use. Fuel quality probably explains most pollution except in the case of older engines which can be owner-tuned but are not maintained carefully. Data on specifically urban vehicle emissions in ASSA are scarce, often once-off and not always easily compared across cities. As yet, there are few procedures in place to control it,¹⁷⁹ although South Africa has started implementing a carbon dioxide (CO₂) vehicle emissions tax. There is scant evidence of efforts in ASSA cities to facilitate low-carbon travel by providing more and safer space for pedestrians.¹⁸⁰

Air monitoring networks have been established in several ASSA cities, including Accra, Dar es Salaam and Durban. Data from Accra suggest that annual average particulate concentrations may be considerably higher than WHO targets and guidelines, and that exposure and disease burdens are greatest for people driving on and working or living near to congested roadways. It is unclear to what extent the increased concentrations observed near roadways were due to tailpipe emissions (mainly fine particles) versus re-suspended road dust (mainly coarse particles).

Heavy-traffic roadways may create pollution hotspots where health risks exceed those encountered more generally throughout a city, and where risks are borne mainly by poor people.¹⁸¹ Results of a pilot study suggest that concentrations of particulate matter are twenty times higher on roadways in Nairobi than in places away from roadways. Evidently motor vehicles are an important source of respirable particulate matter in Nairobi. The data imply that the health of motorists, taxi and truck drivers, and residents and traders who spend substantial time on or near roadways may suffer most. Pedestrians and petty traders are also likely to be exposed to high concentrations of particulates and other pollution.¹⁸²

179. Gleave et al, 2005, p.24.

180. World Bank, 2004, pp.7–8.

181. Kylander et al, 2003.

182. van Vliet and Kinney, 2007, p.2, 4.

9.2. Existing policy, practices and programmes on the environmental impacts of urban transport

It is difficult to find evidence for innovative and successful legislation, practices and approaches for minimizing the environmental impacts of private, public or commercial transport in ASSA cities. If there are legal limits to vehicle emissions, there is little capacity for regular vehicle emissions testing and enforcing of limits. Vehicle licensing charges are not geared to emissions in most ASSA cities. There are no laws against abandoning old, unusable vehicles and tyres. If there is prohibition on fuels and engine types, there is limited enforcement. There is no evidence of mitigation strategies such as tree planting. Disincentives to car use are not primarily directed at stemming environmental decay, so except for project-specific Environmental Impact statements there is no overall view on the environmental impacts of traffic management devices such as speed bumps, tolls, exclusive rights of way, on-street parking restrictions, inflated parking costs, increased parking fines, and neighbourhood parking permits.

In the informal motorized transport sector there are no policy instruments, regulatory frameworks and legislation directed at reducing emissions, although some traffic control has sometimes been motivated by air quality concerns. Efforts to regulate the minibus sector in several ASSA cities have environmental elements, at least in part. For example, the minibus scrapping exercise in South Africa was about 'taxi recapitalization' that could promote comfort, safety as well as reduce emissions from old vehicles. The intention was to improve road safety (and reduce passenger deaths and injuries) by giving owners and operators incentives to decommission old, un-roadworthy vehicles.¹⁸³

There is no evidence of environmentalism initiating provision of dedicated bicycle routes in ASSA cities. The predecessor – the pavement/sidewalk – is a much neglected non-motorized transport space. There are no readily available data regarding city funding set aside for maintenance of these surfaces, and for their segregation from other traffic. Small projects to promote non-motorized transport (including bike-to-work days, e.g. in Cape Town) are not well reported in the literature. In Accra there have been initiatives to integrate cycling with public transport provision.¹⁸⁴

These measures have adverse implications for the poor. A flat rate tax is inherently regressive because it hits the poor the hardest. A congestion charge means greater segregation between the rich and the poor because certain parts of the city can only be visited by the rich, being the ones who can pay the charges. Worse still, a compulsory catalytic device regime will force the poor to pay the same price as the rich for the equipment. Yet, for the poor, it will mean paying more as a share of their income. Such a flat rate becomes less burdensome the wealthier one gets. In the end, inequality and marginality produce further marginality, inequality and poverty: it is socially inequitable to make the poor bear the cost of the pollution of the few rich. The solution, therefore, is not to let the polluter pay because the polluter can pay and the poor need to drive. So rather, the right to pollute should be evenly distributed among different social groups.¹⁸⁵

Import duty (56 per cent) on second-hand vehicles in Uganda is so high that people cannot do away with old cars to acquire relatively new ones whose emissions may be less dangerous. Results from the study indicate that the average age of cars in Uganda is 12 years. Vehicles therefore remain on the road for considerably longer periods for as long as they are

183. Barrett, 2003.

184. Quarshie, 2007.

185. Obeng-Odoom, 2009, p.42.

mechanically able to run. The poor maintenance facilities and absence of enforceable inspection standards results in a large proportion of the vehicle fleet with high fuel consumption and emission levels.¹⁸⁶ Comparable data for the various BRT initiatives have yet to be produced.

9.3. Challenges for future policy development on the environmental impacts of urban transport

A relatively easy step forward is to move towards elimination of leaded petrol because of the damage it inflicts on catalytic converters. Public concern for the effects of high lead absorption on children's lifelong capacities may be overstated in this regard. Reduction of other vehicular pollutants, especially particulates, will be an increasing priority, especially in the largest urban areas.¹⁸⁷ Tackling vehicle emissions and congestion requires strengthening capacities for efficient (and probably generally private-sector) provision of public transport (including, for example, use of bus ways).¹⁸⁸ Reducing the number of vehicles will reduce the number of engines burning fuel. Moving to low sulphur green fuels will reduce nitrogen oxides, sulphur oxides, particulates, carbon monoxide and hydrocarbons, and will be compatible with new vehicle technology and emission control devices.

Regular emission data collection and monitoring are essential. In 2005 there were no facilities in Nairobi or Kampala for checking vehicle emissions.¹⁸⁹ Policy needs to mandate emission checking, but this is probably not more urgent than managing traffic better to reduce emissions. Policies being formulated and implemented in South Africa to manage energy demand via transportation are occurring at the national not the urban levels.¹⁹⁰

Strategies that would assist carbon governance in urban transport include bypasses, one-way streets and redesigning road intersections to minimize congestion, raising parking charges, abolishing leaded fuel, ending urban sprawl, and preventing importation of old polluting vehicles. Efforts to apply some of these instruments in Kampala ran up against fragmented local government institutions and different agencies responsible. According to Kampala City Council, a key constraint facing the city in the promotion and wider application of economic instruments (e.g. parking fees) are high rates of tax evasion.¹⁹¹ It also regards non motorized vehicles as inferior, degrading and a relic of the past. At national level, vehicles are seen as sources of government revenue in form of fees collected on vehicle imports and licensing, and fuel levies, for instance. At the local government level, vehicles are seen as sources of revenue in form of parking and other operating fees.¹⁹² In this regard, limiting vehicle numbers has an adverse effect on state revenues.

In addition to researching and understanding better the effect of transport-generated air pollution on public health in ASSA cities, there are the challenges of measuring, understanding and combating adverse effect of transport investments and emissions on species habitat and on the quality of city life, including ambient noise levels. The disproportionate exposure of poor urban residents to transport pollution, noise and unsightliness (environmental injustice) is a less tangible challenge needing resolution.

186. Mukwaya, 2007, p.5.

187. Mukwaya, 2007.

188. Mukwaya, 2007, p.35.

189. Gleave et al, 2005, p.21.

190. Vanderschuren et al, 2010.

191. Mukwaya, 2007, p.4.

192. Mukwaya, 2007, p.5.

10. The Economics of Sustainable Urban Transport

The financial sustainability of urban transport infrastructure and public vehicle maintenance is a major challenge for ASSA cities. Funding these expenditures diverts public resources from other important services and assets, including health care and education provision. In ASSA cities, civic under-capacity means that urban governments face difficulties sourcing, managing and even spending allocated budgets. Transport investments must be cost-effective and sustainable and benefit the majority of tax payers and urban residents. Urban households too, face pressing questions about the future affordability of current transport practices. Yet, urban transport cannot stagnate: sustainable transport is crucial to the functioning of urban economies and affects the livelihoods of city residents.

10.1. Evidence of impacts of urban transport investments and maintenance of infrastructure and technology assets

In Nairobi, between 14 per cent and 30 per cent of household income is spent on transport.¹⁹³ In South Africa, the 2003 National Household Travel Survey indicated that lower-income households (earning about US\$66 at average 2003 rates) could commit as much as 35 per cent of their income to meeting basic transport costs. This figure fell to 5 per cent for wealthier households (earning more than about US\$396) which were much more likely to own and use private transport.¹⁹⁴

In Lagos, transport (fares) amount to 20 per cent of budget for poor households.¹⁹⁵ In Lagos, 15–20 per cent of household expenditure in 1997 was spent on transport (public and personal). Estimates in 2002 were that poor people (earning one third the average income for the city), and paying the then average fare, would spend over 54 per cent of their income on transport. Someone earning an average income would spend more than 17 per cent. These proportions are both high and reflect the high fares charges on Lagos buses. Fare regulations are not strictly enforced and operators tend to discharge passengers every few kilometres and require that they re-board and pay again, or they bargain the fare with passengers according to the length of the queue.¹⁹⁶

A study of the situation in the 1990s in four East African cities showed that all the modes used by poor people – walking, cycling and public transport – are inadequately provided for. This raises the cost of transport, estimated to be as high as 30 per cent of household income for those in the most remote residential areas. High transport costs reduce poor people's access to basic needs and erodes the monetary returns and efficiency of their economic activities. It also raises the total cost of urban transport, thereby reducing municipal and national economic efficiency. The total cost of transport is high partly due to modal inefficiency, but also because there is a severe distortion in the overall transport cost distribution. Travel by private car meets less than 10 per cent of demand, but incurs over 50 per cent of total system costs. By contrast, walking meets almost half of trip demand but accounts for only 1 per cent of total costs. These distorted cost distribution patterns are a serious misallocation of economic resources and transport policies should aim at their reduction.¹⁹⁷

193. Kunieda and Gauthier, 2007, p.16.

194. Wilkinson, 2010.

195. Mitric, 2008, p.50.

196. Carruthers et al, 2005, p.9.

197. Howe and Bryceson, 2000, p.11.

10.2. Existing policy, practices and programmes on economic sustainability of urban transport

The economic sustainability of major transport projects in ASSA cities hangs by a slender thread. Major government injections of funds are crucial, but are once-off. Thus, the South African government has committed funding for three years for ‘catalytic’ transformation projects in cities which have demonstrated progress in implementing their proposed integrated rapid transit systems. Some US\$1.67 billion will be made available between 2010 and 2013. Sustainable revenue sources are needed for longer term operational funding, including, perhaps, local fuel or business turnover taxes.¹⁹⁸

Road congestion charging and tolls are making their way into urban transport management, such as in the Johannesburg-Pretoria metropolitan area. Part of the objective is rebalancing the private-public mode split. Organized business, notably freight forwarders and employers regard tolling as a major threat to their viability.

10.3. Challenges for future policy on economic sustainability

The key challenges are raising money to support ongoing infrastructure construction and maintenance, and fleet renewal. A key part of this is establishing ring-fenced funds for renewal and rehabilitation, and giving small-scale public transport operators access to bank loans without requiring collateral.

According to the Kampala City Council, the main constraints facing the city in the promotion and wider application of economic instruments (e.g. parking fees) are the low culture for tax compliance and high rates of tax evasion.¹⁹⁹ It also regards non-motorized vehicles as inferior, degrading and a relic of the past. At the national level, vehicles are seen as sources of government revenue in the form of vehicle import fees and vehicle licensing. At local government level vehicles are regarded as sources of revenue from parking and other operating fees.²⁰⁰

National taxes levied on motor vehicles are partly responsible for shaping urban transport supply. High import and VAT taxes are barriers to importation of more *matatus* in Nairobi, for example. Meeting the increasing demand for transport vehicles is expensive; undersupply leads to high prices and unaffordable fares. Similarly, high insurance levies dissuade *matatus* from comprehensive cover in a situation in which insuring against accidents and thefts is expensive. The Kenyan government has agreed to compel insurance companies to reduce premiums charged.²⁰¹

For transport services, there is the evergreen matter of public transport charging fares high enough to sustain fleet replacement. Customarily, and officially, urban surface transport is pay-to-use, but abuses do occur. Fare evasion (non-payment and under-payment) on trains, for instance, is well-known. There is also anecdotal evidence about non-payment agreements between drivers/ticket collectors and members of the public who may be friends or relatives, or who may be bartering services. Empirical evidence for service reliability and cost recovery through fares is difficult to obtain.

There is a need to prepare middle-class public opinion for the rising charges and taxes that will need to be levied for use of private vehicles in order to keep demand within limited road capacity.²⁰²

198. Wilkinson, 2010.

199. Mukwaya, 2007, p.4.

200. Mukwaya, 2007, p.5.

201. Chitere and Kibua, 2004, p.6.

202. AU and UNECA, 2005, p.35.

11. Urban Transport Institutions and Governance

Effective and sustainable institutions are needed to provide sustainable urban transport policies and plans, as well as associated services and supporting infrastructure. These institutions need to be robust, empowered, well-managed and resourced to be able to oversee and influence sustained planning, appraisal and delivery of sustainable urban transport infrastructure and services. Yet, transport institutions in ASSA cities are often under-resourced and lacking in capacity to execute their responsibilities. Effective urban transport governance requires the involvement of transport users (e.g. individuals, households and communities), civil society and the private sector.

11.1. Evidence of impacts: urban transport governance

Many ASSA cities have experienced fragmentation of control over urban transport provision. This is manifest, for example, in the presence of rival syndicates or associations controlling private minibuses in Accra,²⁰³ and in urban Kenya²⁰⁴ and South Africa.

In Kampala and Nairobi, the Governments make no attempt to control the supply of minibuses. Effectively control has been passed to route associations. These are supposed to operate in the owners' and drivers' interests but there is always a danger that they may be controlled by outside agents who use their *de facto* monopoly power to further their own interests. The Government in Kenya has recently taken steps to try to break the power of criminal syndicates which were extorting revenue from the operators of some minibus routes. In Kampala the supply of minibus services is effectively controlled by the Uganda Taxi Operators and Drivers Association (UTODA). They have the license from Kampala City Council to operate the only taxi park (bus terminal) in Kampala, and all minibus operators are obliged to start and end their journeys in the park (and pay a fee to UTODA for each entry). UTODA was initially set up to protect and promote the interests of owners and drivers. However, it has become extremely powerful and earns a substantial income from charges levied on minibus operations.²⁰⁵

In Kampala, UTODA has a strong role in organizing *matatu* services. With a staff of about 650, it operates the 125 stages around Kampala. UTODA has a contract with Kampala City Council to operate and maintain taxi-parks, which are the central points for *matatu* connections within Kampala, and between Kampala and the rest of the country. UTODA collects user fees from every *matatu*, and only registered and paid-up *matatus* are allowed to board passengers in the taxi-parks. UTODA has also been mandated to collect local taxes from the drivers. UTODA also supports the police in regulating city traffic through a force of about 100 traffic wardens. UTODA's weak and unpopular regulatory authority was delegated by under-capacitated government.²⁰⁶

Most *matatu* passengers in Kampala know about UTODA but have never used it as a channel for complaint and are pessimistic about its ability to enforce legislation. There is thus a need for it to develop trust.²⁰⁷

In Kampala and Nairobi there was a strong feeling that the current administration of the urban transport system ignored the interests of local stakeholders and users. It would therefore

203. Quarshie, 2007.

204. Chitere and Kibua, 2004.

205. Gleave et al, 2005, p.14.

206. Kamuhanda and Schmidt, 2009.

207. Kamuhanda and Schmidt, 2009.

be important to ensure local representation, possibly through the local authority, on the boards of these authorities, should they be formed.²⁰⁸ Authorities in both cities have found it difficult to regulate the informal sector. In effect, they have permitted transport to be run by a mix of market forces and operator associations. The results are generally viewed as unsatisfactory. Although the informal sector provides relatively dense coverage, frequent services, and is flexible in response to changes in demand, it is also disorderly, uncomfortable and occasionally unsafe. There is a lack of service discipline, passengers dislike haggling over fares, and the services are costly relative to income.²⁰⁹

Unresolved rivalries between the operators of the same transport modes have disrupted passenger service and mobility in ASSA cities, sometimes violently. Rectifying this can be a major challenge. Public transport workers are a significant constituency: the South African taxi workers' union (SATAWU) needs to devote time and resources to developing services that meet the immediate economic and social needs of workers (information on their legal rights, educational and advocacy projects, legal aid, provision of medical insurance, credit and loan schemes). These services should not be regarded as a substitute for collective bargaining nor a way to absolve the government from its responsibility, but rather as a complementary organizing tool.²¹⁰

Integrating governance of public transport service across diverse modes is another challenge. Since 2000 there has been a legislative framework for establishment of metropolitan transport authorities in South Africa.²¹¹ Their creation has faltered. But, since the opening of the Johannesburg BRT in 2009, the City and taxi operators from nine taxi associations in Soweto have been involved in commercial and business negotiations in preparation for the taxi association's takeover of the Rea Vaya bus operations. In February 2011 the nine taxi operators investment companies owned by over 300 taxi operators took charge of the Rea Vaya Bus Operating Company and commenced the 12-year bus operating contract.

11.2. Evidence of policy responses, specific practices/programmes/projects

In South Africa, the current institutional framework governing provision of public transport services is fragmented and incoherent. Modes are not integrated or even effectively coordinated; planning is disconnected from regulation and operational management, as well as from public funding streams required to implement systemic transformation.²¹²

In South Africa, anomalies between the intentions behind metropolitan transport authorities and the legal, institutional, financial and manpower constraints within municipal government have led to a call for reappraising the idea of major transport authorities.²¹³

The challenges include fragmented governance: integrated transport: inter-line and inter-modal scheduling; through ticketing. The difficulties include ineffective institutions: traffic policing and enforcement; capacity: staff training and turnover; corruption: ethical public behaviour in a situation of risk and vulnerability.

Creating urban transport authorities holds the promise of improving transport service delivery. A recent report is clear that Africa's cities must move quickly toward the model of

208. Gleave et al, 2005, p.xxiv.

209. Gleave et al, 2005, p.25.

210. Barrett, 2003.

211. Groenewald, 2003.

212. Wilkinson, 2008.

213. Cameron, 2005; Krynauw and van den Berg, 2005.

the metropolitan transport authority to coordinate planning, regulation, licensing, inspections, monitoring, and enforcement. A way must be found to bring large buses back. Cities that cannot move people become choked by growth'.²¹⁴ In Liberia, the Monrovia Transit Authority was revived in 2007.²¹⁵ In Lagos, a metropolitan transport authority has started operating (see Box 9).

Box 9. The Lagos Metropolitan Area Transport Authority (LAMATA), Nigeria

The LAMATA project funded by US\$100 million of World Bank credit in 2002 involves re-regulation of the informal sector, using road rehabilitation as a lever and as a direct instrument to reduce poverty, through employment on road works. Public transport service franchises have been introduced on roads improved by the project. Other (non-franchise) operators are prohibited from using these roads. On the institutional side, the project helped to create a regulatory authority (LAMATA) and gave it the threshold financial capacity through a new Transport Fund. The Fund is fed by budget transfers from the Lagos state government, and a share of road user charges. No provision was made to seek street space exclusivity for public transport vehicles, reflecting a sober assessment of what was politically feasible. The project design is unusual in that investments in one mode (road infrastructure) are used to leverage regulatory changes for another mode (public transport services). This was possible because the client government (Lagos State) has jurisdiction over both modal systems.

Source: Mitric, 2008, p.50.

11.3. Challenges for future policy development

One of the key considerations in future transport policy development in ASSA cities is the highly distributed forms of (sometimes ethnicized) power manifested in rent-seeking, clientilism and violence in the minibus sector particularly. Against this, civic transport institutions can often appear ineffective.

It will be crucial to restore trust in civic institutions. The current transport situation in East African cities, for example, reflects two to three decades of economic and social stagnation and decline. It has been suggested that the most important casualty of this process is not the conspicuous physical deterioration of infrastructure and services (especially severe in the areas inhabited by poor people), but the collapse of civic authority as represented by the informal privatization of public transport markets. This has not benefited poor people. It has also undermined the whole notion of centrally coordinated and regulated transport development.²¹⁶

Public transport users have little expectation things will get better. Civic authority has lost its credibility. Decades of empty promises, non-delivery of services, and seeming helplessness in the face of free market forces, has left a legacy of mistrust among poor people especially. A survey published in 2000 found that in Africa the most successful example found of transport infrastructure investment with a clear poverty-focus, is directed by an international non-governmental organization and not civic government. United Nations agencies and non-governmental organizations rather than municipal governments have pioneered projects for infrastructure provision in informal settlements.²¹⁷

In Cape Town, there are also obstacles embedded in the present institutional framework for road-based public transport in the city. There are difficulties establishing an appropriately

214. Kumar and Barrett, 2009, pp.29–33.

215. UN-Habitat, 2010b.

216. Howe and Bryceson, 2000, p.9.

217. Howe and Bryceson, 2000, p.11.

mandated and resourced agency at the local level amid sustained opposition of existing, largely ‘self-regulated’ minibus taxi operators. The proposed regime of ‘regulated competition’ has struggled to get going. Rather than hoping to establish a multi-modal metropolitan transport (passenger) agency, it may be that a partial or ‘hybrid’ transformation of the public transport system may be the best and only outcome of the transformation process.²¹⁸

In Dar es Salaam the regulatory institutions are largely ineffective and there are no procedures for assessing customer service levels or providing a forum where stakeholders can propose improvements.²¹⁹ Overall, civil society is not playing any significant role in the public transport sector. There is therefore an urgent need to establish a forum for discussion whereby bus owners, operators and users would meet to discuss pertinent problems on public transport so as to improve the quality of public transport service to the users.²²⁰

Finally, future effective governance will rely on accurate long-term data about transport and accessibility and mobility trends. But, in East Africa for example, it has not been possible to analyze motorization trends because vehicle registration data has been suspect for at least three decades.²²¹ In Nairobi and Kampala there was no provision to monitor the performance of public transport, or the transport system in general. It is difficult to get basic statistics such as time-series for the number of licensed operators. No attempts have been made to collect system performance indicators such as the annual mileage of the bus and minibus fleets, average fares, or the numbers of passengers carried each day.

If a serious effort is to be made to improve the quality of public transport, there needs to be an agency responsible for the systematic collection of relevant statistics that would demonstrate that public policy goals were being met and whether the performance of the system was improving or deteriorating.²²² But in ASSA cities basic statistics on transport system performance are not collected. Pending better data collection, ‘*it will be impossible to assess the current situation, or to establish whether it is improving or deteriorating*’.²²³

218. Wilkinson, 2010.

219. Sohail et al, 2006.

220. Sohail et al, 2006, p.188.

221. Howe and Bryceson, 2000, p.28.

222. Gleave et al, 2005, p.22.

223. Gleave et al, 2005, p.xviii.

12. Towards Sustainable Urban Transport

Many interventions in urban transport have secured commercial and social advantages for residents in ASSA cities. But these advantages accrue to relatively few people, notably wealthier residents and visitors. Poor urban residents shoulder the burden of long, unsafe and exhausting work journeys (that diminish productivity and health and capital formation), and face the prospect of abandoning many journeys because of their cost and difficulty.²²⁴ More policies and practices should target the social, environmental, economic and institutional sustainability of transport in ASSA cities.

12.1. Social sustainability of urban transport

Governments and citizens in ASSA countries are increasingly aware of urban residents' differentiated accessibility and mobility. The mobility of car-owning elites is almost infinite (even if it is curbed by traffic congestion) but masses of people find intra-urban travel extremely expensive, inconvenient, slow, difficult, dangerous and undignified. Women of all ages, and elderly and young people, are worst affected. Apart from BRT schemes, there are few signs that formal public motor transport, or informal minibuss transport, is being redesigned to make mobility more affordable or easier, and to bridge the mobility divide. Signs of progress in that direction will be prioritization of pedestrians and cyclists over vehicles, and dramatically increased investment in non-motorized transport infrastructure and safety. These investments also make cities more liveable for citizens across the income spectrum, more attractive for visitors, and more environmentally sustainable. Second, it is crucial to enhance the affordability and desirability of public transport.²²⁵

Socially sustainable transport in ASSA cities will accommodate the mobility desires of **all** urban residents, while maintaining affordable and environmentally responsible circulation of people and commodities. This requires more than servicing existing and aspirational motorization dictated by existing land uses and prevailing habits and attitudes. Design of new transit systems (e.g. heavy rail) need to include the poor as a target group, and to find innovative ways of making the system affordable for them (and not to displace them) without compromising the financial sustainability of the system.

The transport needs of multinational corporations and tourists need balancing with local constraints and imperatives. The particular needs of very large disadvantaged groups in shanty towns on the edges of sprawling metropolises pose an immense challenge to African city and state governments. The mobility needs of the urban poor need servicing in ways that simultaneously minimize energy expenditure, that slow climate change and that manage the fiscal drain on a tight public purse.²²⁶ The scale of the challenge is daunting: as many as 80 per cent of people in many ASSA cities live in slums.²²⁷

12.2. Environmental sustainability of urban transport

There is no evidence of progress away from reliance on fossil fuels in ASSA city transport. Adoption of un-leaded fuels has occurred widely, however. Such consideration as is given to encouragement of non-motorized transport in ASSA cities is not primarily because it is an energy saving technology and practice. Public evidence of adoption of energy efficient street

224. Olvera et al, 2003.

225. Salon and Gulyani, 2010.

226. For a general survey see Gwilliam, 2003.

227. AU and UNECA, 2005, p.34.

lighting is buried in municipal records. There are no reported experiments with electric or hybrid private transport, nor with solar fuel and bio-fuels. Electrically powered public road transport (e.g. trams and trolley buses) were swept away in the 1960s. No ASSA cities appear to have given residents incentives to downscale private cars to scooters. In the few ASSA countries where there is regular vehicle roadworthy testing and renewal, regular monitoring of vehicle annual emissions is starting. Steps need taking toward embedding environmental practices and funding allocations within urban transport agencies and bodies. Debates need to start about limiting the socially adverse effects of environmental interventions (e.g. emissions charging that would further curtail the mobility of poor people who necessarily use older vehicles).

12.3. Economic sustainability of urban transport

Moves toward the upgrading of minibuss taxi fleets, and their substitution by larger buses, are the most conspicuous steps in ASSA cities to make urban public transport more efficient. Measures to limit road congestion and reduce collisions work similarly, as well as reducing the indirect costs of public health and the costs of mitigating air pollution and climate change.

In ASSA cities, the mobility of people (and freight) is costly compared to its contribution to product output. Under prevailing economic conditions transport should not cost more than 10–15 per cent of the direct costs and 10 per cent of the available productive time. In reality it often costs as much as 25 per cent of the direct costs (and even worse than that in terms of foreign currency), and up to 15–20 per cent of the productive time. The cost of road infrastructure is only a small percentage of the total cost of urban transport. Typically it is well below 10 per cent. The rest is the total direct costs of making the trips, the productive time spent on urban travel, traffic accidents and negative environmental effects (primarily health effects).²²⁸

Managing travel demand and traffic (e.g. by road pricing, lane dedication) and designing better circulation spaces is imperative.²²⁹ There have not been any prominent steps taken to making transport more affordable to the poorer residents of ASSA cities by, for example, using private vehicle user-charges to cross-subsidize public transport services to and from poor neighbourhoods.

One opportunity for efficiencies presents itself in the minibuss taxi sector if they were to be given a role in commercial freight transport, for example, delivering out-of-hours to small-scale retailers in city slums which are hard to reach, and which can only afford to buy and stock small daily deliveries. Better use could be made of minibuss taxi fleets across the 24-hour day, and the practice could create additional driver jobs.

12.4. Urban transport institutions and governance

Some progress has been made in ASSA cities toward improved oversight, regulation and governance of transport. Steps such as the creation of metropolitan transport authorities remain dogged by conflicting and multiple interests and jurisdictions, however. Within existing organizational structures, however, there are considerable benefits, however, from improving professional capacity and performance. The regulation of land and public transport markets are obvious targets for reform. More generally there is a need to strengthen – and in

228. Howe and Bryceson, 2000, p.145.

229. Wilkinson, 2010.

some cases create – municipal and civic capacity to regulate the private sector so as to reduce corruption and extend enforcement, and to plan in a ‘pro-poor’ way.²³⁰

One urgent need in ASSA cities is sustained, standardized transport system monitoring and data collection. Many writers remark that the absence of information about transport and travel in ASSA cities hampers analysis and policy recommendations.²³¹ The UITP database ‘Mobility in Cities’ (2006) contains data for only one African city, Tunis. The UN-Habitat Global Urban Observatory through its Monitoring Urban Inequities Program will cover transport issues, but the effort needs sustaining.

Databases need to be compiled using information that can assist policy on sustainable city transport. Measurement needs to include more than the basic dimensions of motor-based work travel that dominate conventional performance indicators. A new indicator of transport sector performance which would be particularly valuable is the ‘citizen report card’, based on opinion surveys.²³²

12.5. Integrated land-use and transport planning

Integrated land-use and transport planning in rapidly growing ASSA cities is spoken about more than it is implemented. A major challenge is balancing the economic power of historic city centres with emergent economic clusters. Getting different branches of city governments to co-operate can be an obstacle; monitoring adherence to city plans is another.

One particular dilemma facing city planners is how to improve transport access to informal settlements without then displacing poor residents. Typically, enhanced accessibility will inflate land values, and gentrification follows. One solution is to confine improved access to non-motorized transport. Another is to rehabilitate roads to a lower standard, but to do so mindful of costs and sustainability. Another option is to negotiate limits to rent increases, or otherwise to work through the housing market.²³³

Advocating, as suggested for Mauritius, is that the island follow the Singapore example and make a policy decision to switch some vehicle ownership **constraints** to restrictions on vehicle **use**.²³⁴ In parallel, there is obviously a need for a step change in the quality of alternative modes to the car. Walking and cycling are currently very difficult and often dangerous because the lack of space makes for narrow footways and little room for cyclists. Public transport too is inadequate. In particular, the experience of catching a bus needs to be transformed to something less like travelling by a cattle truck. If such a change could be effected then a series of guided bus corridors may be rather more suitable than the tram option currently being put forward.²³⁵

230. Howe and Bryceson, 2000, p.9.

231. E.g. Behrens et al, 2006; Olvera et al, 2008; Quaye and Badoe, 1996.

232. AU and UNECA, 2005, p.36.

233. Howe and Bryceson, 2000, p.134.

234. Enoch, 2003, p.304.

235. Enoch, 2003.

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