PUBLIC TRANSPORT MODES IN NAIROBI, KENYA

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AN AFRICAN URBAN QUARTERLY LIMITED PRINT SERIES NO. 90/01
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Invited paper presented at the Ad Hoc Expert Group Meeting on Policy Options for Public Transport Modes in Cities of 1 million and above in Developing Countries
Nairobi, Kenya, 16-20 July 1990 UNHCS (HABITAT)
INTRODUCTION

The essence of any urban transportation problem is lack of mobility. severely limited mobility and mobility purchased at a very high social and economic cost. In Nairobi, the current situation of urban transport is alarming. Despite the relatively low levels of private automobile ownership, the city's transportation problems are severe in degree, in daily duration and in the size of the areas affected. These problems are especially felt during the peak demand hours which are often characterised by considerable jostling and stampede amongst the travelling public in search of the means of public transport. The situation of chaos is further stimulated by the carelessness and apparent lack of concern amongst the public service vehicles (PSV) operators.

For most commuters, the problems faced include, increasing walking distances, long waiting hours, severe struggles while getting on and off the available PSV’s; insecurity and pickpocketing; traffic jams, accidents, vehicles breakdowns, and a general atmosphere of bad tempers. Basically the major problems is that of congestion mainly witnessed in form of the overloaded buses and matatus, and traffic jams experienced more so in the central area which is the major activity zone. The centralisation of activities in this zone has ensured that the commuting trend involves a movement from here to the surrounding expanding residential areas.

Underlying all these problems, however, is the acute shortage of resources in the provision of a long life urban transportation infrastructure sufficient enough to match the large additions of population and the emerging patterns of population distribution and demands for public transport services. A rapid deterioration in urban transport conditions in Nairobi is in prospect if present trends continue unchecked. The current exceptional rates of urban growth are unlikely to diminish in the near future— and may well accelerate (NUSG, 1973). Moreover as the city expands and the workers live further away from their work place, a more than proportional expansion of public transport facilities and services is required.

Various methods have been considered and some applied towards achieving this but with minimal success. Among them is the recent introduction of a railway commuter service but this can only serve in areas along which the line passes. It has so far proved rather expensive to run and maintain, apart from being unable to meet the demands even of those areas which it serves. Other measures such as the introduction of the government-run Nyayo Bus Services (NBS) to supplement the services offered by the Kenya Bus Services (KBS) have been helpful but also insufficient to meet the existing demands apart from facing such technical problems as lack of parking space in the city centre. A study conducted by Transurb-Consult on behalf of the Belgium government has considered many long term solutions among which is the introduction of a light rail transport system and the use of busways. However, this study has taken quite a long time and may even take longer to implement in future due to the limited executing capability which a country as Kenya faces due to lack of funds.

At the moment we are therefore left with the option of a low cost strategy should be of immediate importance in a city which is growing as fast as Nairobi. Such a strategy involves reshaping the management of the existing infrastructure in order to achieve a more efficient and agradable equilibrium between demand and supply. (Thomson, 1977). This paper describes the existing public transportation system in Nairobi, within the context of showing how the past and present planning and policy issues have failed. It then suggests alternative policy guidelines towards the achievement of a low-cost solution to the public transport problems which Nairobi faces. The paper basically seeks to show that policy should not be easily
swayed by current popular sentiments. Some of the many popular criticisms levelling at Nairobi’s public transport system, and the matatus in particular are not warranted since they are not based on empirical findings. Indeed it is true that there is need to overhaul the city’s public transport system so as to cope with the ever increasing demands but this can only be done if there is a clear understanding of the wide range of problems faced by the system. The practical value of all existing and new policy options need to be analysed and understood so as to comment on possible solutions and priorities. The degree to which previous attempts at solving the problem have been implemented in practise also need to be analysed. But, before doing this it is equally important to provide a historical background of the city especially as relates to the origin and growth of public transport modes and the associated problems.

THE ORIGIN AND GROWTH OF NAIROBI'S PUBLIC TRANSPORT SYSTEM

The present role and prospects of Nairobi’s public transport system has been shaped by the population pressures, urban structures and the general transportation system prevailing in the city. The current profile of the city has in turn been shaped by the influences of the geography, the historical factors and contemporary forces. Many of the current problems that plague public transport in Nairobi are attributed to the high population growth rate, the lack of vehicle capacities, energy costs, utilisation of infrastructural facilities, location of high density residential areas, lack of road and vehicle maintenance, road safety, manpower training and development, and policy and institutional developments. (Aduwo, 1989). These problems are not new to Nairobi nor are they unique from those existing in other LDC’s. In order to understand their evolution, it is equally paramount to understand the city’s history preferably both in the colonial and post-colonial eras, and the regional economic, social and geographical interactions between the city and the regional surrounding.

Colonialism and the political legacy of colonial communication patterns have had both negative and positive major effects upon the modern (public) transportation policies and much of the development of post-independence transportation systems (Situma, 1987). Nairobi’s land-use development portrays a classic example of this colonial influence. The street layout, residential location, the CBD location, racial residential separation and architectural peculiarities portray these colonial and alien planning concepts. These concepts have influenced the city’s public transport system. As a colonial settlement, the configuration of Nairobi during the colonial period was essentially tripartite in character with the Europeans, Indians and Africans occupying different residential zones and making contacts mainly on official and business matters. Within this configuration the residential areas of the Europeans which were sited on the wooded ridges of fertile red soils to the north and west were well served by transportation facilities hence it was relatively trouble-free in terms of movement problems: Typically, the earliest urban form pattern in Nairobi by the 1920’s was dominated by a major trunk road commencing from the CBD to the hinterland with a spur to industrial area.

Meanwhile the residential areas of the Africans were left to develop towards the east away from the major trunk road. This accommodated the vast majority of Nairobi’s population and were characterised by poor transport access both to the city’s transport network and within the area itself. The continuous flow of rural migrants into these resident areas accentuated their already high residential density levels were incessantly being increased. (Table 1)
Table 1: Nairobi: Population By Race 1906-1979

<table>
<thead>
<tr>
<th>Year</th>
<th>Africans</th>
<th>Europeans</th>
<th>Asians</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1902</td>
<td>6,351</td>
<td>579,</td>
<td>3,582</td>
<td>11,512</td>
</tr>
<tr>
<td>1926</td>
<td>19,112</td>
<td>1,492</td>
<td>9,260</td>
<td>29,864</td>
</tr>
<tr>
<td>1931</td>
<td>26,761</td>
<td>5,195</td>
<td>15,988</td>
<td>47,919</td>
</tr>
<tr>
<td>1948</td>
<td>65,939</td>
<td>10,830</td>
<td>41,810</td>
<td>118,579</td>
</tr>
<tr>
<td>1962</td>
<td>115,388</td>
<td>21,476</td>
<td>87,454</td>
<td>266,750</td>
</tr>
<tr>
<td>1969</td>
<td>421,079</td>
<td>19,185</td>
<td>67,189</td>
<td>509,286</td>
</tr>
<tr>
<td>1979</td>
<td>695,355</td>
<td>33,511</td>
<td>108,911</td>
<td>837,775</td>
</tr>
</tbody>
</table>


Characteristically, however, this growth in the population of the Africans did not immediately manifest itself in many additional journey to work movements from their zone to other parts of the CON since most migrants confined themselves within their residential locations in the Eastlands. Their sustenance revolved around the activities within their residential areas, moving around on foot or on newly bought bicycles leaving the more established members working further away to commute daily.

This state of affairs partly accounted for the relatively trouble-free movement of people during the colonial period, and the generally lower demand for public transport services then. When the KBS started their operations in Nairobi in 1934, it could only operate 12 buses as by 1950 and even these were just enough to serve the existing population's public transport demand. Moreover, most residential areas such as Pangani, Landimawe, Muthurwa, Pumwani, Shauri Moyo and Kamukunji were within walking distance to the CBD hence walking was a predominant mode of commuting for most residents then. These neighbourhoods still remain the most densely populated and even by 1970 it was estimated that 48% of the commuters in Nairobi walk to their places of work (NUSG, 1973).

The need for public transport services increased as the city expanded and witnessed an increase in the number of well to do Africans. Within the African residential zones, mainly in Eastlands, the motorization levels slowly increased as Africans who were observing the rapid growth in the local population hired and bought vans mainly used to bring foodstuffs from the rural areas to feed the growing population. This led to an emergence of informal public transport services within these areas and these became very common as the African residential areas grew and the travel demand increased. It is during this period that the matatu emerged especially in the 1950's when they were mainly used in transporting the residents of the African neighbourhoods to the nearby rural villages. The word matatu is derived from the local term "mango'ore matatu" meaning thirty cents which was the standard fare charged then.

Since the African residential areas were invariably outside the interest and activity spaces of the colonialists, the official knowledge about their development was confined to heresy and their movement problems passed largely unrecognized. They did not figure in any major transportation plans of the time. Their high population density and low levels of basic infrastructural facilities were in stark contrast to the low density developments and good infrastructure provision in the European residential areas. The distribution of access roads within the later areas were both well planned and well maintained providing good access to the CON's wider transportation network as a whole and its business and administrative centre in particular. The predominantly European residents here were as a result very much mobile with a high private vehicle ownership.
appreciated is that the vehicular growth rate not only in Nairobi but also in other
colonial capital cities in Africa took dramatic proportions then. (Table 2).

<table>
<thead>
<tr>
<th>Country</th>
<th>% age growth rate per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>8 Nairobi, 6.8 % (1960-70)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>11</td>
</tr>
<tr>
<td>Ghana</td>
<td>12</td>
</tr>
<tr>
<td>Nigeria</td>
<td>14 Lagos, 15.5 % (1960-70)</td>
</tr>
<tr>
<td>Uganda</td>
<td>18</td>
</tr>
</tbody>
</table>


More evidence point out to the fact that by 1928, Nairobi was the most motor-
ridden city in the world proportionately to its European population. (Hake, 1977).
This high private vehicular ownership is said to have contributed to the early
thinning out of Upper Nairobi. It also presented one of the transportation problems
of the day; others being, how to improve the road access to industrial area and how to
accommodate the increasing motorization in the CBD.

Towards the granting of independence and after the decline in economic
resources and deterioration in the infrastructural facilities began. This was partly
due to the gradual run-down of the past colonial investment in the country up to
independence, the increasing urban population and the scarcity of resources in
general. It led to a decline in whatever infrastructure existed, so that in the face of
increased population growth and increase in travel demand a marked deterioration
of CON's transport network and services took place. As independence approached,
more and more Africans were assimilated into the roles and functions being left
vacant by the departing colonialists. There soon emerged elitist groups who
developed values and aspirations so similar to those of the previous colonialists.
They aspired, for example, for car ownership while in the case of some civil servants
and company employees this was further encouraged by the provision of loans to
assist in car purchases. Many took residence in the former colonial areas and this
accelerated the changes away from the previous socio-economic and cultural
divisions within the CON. This period saw a further increase in car ownership levels
with a growth rate level of about 6.8 % per annum during the period 1960-70. By
1970 it was estimated that 25% of Nairobi's commuters used private automobiles to
reach their places of work. The use of public transport was not so predominant with
only about 24% users (NUSG, 1973). According to a World Bank (1975) estimate the
number of buses as per 1000 population in Nairobi by 1970 stood at 1.5 buses only.

The resultant post-independence movement patterns together with the
additional travel demands generated mainly by an increased migration from rural
areas, extended pressure on the urban form and its infrastructure which were ill-
equipped to serve them. A major problem here has been the centralization of
activities in the CBD which by 1970 was estimated to employ over 75% of the
commuters. This area has for a long time been a victim of numerous traffic
problems more so due to lack of space even within its vicinity. The Post-
independence period also witnessed a relaxation (not by design) of traffic
regulations, parking restrictions, and land-use control. Hence within a few years
after independence much of the previously formalised land-use urban patterns
previously superimposed on the original settlement structure was eroded away.
(Kiamba, 1988).
Since 1970, the CON has expanded tremendously and a new population distribution pattern has emerged. More important is the fact that a large percentage of low income public transport users today live further away from the CBD, partly due to such factors as the introduction of such housing schemes as the site of sites service schemes and the general policy of demolishing squatter settlements sited near the CBD to give way to other developments. Apparantly such neighbourhoods as Bahati, Maringo, Ofafa, Ziwan, Landimawe, Kaloleni and Pumwani which were formerly African settlement away from the CBD are now part of the core of central Nairobi. Numerous other neighbourhoods have sprang up in far off places and developed into congested settlements boasting of hundreds of thousands of residents. Towards the east low-income settlements have emerged in places like Dandora, Kariobangi, Kayole and Umoja and the process of expansion continues further eastwards. The city has also expanded to include peri-urban settlements as Kawangware, Kiruta and Kangemi townships which are today undergoing the most rapid rates of expansion. Towards the north, new settlements are also rapidly emerging and expanding within the Ruaraka/Kasarani zone while in the south the process of residential development has seen the emergence of middle income estates such as Otiende and Ngei Estates, just to mention a few.

This expansion of Nairobi has not been matched by a similar expansion in the transport facilities and services. The annual rate of growth of passenger journeys per day is currently increasing at a rate of about 5.8% per annum which is high by all standards.(Table 3).

<table>
<thead>
<tr>
<th>Year</th>
<th>Passenger Journeys per day (000)</th>
<th>Growth rate per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>676</td>
<td>5.82</td>
</tr>
<tr>
<td>1990</td>
<td>873</td>
<td>5.95</td>
</tr>
<tr>
<td>2000</td>
<td>1,393</td>
<td></td>
</tr>
</tbody>
</table>

Source: Transurb Consult (1986)

A clear manifestation of the excessively high demand for public transport services is witnessed in the daily stampede and jostling which characterize most of the city's transport terminals especially during the rush hours and the over flowing number of passengers transported by the existing modes of public transport. For a long time now, matatus have operated alongside the KBS as the only major supplier of public transport services. Other recently introduced services have only come in to supplement their services. These are the railway commuter services which operate only during the morning and evening rush hours in areas along which the line passes, and the Nyayo Bus Services (NBS) whose services are offered more so during the rush hours.

THE ROLE OF THE PUBLIC BUS SYSTEMS (KBS AND NBS)

The KBS has existed as the sole legal supplier of public transport services since it was incorporated as a private company in 1934 with an authorised capital of Kshs. 20,000. It was converted into a public company in 1950 jointly owned by the United Transport Overseas Company (UTC), a British Company and managing over 100 other such companies all over the world, and the NCC. Since then, the KBS has operated public transport services in Nairobi under various franchises granted by the NCC. An agreement was signed in 1966 at which time, the NCC acquired 21% of the shares of the company thus formalising the partnership the company had been keen to
develop with local community interests. The latest franchise is being extended while negotiations take place concerning longer term arrangements.

The buses owned are a mixture of the Leyland Guy Victory, the ERF Trailblazers and the recently introduced DAF. These are compatible in terms of service requirements and have been specifically adapted for local road conditions in Nairobi. Their engines have been designed to minimize fuel consumption which is an essential factor in running profitable transport services as well as minimizing the overall need for foreign exchange. The assembling and body building is done locally by the Labh Singh Harnam Singh (LSHS) body builders. The KBS has only one bus depot situated at Eastleigh but it recently acquired land at Riruta with a view to constructing a second depot which could be considered in future if the number of buses increases.

The KBS has a fully staffed engineering department with a staff of 550 hence it is mandatory that each bus must be taken to the workshops for check-up every ten days even without having specific mechnical problems. However, a persistent problem which the company is faced with has been that of maintenance. On an average 20 buses break down daily due to minor mechanical problems and it often takes lengthy periods to tow them for repair. Other problems include the lack of a cheaper source of spare parts and the company's inability to maintain crew punctuality and discipline. The result of these have been that for a long time now, the company has been complaining of running at a loss of profits and hence there has been tremendous deterioration in the services offered. Despite these operational complexities of running a full commuter network, the KBS manages to deploy 264 buses daily. This efficiency ratio of 88% is high by any standards. As is shown in Table 4, the rate of growth of its fleet has not been consistent with the increasing demands. The decrease in the number of KBS's daily passengers starting from 1973 up to 1977 can be attributed to the tremendous competition offered by the matatus whose numbers have consistently increased since the same period (Byabafumu, 1982). Since 1977, the average daily number of passengers transported by the KBS has been increasing but it faces stiff competition from matatus whose market share stands at 4:8 (Jarabi, 1982).


<table>
<thead>
<tr>
<th>Year</th>
<th>Fleet Size</th>
<th>Growth Rate</th>
<th>Average Daily Passengers(000)</th>
<th>Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>100</td>
<td>3.0</td>
<td>66</td>
<td>2.2</td>
</tr>
<tr>
<td>1964</td>
<td>106</td>
<td>9.3</td>
<td>69</td>
<td>12.8</td>
</tr>
<tr>
<td>1966</td>
<td>*</td>
<td>*</td>
<td>98</td>
<td>42.2</td>
</tr>
<tr>
<td>1967</td>
<td>*</td>
<td>*</td>
<td>105</td>
<td>7.14</td>
</tr>
<tr>
<td>1968</td>
<td>146</td>
<td>9.4</td>
<td>116</td>
<td>10.0</td>
</tr>
<tr>
<td>1969</td>
<td>*</td>
<td>*</td>
<td>122</td>
<td>5.17</td>
</tr>
<tr>
<td>1970</td>
<td>166</td>
<td>9.4</td>
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<td>1971</td>
<td>195</td>
<td>17.4</td>
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<td>1972</td>
<td>239</td>
<td>22.6</td>
<td>233</td>
<td>11.5</td>
</tr>
<tr>
<td>1973</td>
<td>264</td>
<td>5.4</td>
<td>240</td>
<td>3.0</td>
</tr>
<tr>
<td>1974</td>
<td>284</td>
<td>7.6</td>
<td>237</td>
<td>-1.2</td>
</tr>
<tr>
<td>1975</td>
<td>290</td>
<td>2.1</td>
<td>230</td>
<td>-2.9</td>
</tr>
<tr>
<td>1976</td>
<td>288</td>
<td>-0.1</td>
<td>229</td>
<td>-0.4</td>
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<tr>
<td>1977</td>
<td>285</td>
<td>-1.04</td>
<td>229</td>
<td>0.0</td>
</tr>
<tr>
<td>1978</td>
<td>291</td>
<td>2.1</td>
<td>250</td>
<td>9.17</td>
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<tr>
<td>1979</td>
<td>317</td>
<td>8.9</td>
<td>270</td>
<td>8.0</td>
</tr>
<tr>
<td>1980</td>
<td>310</td>
<td>-2.2</td>
<td>273</td>
<td>1.1</td>
</tr>
<tr>
<td>1981</td>
<td>316</td>
<td>1.9</td>
<td>282</td>
<td>3.3</td>
</tr>
<tr>
<td>1982</td>
<td>309</td>
<td>-2.2</td>
<td>329</td>
<td>16.7</td>
</tr>
</tbody>
</table>
Table 5, KBS: Trading Position and Statistical Analysis: 1970-1984

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Passengers (millions)</th>
<th>Total Length of Km covered (millions)</th>
<th>Revenue in millions of K£</th>
<th>Number of Staff (000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>55.2</td>
<td>13.1</td>
<td>1.055</td>
<td>1.112</td>
</tr>
<tr>
<td>1971</td>
<td>67.2</td>
<td>15.1</td>
<td>1.295</td>
<td>1.352</td>
</tr>
<tr>
<td>1972</td>
<td>85.2</td>
<td>18.2</td>
<td>1.659</td>
<td>1.633</td>
</tr>
<tr>
<td>1973</td>
<td>87.6</td>
<td>18.9</td>
<td>1.977</td>
<td>1.762</td>
</tr>
<tr>
<td>1974</td>
<td>86.4</td>
<td>22.4</td>
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<td>1.802</td>
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<td>1975</td>
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<td>22.7</td>
<td>3.108</td>
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<td>1976</td>
<td>83.6</td>
<td>23.3</td>
<td>3.579</td>
<td>1.837</td>
</tr>
<tr>
<td>1977</td>
<td>83.6</td>
<td>23.9</td>
<td>4.312</td>
<td>1.766</td>
</tr>
<tr>
<td>1978</td>
<td>91.2</td>
<td>23.6</td>
<td>5.142</td>
<td>1.824</td>
</tr>
<tr>
<td>1979</td>
<td>98.4</td>
<td>25.7</td>
<td>5.553</td>
<td>2.126</td>
</tr>
<tr>
<td>1980</td>
<td>99.7</td>
<td>24.9</td>
<td>6.912</td>
<td>2.201</td>
</tr>
<tr>
<td>1981</td>
<td>103.0</td>
<td>26.3</td>
<td>8.372</td>
<td>2.289</td>
</tr>
<tr>
<td>1982</td>
<td>115.6</td>
<td>27.6</td>
<td>9.912</td>
<td>2.295</td>
</tr>
<tr>
<td>1983</td>
<td>131.1</td>
<td>28.7</td>
<td>11.990</td>
<td>2.375</td>
</tr>
<tr>
<td>1984</td>
<td>125.5</td>
<td>28.2</td>
<td>12.772</td>
<td>2.322</td>
</tr>
<tr>
<td>1985</td>
<td>136.0</td>
<td>30.8</td>
<td>14.183</td>
<td>N.A</td>
</tr>
</tbody>
</table>


Despite this state of affairs, the KBS has increased its services areal coverage with operations extending even outside the city's boundaries to places such as Kiambu, Limuru, Ndumberi, Ruiru, Ngong and Athi River. The total length of trips covered by the buses has therefore, increased from about 8.2 million km per year in 1966 to 32.4 million km in 1987 (KBS, 1987). Table 5 summarises the KBS trading position and shows how the company's operations tend to be redundant especially in responding to the ever increasing demand for public transport.

MATATUS

Matatus are small-scale transporters of commuters and goods which are owned and licensed as PSVs. They represent an intermediate form of public transport whose services fall somewhere between the conventional buses and the taxis. They have emerged spontaneously as a result of the inadequacy of the buses. Over the last few years they have assumed an expanding role especially for those whom the buses do not serve adequately. In the 1960's the total number of matatus operating all over Kenya was under 400 and the Police pursued them as "pirate taxis". In 1973, a Presidential decree declared that they were a legal form of public transport and could carry fare paying passengers without having special licenses to do so. At the same time, it was emphasised that the existing insurance and traffic regulations must be complied with.

This decree intervened in an anomalous situation of unlicensed matatus operating despite the existence of a monopoly franchise for public transport by the
BS. Since then, they have increased in numbers and in the daily number of passengers they serve. (Table 6)

<table>
<thead>
<tr>
<th>Year</th>
<th>Fleet Size</th>
<th>Growth Rate (% age)</th>
<th>Average Daily Passengers (000)</th>
<th>Growth Rate (% age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>217</td>
<td>36.4</td>
<td>38</td>
<td>10.6</td>
</tr>
<tr>
<td>1973</td>
<td>375</td>
<td>43.5</td>
<td>47</td>
<td>29.3</td>
</tr>
<tr>
<td>1974</td>
<td>538</td>
<td>30.1</td>
<td>63</td>
<td>16.1</td>
</tr>
<tr>
<td>1975</td>
<td>700</td>
<td>38.4</td>
<td>74</td>
<td>31.1</td>
</tr>
<tr>
<td>1976</td>
<td>969</td>
<td>36.2</td>
<td>101</td>
<td>32.7</td>
</tr>
<tr>
<td>1977</td>
<td>1320</td>
<td>8.6</td>
<td>140</td>
<td>15.8</td>
</tr>
<tr>
<td>1978</td>
<td>1434</td>
<td>9.3</td>
<td>164</td>
<td>17.3</td>
</tr>
<tr>
<td>1979</td>
<td>1567</td>
<td>4.2</td>
<td>195</td>
<td>15.5</td>
</tr>
<tr>
<td>1981</td>
<td>1704</td>
<td>5.6</td>
<td>263</td>
<td>54.4</td>
</tr>
</tbody>
</table>


By 1980, matatus had captured at least a third of the public transport market in Nairobi (Kapila et al, 1982). Apparently this number has increased such that today they provide a big threat or challenge to the public bus systems. Since 1973, their percentage share in the market and the proportional number of passengers using them has been increasing vis-a-vis that of the KBS (Table 7).

<table>
<thead>
<tr>
<th>Year</th>
<th>Matatus</th>
<th>KBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>16.0</td>
<td>84.0</td>
</tr>
<tr>
<td>1974</td>
<td>21.0</td>
<td>79.0</td>
</tr>
<tr>
<td>1975</td>
<td>24.0</td>
<td>76.0</td>
</tr>
<tr>
<td>1976</td>
<td>31.0</td>
<td>69.0</td>
</tr>
<tr>
<td>1977</td>
<td>38.0</td>
<td>62.0</td>
</tr>
<tr>
<td>1978</td>
<td>40.0</td>
<td>60.0</td>
</tr>
<tr>
<td>1979</td>
<td>41.0</td>
<td>59.0</td>
</tr>
<tr>
<td>1980</td>
<td>42.0</td>
<td>58.0</td>
</tr>
<tr>
<td>1985</td>
<td>48.0</td>
<td>52.0</td>
</tr>
<tr>
<td>1987</td>
<td>49.0</td>
<td>51.0</td>
</tr>
</tbody>
</table>

Sources: (a) 1973 to 1979 data from M.N. Ngaruiya (1982)

Most of those in this trade are there as businessmen who are concerned with the search for profitable returns on their heavy investments. Matatus are obviously expensive vehicles both in their purchase price and their maintenance costs hence the increasingly large number of those in this trade is largely an
indication of their lucrattiveness. The rapid increase in their numbers is also a
strong indication of the equally high demand for their services due to the inability
of other modes to cater for these needs. (Aduwo, 1988). The sector also plays a
significant role in generating employment and income for the low-income. In 1985,
it was estimated that it engaged around 14,000 persons who earned approximately
Kshs. 9 million. They generate slightly over 1,000 jobs per year (Kenya, 1983, 1986)
and most of those employed earn between Kshs 900 to Kshs 1,500 per month.

Despite the important role which the matatus play, they have been an object
of persistent public criticisms. GOK restrictions, and proposals to phase them out in
favour of more modern forms of public transport have been raised. They have been
viewed as uneconomical, unruly and a hazardous means of transporting the growing
mass of urban population in Nairobi. Their operations have not only grown beyond
unimaginable heights, but they now constitute a gigantic problem in their own in
the management of the CON's traffic and public transport system. They have been
accused of being a cause of the most dreadful accidents and performing the most
chaotic operations. It is indeed most unfortunate that their enormous growth has
not been matched by a corresponding growth in their regulation and control so as to
streamline their operations and ensure safety and comfort to commuters and other
road users. Numerous complaints have been levelled at the matatu operators who
have generally shown disregard for traffic regulations. They have often been
identified with over-speeding, overloading, and being involved in other haphazard
operations which make them a major cause of road accidents. Other operational
characteristics which they have and which people resent to include, their
continuous hooting and touting for passengers, their chaotic parking and stops,
their harassment and abuse of commuters and other road users, and their general
disregard for many other traffic rules which often interfere with the smooth flow of
traffic in Nairobi.

However, despite these problems, some of which should not be wholly blamed on
them, they have often been identified as beneficial than most transport
"modernizers" assume. It is often accepted that they should stand some improvements
together with other elements of the CON's public transport system. The following
section looks briefly at the past and current planning responses to Nairobi's public
transport system especially as relates to matatus and the practical measures which
have been taken to solve the CON's public transport problems.

PAST AND CURRENT PLANNING RESPONSES TO NAIROBI'S PUBLIC
TRANSPORT SYSTEM

The internal planning response to the above situation of public transport in
Nairobi since independence has been slow. The GOK has placed a great deal of
emphasis on national spatial economic policies rather than urban development. The
various attempts at relying upon industrialization and modernization to achieve
national economic goals has only further accentuated transport problems in the
urban areas. Much of the resultant industrial investment in Kenya has taken place
in Nairobi; thus generating additional transport demands on the already inadequate
and congested transport system. The technological forces released by the
industrialization and modernization development strategies has also generated new
travel patterns, as well as different travel behaviours and life styles all of which
have mixed with the old. According to Banjo and Dimitrou (1980), this represents the
second generation of urban transportation problems faced by all LDC's alike during
their immediate post-independence stage.

Due to the absence of an adequate technical and administrative capacity to
tackle the problem, such countries as Kenya have often turned for assistance from
the MDC's. The result of this has been the appointment of international consultants
from the MDC's, commissioned to examine the urban transport problems that the CON-
faces and prepare ways and means by which they can be tackled. Such consultants have either been appointed on the basis of their previous transport planning experience in other LDC’s or as a result of the expertise they have acquired in their own countries such as in the case of the Transurb Consult-Belgium Government study in Nairobi. In most cases such consultant who have limited understanding of the local urban movement problems use standardised planning procedures which are based on irrelevant assumptions. They have for example, failed to concern themselves with the phenomena of intermediate or informal modes of public transport and lack an understanding of how the system works. As a whole such assumptions have resulted in a penalization of the non-motorized community, the destruction of certain urban forms and structures, and the failure to incorporate the informal or intermediate sector into transport plans among others. (World Bank, 1985)

Hence, while it is appreciated that many standardized planning approaches are not on the whole inappropriate to the LDC’s their implications are much more critical in such countries in the light of the limited resources and other much more crucial problems which they have. Such countries like Kenya are, therefore, left with the option of a low-cost strategy such as the use of traffic management schemes. In Kenya very little has been done even along this line more so because of the tremendously increasing population and demands for public transport facilities.

The first ever post-independence transportation study on Nairobi was carried out in 1970 by the NUSG of the NCC. Research was carried out on transportation and a report presented in the Nairobi Metropolitan Growth Strategy Report (1973). This report identified the problems of public transport facing the CON and made forecasts concerning the future demands for public transport and the future distribution of this demand. However, it did not analyse the role of matatus but only laid emphasis on the future development of buses operating on highways and a mass transit system. It mistakenly favoured buses due to “likely benefits to local employment and the vehicle manufacturing industry” forgetting that matatus also play a major role in these areas. Other recommendations which were made by this report included, a policy of restraint on the ownership and use of private cars in association with measures to encourage public transport usage, progressive reduction in public transport fares to a significant effect, staggering working hours in the CBD in order to spread the effect of traffic peak over a considerable period, and the provision of segregated busways and more roads.

In 1978, the Nairobi City Transport Unit was formed and placed within the NCC Engineers Department with a view to control both the public transport policy and the complimentary parking policy, among other things. The Nairobi Busways and Feasibility Study (1978) further recommended the construction of 27.7 km network of bus priority routes aimed at the regulation and administration of private and public transport, CBD parking supply, demand, control and traffic circulation. The Nairobi Urban Study Report (1978) which followed comprises a series of components such as the creation and improvement of infrastructure, policy matters, and monitoring procedures. This report points out that “most of the projects are long overdue and if not implemented as soon as possible, the national energy losses will be colossal”.

Since then, the NCC policy documents and studies have recognised the important role which matatus play. Among these is Situma, (1977) who summarizes the NCC findings to establish certain physical and micro-economic features of matatus. As a result of a planned World Bank Matatu Assistance Scheme, more studies were carried out under the Kenya Urban Transport Project (KUTP) in 1979 (Barwell, 1979). However, nothing was done in this respect and none of the proposed assistance to the matatu owners and operators ever reached them. The NCC’s recognition of the matatus can also be seen in the practical efforts which have been made to provide
matatus with exclusive terminals in the CBD, a process which the matatu operators have resented because of what they see as an attempt to favour the KBS which is given exclusive right to operate in some terminals.

In 1980, Leyland (Kenya) Ltd. studied a standard matatu prototype in compliance with the specifications laid down by the GOK but this project was not implemented as it was discovered to be financially inviable although mechanically design was good. The study, therefore, recommended the continuous use of various types of matatus except those overloaded beyond the manufacturers' specifications. (Coopers and Lybrand, 1980). For a long time now, the major policy changes in the CON's public transport system have been the role of the matatus and future of the KBS franchise agreements. The recent introduction of NBS to supplement the KBS and matatu services especially during the rush hours and the Railway commuter services are two major practical measures which have been taken to increase the supply of public transport services. The NBS are now run by the National Youth Service (NYS) and have expanded their operations very fast. Today it sites over 80 buses serving mainly the densely populated zones and it is likely to continue expanding its services.

A noticeable problem, however, has been the lack of terminal facilities or parking spaces for the buses in the CBD. The Railway commuter Services (RCS) operate in the high density residential areas such as Kibera, Dandora, and Maringo as well as the suburbs of Kangemi, Limuru, and Kariobangi. It, therefore, serves a few areas which have the line passing through them and does so only making one morning and evening rush hour trip. The service also faces a number of problems, most important being the high operating costs. Even since it was introduced, it has only been making losses (Irandu, 1988). Moreover, very few people use it even in the areas which it serves especially because of its few regular stops and other factors such as the unfavourable location of its terminals and severe congestion during the rush hours.

A study first conducted in April 1984 by Transurb for the Belgium Ministry of Foreign Affairs, Foreign Trade and Development Cooperation highlighted three options to deal with the present mass transportation of problems in Nairobi. The first option suggested the use of specially constructed busways while the second was of introducing a light rail transit system. The third option which seems to have the GOK approval introduces the concept of guided or articulated buses. Meanwhile, investigations are still going on but it is evident that any modern transportation system in Nairobi will require a complete and complementary bus matatu networks (Transurb-Consult, 1986). In its continuing efforts to minimize accidents mainly caused by such factors as overloading, poor roads, vehicle adworthiness, careless driving and other illegal operations often associated with the matatu operations, the GOK has introduced various new legislations. In fact, a Presidential directive ordered all matatus to acquire PSV licenses. The Kenya Police Traffic Road Safety Section Branch which is entrusted with the enforcement of road safety regulations released details of the Traffic Amendment Act, 1983 has rules covering driving licenses, obstruction, maximum driving hours, as passengers, touting, unroadworthy vehicles, and notices to attend court on all of any of the traffic rules. (Kenya, 1984). Using such legislations attempts have been made to clamp down especially on matatus and other PSVs but with mixed success. The situation in CON has often been that whenever the authorities are too harsh on the PSV operators, they respond by boycotting to offer their services. This has been the case at times when such actions have raised the plight of the CON's commuters (Boro, 1986 p.32).

As is clearly stated in a Daily Nation Editorial, "no amount of warnings to public transport operators will stop the inexorable growth of recklessness on our roads...nothing most enduring must be done". The present campaign on road safety
should involve the PSVs as much as the travelling public which tends to value their lives and comfort much less than the immediate need to get to their destinations. The haste, the jostling, and the stampede which characterise PSV terminals are equally a cause of chaos and confusion as the apparent lack of concern amongst most of the PSV operators. Recent measures aimed at reducing the such chaos such as the use of queues have so far proved successful and popular but more needs to be done for the sake of a long term solution to Nairobi's public transport system. Meanwhile, because of their role in increasing the accessibility levels of an increasing number of the CONs commuters they should not be considered as a problem but as a solution to the current public transportation problems which the CON faces under the present circumstances.

IMPLICATIONS AND RECOMMENDATIONS

The inadequacies of Nairobi's urban passenger transport services can be accounted for by a variety of factors. These include, the uneconomic spread of the city's morphology, the great population pressure due to rapid urbanization, the shortage of enough public transport services in form of the available buses, matatus and the RCS, the lack of accessibility to certain parts of the city, and the inadequate street layout and road space. Apart from these, other problems stem from the inability of the city authorities to implement policy recommendations which have been made to solve the inherent problems. These include, the failure to implement efforts geared towards the creation of public transport priority lanes and roads, and to reduce the uniform work schedule which has created a concentration of trips during the morning and evening rush hours. There are also problems associated with the continuous concentration of activities in the CBD which ensures that most trips are made to this point, apart from the problem of inadequate resources to repair the city's roads and to provide other modern urban transportation facilities.

These inadequacies are serious but not impossible to remedy. The following broad recommendations may help in solving the current urban transport problems which the city faces:

1. While it is recognised that urban growth is an inevitable process of socio-economic change, the pace of growth of Nairobi should be reduced. The shift of the administrative and other functions from Nairobi to other urban centres could go along way in reducing population pressure in the city. The District Focus Policy for Rural Development (DFPRD) which is currently being employed by the GOK could go along way in ensuring the success of this re-allocation process (Obudho, et al. 1988). There is need to strengthen the programme and improve the working and living conditions of people in other urban areas and in the rural areas. This will improve the general standard of living of the people and check the drift of people from rural to urban areas. The current high rates of population growth in Nairobi is basically the cause of the city's major problems and its inability to sufficiently provide the facilities required by the increasing population. The problem of population growth in the city should therefore be urgently addressed to bearing in mind the fact that it is mainly caused by rural-urban migration.

2. Within Nairobi, a deliberate de-concentration process should be initiated to remove pressure on the CBD. The relocation of employment and other activities from the CBD to the outskirt need to be given immediate and practical attention so that some traffic flow can be attracted from the CBD to the other zones. So far such zones have been identified and it is very important that they be firmly established as satellite CBD's to offer some of the facilities currently being offered by the CBD. The
notable growth of Westlands and Hurtingham centres, for example, is a step in the right direction but future consideration should be given to the establishment of more such centres closer to the low income residents who are increasing in numbers and residing mainly in the city's suburbs. Since they are also the major users of public transport services, it is important that their trippatters should be changed to ensure that they do not have to cover long distances and spend a substantial amount of their income commuting to the CBD. The sites which should be given due consideration in efforts aimed at changing the trip patterns include; Kangemi/Utiru, Kirutu, Kahawa/Kasarani and Embakasi.

3. The uneconomic use of space in Nairobi should be discouraged. An overview of the built-up sections of Nairobi area shows that the growth of the city's suburbs is amorphous. There exists too much open space between these continuously expanding residential zones and those immediately surrounding the city centre. These suburbs which include Kangemi/Utiru, Kirutu, Roysambu, Kahawa, Embakasi and Njiru are today expanding at a tremendous rate and provide residence to a majority of the city's low income earners. There is need to intensify and strengthen the city's infilling process so that a more compact city form is achieved in order to enhance accessibility to the road network and public transport services. This could inevitably increase the areal coverage of the city's public transport network by increasing the network's density of access.

4. The allocation of the available financial resources should be sensitive to the needs of the public transport sector. This is because a majority of the city's residents are users of these services. Funds should therefore be provided for the procurement of new and more buses, spare parts, fuels and other accessories so that there is an adequate number of serviceable buses. The recent introduction of the NBS and the subsequent formation of a parastatal to run these services is a step in the right direction since these buses today offer a complimentary service. Because of the excessively high demand, more buses should be introduced to offer an all round service in the high demand areas.

For a long time now, the monopoly enjoyed by the KBS has ensured that it considers less the comfort and safety of the users and its done very little to increase the number of buses and improve on its services in response to the ever increasing demands. The competition offered by the NBS will inevitably lead to a change in this state of affairs more so because the NBS has so far proved popular because of its disciplined staff.

As a whole, the increase in the number of buses will increase their frequency of service apart from providing more sitting space. Each bus should be able to establish and carry a maximum number of passengers to ensure that it is not so much overcrowded. The NCC should also be able to set up a research wing to undertake investigations into the changes in traffic characteristics of Nairobi. This would provide information which future bus timetables could be based, and upon which buses could be redistributed in response to demand.

5. The present street layout and road space in Nairobi is inadequate. The NCC should embark on a road rehabilitation programme which should not only be concerned with the CBD. In rehabilitating and constructing new roads the city authorities should ensure that the interests of pedestrians are considered by providing space besides the roads for pedestrian lanes to reduce the danger of accidents. This concern for the pedestrians is more so important in view of the fact that as the number of private automobiles in the CBD continues increasing, there will be need to restrict the private automobiles from the CBD in the near future and to establish Pedestrian Cores. Other important traffic management improvements should include, the construction of highways in major traffic flow zones, the construction of a network of one-way streets, integrated traffic signals, signs and...
road markings in the CBD; reserved bus lanes and specialised roads to service high
density residential, industrial and commercial districts.
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