Public transport in Dar es Salaam, Tanzania

-institutional challenges and opportunities for a sustainable transportation system

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Executive summary

The challenge of promoting and sustaining an ever-evolving transport system in urban areas is a matter of the utmost complexity, which requires innovative research and action initiatives. This research report was prompted by personal experience of problems of public transport in Dar-es-Salaam by the researchers who conducted this study. Many people in Dar-es-Salaam depend on public transport in the form of bus services and these were therefore the main focus of the investigations. The objective of the research was to get a clear and a coherent picture of public transport in Dar-es-Salaam and to analyse the underlying causes of the problems with it.

The main aim of the study, which was conducted from January 2003 to December 2004, was to yield specific knowledge about the technical and institutional problems, challenges and opportunities in planning for sustainable urban transportation. Before reaching this stage, it was necessary to get a clear picture of the current situation, and it was found that the performance of public transportation in Dar-es-Salaam, in terms of social, economic and environmental aspects, was distressing. The existing public transport system is characterized by: i) congestion and delays; ii) excessive gaseous emissions from vehicles; iii) increasing road accidents; iv) inadequate road infrastructure; v) poor vehicle standard; vi) poor infrastructure for non-motorised modes; vii) low bus fares insufficient to cover operating costs and (viii) uncomfortable and unsafe customer services.

The report examines the actual problems and conditions of travelling in Dar-es-Salaam, based on interviews with different socio-economic groups of people in six neighbourhoods. Vulnerable groups such as women, pupils, parents, older persons and disabled people were included. The examination included the question of vehicular air pollution and the historical and dynamic changes in public transportation in terms of quality since it was introduced in Dar-es-Salaam in 1949.

The report surveys strategic approaches applied and examines various mechanisms of interventions to solve the problems by stakeholders in the public transportation sector, namely institutions, agencies and private operators. Major conclusions of the report are:

- Lack of a well-defined authority and administrative system that has the responsibility for formulation and implementation of a coordinated strategy for public transportation. Linked with this is the absence of adequate traffic management principles, i.e. comprehensive management of the road-based transport system that includes policies and measures for the transport system as a whole.
Lack of methods and approaches for funding investment in transport infrastructure. There is no emphasis on charging transport users, especially private vehicle users who are the least efficient users of transport networks, for the costs of the facilities and services being provided to them at public expense.

A clear relationship between socio-economic characteristics and the travel situation has an impact on the public transport situation in Dar-es-Salaam. Low income dominates in a large proportion of the population. Increased bus fares would not be affordable for many commuters. The consequence for bus owners is a minimal economic reserve for maintenance and new investment.

Poor technology in testing the roadworthiness of vehicles and low capacity to measure and monitor air pollution in the city.

Weak involvement of citizens in transport planning. There is an inherent poor enabling environment to organise participatory programmes and processes at grassroots local government institutions due to the lack of resources and administrative problems. Likewise, there is a poor bottom-up coordination.

Inadequate enforcement of traffic regulations and application of out-of-date legal and administrative framework in traffic management.

Absence of environmental legislation constrained the development of a sustainable public transportation.

Potential qualities in Dar-es-Salaam that can be used to improve the quality of public transport are:

Most of the people in Dar-es-Salaam and the public authorities know the scale of public transport problem in terms of its causes and its negative environmental and socio-economic effect. This common understanding is a useful starting point when strategies to solve public transportation are considered.

The city of Dar-es-Salaam has institutions that are suited to work for an improved public transportation. These include legal institutions, enforcement agencies, planning departments, training institutions, standard stipulation agencies, etc.

There is no shortage of trained people who could carry out planning for sustainable public transportation.
All classes and groups of people have a strong desire to participate in planning for sustainable transport in Dar-es-Salaam.

Dar-es-Salaam city already has existing transport infrastructure facilities, providing a starting point to draw up strategies to enhance public transportation. The City Council’s proposal to introduce a rapid transit bus project in Dar-es-Salaam, starting with the existing infrastructure, is a potential move in that direction.

The environmental law was approved by the Tanzanian parliament in November 2004, and if well applied, it can be vital in promoting sustainable public transportation in Dar-es-Salaam.

The Government has prepared a petroleum bill which will be tabled to the parliament for approval. The enactment of the law can be vital in the management of specified standards for the petroleum products that are imported into the country.

The Government of Tanzania has poverty eradication as one of its main goals. Ongoing programmes to eradicate poverty could be integrated into planning for a sustainable public transportation, to enable the people to meet transport costs in Dar-es-Salaam.

This report emphasizes the urgency of solving the problems of public transportation in Dar-es-Salaam if the city is to become a proper human habitat for the current and future generation. We recommend some strategic policy approaches that are relevant not only for Dar-es-Salaam but for other cities with similar institutional arrangements. We believe that such cities can be found in many sub-Saharan areas in Africa. The policy approaches put forward in this report ought to be made ‘city-specific’ by the planning authorities in Dar-es-Salaam or any other city considering how to achieve a future sustainable transportation system.
Chapter One

1.0 Introduction

This report is a product of a study that analyses the problems of public transportation and its causes in Dar-es-salaam City. The main purpose of this study is to give an opportunity to seek solutions for future improvements. The report consists of nine Chapters. The first contains an introduction, which includes the background to Dar-es-Salaam’s transport situation, the problem definition and formulation of the research question. In addition this section describes the framework within which this study was conducted, the methodology and how the study was executed in Dar-es-Salaam. It also describes the physical and geographical characteristics of the case study areas, including an overview of their historical development.

Chapter 2 highlights the poverty-transport nexus in Dar-es-Salaam. It gives an overview of the socio-economic situation in Dar-es-Salaam in the context of Tanzania as a whole and how it can affect the demand for public transport in the city for different socio-economic groups. The Chapter also highlights in brief how Tanzania has developed economically after independence and how this may have affected the quality of public transport in Dar-es-Salaam.

The dynamics of bus public transport in Dar-es-Salaam are described in chapter 3. It gives a brief description of bus services before independence as operated by the Dar-es-Salaam Motor Cooperation (DMT), and the after independence operation by DMT and Usafiri Dar-es-Salaam (UDA) and finally the emergency of daladalas in the early 1980s. The chapter highlights also a proposed scheme by the City Council to introduce Bus Rapid Transit system in Dar-es-salaam.

In Chapter 4 to 6, results from interviews with household and stakeholders as part of this study are being highlighted. In Chapter 4, we analyse the evidence of current air pollution and noise levels in Dar-es-Salaam with the focus on traffic and examine attitudes to and knowledge of effects from air pollution among interviewees.

Chapter 5 describes the condition of public transport in Dar-es-Salaam for motorised and non-motorised modes. Chapter 5 also looks at the economics of operating a daladala bus and the ability of the people to pay for travelling costs in different case study areas. Furthermore, the quality of travelling in terms of safety and comfort and reliability for both bus and non-motorised modes is examined in that Chapter.

Chapter 6 examines public travel in Dar-es-Salaam as a common good. Since one major goal of public transport is to provide services to all inhabitants, this section analyses how women, pupils, the elderly and the disabled are handled by public transport in Dar-es-Salaam.
Chapter 7 examines the constraints on achieving a sustainable transport system both from the institutional and technical viewpoints. Aspects of urban management, traffic management, public participation, environment legislation, institutional co-ordination and clean fuel initiatives are analysed.

Chapter 8 presents the general conclusion of the study. Chapter 9 charts the way forward. It presents policy instruments from a theoretical perspective with regard to planning for public transportation. It also gives strategic ways ahead and propose policy recommendation to address the problems of public transportation in Dar-es-salaam. The chapter outlines the potentials existing in Dar-es-Salaam that could be exploited to promote planning for a sustainable public transport. The chapter outlines also areas for further research.

1.1 Background of Dar-es-Salaam’s transport situation

The Dar-es-Salaam metropolitan area is located on the eastern part of Tanzania between 6°34’S and 7°10’E along the west Indian Ocean coastline. Dar-es-Salaam was established by Sultan Seyyid Majid of Zanzibar in 1862 as a port and trading centre. The Sultan brought labourers and slaves from Zanzibar to carry out its construction. Buildings and streets were made of stone. After the death of Sultan Majid eight years after the establishment of the city, the development projects were abandoned and the city was left to decay (Kimaryo, 1996).

Bagamoyo, on the Indian ocean, was the first seat of government and the administrative headquarters of what is now the mainland Tanzania. However early in 1891 the German colonial power moved the capital to Dar-es-Salaam which, with its greatest natural harbour, it was considered to have more strategic advantages.
Figure 1.1 Spatial growth trends for Dar es Salaam: 1963-2001 (Lupala, 2002)
The role of Dar-es-Salaam as the seat of government was maintained by the British colonial administrators when they took over from the Germans after the First World War in 1919. Dar-es-Salaam continued to be the capital after independence in 1961. In 1973, after eighty-two years as the capital, the government took the decision to move the national capital from Dar-es-Salaam to Dodoma, about 500 kilometres inland to the west of Dar-es-Salaam. The arguments that were cited for the transfer of the capital were that Dar-es-Salaam was growing rapidly into a primate city with limited economic expansion and congested transport facilities (URT, 1976). The shifting of the Capital from Dar-es-salaam was partly aimed at decongesting growth of Dar es Salaam and promoting other growth centres in the upcountry regions.

Even with the relocation of the seat of Government, Dar-es-Salaam still continued to be an attractive, cosmopolitan city which continues to grow. It is the dominant focus of most development, the antithesis of what Tanzania had aimed for, and is growing at a pace which is already damaging the urban environment. The spatial growth of Dar-es-Salaam expanded from 3081 hectares in 1963 to 57211 hectares in 2001 (Figure, 1.1).

With its population of 2.5 million in 2003, Dar-es-Salaam is the largest city in Tanzania, with a size seven times larger than that of the country’s second largest city – Mwanza (URT, 2002). Urban sprawl characterises the spatial growth of Dar-es-Salaam in the form of low-rise structures and a low-density built environment, which is creating increasing financial costs for the public sector to provide infrastructure services in the newly-built areas and maintenance of services in the old inner city areas. The rapid growth of population and the size of the city of Dar-es-Salaam are directly linked with a rapid increase in vehicles. Dar-es-Salaam city hosts about 52% of the total vehicles found in Tanzania. The traffic density growth rate has been reported to be 6.3% per year (JICA, 1995). There is a mismatch between the traffic density growth rate and the road network development. By 1992, road provision in the city of Dar-es-Salaam was only 2.3% of the developed land (ibid.) This is contrary to recommended ratio in Tanzania of 15% land road coverage in urbanised areas (URT, 1978). Although some efforts had been made to increase the capacity of Dar-es-Salaam roads within the past ten years, the existing road network is still inadequate to meet requirements of the fast growing vehicle population. The great number of mini-buses dominates the motorised public transport system on the roads of Dar-es-Salaam. As Dar-es-Salaam continues to grow spatially and in terms of population, the demand for public transport increases, which in turn creates the need for increased numbers and operations of minibuses. Accordingly, these buses exacerbate long queues, congestion and increased rate of accidents in Dar-es-Salaam (see Chapter 5).
1.2 Problem definition

Like many cities in the developing countries, Dar-es-Salaam experiences a poor public transportation system. The dominant mode of public transport system in Dar es Salaam is bus transport that accounts for about 60% of the modal split (Kombe et al, 2003). The existing public transport system is characterised by: i) congestion and delays; ii) excessive gaseous emissions from vehicles; iii) increasing road accidents; iv) inadequate road infrastructure; v) poor vehicle condition; vi) poor infrastructure for non-motorised modes; vii) low bus fares insufficient to cover operating costs; (viii) poor customer services; and (ix) uncomfortable travelling conditions. There are over 7000 minibuses, popularly known as ‘daladala’, which dominate motorised public transportation in Dar-es-Salaam. The majority of people in the city depend on this mode of motorised transport. For this reason, transport issues that emanate from the daladalas were among the central aspects of investigation in this study.

Rapid urbanisation is one of the reasons for the poor state of public transportation in Dar-es-Salaam. As population continues to increase and as the city continues to sprawl, more people live and work in the city and make more trips within the urban area, often over longer distances. Consequently, the limited capacity of existing transport infrastructure is stretched to the limit and thus, it has become a constraint to cope with the public demand for travel. The performance of public transportation in Dar-es-Salaam in social, economic and environmental aspects is thus distressing.

In principle, a city’s public transport ought to fulfil the following basic requirements:

Access: People are entitled to diversified transportation options, giving them more choices as to how they meet their basic access needs;

Equity: People are entitled to a transportation system that ensures social, inter-regional and inter-generational equity, meeting the basic transportation-related needs of all people including women, the poor, the elderly, young people and the disabled;

Health and Safety: Transportation systems ought to be operated in a way that protects the health (physical, mental and social well-being) and safety of all people, and enhances the quality of life in communities;

Pollution Prevention: Transportation needs must be met without generating emissions that threaten public health, global climate, biological diversity or the integrity of essential ecological processes.

Land and Resource Use: Transportation systems must be well integrated with town planning and they should be designed to make efficient use of land for urban development.

Economical transportation: The cost of transportation ought to be designed in a way that guarantees accessibility to all the people, but transportation should also be operated in such a way that revenue is generated to cover its operating costs.
Planning for sustainable urban transport emphasises an integrated approach, a long-term perspective and, importantly, builds on active community participation. To be exact, by combining technological innovation, public regulation and organisational innovation, an integrated planning approach can lead to a reduction in resource use and achieve a modified public transport system improved socially, economically and environmentally. There are already techniques for improving urban transport namely: (i) traffic calming to slow vehicular traffic and create more urban, humane environments better suited to other transport modes; (ii) quality public transport, cycling and walking to provide genuine options to the car; (iii) urban villages to create multinodal centres with mixed, dense land use that reduce the need to travel and that are linked to goods transport; (iv) growth management to prevent urban sprawl and redirect development into urban villages; and (v) transportation tax to cover external costs and to use the revenues to help build a sustainable city in favour of public transport (Newman and Kenworthy, 1999). Concerning traffic management, the World Bank points out that instruments such as automated traffic control, which have yielded great benefits in developed cities, have had little impact in most developing countries. Whereas it was once thought that such technologies were too expensive and too complex for poor cities, the rapid development of technology has reduced both their cost and their maintenance and operational skill requirements. The World Bank argues further that in developing countries, few cities have any comprehensive strategic land use and transportation planning agency. There is often no traffic management institution worthy of the name. If the professionalism of relevant institutions cannot be improved, it is unlikely that the substantive problems will be solved (World Bank, 2000).

In Dar-es-Salaam, policy makers and decision takers approach the challenges of urban transport with difficult starting points. They are constrained by resources (staff and financial) and statutory responsibilities. They increasingly tend to be more concerned with making decisions, both reactive and proactive, on a basis of overall effect. There is often an uncritical analysis of the local contexts, conditions and community values that are associated with the current poor public transport system. However, the argument in this study is that, the greatest single barrier to effectively solving the transport problem is the institutional framework, since the responsibility for urban transportation systems resides with many different entities without clear lines of authority and coordination.

1.3 Research question

In Dar-es-Salaam, authorities have responded to urban transport problems in two main ways to improve the public transport situation. These have included rebuilding older roads and building new road networks as well as encouraging private operators to render services to meet the increasing demand for public transportation. Although these programmes have been implemented,
the quality of transport in Dar-es-Salaam has been deteriorating both in terms of services delivered by private operators, congestion on the roads and unsafe public transportation. Thus, the decision to conduct this study was motivated by the obvious discomfort and inconvenience that almost everyone experiences when using public transportation in Dar-es-Salaam. This research is thus guided by a specific research question namely: What deficiencies of the methodology and what constraints in the planning process inhibit the achievement of sustainable public transportation? This question specifically concerns: (a) How do comprehensive strategic land use and transportation planning agencies work and how do they co-ordinate their actions to address sustainable public transportation? (b) What is the mechanism of institutional co-ordination regarding public transportation? (c) How do public participation and consultation occur in parallel with the local democratic process as a means of improving local design policy for public transportation?

1.4 The essence of the research study

This research study forms the basis for understanding the existing constraints in planning and implementation regarding public transportation in Dar-es-Salaam, which in turn will be useful in: a) devising alternative design strategies for integrated urban and transport planning and application of new technology that will work best for public transportation; b) handling people’s choice and use of public transportation as regards different modes of transport; c) handling traffic flows, security and accidents; d) reducing or stabilising environmental impacts from urban transportation. The purpose here is to make concrete statements about possible answers to the research questions, and outline untreated or partially treated issues which may be suggested for further research.

1.5 Objectives and methods of the study

The main objective of this research was to yield specific knowledge about the technical and institutional problems, challenges and opportunities in planning for sustainable urban transportation in Dar-es-Salaam: The concerns or specific objectives here were:

i) to investigate existing town and public transport planning approaches in Dar-es-Salaam.

ii) to examine how public transport is managed in the city;

iii) to examine operational approaches to traffic management with respect to use of existing transport infrastructure;

iv) to examine existing approaches to control vehicle emissions, occurrence of accident and periodic inspections of vehicle;

v) to examine factors that inhibit institutional co-ordination and weaknesses of institutions to put together a suitable technical organisation that is necessary to effectively address future public transport needs;

vi) to examine constraints and potentials for the development of public participation and consultations, in parallel to the local democratic process as a means of improving local policy design;
viii) to examine obstacles to people’s use of public transport with respect to the economy, local housing areas, attitudes and safety.

In pursuing these objectives, we applied a method that included interviews, literature reviews, analysis of official documents and the synthesis of information. The interviews involved the following groups: i) representatives of different social classes and genders; ii) authorities responsible for city and transport planning; iii) agencies responsible for urban environmental control; and iv) state institutions that devise urban transportation policies (see section 1.7). Interviews that were carried out were meant to reveal the state of the current transportation system in Dar-es-Salaam and the planned objectives and strategies for its sustainable future state. The analysis of the information thus obtained is discussed under three main categories namely:

(i) Environment/Resources, i.e. pollution – air, noise, vehicle quality, land use;
(ii) Economy, i.e. transport cost, reliability and market access;
(iii) Social/Equity, i.e. accessibility, mobility, safety and security.

The literature review that we carried out for this study includes a survey of the current models for sustainable urban transportation. The findings from the interviews and official documents were re-examined and compared with theoretical viewpoints and current models of planning for urban transportation that have been applied in both developing and developed countries.

1.6 Framework of the research

A complex web of inter-related needs and activities are required to efficiently meet transportation demand in an urban area while meeting the basic needs of all citizens without depleting the natural resource base or polluting the environment. It is widely acknowledged nowadays that a sustainable transportation system must be ecologically sustainable to maintain transport-related pollution levels below those that human beings can safely tolerate and the environment’s ‘carrying capacity’ can allow. Environmental problems arising from transportation have brought an urban focus to the debate on sustainability, i.e. the relationship between urban form and transportation. To view future urban transport in a framework of ecological planning, the definition of an urban environment is a necessity here: an urban environment can be said to consist of natural, built and social components. The natural environment includes air, water, land, climate, flora and fauna, whilst the built environment encompasses the fabric of buildings, infrastructure and urban open spaces. The social component embraces less tangible aspects of urban areas, including aesthetic and amenity quality, architectural styles, heritage, and the values, behaviour, laws and traditions of the resident community (OECD, 1990). Urban environmental planning ought to create conditions for general health and for a differentiated human habitat in which different groups can feel at home and in which people can make individual choices. Ecology has instrumental meaning when principles that maintain a balanced ecological situation are applied in, for example, planning for future urban transport.
Tjallingii (1995) developed a model that he calls ‘ecopolis’ for guiding urban development. In this research, this model was applied in evaluation of strategies and policies that were formulated and carried out in Dar-es-Salaam to address public transportation concerns. Ecopolis is a threefold strategy for ecologically sound development in urban ecosystems distinguished in three important areas of attention: ‘flows’ which in this research is transportation, ‘participants’ and ‘sites’ or ‘area’ (see Table 1.1). In the relationship between people and the urban environment, much depends on the involvement of inhabitants and users of urban areas. All participants in the development and management of the city must be able to contribute and develop a sustainable commitment in their own way. This model is supposed to help policy makers and researchers understand why policies such as those of urban transportation are ineffective.

Table 1.1 Ecopolis Strategy Framework

<table>
<thead>
<tr>
<th>Motto</th>
<th>THE RESPONSIBLE CITY</th>
<th>THE LIVING CITY</th>
<th>THE PARTICIPATING CITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object</td>
<td>Flows</td>
<td>Areas</td>
<td>Participation</td>
</tr>
<tr>
<td>Social Objectives</td>
<td>-production</td>
<td>-usefulness</td>
<td>-prosperity</td>
</tr>
<tr>
<td></td>
<td>-quality</td>
<td>-attractiveness</td>
<td>-well-being</td>
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<tr>
<td>Problems</td>
<td>-depletion</td>
<td>-health problems</td>
<td>-alienation</td>
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<td></td>
<td>-pollution</td>
<td>-damage to functions</td>
<td>-indifference</td>
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<tr>
<td></td>
<td>-disturbance</td>
<td>-loss of differentiation of</td>
<td></td>
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<tr>
<td></td>
<td>('push-off problems)</td>
<td>plant and animal life</td>
<td></td>
</tr>
<tr>
<td>'ecopolis' objectives</td>
<td>-sustainable flow</td>
<td>-sustainable use of areas</td>
<td>-sustained</td>
</tr>
<tr>
<td></td>
<td>management</td>
<td>planning with local potentials</td>
<td>commitment to ecological relationships</td>
</tr>
<tr>
<td></td>
<td>-planning for</td>
<td>-planning for self-organization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prevention</td>
<td></td>
<td></td>
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<tr>
<td>Policy theme</td>
<td>-integral ‘chain’</td>
<td>-spatial and area directed management</td>
<td>-target group policy</td>
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<tr>
<td></td>
<td>management</td>
<td>-effect directed policy</td>
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<td></td>
<td>-source directed</td>
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In line with the Tjallingii model, we investigated whether or not Dar-es-Salaam is a ‘responsible’ City in terms of how policies for a sustainable public transportation are devised. An argument connected to this is that unless people are clear about the environmental impacts of their activities, they should refrain from activities which might damage the environment (Houghton and Hunter,
The problem which plays a large part here is that urban areas pass on many problems to higher scales or to future generations (Tjallingii, 1995). We investigated whether policy makers involved in public transportation practised improvement of the quality of the environment by being cautious about probable environmental degradation such as increased air pollution from occurring rather than be forced to embark upon—often very expensive—‘end-of-pipe’ cures at a later date. Were there effective policies to promote sustainable public transportation to protect the environment, for example, in preventing increased air pollution as delivery of public transportation services changed over years since the inception of public transportation in Dar-es-Salaam?

As regard ‘the living city’, this study investigated whether the operation of public transportation in Dar-es-Salaam typifies Dar-es-Salaam as a ‘living city’ or in other words a human habitat that promote good quality life? Public transport is a service offered to inhabitants to make it possible to travel from A to B over quite long distances within an urban area. From the perspective of politicians and planners, there is a need for infrastructure, e.g. a suitable road system, a number of vehicles and an organisation capable of organising, managing and providing the transport service. Most such systems are organised from a top-down perspective. Needs of transport are identified, as well as the need for an organisation to fulfil the task of public transport. The aims are to serve as many people as possible with the same service standard irrespective of gender, age or income. A systems perspective has to be used to get all factors to fit together.

Another theoretical framework that was explored and applied in this study was that which views public transport as a common good. The theoretical viewpoint starts from the transport user. The public traveller also uses a systems perspective to identify possibilities of going from A to B in an efficient and safe way. The service product, public travel, is composed of a series of qualities the customer wants to have fulfilled. The travel service as the sum of qualities for travelling from A to B represents the systems perspective from the customer’s point of view (Edvardsson, 1996; Haglund & Stålhammar, 2001). The customer satisfaction from different aspects of the travel is the criterion of success for the transportation system when numbers of travellers buy and use the transport service (Oliver, 1966).

From the point of view of the customer, the travel service starts when he has decided to go from his home to a place B. In a more or less time series perspective, he invents the possibilities and qualities to perform the travel with different services and vehicles, e.g. public transport, taxi, bicycle etc.

The travel starts with
- Exploring the timetable,
- Finding a bus stop with safety qualities,
- Using a vehicle: standard of the vehicle, safety aspects, crowdedness, price, driver and conductor behaviour.
- Route to B: directly or possibilities to change vehicle.
- Timetable to go back to A.

Furthermore, in assessing the quality public transport in Dar-es-Salaam as a ‘common good’ or not, we asked the following questions: Is Dar-es-Salaam a healthy place for people to live in given the extent of air pollution generated from the current (public) transport system? Does public transport system in Dar-es-Salaam provide good and equal services to its inhabitants including the poor, children, elderly, disabled and women?

We investigated further whether the existing public transport system typifies Dar-es-Salaam as a ‘participating city’. In other words, whether the general public is widely involved in conceiving the way public transportation is run in Dar-es-Salaam. Is there a forum for participatory governance, in which local actors come together to discuss, debate and agree on proposals for the development of their own community, district or city? Tjallingii stresses that the city is for the people. Urban (environmental) problems such as noise or air pollution etc., are connected to lack of involvement by the people in the management of their daily environment. This can be due to ignorance. But more important is the organisation of urban society which does not call for involvement, sometimes even contracts it. Involvement of people in, for example, designing of a public transportation is also a condition for achieving the ‘Responsible’ and ‘Living’ City. According to Tjallingii, the three aspects of the city (‘responsible’, ‘participating’ and ‘living’ city) are mentioned separately because it make sense to coordinate activities in the three fields. However, a true urban ecological approach should combine the three strategic objectives. They need to support each other.

1.7 Research methodology and execution of the study

The research project was carried out over a two-year period. The plan for the research stipulated that the first twelve months would be devoted to conducting field surveys and reading necessary literature on public transportation conditions and how these are planned in Dar-es-Salaam. We obtained most of the literature about the Dar-es-Salaam public transport situation from official documents and academic materials. The first field work was carried out from 8 April 2003 to 11 June 2003 in close collaboration with the University College of Lands and Architectural Studies (UCLAS) in Dar-es-Salaam. This was in line with the research proposal, which aims to facilitate the exchange of knowledge between Swedish and Tanzanian researchers regarding the subject of sustainable urban transportation. We selected six housing areas for detailed study in Dar-es-Salaam. In each of the three municipalities (namely, Ilala, Temek and Kinondoni) two housing areas for low and high income groups were selected respectively. These areas were Kawe and
Mikocheni for Kinondoni municipality; Ilala Boma and Tabata for Ilala municipality; and Kurasini and Mbagala for Temeke municipality.

The questionnaires used for interviews covered specific questions for women, students/pupils, the disabled and the elderly concerning public transportation in the city (see appendix 1). The areas that were chosen had to cover differences in socio-economic characteristics within the city’s high and low income groups in equal proportions in all three municipalities in order to render a representative picture of Dar-es-Salaam regarding the public transportation situation. We used the housing quality of areas as the criterion to judge the socio-economic status of the areas in all three municipalities. The choice of the study areas also took into account the intensity and varying land use activities in each area, dependency on public transport and varying commuting distances to the Central Business District of Dar-es-Salaam. We conducted the field survey with the assistance of two research assistants from UCLAS. An average of 62 household interviews were conducted in each housing area. Women respondents dominated in the sample, as they represented 60 to 69% of the total in each area. Interviews in the housing areas were conducted between mid-April and mid-May 2003. Simultaneously, we conducted interviews with some stakeholders in the public transportation sector, namely institutions, agencies and private operators. Specific institutions that we interviewed were: the Ministry of Lands and Human Settlement development; the Ministry of Transport and Communication; the National Environment Management Council (NEMC); the Dar-es-Salaam City Council; the National Institute of Transport (NIT); the Dar-es-Salaam Regional Traffic Police; the Dar-es-Salaam Transport Licensing Authority(DRTLA); the Department of the Environment in the Vice-President’s Office and the University College of Lands and Architectural Studies (UCLAS).

The questionnaires used when interviewing authorities and agencies were semi-structured and the occasion was as a form of a dialogue during which the interviewer took notes. The issues under discussion included main obstacles to improving public transport, urgent improvements needed in the public transport sector, most urgent improvement from different professionals’ view points. The contents of the field surveys, namely interviews from the six housing areas and official interviews, were subsequently analysed to give a substantive picture of the public transport situation in Dar-es-Salaam for a workshop which was held on 29 May 2003 at the University College of Lands and Architectural Studies in Dar-es-Salaam. The workshop was attended by stakeholders from institutions, agencies, private operators and leaders at grass-roots (ward) level. Results of both household and officials interviews were presented in the workshop. The workshop was thus a forum in which different issues were raised and discussed regarding the situation of public transport in Dar-es-Salaam as identified during the field (interview) surveys.
During the workshop, a back-casting technique enabling stakeholders to create a map of ideas and clusters for a future sustainable transportation system in Dar-es-Salaam was applied. This is a method for brainstorming inspired by the Shell tradition of making scenarios for strategic conversation (van der Heiden, 1996) and by experiences from participative back-casting (Carlsson-Kanyama et al., 2004). The backcasting approach is an example of a visionary mode of thinking and seeks desirable futures. The resulting scenarios typically entail policy measures that are assumed to push the development in the right direction.

The workshop participants in Dar-es-Salaam were asked by a facilitator to imagine a travel in time 10 years ahead and to imagine elements of a sustainable transportation system in the city then. They were asked to free their minds of present constraints and to think freely about an attractive future in all senses. This is also called guided day-dreaming and it has been shown that the method influences the way people think about the future. All ideas were described to all other participants, and written down on post-it notes that were attached to a wall. Subsequently, the ideas were clustered under different headings and then ideas were voted upon by the participants, who received a certain number of green votes for the most pertinent proposals and red votes for the ones they gave least priority.

A very obvious result from this exercise is that a very important ingredient in the future transportation system is better buses (see Appendix 2). These buses should be cleaner, bigger and more well functioning than now and the conductors should be well mannered, according to the stakeholders. Another salient result of the exercise is that all proposals for alternative motorised modes of public transport such as railway, tram or speed boats were voted down, not because stakeholders found them unattractive modes but because they considered them as too costly and therefore less prioritised. Further, non-motorised modes of transport such as cycling and walking were not very much mentioned. Ideas related to regulations, planning and management practices were favoured, implying a desire for a more orderly management of the traffic system than now.

The second phase of field work was conducted in Dar-es-Salaam between 17 March and 15 April 2004, during which students’ travel situation was investigated further. Selected interviews with low and high income households about how the travel situation to schools affected the students’ school lives were conducted. The interviews were designed such that parents could also give their opinion on what could be done to improve the travel situation of students. In the same way, further investigation on the student travel situation by interviews with selected primary and secondary school head teachers was conducted.

The aspect of air pollution and the continued use of leaded petrol in Tanzania was also investigated during this second field work phase. Interviews were conducted on the subject with a number of agencies and institutions, namely the Ministry of Energy and Minerals, the Tanzania Bureau of Standards, Tanzania
Association of Oil Companies, British Petroleum(T), and the National Environment Management Council. Tanzania’s first environmental legislation was under preparation when we carried out this study. For that reason, we conducted an interview with the co-ordinator for the preparation of the legislation about its expected efficacy in addressing environmental problems, including those of public transportation in Dar-es-Salaam. A draft report from this study was completed in August 2004 and presented at a stakeholders’ workshop in Dar-es-Salaam on 17th September 2004. A number of issues were raised during this workshop including the need to find better ways of disseminating research results of this study. The workshop participants emphasized the need for improved non-motorised transport, strategies on reducing air pollution, improvement of the pupils travel situation and the present transport system and ways for improving institutional coordination among key actors involved in the public transport sector.

1.8 Case studies

As highlighted in section 1.7, the selection of case studies was based on several factors including: settlements that depicted low/high income characteristics with respect to public transport, the distance to the city centre, density and housing quality which implicitly reflected one of the aspects of socio-economic conditions. Other variables that were taken into account included the availability of community services, physical planning status of the areas, i.e. whether planned or unplanned, and accessibility and availability of public transport. A qualitative observance of both bus services and other vehicular movement and accumulation was also taken into consideration. Two case study settlements were selected from each municipality depicting low and high income characteristics. While Ilala-Bomani is a low income housing area, Tabata is a middle and high income housing area in Ilala municipality. Kurasini is again a high income area, while Mbagala depicts low income housing characteristics in Temeke municipality. Similarly, Mikocheni was chosen as a high income area and Kawe as a low income area in Ilala municipality (Figure 1.2).
1.8.1 Ilala

Ilala is located approximately two kilometres from the city centre. It is bordered by the densely built Buguruni informal settlement to the west, the central railway line and Pugu industrial areas to the south, Karume sports grounds, the cemetery site and Kariakoo to the east and Ilala Boma (Regional Office Headquarters) and Ilala Quarters to the north. Ilala was designed during the colonial period, under the auspices of a consultant Sir Alexander Gibbons and Partners who prepared the plan for Dar-es-Salaam in 1949. The Ilala area was designated a high-density residential extension of Kariakoo - both settlements designed as residential areas for ‘Africans’. It is dominated by multi-occupant Swahili type of houses. Services such as surfaced roads, sewerage and drainage were poorly provided or the standard of service was kept very low (Kironde, 1994).

Ilala is accessible by the Uhuru road that terminates at the city centre and joins the Mandela expressway to the far west. Due to its importance, Uhuru road is one of the major bus routes for buses travelling between the city centre and the settlements of Buguruni, Vingunguti, Gongolamboto, Temeke, Yombo and Tabata. Ilala is characterised by the relatively medium-sized plots ranging between 250 and 300 square metres, plot coverage of about 37% and single storey houses with a floor area ratio of approximately 0.37 (Lupala, 2002:65). The majority of the residents of Ilala are engaged in petty trading activities such
as food vending, butchery, market stall vending, small scale garaging, shops and restaurants and a few residents who are employed in the formal sector. Due to low car ownership, many residents either walk or use public transport for their daily livelihood activities. Recently, a bus route traversing the central part of Ilala (Lindi Street) has been introduced. This makes Ilala one of the settlements traversed by two prominent bus routes. As such, it is susceptible to air and noise pollution due to heavy traffic along Uhuru and Lindi Streets. Garaging activities that take place in Ilala have further compounded the level of air and environmental pollution in this settlement.

The major land use activities in Ilala include residential, commercial, industrial activities such as brewing, illegal vehicle repair garages and institutional uses such as offices, schools and mosques. Being close to the city centre, Ilala experiences traffic congestion originating from the north and west of the city, particularly in the morning, midday and in the evening.

1.8.2 Kurasini

Kurasini is located 4 kilometres south of the city centre. The neighbourhood chosen for this study is surrounded by the seaport facilities to the south and east, by the Police College to the west and Kurasini informal settlement to the north. The settlement is to some extent landlocked by these establishments. As such, there is no direct vehicular access to the settlement. It can be accessed from the Mandela expressway via a small access road. The built-up part of the Kurasini case study area, like that of Ilala, is a product of colonial policies and a plan prepared by a consultant Sir Alexander Gibbons and Partners of London in 1949. The area was designated a residence for Europeans who were working at the seaport. However, unlike other European areas, the one at Kurasini was a relatively small housing scheme developed in the 1950s. Currently, the majority of the residents living in the area are government employees and self-employed people, including retired government officials. It is a settlement that depicts a high and middle income group of people with a relatively high ownership of private vehicles. The area is characterised by high-class residential houses located on larger plots of about one acre. Many of the houses have provisions for entrance gates and car port facilities. It was from these features that we categorised the households living in this area as a high income group.

The infrastructure services were well supplied to suit European colonialists who lived in the area. These include tarmac roads, sewerage system and lined drainage system. The area was also provided with nearby community facilities such as schools and churches. Europeans who lived in Kurasini used private cars to reach necessary services elsewhere in the city. There are buses which travel between Kurasini and the city centre via Mandela road and there is also an indirect bus access from the Kilwa road. Residents from the Kurasini area have to walk about one kilometre to the nearest bus terminal.
1.8.3 Kawe
Kawe is one of the 52 informal settlements of Dar-es-Salaam. The settlement developed without guidelines from physical planning authorities. Kawe is surrounded by the defunct Tanganyika Packers industry (which used to employ many workers up to late 1980s). It shares a border with the low-density residential areas of Msasani and Mbezi. The settlement is predominantly inhabited by low-income people. It is located about 10 kilometres north-west of the city centre along the Old Bagamoyo Road. Like many informal settlements, Kawe developed after independence and grew in size over the years with remarkable expansion taking place in a relatively short period after independence. In 1969, Kawe had 530 housing units, in 1972, the number of houses had increased to 714 units and by 1975 this number had reached 744 units. In 1979, there were 939 units (Kironde, 1994). The characteristic qualities of informal settlement are obvious in Kawe in terms of poor housing quality, absence or inadequate access road network for vehicular movement, high density house development and a poor drainage system. Internal vehicular and pedestrian accessibility is constrained by the compact pattern of housing development. In addition, the area is characterised by low car ownership. Many residents are engaged in petty trading activities such as food vending, retail shops, selling of cooked foodstuffs, market stalls, second-hand clothes and water vending. The majority of the residents walk from their housing areas to the bus terminal to catch the buses. Kawe is a terminal station for buses from the city centre via Mwenge and from Tegeta and Mbezi via Bagamoyo Road. Although, Kawe is an important terminal point handling buses from different routes there are no terminal facilities designed in the area.

1.8.4 Mikocheni
Mikocheni is located about 7 kilometres north-west of the city centre. It is bordered by the low-density high class residential areas of Regent Estate to the south-east, Msasani to the north and the industrial area of Mikocheni to the south and west. The settlement has developed around the Mikocheni oxidation ponds which at times produce bad smells as a result of poor functioning of the ponds. Mikocheni is accessed from the Mikocheni road that terminates from the Bagamoyo road, providing a strong link between old and new Bagamoyo roads. There are no buses plying this road. Residents have to walk about half to one kilometre to the old or new Bagamoyo roads to catch a bus.

This settlement is predominantly inhabited by a high income group of people. The residential area came about as a result of housing policies and programmes that were implemented in the 1970s and 1980s under the sites and services project. The project was intended to benefit some 160,000 low income people through the provision of 106,000 new serviced building plots in Dar-es-Salaam, Mwanza and Mbeya. In Mikocheni, 35 hectares of land were set aside and 710 plots were designed (Kironde, 1994). As it is located closer to the ocean, Mikocheni turned out to be a high-class residential area with quality residential houses, although a few low income houses can also be found in the settlement.
The area was subdivided into a comparatively high proportion of medium-sized plots. At the time of the study the area was characterised by the poor condition of access roads and the drain system. It was difficult to travel through during the rainy season due to seasonal flooding along the access roads. A few streets were not properly paved. The area is predominantly residential and people have to travel to other areas to work and to seek community service facilities such as supermarkets and schools.

1.8.5 Tabata

Tabata, like Mikocheni, is a product of the ‘site and service’ project which was implemented in the 1970s and 1980s. It is located approximately 9 kilometres to the west of the city centre. Tabata is accessible via Tabata Road, which traverses through the settlement starting from the Mandela expressway. This is a spine road that leads to Segerea Prison and further to Kinyerezi. It is the only tarmac road in Tabata. Other access roads are unpaved and lack proper stormwater drainage systems. Several commuter buses pass along Tabata road en route to Mawenzi, Tabata Mwisho, Ubungo, Buguruni, City Centre and Mwenge. Housing quality development in Tabata predominantly displays features of middle and high income people, though low quality houses can also be noted. Tabata was not a completely developed settlement when this study was being carried out, as it was characterised by several uncompleted houses and vacant plots.

Plots that were subdivided in Tabata were meant to benefit two categories of people. First were people who would be displaced during upgrading of unplanned areas of Dar-es-Salaam in Manzese, Hanna Nassif, Mwananyamala Kisiwani and Kinonndoni Shamba. Second were the middle and high income group of people who could not benefit from the sites and services project. A total of 1434 medium and high density plots were demarcated and earmarked in Tabata in the 1980s. The allocation of plots at Tabata went ahead in spite of the lack of basic infrastructure services such as access roads and water supply. The area was thus difficult to develop, although developers aimed at high building standards. In other words, it was only those who were rich who could develop houses in this area. The land policy that created these areas had failed to ensure both efficiency and equity in the development (Kironde, 1994). Vehicular traffic is minimal in the area because there are limited paved access roads in many sections of the settlement. The major land use activity in Tabata is residential use with low level supportive commercial activities such as bars, restaurants, retail shops and groceries.

1.8.6 Mbagala

Mbagala is located about 10 kilometres to the south of the city with housing quality characteristics portraying a low income area. These include low quality multi-family ‘Swahili type’ of houses, some of which were built with mud and poles. The area selected for this study is planned with high-density plots ranging between 450 to 600 square metres. The settlement is accessible by the Kilwa Road from the city centre and several buses travelling between the
city centre and the settlements of Mbagala Mwisho, Rangitatu, Mbande, Yombo Dovya, Chamazi and Mkuranga. The street condition within the settlement is rather poor and soil erosion has caused gullies in the far eastern part of the settlement. Due to traffic congestion during morning and evening peak periods, it takes a longer time to travel from Mbagala to other parts of the city. Kilwa Road has only two lanes, limiting the volume of traffic accommodated during peak periods. This is further compounded by the lack of an alternative route to the city centre as a result of the Mzinga creek that separates Mbagala from the rest of the city of Dar-es-Salaam.

There are no major community facilities in this settlement, thus compelling people to travel to the city centre for employment, shopping, medical attention etc. Residents of Mbagala can easily walk to the bus station along Kilwa Road and catch a bus. Field work results from this settlement shows that it takes one to two hours of travel time from Mbagala to the city centre during peak periods. This long travel time by daladala buses is compelling some residents to use bicycles to travel from Mbagala to the City Centre and for transporting products to be sold within Dar-es-Salaam city centre. Although Mbagala is accessed via Kilwa Road with a considerably large number of buses along the route, the accessibility to the settlement is constrained by the high volume of vehicular traffic, which limits the capacity of the road.
Chapter Two

2.0 Poverty and poor public transport nexus

2.1 The general picture

Income levels of people and the state of economic development of a country have an impact on the quality of public transport that they use. The way people choose modes of transport and the nature of existing transport infrastructure promote or suppress the efforts to attain ‘sustainable transportation’. It can thus be strongly argued that the low economic situation of households in developing countries has a strong bearing on the quality of utilised public transportation. In these countries, urbanization is accompanied by an alarming growth in the incidence of poverty and environmental degradation. One out of four urban dwellers in developing countries lives in absolute poverty, while another one in four is classified as relatively poor (Fernandes, 1998). Looking at this from an African perspective, the link between poverty and degree of unemployment is obvious. From the mid-1960s to the early 1970s it became clear that the rate of rural-urban migration was greatly exceeding the rate of formal employment creation in Africa’s cities. Total numbers of jobs created in the formal sectors (including government, the parastatal sector, manufacturing and the large-scale service sectors such as banking and tourism) were not keeping pace with the increase in the urban population (Habitat, 1996). Overall unemployment has been increasing in the sub-Saharan Africa while wages have also declined steadily (ILO, 1999). With reference to Tanzania, real wages for the majority of urban settlers have been declining while prices for food have been increasing. Wages in Tanzania declined by 65 per cent in real terms between 1974 and 1988 (Kombe, 1999). The decline of real wages on households and individual have an impact on the extent to which they may be willing to spend on the public transport services. The success of Urban Transport planning Management Programme depends on improved urban productivity and improved living and working conditions by appropriately meeting transport needs in an economically efficient, and environmentally and socially sustainable manner. The following sections illustrate the linkage between the increasing urban poverty as employment opportunities decline with the deterioration of public transportation in Dar-es-Salaam.

2.2 Dar-es-Salaam’s socio-economic profile in the context of Tanzania

Dar-es-Salaam has experienced a sharp decline in employment provided by the government and parastatal companies, caused by the privatisation

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5 Absolute poverty is a level of poverty at which certain minimum standards -- for example for nutrition, health and shelter -- cannot be met.
6 Urban poverty is a multidimensional phenomenon, and the poor suffer from various deprivations, e.g., lack of access to employment; adequate housing and services; social protection; and lack of access to health, education and personal security (World Bank, 2001).
policies and the government employee retrenchment that was implemented during the 1990s. The government and parastal state of employment declined from 8.7 to 3.8 and 12.7 to 3.1 percent for the years 1991/92 and 2000/01 respectively. However, there has been a corresponding rise in other sources of employment and self-employment during the same time (Table 2.1).

Table 2.1. Activity of adults by area and year of survey, %

<table>
<thead>
<tr>
<th>Activity</th>
<th>Dar-es-Salaam</th>
<th>Mainland Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming/livestock/fishing</td>
<td>2.3  3.0</td>
<td>72.8  63.2</td>
</tr>
<tr>
<td>Employee - government</td>
<td>8.7  3.8</td>
<td>3.4  1.9</td>
</tr>
<tr>
<td>Employee- parastatal</td>
<td>12.7  3.1</td>
<td>1.8  0.6</td>
</tr>
<tr>
<td>Employee-other</td>
<td>9.7  16.0</td>
<td>2.0  4.1</td>
</tr>
<tr>
<td>Self-employed with employees</td>
<td>17.3  5.9</td>
<td>4.5  1.9</td>
</tr>
<tr>
<td>Self-employed without employees</td>
<td>1.1  18.1</td>
<td>0.3  6.1</td>
</tr>
<tr>
<td>Unpaid helper in business</td>
<td>4.8  10.5</td>
<td>1.8  8.5</td>
</tr>
<tr>
<td>Housewife/homemaker/ household chores</td>
<td>21.6  19.2</td>
<td>3.6  6.2</td>
</tr>
<tr>
<td>Student</td>
<td>14.7  8.6</td>
<td>6.3  2.8</td>
</tr>
<tr>
<td>Not active</td>
<td>7.2  11.6</td>
<td>3.5  4.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0 100.0</td>
<td>100.0 100.0</td>
</tr>
</tbody>
</table>

Source: (URT 2002).

The household budget survey (2000/01) shows that wages and other income from employment provide 41% of total household income in Dar-es-Salaam, while income from self-employment represents almost 30%. However, over one-third of households in Dar-es-Salaam depend on a single type of source (URT 2002). This indicates that a significant proportion of households with members working in either public or private sectors experience constrained household income. This situation is aggravated by a decline in government and parastatal employment and a rise in the self-employment notably in Dar-es-salaam (Table 2.1). Income earnings from self employment are usually less than those from employment in the public sector.

Thirty-six per cent of Tanzanians fall below the basic needs poverty line and 19% of the population fall below the food poverty line according to the 2000/01 household budget survey (URT, 2002).

---

7 Two poverty lines were defined for 1991/92 and 2000/01. These are the basic need poverty line and the food poverty line. The food consumption pattern reported by the poorest 50% of the population was used as the basis for the food poverty line. The median quantity consumed
The absolute number of individuals who are poor increased during the 1990s, mainly due to population growth (Table 2.2). Some 11.4 million Tanzanians were below the basic needs poverty line in 2001 as compared to 9.5 million in 1991.

Table 2.2. Distribution of the poor in Tanzania

<table>
<thead>
<tr>
<th></th>
<th>Dar-es-salaam</th>
<th>Other urban areas</th>
<th>Rural areas</th>
<th>Mainland Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>91/92 00/01</td>
<td>91/92 00/01</td>
<td>91/92 00/01</td>
<td>91/92 00/01</td>
</tr>
<tr>
<td>Total pop. '000</td>
<td>1,313 1,845</td>
<td>3,094 4,405</td>
<td>20,154 25,650</td>
<td>24,561 31,900</td>
</tr>
<tr>
<td>Share of pop</td>
<td>5.3 5.8</td>
<td>12.6 13.8</td>
<td>82.1 80.4</td>
<td>100.0 100.0</td>
</tr>
</tbody>
</table>

Number of poor

<table>
<thead>
<tr>
<th></th>
<th>Food Poverty, '000</th>
<th>Basic needs '000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>179 138</td>
<td>369 325</td>
</tr>
<tr>
<td></td>
<td>464 581</td>
<td>888 1,136</td>
</tr>
<tr>
<td></td>
<td>4,656 5,233</td>
<td>8,223 9,926</td>
</tr>
<tr>
<td></td>
<td>5,305 5,965</td>
<td>9,481 11,388</td>
</tr>
</tbody>
</table>

Percentage of poor:

<table>
<thead>
<tr>
<th></th>
<th>Food poverty</th>
<th>Basic needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991/92</td>
<td>3.4 2.3</td>
<td>3.9 2.9</td>
</tr>
<tr>
<td>2000/01</td>
<td>8.7 9.7</td>
<td>9.4 10.0</td>
</tr>
</tbody>
</table>

Source: (URT, 2002)

There are also obvious increases in income inequalities between the population in the big cities. The measure of inequality can be calculated on a per capita basis by the use of Gini coefficients. This measure summarises how equal or unequal an income or expenditure distribution is. Higher values indicate greater inequality. Table 2.3 below shows the Gini coefficients for 1991/92 and 2000/01. Income inequality has increased slightly over the decade, with the largest increase taking place in Dar-es-Salaam (URT, 2002).

per adult equivalent per day was tabulated for all food items whose consumption was recorded in the survey. The quantities of each item consumed were then adjusted by a constant factor so that the sum of their calorific valued equalled 2,200 calories per day, the minimum necessary for an adult. These quantities were then priced using median unit prices calculated from the survey data. The sum of these values gave the cost of meeting the minimum adult calorific requirement with a food consumption pattern typical of the poorest 50% of the population. This is the food poverty line. It was calculated separately from the two surveys, so the poverty lines are based on the food consumption patterns of each year.

A higher ‘basic needs’ poverty line was also calculated. This makes allowance for the fact that individuals need more than just food to live. The share of expenditure on non-food items in the poorest 25% of the population was calculated for both survey years. This fraction was used to increase the food poverty line to allow for non-food consumption (URT, 2002).
Table 2.3. Gini coefficients by geographical location

<table>
<thead>
<tr>
<th></th>
<th>Dar-es-Salaam</th>
<th>Other urban areas</th>
<th>Rural area</th>
<th>Mainland Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992/92</td>
<td>0.30</td>
<td>0.35</td>
<td>0.33</td>
<td>0.34</td>
</tr>
<tr>
<td>2001/01</td>
<td>0.36</td>
<td>0.36</td>
<td>0.33</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Source: (URT, 2002)

Another measure of income inequality is the share of total consumption accounted for by different expenditure classes. In Table 2.4, individuals are divided into five groups based on their level of consumption. The poorest fifth of the population accounts for just 7% of total consumption expenditure, while the richest fifth accounts for 48% in Dar-es-Salaam. This measure shows inequality to be highest in Dar-es-Salaam and lowest in rural areas. It also shows that inequality has generally increased over the decade, particularly in Dar-es-Salaam. The total consumption expenditure for the poorest fifth of the population has decreased from 7.8% to 6.7% while that of the richest fifth has increased from 43.3% to 48% between 1991/92 and 2000/1 in Dar-es-Salaam (Table, 2.4).

Table 2.4. Percentage of consumption expenditure by quintile

<table>
<thead>
<tr>
<th>Quintile</th>
<th>Dar-es-Salaam</th>
<th>Other urban areas</th>
<th>Rural Areas</th>
<th>Mainland Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1991/92</td>
<td>00/01</td>
<td>91/96</td>
<td>00/01</td>
</tr>
<tr>
<td>Q1-poorest</td>
<td>7.8</td>
<td>6.7</td>
<td>7.1</td>
<td>6.7</td>
</tr>
<tr>
<td>Q2</td>
<td>11.9</td>
<td>10.4</td>
<td>11.3</td>
<td>11.2</td>
</tr>
<tr>
<td>Q3</td>
<td>15.1</td>
<td>14.5</td>
<td>15.3</td>
<td>15.5</td>
</tr>
<tr>
<td>Q4</td>
<td>21.9</td>
<td>20.0</td>
<td>21.0</td>
<td>22.1</td>
</tr>
<tr>
<td>Q5- richest</td>
<td>43.3</td>
<td>48.4</td>
<td>45.3</td>
<td>44.5</td>
</tr>
<tr>
<td>Ratio of Q5:Q1</td>
<td>5.6</td>
<td>7.2</td>
<td>6.4</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Source: (URT, 2002)

This section has shown that the absolute number of people who are poor is increasing in Dar-es-Salaam due to high population growth and the income gap and expenditure is increasing between the low and high income earning groups. The general picture of increasing poverty and inequality given in this section has given a basis for assessments on how households of different levels of socio-economic situation think they can afford to travel in Dar-es-salaam.
2.3 Households’ socio-economic situation and the utility of public transport in Dar-es-Salaam

The level of income reflects the inclination to spend on available services. We examine the pattern of transportation for both low and high income income groups. As described earlier in the methodology section, the case study areas of Mikocheni, Tabata and Kurasini were categorised as dominated by high income earners, and those of Ilala, Mbagala and Kawe as areas dominated by low income earners. The classification of case study areas according to income was intended to find out for example how respective groups travelled and how they experienced the quality of public transportation that is being supplied in Dar-es-Salaam. The classification of income groups based on the quality of the built environment reflected the occupational characteristics of the respondents in the case studies (see Figure 2.1). On one hand, people with secure and stable (high) income were the civil servants and those engaged in rather large business activities. This phenomenon was distinct in the high income case study areas. On the other hand, the low income group mainly fell into the categories of self-employment, mainly petty trading. This area of occupation predominantly consists of activities such as food vending, kiosk ownership, selling of charcoal, second-hand garments, fish, food etc.

![Figure 2.1. Occupational characteristics in the six case-study areas](image)

However, the criterion that we used for classifying areas into socio-economic strata could not bring about an absolute homogeneity of specific households. Even in high income areas, there are families with low income characteristics. It is common in an African context to find families with a number of dependants/relatives who are not employed. For the most part, dependants in urban areas include the retired or old parents, school leavers who either wait to join higher education or are looking for job opportunities, relatives on transit...
travelling to other parts of the country and long-term visitors who simply come to stay. One can also find a high income earner living in an area classified as low income for many reasons, including a shortage of building plots in a high income areas. Even so, as Figure 2.1 shows, Mikocheni, Tabata and Kurasini showed higher proportions of business owners and civil servants than was the case in Mbagala, Kawe and Ilala. The proportion of respondents employed in big business plus civil service in the respective case study areas was: 40% at Mikocheni, 36% at Kurasini, 27% at Tabata, 19% at Ilala, 17% at Mbagala and 7.5% at Kawe. It was also in the high income areas that the proportion of those who owned private cars was relatively high, i.e. Kurasini 43%, Tabata 41% and Mikocheni 60%. On the other hand, in low income areas the proportion of those who owned private cars was relatively low, i.e. 5% at Mbagala, 11% at Ilala and 6% at Kawe (see also Figure 2.2).

![Figure 2.2. Private car ownership in the six case study areas](image)

With the absence of cars in so many households, evidently daladala is the dominant mode of motorised public transport in Dar-es-Salaam. As will be shown later in Chapter 5, the level of fares charged for travelling by bus operators is low, yet a substantial proportion of the interviewees still thought that their weekly expenditure for public transport was high i.e., 51.4% at Kawe, 60% at Mbagala, 46% at Tabata, 53% at Ilala, 58% at Kurasini and 49% at Mikocheni.

The feeling among people that travelling expenses were high was not limited only to areas dominated by low income people, instead it was also common in areas that were classified as high income. It was within high income neighbourhoods that car possession was most common. It was common for high income households to consider the use of private cars problematic because it
squeezes the households budget owing to expenses incurred on fuel. Extended families, which means living with economic dependants who are unemployed, is very common phenomenon in many households living in the towns (see Table 2.5). High income group respondents in this study had one common desire - to cut down their current expenditure on cars by travelling by public transport if possible. An example of this wish was given by one respondent who said:

“Even if we are considered a well-off family by Tanzanian standards, we need to reduce our costs nevertheless. We are the extended family - we support our parents and other relatives. If we had a good and efficient public transport, we would channel those savings arising from minimal use of private transport towards supporting our relatives who depend financially on us” (Male aged 50 years) – Mikocheni study area.

However, the majority of private vehicle owners asserted that they would only use the present public transport if they had no other alternative. The common view among them was that they could not subject their school-going children or themselves to the poor public bus services provided in Dar-es-Salaam at present. Furthermore, there was a widely expressed willingness to pay more for travelling if the bus services were improved:

“It should be possible to institute a public system which allows those that were financially capable to enjoy higher services at own cost” (Male aged 49 years) – Mikocheni study area.

Table 2.5 Mean proportion of dependants

<table>
<thead>
<tr>
<th></th>
<th>Dar-es-Salaam</th>
<th>Other urban areas</th>
<th>Rural areas</th>
<th>Mainland Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBS 1991/92</td>
<td>0.30</td>
<td>0.34</td>
<td>0.42</td>
<td>0.40</td>
</tr>
<tr>
<td>HBS 2000/01</td>
<td>0.30</td>
<td>0.36</td>
<td>0.45</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Source: (URT, 2002)

As shown earlier in this section, a large section of the population in Dar-es-Salaam has low income characteristics and that impacts on the degree of utilisation of public transportation. Low income households’ expenditure on public transport goes up to 45 per cent in Dar-es-Salaam (Kombe et. al, 2003). As highlighted by the UN (Habitat, 1993), income affects the way in which people choose to travel. It sets limits on their capacity to acquire a personal vehicle and also, given that trip-making is relatively inelastic to income, it sets a limit on how much of a particular mode they can ‘consume’ in order to achieve their desired level of travel. On the other hand, a certain extent of trip-
making must be a necessary part of life irrespective of income level. Only households made up of solely of the very poor, the unemployed or retired will not participate in these committed trips (UN-Habitat, 1993). Although, many respondents in the case study areas in Dar-es-salaam think that travelling is expensive because of their low income earnings, yet they have to find ways to reach important services like employment, hospital, schools etc. Hard choices that people take include walking which take a long time to reach destinations or spending money for fare which would have been used for other basic necessities.

2.4 Declining economic capacity and provision of physical infrastructure in Dar-es-salaam.

During the first decade of independence, Tanzania was fairly successful in terms of meeting basic human needs and performed well in terms of achieving economic growth. The situation changed in the mid-1970s. In 1974, the country suffered a major balance of payments deficit as a result of factors such as falling primary agricultural commodity prices, the first of the oil price rise shocks and drought. Fifty percent of the export earnings in that year (1974) was used to import food and in the first half of 1979, foreign exchange reserves fell to less than that required to procure basic necessities for two weeks (Kironde, 1995).

The economic crisis meant that relatively little could be spent by government and this happened under a situation of rapid urban growth. With limited economic resources available to the government to spend, direct investment in infrastructure and services in existing and new planning schemes became highly constrained (Kironde, 1995). As also highlighted by UN-Habitat (1993), Dar-es-Salaam experienced a decline in expenditure on services and infrastructure of 8.5% a year from 1978/9 through 1986/7 measured in constant currency units. If Dar-es-Salaam's population growth is taken into account (see Figure, 3.1), the per capita decline in expenditure comes to 11% per year over the period studied. While Tanzania’s economy as a whole stagnated during much of this period, the decline of urban infrastructure fabric was occurring at a much more faster rate (Habitat 1996:91). The number of informal settlements in Dar es Salaam’s increased from 25 in 1979 to 52 in 2002 (Lupala, 2002). As highlighted by Kironde (1995), the government failed to service new areas required for the city’s development and also, could not effect new planning schemes for the future growth of city. It was during this decade that the major part of the road infrastructure that was laid down in the 1960s and early 1970s deteriorated tremendously.
2.5 Concluding remarks on the poverty-transport nexus in Dar-es-Salaam

To a certain extent, the poor performance of economic growth in Tanzania after independence has financially impaired government investment in urban areas in the transport infrastructure that would be necessary to support a well functioning urban public transportation system. The deterioration in public transport services in urban areas such as Dar-es-Salaam has been exacerbated by the influx of population from rural hinterlands into the city to look for employment opportunities. Thus, the increasing population not only strains the existing public transport facilities but also a substantial proportion of such people realize that public transport costs are prohibitive, as most of them are unemployed or have very low paid jobs. Accordingly, the lack of employment and rapid population growth in Dar-es-Salaam have partly been the cause of an increasing proportion of poor people in the population. In addition to this increase in the poor, there is also an increasing incidence of income and expenditure inequality. By the same token, public transport services wanted by high income people are of higher standards than those currently provided in Dar-es-Salaam. The city authorities face challenges that call for strategies to provide a public transport system that addresses the following issues: (a) a city in a developing country with constrained financial resources to invest in a sustainable public transport system; (b) a large community that is unemployed or receiving so low wages that they have difficulties paying for public transport; (c) a section of high income people whose desire is to be given a high standard of public transport services at a cost.
Chapter Three

3.0 The Historical perspective: The dynamics of public (bus) transport and management in Dar-es-Salaam

3.1 Before independence

Public (bus) transport in Dar es Salaam dates back to the British colonial era when in 1949 a privately owned British company known as the Dar es Salaam Motor Transport Company (DMT) was started to provide bus services in the city. The company’s transport services were confined within the then officially recognised urbanised area of about 2-3 kilometres radius. But, as shown in chapter one, both the built-up area and the population of Dar-es-salaam were smaller than they are today. In the 1940’s the colonial policies were prohibitive for Tanzania’s population to migrate into the cities. This policy meant that Dar-es-salaam’s population remained relatively low until during independence in 1961. In view of this, bus transport services that DMT provided before independence corresponded to a great extent with the then demand to travel apparently due to the smaller size of the city and its population size. The good quality of public transport services offered by DMT continued relatively well until the mid-1970s. According to bus commuters of that time, buses adhered to timetables and delays were minor (Kombe et al. 2003).

3.2 After independence

In 1970, DMT was nationalised, and in 1974 it was renamed ‘Usafiri Dar-es-Salaam’ (UDA), meaning literally ‘Public Transport in Dar-es-Salaam’. The nationalisation of DMT was in line with the then socialist ideology that the ‘commanding heights’ of the economy ought to be under the control of the state. UDA was thus owned jointly by Dar es Salaam City Council with 51% of the shares, and the National Transport Company (a government agency) holding 49% of the shares (Kombe et al. 2003). As the sole provider of bus services in Dar-es-salaam, UDA operated fairly satisfactorily immediately after it acquired the assets of DMT. It inherited good quality buses that were comfortable and well-suited to the city’s public transportation. It also carried forward DMT’s basic transport planning skills among its staff, namely planning for bus route networks, number of routes, route length, bus terminals and principal bus stop locations. However, by and large, UDA operated under the auspices of the government and therefore the fare levels it set had to get cabinet approval. Fare levels were regulated according to what the government thought the majority of the people could afford to pay, with no investigation or consideration of actual operating costs. The fare levels sanctioned by the government were too low to cover operating costs, and the government could not cover the financial gap. The financial deficits that occurred as a result of this situation had a devastating effect on the efficiency of UDA in its delivery of services. This problematic situation occurred at the same time as a dramatic growth in travel demand during post-independence. Dar-es-salaam’s population
grew rapidly (Figure 3.1), while the number of UDA buses declined (Figure 3.2).

![Figure 3.1. Population growth in Dar es Salaam 1891-2001 (Source: Lupala, 2003).](image)

The bus fleet included standard single-decker buses with a carrying capacity of 90 passengers and minibuses with a carrying capacity of 30-50 passengers. (Source: URT, Budget Speech for Year 1983/84, cit. Kombe et al. 2003,

![Figure 3.2. UDA fleet size and number of passengers carried, 1975 – 2000.](image)

Along with the deterioration in UDA’s capacity to provide adequate number of buses, there was also a deterioration in public transport infrastructure, namely the use of unmarked bus stops and terminals, the absence of bus bays, shelters,
posts, benches, destination signboards and timetables. On the whole, the main factors that impaired the public transport services offered by UDA were:

- Lack of adequate finance (from the main financier, the Tanzanian government) to purchase buses and spare parts to extend the bus fleet in order to meet public travel demand;
- Lack of qualified technicians, engineers and transport planners to carry out maintenance and scheduling of vehicles;
- Poor road conditions characterised by extensive potholes that inflicted mechanical damage on the buses. As a result, UDA services became further constrained by an increasing number of unserviceable buses;
- Low fare rates that did not reflect the real market price for travelling.

Lack of foreign exchange and a generally harsh economic situation made the running of the public bus service come to a near halt. Workers were constantly reporting late to work due to lack of transport. The government of Tanzania responded to the transport crisis that faced Dar es Salaam by allowing all ministries, government departments and parastatal organisations to provide transport to their employees. Accordingly, many employing organisation bought buses to transport own employees. However, this did not adequately satisfy the growing demand for transport.

3.3 Emergence of privately owned daladala buses

Illegal private transport operators emerged in the late 1970s and early 1980s due to the gross failure of UDA to offer adequate transport services to meet public travel demand. These illegal operators charged a fare of 5 shillings instead of the 1-1.5 shillings charged by UDA, yet the demand for the illegal operators was high, a clear testimony to the enormous gap between the bus services supplied by UDA and the public travel demand. The services of the illegal operators were popularly named ‘dala-dala’ because of the then exchange rate of five Tanzanian shillings to one US dollar. Since then, dala-dala has become the term used to refer to all privately owned buses providing public transport services in the city. When dala-dalas first emerged, the government authorities made numerous efforts to prohibit their operation but such efforts were unsuccessful and the dala-dala buses continued to increase to meet existing demand.

In 1983 the government of Tanzania issued a directive officially to allow the operation of dala-dalas in order to solve the city’s transport problem. This was in part to comply with the Economic Reform Programme (ERP) and also resulted from the persistent public transport problem in Dar-es-Salaam. The official recognition of dala-dalas as a mode of public transportation compelled
the government to set up a system for organising the operations of the dala-dala buses. Accordingly, the Central Transport Licensing Authority (CTLA), a department within the Ministry of Communication and Transport, was given the responsibility for issuing licenses to vehicles operating in Dar-es-Salaam. All the operators had to apply to the CTLA for licenses and route permits. The CTLA did not issue licences based on the right to ply specific routes, but instead issued permits and road licences valid on all Dar-es-Salaam roads. For that reason, competition and chaos among dala-dala operators became common as buses could operate on any route which they thought had more passengers.

In view of the chaotic operations of dala-dalas that became evident in Dar-es-Salaam, the Regional Commissioner initiated a takeover of management of dala-dala services from the CTLA. In 1999, the Regional Commissioner formed an agency - the Dar-es-Salaam Region Transport Licensing Authority (DRTLA) - to license commuter buses within the Dar-es-Salaam region.  

Today the process followed by a prospective bus operator in Dar-es-Salaam starts with the submission of an application to the DRTLA. To obtain a license and route permit the operator must submit a vehicle registration card, business licence tax clearance certificate and vehicle insurance documents along with his initial application. Thereafter, the vehicle must be presented to the traffic police for a roadworthiness inspection. Once the vehicle inspection certificate has been obtained, it must be presented to the DRTLA, which considers the application and grants the bus-operating licence. The licence is usually issued for 6 months or one year at a time (depending on the financial status of the applicant). Vehicles are expected to operate on specific roads. Each route is allocated a certain number of vehicles, and each vehicle is given a colour for that specific route (Figure 3.3).

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8 Interview with executive secretary – DRTLA, May—2003
<table>
<thead>
<tr>
<th>Activity</th>
<th>Actors</th>
<th>Other requirements / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submission of application for bus operation</td>
<td>• Private operator (applicant)</td>
<td>• A copy of vehicle registration card</td>
</tr>
<tr>
<td></td>
<td>• DRTLA</td>
<td>• Business license clearance certificate</td>
</tr>
<tr>
<td>Present vehicle to traffic police for road worthiness inspection</td>
<td>• Private operator (applicant)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Traffic Police</td>
<td></td>
</tr>
<tr>
<td>Submitting of vehicle inspection certificate to DRTLA</td>
<td>• Private operator (applicant)</td>
<td>• Road worthiness inspection certificate</td>
</tr>
<tr>
<td></td>
<td>• DRTLA</td>
<td></td>
</tr>
<tr>
<td>Present vehicle to DRTLA for physical inspection as a passenger vehicle</td>
<td>• Private operator (applicant)</td>
<td>Here the vehicle is inspected whether it meets the standards for a passenger vehicles e.g. seats arrangement, fire extinguishers, first aid tool kit, etc</td>
</tr>
<tr>
<td></td>
<td>• DRTLA</td>
<td></td>
</tr>
<tr>
<td>Painting of the vehicle to reflect the route of operation</td>
<td>• Private operator (applicant)</td>
<td>Vehicles are usually painted a strip that distinguishes one route to other. This is done in designated garages and workshops by the DRTLA.</td>
</tr>
<tr>
<td></td>
<td>• Appointed workshops for painting of daladala vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• (VETA) workshops</td>
<td></td>
</tr>
<tr>
<td>Issuance of license</td>
<td>• Private operator (applicant)</td>
<td>This is issued upon scrutiny and satisfaction of the above requirements.</td>
</tr>
<tr>
<td></td>
<td>• DRTLA</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 3.3. Procedure for obtaining a license for bus operation (Source: Interview with DRTLA, May 2003)*

However, the DRTLA lacks the professional competence to carry out proper bus route planning. Unlike the UDA or DMT, the DRTLA had neither traffic inspectors nor traffic planners among its staff. Instead, it recruited field assistants employed on a temporary basis to carry out transport planning. The DRTLA has a shortage of finance to recruit and pay field assistants, and for that

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9 Interview with executive secretary – DRTLA, May—2003
reason it is hard for the DRTLA to retain even low-skilled staff. The secretary of the DRTLA (in our interview) concedes that today they assign bus routes merely based on intuition and simple methods including: i) assessments made by traffic counts on different routes; (ii) simple on-site observations of concentrations of people in different areas in the city; and iii) hasty and generalised assessments of income distribution according to the quality of built-up areas.

Furthermore, the DRTLA acknowledges that problems constraining the management of (dala-dala) public transport in Dar-es-Salaam include: i) a lack of inspectors who could ensure that operators adhered to the route to which they were allocated; ii) only 30% of dala-dala vehicles are roadworthy despite the existence of regulations banning such vehicles from the roads; iii) the high accident rates due to poor driving skills; iv) the overcrowding of passengers in buses and congestion of vehicles on the roads, which leads to delays in arriving at destinations.

3.4 The City Council’s Bus Rapid Transit (BRT) project

The 1997 Transport and Licensing Act which was amended in 1999 empowers city authority to manage public transport in Dar-es-Salaam. In light of this, and as a result of chronic public transport problems, the mayor of Dar-es-Salaam announced that the city will begin to develop a new city-wide mobility plan for public transport. Speaking at a workshop organised by the city council on May 13, 2003, the mayor said that the proposal will include plans for a world-class Bus Rapid Transit system (ITDP, 2003). According to a City Council planner, the planned Bus Rapid Transit (BRT) would either replace the existing poor and chaotic public city transport vehicles (dala-dalas) or reorganise them to operate more efficiently alongside BRT. The BRT vision is to embark on a modern public transport system at a reasonable cost to the users with quality and high-capacity buses that meet international service standards, reduce travelling time and that are environmentally friendly. The target is to make the BRT project operational by 2005 (Guardian, 2003.10.11). Some members of the Dar-es-Salaam City Council travelled to Colombia in 2002 with some representatives of the Dar-es-Salaam Bus Owners Association (DARBOA) on a study visit to see how BRT is managed. The City Council has thus identified the Colombian capital, Bogota, as a place from which to learn how BRT works.

Under its proposed scheme, the Bus Rapid Transit (BRT) programme, the City Council has earmarked some major roads in Dar-es-Salaam for expansion in order to improve the city’s public transportation. Roads identified in the initial phases of the BRT programme include Nyerere, Mandela, Morogoro and Ali Hassan Mwinyi. The intention of the City Council is to expand these roads in order to provide room for another lane to be used by passenger buses that will serve the public under the BRT programme. No other vehicles will be allowed to use these additional lanes set aside for BRT. According to the statement from
the City Council, the buses to be used in the BRT programme would be owned and operated by private firms (Guardian, 2004.01.20).

The city council in Dar-es-Salaam has already formed a unit – Project Monitoring Unit (PMU). By September 2004, the PMU constituted of a project manager, a highway engineer, a project coordinator, a transport economist, an accountant, a secretary and an office assistant. The steering committee for the BRT project constitutes of the mayor of the Dar-es-salaam City, who is also the chairperson, directors from the three municipalities of Dar-es-Salaam, Tanzania Roads (TANROADS) —an agency responsible for the construction and maintenance of roads in Tanzania in the ministry of works and Road Fund—an agency under the ministry of works responsible for collection of funds from fuel levy.

The role of PMU is to oversee the implementation of the BRT scheme including the provision of necessary transport infrastructure to enable the operation of BRT. The sources of funds to execute the project will be obtained from the World Bank, central government and municipalities. There is already a political commitment and pledged support for the project by the councillors of Ilala, Kinondoni and Tembeke municipalities. Chapter 7, analyses further the challenges faced in implementing the proposed scheme for BRT in Dar-es-Salaam.

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10 Interview with the transport economist (PMU) – September, 2004.
11 ibid
Chapter Four

4.0 Air pollution in Dar-es-Salaam

In this chapter we review the evidence of current air pollution and noise levels in Dar-es-Salaam with the focus on traffic. This is done with the help of measurements and statistics, but the main material is the results from household and stakeholder interviews carried out during phase one and two of the field work study. This chapter starts with a short introduction about the effects of vehicular exhausts and noise pollution, plus pollution by lead particles from the use of leaded petrol and the effects of petrol adulteration. This is followed by a review of some measurements of air pollution levels in Dar-es-Salaam and thereafter an analysis on how households experience the pollution and noise situation in their neighbourhoods, what they know about the effects of air pollution and their awareness of climate change. This picture is complemented with stakeholder interviews in which topics such as evidence of the effects from air pollution on health are discussed. We conclude by describing the known situation concerning air pollution and noise in Dar-es-Salaam in the last section of this chapter.

4.1 Effects of pollution and noise from traffic

Combustion of fossil fuels produces a number of substances that directly impact upon human health. In the ideal situation, the only result of such combustion is water vapour and carbon dioxide, neither damaging to human health, although carbon dioxide is the main greenhouse gas with impacts on the global climate. However, in reality, combustion is most often not complete and results in the production of substances such as carbon monoxide (CO) and particles (a basic component of particulate matter). Other pollutants due to incomplete combustion processes include volatile organic compounds (VOCs), oxides of nitrogen (NOx) and sulphur dioxide (SO\textsubscript{2}). If lead has been added to the fuel, lead aerosols are also produced. These by-products from combustion, apart from damaging human health, also react in the environment, producing secondary transport pollutants such as sulphuric acid, sulphates and ozone. Atmosphere and climate, together with urban form, population and street density, influence the extent to which populations are exposed to primary and secondary pollutants. The age of vehicles also affects pollution levels and studies have shown that older vehicles account for a disproportionate share of air pollution in a given location. A badly maintained older vehicle can emit 100 times the pollutants of a properly maintained modern vehicle (ETC, 1995). In Dar-es-Salaam many buses (daladala) and other vehicles are not only second-hand, but rather third-hand, fourth-hand or more, and are aged between 10 and 15 years\textsuperscript{12}.

Suspended particulate matter (SPM) has been identified as perhaps the most critical transport sector pollutant for developing countries (Gorham, 2002). Its health effect on humans is significant, while technical equipment to control it is

\textsuperscript{12} Interview with coordinator for the preparation of Environmental Legislation in Tanzania.
costly. Effects on human health from inhaling air with elevated levels of SPM include a reduction in lung function, increased infections and even mortality. The norms provided by US Environmental Protection Agency (EPA) for total SPM are: 50 ug per m$^3$ for the annual average and 150 ug for the 24-hour. The US EPA has stricter norms for inhalation of particles less than 10 um aerodynamic diameter (US EPA, 2004). In areas with heavy vehicular traffic, it is common to find high concentrations of particles that are less than 0.2 um in aerodynamic diameter (Schwela and Zali, 1999). Health effects from inhalation of air polluted with SPM may be long-term.

Sulphur dioxide (SO$_2$) causes irritation in the respiratory tract when inhaled, resulting in wheezing and shortness of breath, especially in asthmatics. Children under five years old are especially vulnerable to elevated levels of sulphur dioxide. Longer periods with increased levels of SO$_2$ are known to cause an increase in morbidity. The World Health Organisation (WHO) guidelines for ambient concentrations of SO$_2$ are: 500 ug per m$^3$ (0.175 ppm) for 10 minutes, 125 ug per m$^3$ (0.044 ppm) for the 24-h average and 50 ug per m$^3$ (0.017 ppm) for the annual average (Schwela and Zali, 1999).

Nitrogen dioxide (NO$_2$) is an irritant gas and its polluting effects are generally attributed to its oxidative capacities. Nitrogen dioxide is a contaminant in the indoor and outdoor environment and inhalation affects lung function. Use of gas stoves and kerosene heaters are sources of pollution indoors. WHO has proposed a 1-hour guideline of 200 ug per m$^3$ (0.11 ppm) and an annual guideline of 40 ug per m$^3$ (0.021 ppm) (Schwela and Zali, 1999).

Carbon monoxide (CO) is rapidly absorbed in the lungs and is taken up in the bloodstream, where it binds to haemoglobin and impairs the oxygen carrying capacity of blood. This hampers oxygen transport to tissues and may damage organs, particularly the heart, the central nervous system and also the foetus. The negative health effects from carbon monoxide are well documented and the following guidelines have been proposed by WHO: a maximum permitted exposure of 100 mg per m$^3$ (90 ppm) for 15 minutes; 60 mg per m$^3$ (50 ppm) for 30 minutes; 30 mg per m$^3$ (25 ppm) for 1 hour; and 10 mg per m$^3$ (9 ppm) for 8 hours (Schwela and Zali, 1999).

Volatile organic compounds (VOCs) contribute to the formation of ozone (O$_3$), a substance that impairs respiratory function and causes damage to forests and crops. Typical reactions to inhalation of ozone-laden air are airway inflammation, a running nose and reduction in lung function, particularly severe among vulnerable people. The WHO guideline for ozone is an 8-hour (moving average) value of 120 ug per m$^3$ (0.06 ppm) (Schwela and Zali, 1999). Table 4.1 summarises guidelines for air pollution with regard to health impacts including those for lead, see further below.
### Table 4.1 Guidelines for air pollution for some substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>Time-weighted average</th>
<th>Averaging time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended particulate matter (PM(_{10}))</td>
<td>150 ug/m(^3)</td>
<td>24-hours</td>
</tr>
<tr>
<td></td>
<td>50 ug/m(^3)</td>
<td>Annual average</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>500 ug/m(^3)</td>
<td>10 minutes</td>
</tr>
<tr>
<td></td>
<td>125 ug/m(^3)</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td>50 ug/m(^3)</td>
<td>Annual</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>200 ug/m(^3)</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>40 ug/m(^3)</td>
<td>Annual</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>100 mg/m(^3)</td>
<td>15 minutes</td>
</tr>
<tr>
<td></td>
<td>60 mg/m(^3)</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td>30 mg/m(^3)</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>10 mg/m(^3)</td>
<td>8 hours</td>
</tr>
<tr>
<td>Ozone</td>
<td>120 ug/m(^3)</td>
<td>8-hour moving average</td>
</tr>
<tr>
<td>Lead</td>
<td>0.5 ug/m(^3)</td>
<td>Annual</td>
</tr>
</tbody>
</table>


Noise can be a serious health hazard and the health effects of hazardous noise exposure are now considered to be an increasingly important public health problem. Prolonged or excessive exposure to noise, whether in the community or at work, can cause permanent medical conditions, such as hypertension and ischemic heart disease. Noise can adversely affect performance, for example in reading, attentiveness, problem solving and memory. Noise above 80 dB may increase aggressive behaviour. A link between community noise and mental health problems is suggested by the demand for tranquillizers and sleeping pills, the incidence of psychiatric symptoms and the number of admissions to mental hospitals. Noise can cause hearing impairment, interfere with communication, disturb sleep, cause cardiovascular and psycho-physiological effects, reduce performance and provoke annoyance responses and changes in social behaviour. The main social consequence of hearing impairment is the inability to understand speech in normal conditions, which is considered a severe social handicap (WHO, 2004a). Whereas in the developed world hearing impairment is mostly restricted to the work setting, in cities in the developing world the problems are worse, with increasing hearing impairment due to community noise. For most people, a life-time's continuous exposure to an environmental average noise level of 70 dB will not cause hearing impairment. An adult person's ear can tolerate an occasional noise level of up to 140 dB, but

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13 According to WHO this level will cause an increase in hospital admissions for respiratory conditions with 20% (WHO, 2004).
for children such an exposure should never exceed 120 dB. The guidelines for noise issued by WHO set a target of maximum 50-55 dB(A) for outdoor living areas and target of maximum of 35 dB (A) for indoor living areas. Higher values cause annoyance and speech intelligibility (WHO, 2004a).

4.2 Lead and other additives in petrol - health impacts and efforts to abolish them

Refineries have historically added tetraethyl lead to petrol blends in order to avoid more costly methods for raising octane ratings. In those countries that do not use unleaded petrol, 80-90% of the lead in ambient air can usually be attributed to Pb additives in fuel (Schwela and Zali 1999). Most of the lead in ambient air occurs as fine particles that can be absorbed thorough the lung, the skin or through digestion. Children in particular are known to have a high lung deposition rate of lead and as they are frequently in touch with soil, they are likely to consume lead to a higher extent than adults. Lead causes a range of serious and well documented conditions such as anaemia, impairment of learning capability, and a reduction in intelligence and fine motor-coordination among children. It has been shown that blood Pb concentrations as low as 100-150 ug per litre are associated with IQ impairment in children (Needleman, 1992). Other health impacts are chronic deficiencies in kidney function, altered reproductive capacities and elevated blood pressure. Nutrient deficiencies increase the risk of adverse health effects from lead exposure. Lead levels in blood in children in Dakar Senegal were found to be 107 ug per litre, in a medium-sized town in Nigeria they were 106 ug per litre and in urban areas in South Africa they were 100 ug per litre. In rural areas levels were less than half those (World Bank, 2003). The WHO guideline for long-time exposure (annual average) to lead in air is 0.5 ug per m$^3$ (Schwela and Zali 1999). WHO also proposed guidelines for lead levels in edible products of 200-300 ug/kg product (WHO, 2004). A recent study conducted in Kenya found that lead levels in kale cultivated in the Nairobi inner city were 5000 ug/kg and for kale cultivated in residential areas about 1400 ug/kg. Lead levels in milk produced in the same areas exceeded WHO standards by a factor of two (Mutuku, 2004). In Tanzania, lead levels in vegetables harvested in horticulture at the Makumbusho area along Ali Hassan Mwinyi road showed concentrations of 30 ppb (URT, 2004). The effects of lead on human beings have well been described above. The probable sources of lead that contaminated vegetables grown near the roads in Dar-es-salaam is pollution from motor vehicles that use leaded petrol. Tanzania has not yet taken legal measures to prohibit the use or sale of leaded petrol.

During the past decade, the use of lead additives has been abolished in many parts of the world because of the dangers that it poses on the environment. However, in sub-Saharan Africa the use of leaded petrol is still common. By January 2004, only four countries sold unleaded petrol only and another six countries have set a date for phase-out (UNEP, 2004). Common lead levels in petrol sold in Africa are reported to be 0.4 to 0.6 grams of lead per litre (ibid).
These levels are comparable to those prevalent in Sweden at the end of 1960, 0.6 grams per litre, and it was during that time that alternatives to lead were first discussed there (Åslander, 1977). It has been estimated that the social costs of lead to mega cities in developing countries are over 10 times higher than would be the cost to refiners of removing lead from their products (Gorham, 2002).

The abolition of leaded petrol in sub-Saharan Africa (SSA) has become an issue of international concern recently. The continued use of leaded petrol not only contributes to lead exposure, but also it is widely known that leaded fuel prevents the introduction of cleaner engines and catalytic converters which are necessary to achieve significant reductions in air pollution. Most second-hand cars now imported to sub-Saharan Africa have catalytic converters upon arrival. However their function is destroyed when leaded fuel is used (World Bank, 2003). Some international agencies and network of organisation have already started action plans to phase out the use of leaded fuel in SSA. The Clean Air Initiative in Sub-Saharan African Cities (CAI-Africa) was launched in 1998 by the World Bank. Since June 2001, the major effort of the CAI-SSA is to eliminate lead from petrol in SSA by the end of 2005 (World Bank, 2004).

The Dakar Declaration on the phasing out of leaded petrol in Sub-Saharan Africa was held in June 2001. During this first regional conference on lead phase-out in Sub-Saharan Africa, it was agreed that leaded petrol will be completely phased out in all Sub-Saharan African countries as soon as possible, and by 2005 at the latest. It was also decided to create the AFRICACLEAN network of air quality practitioners (at all levels) both throughout the region and internationally.

A Partnership was established at the World Summit on Sustainable Development in September 2002 to reduce vehicular air pollution in developing countries through the promotion of clean fuels and vehicles. In Sub-Saharan Africa the focus is on phasing out use of leaded petrol and reducing the sulphur content in diesel according to information about the progress in this partnership (February 2004).

An Action plan for phasing out leaded petrol in East Africa was adopted in 2002 when representatives from governments, the private sector and civil society met in Nairobi, Kenya. The meetings supported the resolutions from Dakar and encouraged development of national action plans.

According to a study (World Bank, 2003), 85% of all petrol sold on the world market today is lead-free and the price of unleaded petrol is usually lower than that of leaded. According to the latter study, for many countries in Sub-Saharan Africa (SSA), phasing out leaded petrol is a fairly easy task as all petrol is imported due to lack of refinery plants. Tanzania is an example where the only refinery was closed down in a few years ago. However, an interview with
British Petroleum in Dar-es-Salaam has shown that the initial costs of cleaning the tanks to remove leaded petrol is high. This is one of the factors that constrain the effort to phase out leaded petrol.

However, an action plan for lead phase-out in Tanzania published in 2003 (World Bank, 2003) revealed that phasing out leaded petrol could save as much as 2 million US dollars per year with current fuel prices. Furthermore, changeover costs were estimated to be negligible, maintenance costs for cars were expected to be lower and the phasing out of leaded petrol was identified as a necessary first step in a more comprehensive approach to air quality management. Regarding cars with soft valve seats, common among a small proportion of cars manufactured before 1980, the impacts were considered to be minor and a non-issue. The Action Plan also identified several other issues for a more comprehensive approach to air quality management. These included improved fuel quality and fuel specifications; upgrading the quality of vehicle imports and emission controls; establishing baseline inventories of key pollutants and health effects and developing an appropriate public information campaign.

Petroleum adulteration also increases emission in to the air. Adulteration is a phenomenon of introducing foreign substances into gasoline or automotive diesel resulting in a product that does not conform with combustive requirements. Adulteration is carried out in order to maximize profit. Liquids with a unit price lower than that of petrol or diesel is used, commonly kerosene. Small amounts of kerosene in gasoline affects the Research Octane Number (RON), which is a crucial parameter for efficient combustion and power generation. The result is uncontrolled fuel combustion and inefficient engine operation, increasing emission of particles and other harmful substances. Adulteration of petroleum products is currently very common in Tanzania. Section 7.6 analyses the constraints and potentials for addressing the use of leaded petrol and other petroleum additives in Tanzania.

4.3 Measurements of air pollution in Dar-es-Salaam

As shown above, use of leaded petrol is still very common in Tanzania. The maximum level of lead according to the fuel specifications made by Tanzanian Bureau of Standard is 0.4 g per litre and the specification for sulphur content in diesel is 5 000 parts per million (ppm). Not all diesel sold in Tanzania has that high sulphur content, one can come across fuel with a content of 500 ppm and above. By 1995, it was estimated that the number of vehicles in use was 50,000 and the number of vehicles on the roads was increasing annually at a rate of 3% (Rwebangira, 1999).

There have been no systematic efforts to monitor air pollution levels in the city. There have, however, been some scattered measurements of air pollution, 

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14 Interview with Tanzania Bureau of Standards – Sept. 2004
15 Interview with BP(T) official
although none in the areas where we conducted household interviews. Some of the studies performed have been criticised for methodological deficiencies. Eight studies on air pollution levels have been found and are hereby presented in a chronological order. Investigations have established various degree of air pollution in Dar-es-Salaam as follows:

A study that measured concentrations of CO, SO$_2$, lead, NO$_2$ and SPM was carried out in 1992 by the Chemistry Department at the University of Dar-es-Salaam. Measurements were carried out at Askari Monument, Kariakoo, Gerezani, Muhimbili Medical Centre and Bahari Beach hotel using a Dräger detector, typically measuring air quality for 15 minutes and the relative overall uncertainty of results may be as much as 50%. Lead levels varied from 20-76 ug per m$^3$, CO levels from 15-94 mg per m$^3$, NO$_2$ from 190-430 ug per m$^3$, SO$_2$ from 1.2-3-4 mg per m$^3$ and SPM from 0.09-0.76 mg per m$^3$ (Henricson, 1998, University of Dar-es-Salaam, 1993). Compared to the WHO guidelines, the lead level was much higher than the recommended one for long-term exposure, CO levels were lower than the WHO guideline for short-term exposure (15 min) but higher than the level for exposure for 8 hours. NO$_2$ was higher than the WHO one hour guideline, SO$_2$ much higher than any guideline from WHO and levels of SPM higher than the WHO guideline for annual exposure.

A study was performed by Japan International Cooperation Agency (JICA) in 1994. Ambient air measurements were made on NO$_2$ and CO at the following locations: Changombe Road, Rashidi Kawawa Road and New Kigogo Road. Dräger detectors were used and levels of both pollutants were lower than the WHO guidelines for any exposure time (Henricson, 1998; JICA, 1995).

In 1995, levels of NO$_2$ and SO$_2$ were measured for one week at ten stations, none in the proximity of the areas we studied. The samples were placed on rafters of roofs three metres above the ground in the proximity of the road. Levels of both pollutants were found to be lower than any guideline proposed by WHO (Henricson, 1998).

In 1996, measurements of CO, SO$_2$ and SPM were made at five different locations: Samora Avenue/Morogoro Road, Kariakoo, Ubungo, DSM International Airport and Oysterbay. All pollutants were measured 2 m above ground with a Dräger sampler. Levels of CO were below WHO guidelines. Levels of SO$_2$ were 260-310 ug, above the levels for 24-hour and annual exposure proposed by WHO. Levels of SPM were up to 60 mg per m$^3$ (or 60,000 ug per m$^3$) and the results for this substance can be questioned (Centre for Energy, Environment, Science and Technology, 1996; Henricson, 1998).

In 1997 passive samplers were used in Samora Avenue to measure concentrations of NO$_2$, SO$_2$ and O$_3$ over a period of two weeks. Levels of NO$_2$ were 108 ug per m$^3$, twice as high as levels proposed by WHO for annual
exposure. Levels of SO_2 and ozone (O_3) did not greatly exceed proposed levels for annual exposure (Henricson, 1998).

Measurements of air pollution were carried out in Dar-es-Salaam in 2002 at six different locations, Ubungo, Askari Monument, Fire, Kariakoo, Uhuru primary school and University of Dar-es-Salaam Road. Samples of air were collected with manual air sampling methods and the samples were analysed for nitrogen dioxide, particulate matter and particulate lead. Nitrogen dioxide had a maximum value of 53 ug per m^3, which is above the WHO annual guideline (40 ug per m^3) but below the 1-hour guideline of 200 ug per m^3. PM ranged from 758 to 1343 ug per m^3, much above the guideline from US EPA (Environmental Protection Agency) for 24-hour exposure which is 150 ug per m^3. Levels of particulate lead were between 8 to 36 ug per m^3, greatly exceeding the WHO guidelines of 0.5 ug per m^3 (Jackson, 2004). As part of this study, a risk assessment was undertaken regarding people who spend a significant proportion of their time near the road, such as Uhuru primary school pupils and the adult population residing by the road. It was based on measurements of air pollution carried out during the same time. The result was that the risk realised was higher than what can be considered an acceptable limit according to the US EPA (Jackson 2004).

In 2003, measurements were carried out in eight bus stations where levels of sulphur dioxide, nitrogen dioxide and particulate matter were determined by taking samples on three occasions during one day. Results showed levels of sulphur dioxide far exceeding levels recommended by WHO in seven such stations. Concentrations of sulphur dioxide were between 1300-2480 ug/m^3. The levels of nitrogen dioxide ranged from 88-297 ug/m^3 and in 50% of the bus stations the levels exceeded the WHO recommendation for 1-hour exposure. The air in all the bus stations had PM concentrations above EPA guidelines of 150 ug/m^3 during 24-hours, the lowest value was 593 ug per m^3 and the highest value was 1211 ug per m^3. It was observed that the concentrations of pollutants increased with vehicle population. The highest correlation was between bus flow and pollutants, explained by the fact that many buses are fuelled by diesel, which contains sulphur and gives high emissions of PM (Kamuzora, 2003).

Also in 2003, measurements of the pollutants sulphur dioxide, nitrogen dioxide and suspended particles were carried out at eight different road junctions. Sampling was carried out on three occasions during one day. Results showed that levels of sulphur dioxide exceeded WHO recommendations by far, the measured range was 558-1161 ug/m^3. Nitrogen dioxide concentrations were 18-53ug/m^3, which is below the WHO guidelines and levels of SPM were 744-1161 ug/m^3, thus exceeding the recommended values by EPA for 24 hours. The correlation coefficient of pollutants and number of vehicles was high, with a

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16 Mwenge, Ubungo, Posta, Mnazi Moja, Kariakoo Market, Uhuru, Buguruni and Tandika.
17 Fire, Morocco, Tazara, Kariakoo, Ubungo, Posta, UCLAS and Akiba.
value of 0.906 for SPM, 0.64 for nitrogen oxides and 0.74 for sulphur dioxide (Furgeon, 2003).

Table 4.2 summarizes some of the more recent studies on the air pollution in Dar-es-Salaam. When the levels detected in these studies are compared with the guidelines adopted by WHO (and EPA for SPM), the conclusion is obviously that levels of lead, sulphur dioxide and SPM are particularly problematic. In fact, levels of sulphur dioxide in bus stations and cross-roads are so high that a reduction in normal lung function among healthy subjects may be expected even after a short period. The level of 2500 µg SO\textsubscript{2} per m\textsuperscript{3} recorded at some bus stations is close to the level at which a reduction in normal lung function with subjects at rest during a 10-minute period has been observed—2860 µg/m\textsuperscript{3} (WHO, 2004). Effects on sensitive subjects are expected even at levels of 250 µg/m\textsuperscript{3} (0.087ppm) in the presence of particulate matter. It is likely that there are many locations in Dar-es-Salaam with such an impact. The few measurements of lead carried out consistently showed much higher levels than the recommended ones. As current levels of air pollution seem to be closely correlated with traffic, this indicates that the current transportation system is indeed a main contributor to air pollution in the city. There are no recorded measurements of noise according to our knowledge.

Table 4.2: Levels of air pollution from some studies made in Dar-es Salaam

<table>
<thead>
<tr>
<th>Reference</th>
<th>Location of measurements</th>
<th>SO\textsubscript{2}, ug/m\textsuperscript{3}</th>
<th>CO, mg/m\textsuperscript{3}</th>
<th>NO\textsubscript{2}, ug/m\textsuperscript{3}</th>
<th>SPM, ug/m\textsuperscript{3}</th>
<th>Lead, ug/m\textsuperscript{3}</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEST, 1996</td>
<td>Roads with heavy traffic</td>
<td>260-310</td>
<td>-</td>
<td>-</td>
<td>Very high levels, questionable result</td>
<td>-</td>
</tr>
<tr>
<td>Henricsson, 1998</td>
<td>Samora Avenue</td>
<td>-</td>
<td>-</td>
<td>108</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Jackson, 2004</td>
<td>Roads with heavy traffic</td>
<td>-</td>
<td>-</td>
<td>Max 53</td>
<td>760-1340</td>
<td>8-36</td>
</tr>
<tr>
<td>Kamuzora, 2003</td>
<td>Bus stations</td>
<td>1300-2500</td>
<td>-</td>
<td>88-300</td>
<td>590-1210</td>
<td>-</td>
</tr>
<tr>
<td>Furgeon, 2003</td>
<td>Road junctions</td>
<td>560-1120</td>
<td>-</td>
<td>18-53</td>
<td>744-1120</td>
<td>-</td>
</tr>
</tbody>
</table>

4.4 Attitudes of households and other stakeholders to air pollution and noise

In the interviews carried out in the six case study areas, we asked several questions about air pollution. The questions focused on air quality and noise levels in the neighbourhood and enquiry on why air was clean or not clean or why the neighbourhood was noisy or not. Other inquiries included if people had heard that pollution from traffic may be harmful to health and the environment and if they had heard in what ways they believed it was harmful to the environment. In addition, households were asked if they had heard about climate change and what they thought were the effects and causes. On the whole, the questions were directed to 360 households in different areas, refer Section 1.7 of this report. In order to complement this rather extensive survey, interviews with relevant stakeholders was carried out in order to get their assessment on air pollution and its associated impacts in Dar-es-Salaam. In these interviews, emphasis was put on health aspect.

4.4.1 Air quality and noise levels in the case study areas

Concerning air quality, the answers from the households differed from one case study area to another depending on the proximity of living environment to vehicular traffic and other activities that were carried out in these areas. The average score for air quality on a scale from 1 to 5 (where 5 was a very clean and 1 dirty) varied between 2.4 and 4.0, with the highest value in the high income area of Mikocheni and the lowest value in the low income area of Ilala (see Table 4.3).

Table 4.3: Average score on a question to households of how clean the air is in their neighbourhood. 1 is very much polluted and 5 is very clean.

<table>
<thead>
<tr>
<th>Area</th>
<th>Mikocheni</th>
<th>Tabata</th>
<th>Kurasini</th>
<th>Ilala</th>
<th>Mbagala</th>
<th>Kawe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average score</td>
<td>3.9</td>
<td>3.7</td>
<td>3.5</td>
<td>2.3</td>
<td>3.6</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: Household Interviews, March – May 2003

The tendency was for women to be more concerned about air pollution than men, although significant differences were found in only three areas: Ilala, Mikocheni and Tabata. As related in Chapter 1, women dominated among the interviewees and men were never more than 40% of the sample, decreasing to 31% in two areas (Tabata and Mikocheni).

In Figure 4.1, answers about air quality are further analysed per area. The figure shows that in Mikocheni, 74% of the interviewees felt that the air in their
neighbourhood was either clean or very clean, while only 8% felt that the air was polluted.

At Tabata, 59% of the interviewees felt that the air was clean or very clean, 38% felt that the air was not very clean and 3% felt that the air was polluted. At Kurasini, 50% of the interviewees felt that the air was clean or very clean, 40% felt that the air was not very clean and 10% felt that the air was polluted. At Ilala, only 10% of the interviewees felt that the air was clean, 40% felt that the air was not very clean and 50% felt that the air was polluted or very much polluted.

At Mbagala, 56% of the interviewees felt that the air was clean or very clean, 43% felt that the air was not very clean and 2% felt that the air was polluted. At Kawe, 34% of the interviewees felt that the air was clean or very clean, 60% felt that the air was not very clean and 6% felt that the air was polluted. Men were slightly more satisfied with the air quality in five out of six areas.

![Figure 4.1. Air pollution levels in six neighbourhoods as evaluated by households.](image)

In all high income housing areas, at least the majority of the respondents thought that air quality was clean or very clean. As for the low income areas, Ilala showed the highest discontent concerning air quality among the respondents and it was also the most polluted area according to results from the physical surveys. The main reasons for the poor air quality at Ilala according to the respondents included: i) Ilala is located very close to the city centre and
hence concentration of vehicles results in accumulated emissions in the neighbourhood; ii) old vehicles emit a lot of exhaust fumes; iii) disorganized location of repair garages, mainly for daladala buses within the neighbourhood leads to increased vehicle emissions and spillage of oil products; iv) the area is overcrowded with people and houses; v) the area lacks good sewage management; vi) the area has unpaved surfaces which bring about dust from passing vehicles.

In comparison, the respondents in Mikocheni, who mainly thought air quality was good or very good, gave the following reasons for why air quality was perceived as excellent: i) their neighbourhood is located away from the main road; ii) there is limited movement of vehicles within the neighbourhood; ii) their area is situated near the ocean and with a characteristic low density built environment; iv) their area is planted with trees and there is an absence of industrial activities in the area. A typical quote from this area was that “We get enough air because we are near to the coast, we have a lot of trees and there is no overcrowding” (woman aged 48 years from Mickocheni).

Tabata is another high income area in which a high percentage of the respondents thought that the quality of air was good for the following reasons:

Little vehicular traffic within the area and the neighbourhood is located far from the main road. Other reasons included that the neighbourhood was characterised by low housing density and that it was located away from industrial activities. In Kurasini, there was also a high proportion of interviewees who thought that the quality of air was good. Explanations were that there was little traffic in the area and that it was far from the main road, it was a low density housing development located away from industrial activities.

In the low income areas of Mbagala and Kawe, the main reason why the air was rather clean had to do with lack of heavy vehicular traffic because these areas are located far away from the city centre. However, people who lived or carried out businesses close to the road experienced unpleasant quality of air because of vehicle emissions, mostly from the daladala buses. In Kawe, the results showed a feeling of relative dissatisfaction regarding the quality of air although, like Mbagala, the area is located far from the city centre. The explanation that most respondents gave as to why air quality is still not very good is that Kawe is an informal settlement, and its houses are thronged together near the daladala terminal. As such, people felt that the concentration of dalalas at the terminal caused emissions that spoiled the air within the residential area.

In summary, households that have been investigated in this study have a clear perception of the air quality in their neighbourhoods and often relate it to vehicular traffic. By and large, daladala vehicles were singled out as the main cause of air pollution. When thinking about the causes of air pollution
household respondents also think about industrial activities and garages which service mainly daladala buses.

In response to a question about noise impacts in the neighbourhoods, the pattern resembled that of air pollution in that the inhabitants of Mikocheni and Tabata, which are high income areas, find their neighbourhood rather quiet, 3.8-3.9 on a scale from one to five where five is very quiet and one is very noisy. On the other hand, the inhabitants in Ilala and Kawe consider that their neighbourhoods are noisy as shown by scores of 1.8 and 2.5 for Ilala and Kawe respectively (see Table 4.4). Again Ilala stands out as the area with the lowest environmental qualities. There were no significant differences between answers from men and women apart from Mbagala, where women scored 3.4 and men 3.6 in their appreciation of noise impacts, thus women think their neighbourhood is noisier than men do.

Table 4.4. Average score on a question to households of how noisy it is in their neighbourhood. 1 is very noisy and 5 is very quiet.

<table>
<thead>
<tr>
<th>Area</th>
<th>Mikocheni</th>
<th>Tabata</th>
<th>Kurasini</th>
<th>Ilala</th>
<th>Mbagala</th>
<th>Kawe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>3.8</td>
<td>3.9</td>
<td>3.4</td>
<td>1.8</td>
<td>3.5</td>
<td>2.6</td>
</tr>
<tr>
<td>score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Household Interviews, March—May 2003*

When results concerning noise levels are displayed as shown in Figure 4.2, the differences between neighbourhoods become even more obvious. In Mikocheni, 70% thought that the neighbourhood was quiet or very quiet while in Ilala less than 10% made the same estimate and close to 90% thought that the area was noisy or very noisy. Results for Kawe show that 67% thought the area was noisy or very noisy, while this share in the other areas did not exceed 30% except for Ilala.
Another factor that contributed to the quietness was considerate neighbours who care for their living environment – this explanation was mostly expressed at Mikocheni.

Household representatives were also asked about the extent to which they thought daladala buses pollute the air. Results from five case study areas showed that less than half of the respondents thought that daladalas were either polluting or very much polluting\(^{18}\). In Kawe 38% thought so, in Mbagala 47%, in Tabata 49%, in Ilala 45% and in Kurasini 46%. Mikocheni differed because 57% thought daladalas pollute substantially. So, even though many respondents in, for example, Ilala thought that the air was not clean, only less than half seemed to attribute a substantial part of that pollution to daladala vehicles. Based on data presented earlier in this study it is highly probable that the current fleet of daladalas release substantial amounts of pollution. There is a low awareness of this among the population and therefore it is important to educate households about the effect of using old vehicles.

### 4.4.2 Awareness of the impact of traffic pollution

Results from household interviews showed that most people were aware of the negative impacts from traffic pollution on health and the environment and many had also heard about climate change. Table 4.5 summarises the results for the three questions asked concerning these topics. The respondents were asked to say Yes or No to whether they had heard about health and environmental implications or not.

\(^{18}\) The question was to which extent daladala buses are polluting and possible answers were: not at all, a little bit, moderately polluting, polluting or highly polluting.
No score was lower than 56% which indicates that the awareness about the impact of air pollution on the environment among inhabitants in Dar-es-Salaam is quite high. However, the results show that people need to be better informed about the effects of pollution because many who live in the urban environment and are subjected to pollution daily do not know about the risks involved.

Table 4.5. Awareness of the impact of traffic pollution on health and the environment and the awareness of climate change

<table>
<thead>
<tr>
<th>Area</th>
<th>Mikocheni</th>
<th>Tabata</th>
<th>Kurasini</th>
<th>Ilala</th>
<th>Mgbala</th>
<th>Kawe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage knowing about health impacts</td>
<td>86</td>
<td>89</td>
<td>96</td>
<td>73</td>
<td>77</td>
<td>91</td>
</tr>
<tr>
<td>Percentage knowing about environmental impacts</td>
<td>82</td>
<td>77</td>
<td>80</td>
<td>75</td>
<td>56</td>
<td>80</td>
</tr>
<tr>
<td>Percentage knowing about climate change</td>
<td>83</td>
<td>85</td>
<td>78</td>
<td>79</td>
<td>73</td>
<td>83</td>
</tr>
</tbody>
</table>

Source. Household interviews, March — May 2003

Awareness of health impacts ranged from 73-96% (Table 4.5). People were least aware in the low income areas of Ilala and Mbagala. The proportion of respondents knowing about health implications in these areas was 73 and 77%, as opposed to the high income areas, where it was 86 — 96%. In Kawe the extent of awareness was as high as in the high income area, but this can partly be explained by the fact that men formed an unusually high proportion in this sample population – 40% see further below.

When given the opportunity to elaborate upon how traffic pollution may impact on health, most respondents mentioned inhalation of exhaust emissions (Figure 4.3). There were no large differences among areas in this respect. When specific effects were identified, high blood pressure due to noise levels were mentioned, as were crowded buses that cause health damage and oil spill from cars that may infiltrate water pipes. Examples of answers were:

“Smoke when burning cars (welding, our comment) can affect the health of people” (woman aged 53 years, Ilala)

“Smoke may cause diseases” (man aged 30 years, Mikocheni)
The awareness of that traffic air pollution has environmental impacts was highest in the high income areas. In these areas it varied from 77-82% while in low income areas it varied from 56 to 80 % (Table 4.5). When the issue was elaborated upon by the respondents who thought that traffic pollution may affect the environment, they indicated that it caused severe harm to plants and animals. Other effects mentioned by some respondents were destruction of the ozone layer, global warming and potholes in the roads. The respondents thought that traffic pollution came from exhaust emissions from vehicles and garage wastes (Figure 4.4).

“Maybe oil can harm the plants” (woman aged 53 years, Ilala)

“The oil may affect the environment” (man aged 30 years, Mikocheni)
Figure 4.4. Ways in which traffic pollution may harm the environment according to the respondents who had heard of that air pollution may affect the environment.

Awareness levels of climate change and environmental impacts from traffic pollution are similar (Table 4.5). The main causes for climate change identified by the respondents were pollution by vehicles and industries, as well as deforestation. 50% or more of the answers in any area related to these three causes. Along with these ‘science-based’ causes, there were more fatalistic explanations such as ‘God’s wish,’ ‘bombing through wars’ and more general statements implicating humankind in irresponsible actions. “Perhaps the environmental change’s done as God’s wish. There are so many evil doings in society that God punishes people by imparting on them disease and climate change” (woman aged 53 years, Ilala); “God himself decides upon the time for sun and rain” (male aged 30 years, Mikocheni)

There were no substantial differences between high and low income areas when it came to causes for climate change (Figure 4.5).
Regarding the implications of climate change, respondents thought that droughts have increased over the years with associated increase in the incidence of diseases. The drought issue was mainly linked with increased incidences of poor harvest resulting in hunger (Figure 4.6). 54% of the respondents linked climate change with less rain and drought, while 27% linked it with diseases. Other effects of climate change mentioned by the respondents were destruction of the ozone layer and increased incidences of heavy rains associated with abnormal floods. Examples of answers from the interviews were:

“The city is too hot caused by climate change” (woman aged 27 years, Mikocheni).

“Heavy rains and floods” (man aged 76 years, Ilala)

“Respiratory diseases such as the one happening in Hong-Kong” (woman aged 49 years, Ilala)

“There are a lot of changes in season, no rain or very little rain” (woman aged 36 years, Mikocheni)

“The effect may be harmful to human health, for example wind, big waves and heat” (woman aged 57 years, Mikocheni).

“It can cause hunger and death” (woman aged 49 years, Kawe)

“Me I am not an expert and therefore I cannot say much” (male aged 45 years, Mbagala)
Men and women differed quite a lot with regard to their awareness of environmental and health impacts as well as knowledge about climate change. Men more often answered that they were aware or had knowledge than women did. Table 4.6 summarizes the answers divided by sex. It can be seen that especially in the field of climate change, men consider themselves more knowledgeable than women. The impression is that differences according to sex are more pronounced in the low income areas.

Table 4.6. Women’s and men’s responses on the impact of pollution on health, environment and on climate change

<table>
<thead>
<tr>
<th>Area</th>
<th>Mikocheni</th>
<th>Tabata</th>
<th>Kurasini</th>
<th>Ilala</th>
<th>Mbgala</th>
<th>Kawe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage women/men knowing about health impacts</td>
<td>87/85</td>
<td>84/100</td>
<td>97/94</td>
<td>69/81</td>
<td>75/82</td>
<td>87/96</td>
</tr>
<tr>
<td>Percentage women/men knowing about environmental impacts</td>
<td>82/80</td>
<td>71/90</td>
<td>84/72</td>
<td>74/76</td>
<td>50/68</td>
<td>74/88</td>
</tr>
<tr>
<td>Percentage women/men knowing about climate change</td>
<td>80/90</td>
<td>80/95</td>
<td>79/78</td>
<td>71/95</td>
<td>68/82</td>
<td>79/88</td>
</tr>
</tbody>
</table>

Source: Household interviews; March –May 2003.
The stakeholder interviews focused on knowledge about health risks of traffic pollution. This was because such risks are perhaps the most pertinent in a low-income society.

We carried out interviews with municipal health officials of Temeke and Kinondoni municipalities to determine their knowledge and attitudes towards the impacts of air pollution on the health sector in Dar-es-Salaam. They revealed that there is a general awareness that the air in some parts of Dar-es-Salaam might be highly polluted with emissions from vehicles. However, they was no documentation linking air pollution with the occurrence of diseases. Municipal health officials stressed that “it is most likely that there is pollution in the air which causes diseases due to emissions from vehicles, but we do not have the premises or research results to link with the occurrence of diseases”. Furthermore, they emphasized that there was no adequate infrastructure nor a system to measure air pollution in the municipality. It was further reported that no funds are allocated for treating diseases that accrue from air pollution and there is no research done concerning those diseases since priority has been put on severe and more calling diseases such as HIV/AIDS and cholera.

In Kinondoni municipality, for example, there has never been any study made linking air pollution from motor vehicles with respiratory diseases. According to our informants, one can only draw an indirect linkage since several respiratory and lung-related diseases are nowadays associated with the HIV/AIDS pandemic. Three diseases were identified as being linked with air pollution:  

1. Acute Respiratory Infection (ARI)
2. Pneumonia
3. Skin infection

Trends in the incidences of these diseases show that while ARI has increased over time, the incidence of pneumonia and skin infection is decreasing. ARI increased from 44,934 cases in children under 5 years to 63,605 and further to 91,292 for the years 1999, 2001 and 2002. Similar trends prevail for the population aged more than 5 years, ARI incidence being recorded as being 54,843, 47,310 and 88,205 cases for the years 1999, 2001 and 2002 respectively. A decreasing trend for skin diseases is noted in Table 4.7. According to the Kinondoni municipal health officer, the substantial decrease in cases of skin disease between 1999 and 2004 was attributed to the fact that though skin diseases could be related to air pollution, they are to a large extent dependent on personal hygiene.

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19 Interview with Kinondoni Municipality Health officials
<table>
<thead>
<tr>
<th>SN</th>
<th>Disease</th>
<th>1999 Under 5 years</th>
<th>1999 Above 5 years</th>
<th>2001 Under 5 years</th>
<th>2001 Above 5 years</th>
<th>2002 Under 5 years</th>
<th>2002 Above 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acute Respiratory Infection (ARI)</td>
<td>44,934</td>
<td>54,843</td>
<td>63,605</td>
<td>47,310</td>
<td>91,292</td>
<td>88,205</td>
</tr>
<tr>
<td>2</td>
<td>Pneumonia</td>
<td>38,702</td>
<td>35,920</td>
<td>39,783</td>
<td>15,885</td>
<td>25,378</td>
<td>14,667</td>
</tr>
<tr>
<td>3</td>
<td>Skin infections</td>
<td>20,566</td>
<td>32,473</td>
<td>22,847</td>
<td>19,857</td>
<td>9,145</td>
<td>10,904</td>
</tr>
</tbody>
</table>

Source: Kinondoni Health Office, March 2004

It was further argued by the same municipal health officials that there is no clear basis on which to correlate the trends in ARIs to air pollution levels. The prevalence of HIV/AIDS disease has resulted in many victims becoming less resistant even to curable diseases. Therefore, with regard to ARIs, many other factors came into play, not only pollution. Besides, the health officials noted that since there is no good system for capturing information on, for example, levels of air pollution, such correlations were rather implicit and sometimes such inferences were made based on studies done in other countries only.

The increase in the incidence of ARIs has impacted on the health budget of the municipality of Kinondoni and ARIs now rank second after malaria when the number of treated cases are counted. The municipality is striving to address this problem in its health budget, which increased by almost 30% between 2001 and 2003. It is apparent from these figures that even though the links between air pollution, increase in the ARIs and other diseases is not well established, the same disease contributes substantially to the budget requirements of the municipality.

In an interview with Police Traffic officers, it was reported that usually they work on the roads to control and guide the flow of traffic in junctions which lack traffic lights. They stressed that the cumulative amount of smoke in the roads was enormous and to work under such conditions was a health risk. They described a case of their colleague who became ill and whose respiratory tract was found to have been tinted with black soot during medical examination. He was asked by medical staff whether he worked in the coal mines.

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20 Interview with Kinondoni Municipality Health officials
4.5 Conclusion

This chapter showed what is known about air pollution in Dar-es-Salaam today based on measurements and household and stakeholder interviews. Firstly, it can be argued that although the pollution measurements are far from exhaustive, they indicate very high levels of several pollutants where traffic is dense, such as at bus stops and by roads with high traffic volume. The correlation between traffic and pollution is also high according to these studies, implicating the transportation sector as an important contributor to the air pollution in Dar-es-Salaam.

From this data and the interviews it is fair to say that the current transportation system contributes to environmental non-sustainability in the city and that this spills over into the health sector, with increasing costs for treatment of respiratory diseases at the local level. It is at this level that costs for treating commonly occurring diseases such as malaria and AIDS/HIV also have to be dealt with. It is fair to argue that diseases that are caused by air pollution may inflict HIV positive people fatally – victims who would live longer lives if pollution levels were lower. The high pollution levels at bus stops and main roads are also troublesome because they affect vulnerable groups such as women and children. School children going to and from school often use daladalas to commute for long distances (see Chapter 6). Street vendors, often women with small children, work by the side of the road selling food and drinks. Pollution also affects professionals of several categories who carry out their daily tasks in the urban environment: traffic police, bus conductors and drivers. The latter two categories might well be in the order of 20,000-30,000 persons, usually young men, and any health impairment in this population segment is especially troublesome for society’s overall capacity to sustain and develop itself.

Of significant importance for the high pollution levels is the fact that fuel in Tanzania is of low environmental quality in terms of contents of lead in petrol and sulphur in diesel (see section 7.6).

This study has shown that many households have a general awareness that air pollution may affect health and the environment, although specific knowledge is weak. However, lead related health issues are not even mentioned once by the interviewees despite the fact that many of these ailments affect children severely and that childcare and child rearing are very prioritized activities in Tanzanian society. Efforts to abolish use of leaded petrol or diesel with a high sulphur content, or efforts to reduce the age of imported vehicles need to be backed up by information campaigns directed at the public about the direct health benefits of such measures. As there is already a general awareness and a concern for pollution problems in the city, the interest in factual information should be high.

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21 There are about 7,000 daladalas in Dar es Salaam and three to four persons work at every vehicle.
Concerning climate change, a long-term and global phenomenon, the general perception of its effects are disastrous: famine, drought and disease. This is a ‘good’ platform for discussing alternative energy systems for the future, including the use of low polluting vehicles, such as bicycles or buses run on natural gas. The persistent gender differences that we found concerning knowledge are well worth considering should information campaigns be implemented. Women, who are more concerned with air quality and who are the main caretakers of children, need targeted information about pollution impacts and ways to avoid them. This would optimize information efforts, as would a focus on disseminating information through local health clinics. However, this requires the cooperation of local staff who at this point have but a very vague image of the health impacts from air pollution and do not seem to give it much attention.
5.0 Travelling in Dar-es-Salaam

5.1 Public Transport system in Dar-es-Salaam

The public transport system in Dar-es-Salaam includes daladala buses, taxies, non-motorised transport systems (walking and people-powered vehicles) and associated road infrastructure facilities. UDA also provides transport services but with a fleet of only about 20-30 buses. Its services have become unreliable, sporadic and rare, and consequently the impact of UDA is insignificant on the current provision of public transport services in Dar-es-Salaam. In this section, we describe the existing quality of the public transport system according to findings from the field work.

5.2 Daladala buses

Daladala minibuses have been operating for about 20 years now since they were officially sanctioned to operate by the Government in 1983. Today, public bus transport in Dar-es-Salaam is dominated by daladala bus services. As described in Chapter 2, car ownership was more common in the high income areas than in low income areas in Dar-es-Salaam. Yet the proportion of residents using daladala services in high income areas was as high as that in low income areas i.e., 90% at Kawe, 97% at Ilala, 98% at Mbagala, 77% at Mikocheni, 96% at Kurasini and 96% at Tabata (see Figure 5.3). This indicates that daladalas are the most common mode of motorised public transport for households, irrespective of income, in Dar-es-Salaam. The most dominant types of daladala buses with a capacity of transporting 15 passengers appear in Figure 5.1 and larger buses with the capacity of 30 passengers appear in Figure 5.2.

Figure 5.1. A series of small daladala buses lined up with capacity of 15 passengers
Figure 5.2. A mini daladala bus with a capacity of 30 passengers

The Dar-es-Salaam Regional Transport Licensing Authority (DRTLA) estimates that the number of privately owned daladala buses is between 6 000 and 7 500, while the actual number of daladalas registered for passenger traffic is about 6 000. It has been difficult for the Authority to establish the total number of daladala buses in passenger traffic because many such vehicles operate without a route licence. Commonly, illegal daladalas operate either on remote routes away from traffic police and DRTLA’s route inspectors. Alternatively they operate very early in the morning and late in the evenings, when route inspection and police control is usually minimal. The Regional Police Traffic Officers in Dar-es-Salaam remarked that most of the illegal daladalas would not be permitted to operate on the roads were they inspected because they are very old, with severe mechanical faults capable of endangering public safety.

Owners of daladala buses in Dar-es-Salaam are of three categories namely: i) retired people, ii) people with low-incomes, iii) civil servants. On the whole, most owners of daladala buses have a relatively unstable financial situation. While some owners may have other employment, others depend solely on one or two daladala operations to support their families.

22 Interview with the Secretary – Dar-es-Salaam Region Transport Licensing Authority—May 2003

23 Interview with the Dar-es-Salaam Regional Traffic Police Officers—May 2003
5.3 The economics of bus operation in Dar-es-Salaam

Daladala bus operators charge a fare of 150 Tanzanian shillings for adult passengers and 50 shillings for pupils/children. The Dar-es-Salaam Regional Authority issued a directive that students should pay 50 shillings on the grounds that most parents could not afford the full fare for their children. Linked with this directive, in 1992 traffic police received a statement from the Deputy Minister for Home Affairs that students ought to pay ‘half fare’ implying 50 shillings and that all daladala operators must comply with the directive. There was no system of subsidy by the Government for student travel and thus it was the daladala operators who bore the brunt of the costs for student subsidies. Furthermore, daladala operators bore the brunt of costs for soldiers, who travel free of charge.

During the stakeholder meeting in Dar-es-Salaam in 2003 (refer sect. 1.7), the Chairman of daladala operators argued that the fare charged was very low and could hardly generate enough revenue to sustain adequate delivery of services. The price of oil had risen several times since 1993 (Table 5.1) and the cost of vehicles had risen to several millions but the fare had remained stagnant for many years.
Table 5.1. Fuel prices in 1993, 2003 and 2004

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of Diesel (Tsh)</th>
<th>Price of Petrol (Tsh)</th>
<th>Bus fare (Tsh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Adults</td>
</tr>
<tr>
<td>1993</td>
<td>256</td>
<td>325</td>
<td>150</td>
</tr>
<tr>
<td>2003</td>
<td>680</td>
<td>720</td>
<td>150</td>
</tr>
<tr>
<td>2004</td>
<td>830</td>
<td>920</td>
<td>150</td>
</tr>
</tbody>
</table>


The secretary of DRTLA pointed out that it was common for daladala operators to end-up at a financial loss. Often, operators who left the business sold their vehicles to new operators who were less experienced and less well informed about the risk of taking on the daladala business. Accordingly, most of the new operators entered into the business with high expectation that the business was always profitable. Daladala operation in Dar-es-Salaam has become an experimentation opportunity for people trying to enter into the public transport industry. Because of this, the public transport industry is characterised by a continuous flow of operators: those opting out and those entering the business. The consequences are lack of professionalism and long-term commitment among daladala owners.

Despite claims by the operators that the fare level was kept very low, the Government has already set an enabling environment that allows operators to raise fares. In 1994, a Fair Trade Practice Act was issued, which allowed competition among service providers including those of daladala.24

Daladala operators have not made profound moves to raise the fare for a long time. On the other hand the UDA company has increased fares above 150 Tsh. According to a respondent (inspector) employed by the UDA, the company has three categories of fare, applied thus: Monday to Friday, 250 shillings until 11:00 am; 150 shillings from 11:00 am until night and 50 shillings all day for pupils. On Saturdays, the rates are 250 shillings to 9:00 am and beyond this time the cost of travelling is 150 shillings. On Sundays the rate of travelling is 150 shillings all day.

According to the UDA inspector, the decision to raise the fare from 150 to 250 shillings during peak hours was reached following a meeting held at the National Institute of Transport that drew other stakeholders, including daladala

24 Interview with the Secretary—Dar-es-Salaam Region Transport Licensing Authority—May 2003
owners. The inspector was of the opinion that daladala owners had not increased the fare for two reasons. Firstly, it was due to a fear that they would be prosecuted, even though the Government had liberalised the public transport sector. However, there has been a development on this aspect, as will be described further in section 7.3 the fear of daladala operators not to increase the fare turned out to be real because as recent as May 2004, the government blocked moves taken by operators to raise the fair in Dar-es-Salaam. Secondly, they are poorly organised which led to a fear that isolated moves to raise the fare would drive away passengers to operators who continued to charge a lower fare. All daladala operators deliver same quality of service. Any fare rise would therefore be judged by the corresponding quality of services that other operators provide. According to the Secretary of DRTLA, a further reason why fare remains low is because the supply of bus transport opportunities sometimes exceeds demand. Even though, this may seem contradictory as many people wait for a long time and scramble for the buses during rush hours. It is at such times that long queues and congestion that impair vehicular traffic flow become common in Dar-es-salaam. During off peak hours in a day, the demand to travel is low leading in some cases to reduction of the fare among some daladala operators. It is also during off peak hours that the competition for passengers is stiff and it is common to see half-empty daladala buses.

An examination of monthly revenue from a dalalada operator owning a 30 seater bus has shown an earning ranging between Tshs 6 and 7 million for a bus bought for Tshs 18million (Table 5.2 and 5.3).

Table 5.2. Revenue and expenditure in Tanzanian shillings for a 30 seater daladala bus (2003)

<table>
<thead>
<tr>
<th>Month</th>
<th>Gross revenue</th>
<th>Expenditure</th>
<th>Net revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>305,000</td>
<td>56,000</td>
<td>249,000</td>
</tr>
<tr>
<td>June</td>
<td>700000</td>
<td>84000</td>
<td>616,000</td>
</tr>
<tr>
<td>July</td>
<td>850000</td>
<td>84000</td>
<td>766,000</td>
</tr>
<tr>
<td>August</td>
<td>870000</td>
<td>84000</td>
<td>786,000</td>
</tr>
<tr>
<td>September</td>
<td>830000</td>
<td>84000</td>
<td>746,000</td>
</tr>
<tr>
<td>October</td>
<td>1,205,000</td>
<td>234000</td>
<td>971,000</td>
</tr>
<tr>
<td>November</td>
<td>1,171,000</td>
<td>234000</td>
<td>937,000</td>
</tr>
<tr>
<td>December</td>
<td>1,196,000</td>
<td>234000</td>
<td>962,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7,127,000</td>
<td>1,094,000</td>
<td>6,033,000</td>
</tr>
</tbody>
</table>

Source: Revenue and expenditure records from a daladala operator, Dar es Salaam
Table 5.3: Revenue and expenditure in Tanzanian shillings for a 30 seater daladala bus (2004)

<table>
<thead>
<tr>
<th>Month</th>
<th>Gross revenue</th>
<th>Expenditure</th>
<th>Net revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1,100,000</td>
<td>234,000</td>
<td>866,000</td>
</tr>
<tr>
<td>February</td>
<td>849,000</td>
<td>234,000</td>
<td>615,000</td>
</tr>
<tr>
<td>March</td>
<td>865,000</td>
<td>234,000</td>
<td>631,000</td>
</tr>
<tr>
<td>April</td>
<td>970,000</td>
<td>234,000</td>
<td>736,000</td>
</tr>
<tr>
<td>May</td>
<td>1,050,000</td>
<td>234,000</td>
<td>816,000</td>
</tr>
<tr>
<td>June</td>
<td>1,062,000</td>
<td>234,000</td>
<td>828,000</td>
</tr>
<tr>
<td>July</td>
<td>970,000</td>
<td>234,000</td>
<td>736,000</td>
</tr>
<tr>
<td>August</td>
<td>1,000,000</td>
<td>234,000</td>
<td>766,000</td>
</tr>
<tr>
<td>September</td>
<td>1,003,000</td>
<td>234,000</td>
<td>769,000</td>
</tr>
<tr>
<td>October</td>
<td>0</td>
<td>234,000</td>
<td>0</td>
</tr>
<tr>
<td>November</td>
<td>230,000</td>
<td>234,000</td>
<td>0</td>
</tr>
<tr>
<td>December</td>
<td>0</td>
<td>230,000</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9,099,000</td>
<td>2,106,000</td>
<td>6,993,000</td>
</tr>
</tbody>
</table>

Source: Revenue and expenditure records from a daladala operator, Dar es Salaam

According to tables 5.2 and 5.3 it will take about three to four years for an operator to recover the invested capital. This revenue recovery period is too long for a daladala operator to thrive in the business. The escalating fuel prices amidst stagnating bus fare prices, devaluation of the Tanzanian shilling and a rather increasing inflation are factors that affect negatively the public bus service business. This information echoes the remarks made by the DRTLA secretary that most of the daladala owners go bankrupt after three to four years or sell their buses at a loss.

5.4 People’s ability to pay travel costs

Apparently, the fare to travel in Dar-es-Salaam is too low for the operators to generate sufficient revenue to meet the cost of operations for better services, yet a substantial proportion of respondents thought that travelling costs were high. In an inquiry about ten central aspects that should be improved in public transportation in Dar-es-Salaam, a reduction in fare ranked among the first five. This indicates that the level of fare of 150 Tsh is rather constraining for many people in Dar-es-Salaam. In the high income housing case study areas of Mikocheni and Kurasini a low proportion, 18% and 17% respectively, gave priority to lowering the fare. In these areas the proportional of civil servants and business people is high and people with such professions earn a relatively ‘good income’. Ironically, in Tabata (a high income case study area) a relatively high proportion of the respondents, about 48%, favoured
lower bus fares and that percentage was more than for most low income case study areas. The most common argument by the respondents for lowering fares in Tabata was the absence of a direct bus route from Tabata to the city centre. For every bus connection a passenger had to pay a new fare, which pushes up the travel costs for people living at Tabata. Regarding the low income areas of Kawe and Ilala, a relatively high percentage of the respondents, 42% and 56% respectively, favoured reduction of the fare. At Mbagala, the inclination to lower the fare was 34%, the lowest amongst the low income areas studied. The respondents argued that Mbagala was located far away from the city centre and thus a high proportion of the respondents thought that the fare was acceptable owing to the long travel distance from the city. In addition, Mbagala had one of the lowest proportion of people connecting to other routes, 26%, and hence people spent less money for fares since a high proportion of respondents commuted along direct routes. Tabata had the highest proportion of respondents connecting to other routes, 52%, Ilala (located by the city centre) had 23%, Kurasini 44% and Kawe 27%. In general, the desire to lower the fare appeared in all the case study areas, though to varying degrees. This situation echoes results described in Chapter 2 that poor socio-economic conditions for many households in Dar-es-salaam constrain their ability to meet the costs of public transportation.

5.5 Deficiencies of daladala

Despite the vital role that daladala buses fulfil in transporting people, the quality of daladala services was in many respects poor. Bus services in many places fell far short of demand during rush hours; often severely overstretched, uncomfortable and unreliable. In addition, as discussed in Chapter 4, daladala buses contribute to increased air pollution in Dar-es-Salaam. The respondents in all the case study areas assessed different aspects that constituted the quality of public transportation with respect to daladalas as follows:

5.5.1 Overloading of buses

Most of the respondents in all the case study areas thought that daladala buses were either overloaded or highly overloaded: 90% at Kawe, 92% at Mbagala, 95% at Tabata, 88% at Kurasini, 84% at Ilala and 86% at Mikocheni (Figure 5.5). Overloading in the buses was a problem for people as it often led to incidents of pick-pocketing, impaired air circulation, and bad smells due to warm weather and sweat. The respondents were also worried that overcrowding in the buses could lead to the spread of communicable diseases such as Tuberculosis (TB). Furthermore, overcrowding and squeezing in the buses led to incidents of women being sexually abused by men. When scrambling to enter in the buses become extreme, it is possible to see commuters entering in the buses through the windows. In general, overloading of the buses creates hard travelling conditions for parents with children, women, disabled people and the elderly (Figure 5.4).
The dire consequences of overloading arises when daladala buses get involved in accidents – the fatality increases with the extent of overloading. According to the Regional Traffic Officers, an accident involving a daladala happened in 2002 at Gongo la mboto, on the outskirts of Dar-es-Salaam in which many of those who lost their lives were standing passengers – mostly pupils. For this reason, the Police Traffic Department instituted a regulation specifying what it called ‘level sitting’ in the buses - which meant that it was forbidden to stand in the daladala. However, the Regional Traffic Office gave permission for a maximum of only five students standing in the bus but due to the demand for transportation, especially during peak hours, police have been overwhelmed by the massive build-up of people who scramble to get into daladala buses. This situation has made it difficult to implement the regulation of ‘level sitting’.

Figure 5.5. Overloading of buses according to respondents in the six case study areas.
5.5.2 Noise from music and blaring horns

Tuning of radio and music players to a loud volume was a common practice in the buses, apparently to entertain the passengers. On the contrary, it was seen by the respondents in the areas studied as being disturbingly loud or very loud: 81% at Ilala, 51% at Kurasini, 51% at Tabata, 40% at Mbagala, 62% at Kawe and 70% at Mikocheni. Noises emanating from car horns were equally a nuisance. Daladala buses often blare horns in order to catch the attention of passengers that a bus is about to leave a terminal. Operators apply this method to attract commuters owing to the lack of an organized timetable system that could guide the departure and arrival of buses. Furthermore, daladala buses blare horns as they overtake one another in the process of competing for passengers or as drivers plead with one another to give way. The proportion of respondents in the respective study areas who thought that blaring horns were noisy or very noisy was 64% at Mikocheni, 67% at Kawe, 32% at Mbagala, 54% at Mbagala, 54% at Tabata, 51% at Kurasini, and 81% at Ilala. Other traffic noise (which is sometimes extensive) comes from the constant drone of passing cars and trucks, as well as screeching tires.

5.5.3 Treatment by conductors – verbal expressions

Most of the respondents thought that conductors’ verbal expressions to the passengers were appalling and unacceptable. The proportion of respondent who thought that verbal expressions were either poor or very poor in the respective case study area was 70% at Mikocheni, 74% at Kawe, 83% at Tabata, 63% at Mbagala, 81% at Ilala and 61% at Kurasini (Figure 5.6). Often, incidents that lead to expressions of indecent language include when conductors are collecting fares or urging passengers to squeeze tightly in order to put more people into already overLoaded buses. In such situations, conductors often use abusive language to passengers who protest against overloading. Then again, most of the interviewees felt that women and school children were the groups most abused by the daladala conductors. Respondents thought that conductors behaved badly and unprofessionally, that they were young people who were untrained in delivering public transport services. Other respondents thought that bad verbal expressions by conductors stem from the fact that conductors and drivers do not respect their work because they have no legal contracts with bus owners - they consider the work they do as temporary with no binding condition.
5.5.4 Sitting and standing conditions

Most of the interviewees thought that sitting and standing conditions in the buses created discomfort and problems during travelling. This was aggravated by the tendency of operators to adjust seats to smaller sizes and pack them tightly in order to increase the passenger capacity of the buses. Furthermore, low cabin height, lack of adequate ventilation and narrow or no passage ways made travelling uncomfortable for the commuters. Responses to whether standing and seating conditions were poor or very poor in the respective case studies were: 58% at Mikocheni, 55% at Kawe, 65% at Mbagala, 63% at Tabata, 84% at Kurasini and 48% at Ilala. Often, it is during rush hour that tight sitting and standing conditions become extreme. Low cabin height impairs the ability of tall people to see through the windows, and thus makes it difficult for them to see when they have arrived at their destination. Large people have difficulties fitting in smaller seats. Since seats are commonly mounted in the middle passage way of the buses, it is difficult for disembarking passengers to move towards exit doors. Ironically, delays caused by passengers disembarking across the blocked passage way invoke abusive language from conductors. Furthermore, due to tight sitting and standing conditions, well-dressed passengers find their clothes soiled and creased. This was one the reasons given by most well-educated and high income people who owned private vehicles for their reluctance to travel to work by daladala bus. One respondent remarked that: “the mini buses that operate in Dar-es-Salaam are not intended to cater for public transport and are not capable of providing the expected service to the public”. --A 40 years old man at Ilala.
5.5.5 Hygiene condition of the buses

Most of the respondents in the case study areas thought that the cleanliness of buses was inadequate. Around 63% at Kurasini, 58% at Ilala, 72% at Mbagala, 48% at Kawe and 63% at Mikocheni felt that the cleanliness of buses was either poor or very poor. At Mbagala, the proportion of respondents who thought that the buses were not hygienic was higher (72%) than in other areas. Due to the remoteness of Mbagala, it has buses that are in extremely poor mechanical and physical condition (see also Section 5.5.7) owing to lack of adequate traffic police patrols and vehicle route inspections. Traffic officers are rarely seen at bus stops situated on the outskirts of Dar-es-Salaam and that gives dilapidated commuter buses freedom to operate at their own discretion, hence causing congestion and even accidents (Guardian, 21.08.04).

The disagreeable unhygienic condition of bus conductors also contributes to the poor quality of the internal environment in the buses. The unpleasant smell from conductors’ dirty uniforms and sweat from many hours of working in a warm environment exacerbates the discomfort for the commuters. A respondent from Kawe remarked that, “drivers and conductors are not permanently employed, thus they may switch from one bus owner to another in a very short period and therefore they do not care to maintain the cleanliness of the buses or themselves”. As recently as October, 2003, the chairman of the Dar-es-Salaam Regional Transport Licensing Authority, announced that his agency together with Traffic Police would track down conductors who were improperly dressed, i.e. those without uniforms or those wearing flip-flops instead of proper shoes and those who appeared dirty. The chairman warned that from 14 October 2003, conductors and drivers who could not abide by the above guidelines should not be on the road. He stressed that most daladala conductors smell bad and wear awfully dirty uniforms like ‘hooligans’, thereby tarnishing the quality of bus services (Nipashe, 2003/10/11). On the other hand, a respondent from Mbagala who was once a daladala driver remarked that: “some conductors and drivers of daladalas lack confidence in delivering services. When an accident or any irregularity occurs they run away and therefore they avoid uniforms as a way to avoid being identified”. Despite the ultimatum issued in 2003 by the Chairman of DRTLA to bus conductors to improve their hygiene situation, complaints about the poor hygiene condition of bus conductors still persist.25

5.5.6 Condition of bus stops and terminals

Most respondents in the respective case studies thought that the condition of bus stops and terminals was poor: 83% at Kawe, 89% at Mikocheni, 100% at Mbagala, 86% at Tabata, 74% at Ilala and 67% at Kurasini. Bus stops and terminals were characterized by poorly built and maintained facilities, lack of bus bays, shelters, posts, benches, destination

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25 Interviews with stakeholders in March 2004
signboards and timetables. For instance at Kawe, one respondent said that: “the terminal has no space for buses to turn around and overcrowding by buses and congestion increase air pollution in our residential area”. The few terminals that exist in Dar-es-Salaam were intended to be major transfer points for many routes but they tend to be chaotic, dirty and unsafe. Inadequate bus bays result in buses from different routes sharing lanes; this, in turn, causes long delays. The appalling situation is highlighted by recent coverage in the Sunday observer newspaper in Dar-es-Salaam that the Mwenge Bus Stand on the outskirts of Dar-es-Salaam city has progressively been converted from a convenient centre for dropping off and picking commuters to a chaotic multi-purpose facility that highly inconveniences the users (see Figure 5.7). According to the Sunday observer, the station is literally exploding in the wake of being crammed by not only commuters and crew, but scores of hawkers engaged in a host of commercial activities. Interior and exterior restaurants operate at the station, as do a mixed group of traders who sell raw foodstuffs, vegetables, roast meat and fish, watches, garments, stationery materials and vehicle spare parts. Taxi and watch repairing services are also offered (Sunday observer, 2004.05.23). Trading has contributed greatly to congestion at Mwenge bus station which can no longer cope. It is becoming very difficult for someone to establish where buses serving a given route park. Lack of toilet facilities at the bus terminals is being seen as a major deficiency of public transport services.

Figure 5.7. Mwenge bus terminal in Dar-es-salaam

Passengers need to be provided with toilet facilities at the terminals because of the frequent long waiting times for buses. According to the Observer, the lack of toilets at Mwenge bus terminal is a great problem for both bus crews and commuters, but particularly the former for whom the station is their work base.
Accordingly, the crew strike up friendship with operators of business centres in the vicinity of the station, whose toilets they use. Filth is also an irritant to the people at Mwenge station, particularly during the rainy season when they are forced to negotiate their way through puddles of water and along slippery, muddy paths (ibid). The conditions of other daladala bus terminal in Dar-es-salaam are similar to that of Mwenge terminal.

5.5.7 Physical condition of buses and engine (noise) condition

Most respondents in the respective case study areas thought that nearly all the daladala buses were old and in poor physical condition, characterized by lack of window glass and windscreen, tattered seats, and lack of protective and safety devices such as fire extinguishers. Furthermore, frequent mechanical failures are a common phenomenon for many daladala buses. Some respondents had experienced an interruption of their journey before reaching their destination due to either mechanical breakdown or empty fuel tank. The percentage of respondents who thought that the physical condition of buses was poor was: 61% at Kurasini, 58% at Ilala, 64% at Tabata, 64% at Mbagala, 60% at Mikocheni and 42% at Kawe. It was a common occurrence for respondents to have their clothes torn by dilapidated seats. With regard to engines condition, almost half the interviewees in some areas thought that the engines were noisy or very noisy: 42% at Kurasini, 45% at Ilala, 55% at Tabata, 48% at Mbagala, 49% at Mikocheni and 29% at Kawe. One can argue that it requires technical competence to determine whether or not engines are noisy or polluting. Nonetheless, the large scale assessment by the respondents that many of the operating daladala buses were old, dilapidated and noisy is an indication that the buses may be unsafe for passenger transport. Many daladala buses have been in use for more than ten years and their inherent poor quality was emphasised by the chairman of DRTLA who stated that although there were about 6 000 registered daladala buses in Dar-es-Salaam, most of them were defective. According to the chairman, buses are of such poor quality that commuters can see the earth’s ground through the floor of the buses (Nipashe, 2003/10/11).

5.5.8 Travel time

A high proportion of respondents thought that travel time to reach destinations was long: 74% at Kurasini, 56% at Ilala, 71% at Tabata, 60% at Mbagala, 50% at Mikocheni and 50% at Kawe. The amount of time spent on travel differed from one case study area to another depending on the respective location and distance to the city centre or to a desired destination. Two main reasons for long travel times were: (i) long queues and traffic congestion during rush hour, and (ii) the habit drivers/conductors have of waiting a long time at bus stops/terminal to get adequate number of passengers before they travel ahead. Consequently, commuters who wait for buses at the middle or end of these same routes are either delayed or buses cannot stop because they are packed with passengers. Operators believe that it is important to get enough
passengers before they take off in order to maximise revenues. They expect many passengers to get off half way and to be replaced by new paying commuters, thus maximising the revenue for the entire trip. This mode of service delivery is a result of the flat rate fare charged to passengers irrespective of the distance travelled. As a result, bus operators want to minimise the number of passengers who travel directly from the origin to the end destination. Bus operators devised a scheme whereby conductors and touts announce that buses will only travel to a mid-way destination once passengers have paid the fare. Those who want to go beyond this point have to pay a new fare. The deceptions employed by daladala operators frustrate many commuters who wait for hours before they get on the buses. Because of the need to travel, commuters are compelled to break their journey into two parts according to the operation of daladala buses. Similarly, in order to minimise travel time during the morning rush hour, some commuters who live in the middle of bus routes, especially those in a hurry to work, board buses going in the opposite direction so as to return with them to the desired destination. In this way, commuters are prepared to pay the fare two-fold in order to save waiting time and avoid delays to reach work places. Although the public see that the services provided by the daladala operators is poor, the responsible authorities have done little to redress the situation. According to the Guardian newspaper in Dar-es-salaam, traffic officers deployed to control movements of vehicles seem to have failed to control the operation of daladala buses which have been grossly diverting routes through “Panya routes,” and at times short-changing commuters by not reaching the intended destinations. Furthermore, buses violate routes and refuse to pick up passengers from bus stops, particularly at the end and beginning of the routes, in the presence of the traffic police (Guardian 21.08.2004). The inconveniences for travelling passengers can be summarised by opinion of a commuter interviewed by the Guardian newspaper at Mwenge bus terminal as thus:

(i) “Daladala bus come and go with no passengers onboard. They refuse to pick us up, saying it is a great loss to pick passengers who travel all the way from the first station to the end of the route”.

(ii) “A number of buses plying the Mbezi-Mwenge, Posta, Kariakoo route, the Mwenge-Mtoni Miongani, Mbagala route and some other routes drop passengers at the stop and make U-turns without picking up any passengers”.

(iii) “And some daladala buses do not cover their routes properly. They cut the routes short, drop passengers and pick new ones in order to maximize profits”.


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26 Interview with a daladala driver in Dar-es-Salaam—April 2003
Long distance between homes and bus stops also elongates the travel time to destination. This is a particular problem in the high income area of Mikocheni because only one bus route traverses the area. A respondent at Mikocheni described the situation in this way: “I have first to walk for at least 20 minutes to reach a bus stop and then board a daladala which is not fast due to congestion during peak travel period. But if I travel at non peak travel times I have to remain in the bus to wait for the bus to filled with commuters before it leaves”. Route connections also cause more delays. At Mbagala, 30% of the respondents spent just over one hour in travel and 30% spent 2 to 3 hours to reach the city centre. At Kawe, 20% spent up to one hour in travel and 10% spent 1 to 2 hours. At Mikocheni, 26% spend up to one hour in travel, at Tabata 32% spent up to one hour to reach the city centre, while 20% spent up to two hours and more, especially during peak hours. At Ilala, 8% of respondents spent up to one hour in travel to their destination and 29% travelled for up to two hours to reach their destination. At Kurasini, 34% of the respondents travelled for more than one hour to get to work. The case studies showed that commuters who live far away from the city centre spend more time in travel, as illustrated by the case of Mbagala. Other categories of commuters who spend more time in travel include those who live in areas where they depend on more transfers to reach their destination, as shown in the case of Tabata. In general, it takes a long time to travel by daladala buses in Dar-es-Salaam, making public transport unattractive for many people. But due to the lack of a viable alternative, daladala continue to be the dominant mode of public transport in the city.

5.5.9 Reliability of the buses

The assessment of reliability of daladala buses differed from one case study to another depending on the supply of buses on a particular route. The reliability of bus services was assessed in two ways by the respondents, namely i) the inability of daladala buses to cope with demand for transport services during rush hour, and ii) the irregularity of bus services after rush hour owing to long waiting time (by buses) for customers at bus stops.

At Kurasini 63% thought that daladala buses were either reliable or very reliable and 37% that the services were either not very reliable or poor. At Tabata, 4% thought that daladala were reliable or more reliable and 96% thought that they were less reliable or poor. At Ilala, 56% thought that daladala services were either reliable or very reliable and 44% that they were less reliable or poor. At Mikocheni, 58% thought that daladala services were reliable or very reliable and 42% that they were less reliable or poor. At Kawe, 38% thought that daladala services were reliable or very reliable and 62% that they were less reliable or poor. At Mbagala, 20% thought that the services were reliable and 80% that they were less reliable or poor.

These results show that the reliability of the bus services in Dar-es-Salaam decreases with remoteness of the area from the city centre. For instance, Mbagala was the most distantly located area from the city centre and showed
the highest proportion of respondents who thought that the bus services were unreliable. A greater need for connections also affected the perception of reliability of services. As shown earlier, travelling from Tabata to other destinations meant that people had to change bus routes more than once. It was also in Tabata that we found the highest proportion of interviewees (96%) who thought that the bus services were unreliable. In Tabata and Mbagala, as shown in section 5.5.8, a high proportion of the respondents spent longer time to reach their desired destination by daladalas, and as shown above in this section, the same areas have shown a high proportion of respondents who thought that bus services were unreliable. There is thus a correlation between time taken to travel to destination and reliability of the buses. Observations from these areas showed that bus services were most unreliable after rush hour. It was during this period that bus drivers and conductors spent more time waiting for buses to fill-up with passengers before they left. Furthermore, unreliability of services occurred when the daladala operators violated the arrangement of routes to which they were allocated. Often they operated along shorter routes which were not approved by the authorities in order to increase the frequency of operation (Nipashe, 2003.10.16). The reliability of daladala buses was also impaired by unexpected mechanical breakdown of vehicles during travel. Furthermore, changes of routes without prior notice to the commuters exacerbate the problems of travelling in Dar-es-Salaam. A respondent elderly lady of Kurasini 68 years described her situation thus: “when I once travelled by daladala bus I was compelled to get off the bus very far away from my home because the bus driver opted for a shorter route. I was scared for my safety because it was 8 pm and dark”. Sometimes buses may turn back before reaching the end destination if conductors and drivers realise that they may not be able to collect enough revenue. A female respondent of Kurasini, 30 years, described the situation: “We were asked to get out of the bus in the middle of the journey because we were very few – the driver said they would not continue with the journey because the bus was half empty”.

In general, most daladala buses end their operations between 8 pm and 9 pm. This early ending of service is seen as a problem by many commuters in Dar-es-Salaam who need transport services in the night. Since buses are being regulated individually, rather than at the route level, no individual operator has any responsibility for the overall level of service on the route. Buses are required by the authority only to operate on a route. No requirements or guidelines have been stipulated by an authority to provide a particular level of service such as bus frequency, comfort or maintenance of services at a certain minimum level.

In spite of the obvious unreliability of daladala buses, some respondents thought that daladala buses were reliable. However, most respondents who thought so had compared daladala services with those of UDA buses before the emergence of daladala. Respondents argued that UDA had/has poorer services than those offered by daladala today in Dar-es-Salaam.
5.5.10 Speeding/reckless driving and incidence of accidents

Most interviewees thought that the speed of daladala buses was high or very high: 71% at Kurasini, 65% at Ilala, 77% at Tabata, 62% at Mbagala, 63% at Mikocheni, and 55% at Kawe. Commuters considered high speeding as worrisome and dangerous. A respondent at Ilala described the situation this way: “vehicles are driven very fast and brake hard often with screeching tyres, and as you can see we live close to the road, so we often rush out quickly when we hear the noise from a braking vehicle in fear that our children may have been knocked down”. The respondents stressed that informal loosely regulated driving routes lead to fierce competition and reckless driving that endangers their lives. As buses compete with each other for passengers, double or triple parking in order to pick up passengers at busy locations was common. This resulted in traffic delays, congestion and recklessness. Reckless driving was also believed to be the result of poor driving skills. According to the chairman of DRTLA, more than half the daladala drivers in Dar-es-Salaam own fake driving licences (Nipashe, 2003.10.11). Reckless driving in combination with poor maintenance of vehicles is the cause of many accidents in Dar-es-Salaam.

As Tables 5.2 and 5.3 show, the number of fatal accidents involving daladala buses has been on the increase since 2000, when there were 1295 accidents involving daladala buses with 84 persons killed and 1168 injured (including 6 dead students and 82 injured). In 2001, daladala buses were involved in 1318 accidents which led to 91 deaths and 1118 injuries (35 dead students and 92 injured). In 2002, daladala buses were involved in 1499 accidents with a resultant 93 deaths (18 dead students and 72 injured).27 During the first six months of 2004, 1080 persons died in road accidents in Dar-es Salaam (Sunday Citizen, 04.09.10). The figure includes passengers, pedestrians, drivers and biking people. Studies have shown that 35% of all road accidents within mainland Tanzania occur in the Dar-es-Salaam region (Rwebagira, 1999).

Reckless driving is also a result of the way the drivers and conductors of daladala buses are paid. They are paid on a daily basis depending on the revenue they collect above a fixed amount which is usually submitted to the bus owner every evening. For this reason, the payment of drivers and conductors depends on the ability of the drivers and conductors to collect a substantial revenue through a ‘struggle’ to win many commuters. This mode of payment prompts extreme competition for commuters among drivers and conductors. In so doing, most buses disregard public safety by speeding and reckless driving. Furthermore, an interview at Kawe with a former daladala driver revealed an array of traffic management factors that negatively affect driving in Dar-es-Salaam. These include inadequate traffic signs, but also the inability of some drivers to interpret them properly. According to the respondent, many drivers are young people in their early 20ties who have not attended special training to handle driving of commuter transport in the city. In addition, there is no clear

27 Dar-es-Salaam Regional Traffic Police Department
separation between pedestrian ways and roads. Similarly, commercial activities are continually being carried out very close to the roads, which increases the risk of knocking down pedestrians (Figure 5.8). Traffic Police officers on the other hand pointed out that road signs in Dar-es-Salaam are old and meant for a city with fewer vehicles and also that many roads are unlit and therefore there is a constant risk of not seeing road signs during the night.

Death and injuries from motor vehicle accidents in Dar-es-Salaam as discussed above should be a matter of national concern because they are associated with severe financial and social implications for those involved. Generally road accidents in Tanzania are costly and unacceptably frequent. In 1994, it was estimated that the nation lost at least 11 billion Tsh, equivalent to £11 million, through road accidents (Rwebangira, 1999). As described in Chapter 2, the poor socio-economic situation of the country limits the government to invest in transport infrastructure. On the other hand the costs that is incurred by the society due to increasing accidents owing to poor transportation infrastructure is increasing to be high.
Table 5.2 Accidents in Dar-es-Salaam according to vehicle type, 2000-2002

<table>
<thead>
<tr>
<th>Year 2000</th>
<th>Type of vehicle</th>
<th>No of vehicles</th>
<th>No of accidents</th>
<th>Persons killed</th>
<th>Persons injured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private car</td>
<td>3291</td>
<td>1779</td>
<td>70</td>
<td>1006</td>
</tr>
<tr>
<td></td>
<td>PSV bus</td>
<td>49</td>
<td>45</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PSV daladala</td>
<td>3224</td>
<td>1295</td>
<td>84</td>
<td>1168</td>
</tr>
<tr>
<td></td>
<td>PSV taxicab</td>
<td>75</td>
<td>73</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>PSV hire</td>
<td>39</td>
<td>37</td>
<td>NIL</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>HGV/trailer</td>
<td>571</td>
<td>423</td>
<td>40</td>
<td>161</td>
</tr>
<tr>
<td></td>
<td>Motor cycle</td>
<td>227</td>
<td>225</td>
<td>8</td>
<td>221</td>
</tr>
<tr>
<td></td>
<td>Pedal cycle</td>
<td>343</td>
<td>338</td>
<td>15</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td>Pickup</td>
<td>1624</td>
<td>884</td>
<td>64</td>
<td>747</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9440</td>
<td>5099</td>
<td>284</td>
<td>3664</td>
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<table>
<thead>
<tr>
<th>Year 2001</th>
<th>Type of vehicle</th>
<th>No. of vehicles</th>
<th>No. of accidents</th>
<th>Persons killed</th>
<th>Persons injured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private car</td>
<td>3582</td>
<td>1884</td>
<td>81</td>
<td>993</td>
</tr>
<tr>
<td></td>
<td>PSV bus</td>
<td>67</td>
<td>53</td>
<td>9</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>PSV daladala</td>
<td>2396</td>
<td>1318</td>
<td>91</td>
<td>1118</td>
</tr>
<tr>
<td></td>
<td>PSV taxicab</td>
<td>84</td>
<td>77</td>
<td>1</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>PSV hire</td>
<td>80</td>
<td>74</td>
<td>1</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>HGV/trailer</td>
<td>678</td>
<td>493</td>
<td>55</td>
<td>172</td>
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<tr>
<td></td>
<td>Motor cycle</td>
<td>237</td>
<td>235</td>
<td>10</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Pedal cycle</td>
<td>381</td>
<td>356</td>
<td>33</td>
<td>376</td>
</tr>
<tr>
<td></td>
<td>Pickup</td>
<td>1573</td>
<td>1032</td>
<td>79</td>
<td>725</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9778</td>
<td>5482</td>
<td>360</td>
<td>2747</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2002</th>
<th>Type of vehicle</th>
<th>No of vehicle</th>
<th>No of accidents</th>
<th>Persons killed</th>
<th>Persons injured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private car</td>
<td>4079</td>
<td>1907</td>
<td>91</td>
<td>1104</td>
</tr>
<tr>
<td></td>
<td>PSV bus</td>
<td>52</td>
<td>52</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>PSV daladala</td>
<td>2467</td>
<td>1499</td>
<td>93</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>PSV taxicab</td>
<td>111</td>
<td>111</td>
<td>NIL</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>PSV hire</td>
<td>770</td>
<td>523</td>
<td>60</td>
<td>204</td>
</tr>
<tr>
<td></td>
<td>HGV/trailer</td>
<td>251</td>
<td>249</td>
<td>14</td>
<td>314</td>
</tr>
<tr>
<td></td>
<td>Motor cycle</td>
<td>388</td>
<td>388</td>
<td>17</td>
<td>490</td>
</tr>
<tr>
<td></td>
<td>Pedal cycle</td>
<td>2467</td>
<td>1499</td>
<td>93</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>Pickup</td>
<td>1642</td>
<td>1156</td>
<td>91</td>
<td>917</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>12227</td>
<td>7384</td>
<td>465</td>
<td>4161</td>
</tr>
</tbody>
</table>
Table 5.3 Accidents in Dar-es-Salaam involving students, 2000 -2002

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th>Dead</th>
<th>Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>2001</td>
<td>2002</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>25</td>
<td>18</td>
</tr>
</tbody>
</table>


5.6 Bicycling and walking

Non-motorised transport modes such as walking and bicycling can greatly improve accessibility for many poor families, yet these do not make competitive alternatives to bus services (Figure 5.9). The study showed a very low proportion of people cycling in all the case study areas: 9% at Mikocheni, 12% at Kawe, 4% at Mbagala, 14% at Tabata, 21% at Kurasini and 6% at Ilala. More than 50% of the respondents in all the case study areas were negative to cycling in Dar-es-Salaam due to poor bicycle routes, traffic congestion, poor road conditions and reckless drivers who do not care for cyclists’ safety. Only less than 50% of the interviewees in all the case study areas responded that they could not raise enough money to buy a bicycle. On the whole, as shown in Table 5.2, the number of serious accidents involving cyclists has been on the increase in recent years, from 338 in 2000, leading to 15 deaths and 316 injuries, to 1499 in 2002, leading to 93 deaths and 1010 injuries.28

![Figure 5.9. Frequency of travelling by bicycle in the six case study areas](image)

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28 Interview with Dar-es-Salaam Region Traffic Police Department—May 2003
On the other hand, all the interviewees responded that walking was their common mode of travel to nearby destinations. However most of the respondents considered that walking conditions were poor: 99% at Ilala, 100% at Kurasini, 97% at Mbagala, 94% at Kawe and 91% at Mikocheni. The respondents defined the poor quality of walking conditions in terms of: absence of walking routes, unpaved route surfaces, conflict with motor vehicles—(see Figure, 5.10), narrow streets, muddy conditions during rainy season, lack of shade along routes, absence of street lights and hence unsafe routes at night.

Figure 5.10. Conflict situation involving people and vehicles

5.7 Voices concerning transportation in Dar-es-Salaam

The questionnaires used in the household interviews were used to construct two tales of transportation experiences in Dar-es-Salaam in order to complement the analysis made so far in this report.

5.7.1 Laborious journeys to the market

Agnes is 45 years old and lives in a household in Tabata with 10 inhabitants and without a car. She has no formal employment but carries out small businesses such as baking deep-fried pastries in her home and then selling them at a market, Kariakoo or Temeke. There is no market for selling her products in her own neighbourhood. She considers that the air in her neighbourhood is polluted, mainly because people in the area practice zero grazing, which pollutes the area during the rainy season when the manure is washed away by the rain. Another reason why the air is polluted is because her
home is near the garbage dump. The area around her home is not very noisy as there are few activities around and they live far from the main road.

When doing her business and other daily activities Agnes walks or uses a daladala depending on the fare and distance. She thinks travelling takes too long because of traffic jams and that the bus fare she spends per week, 700 Tsh (about 1 US$), is too high. She finds that the reliability of buses is rather poor and that the bus stops are deplorable “the bus stops do not cater for passenger demand”. Inside the daladala buses, Agnes experiences discomfort including the inability to see out, the dirt of the buses and the poor sitting and standing conditions, as in some areas regulations for how many passengers the daladalas can carry are not upheld. She finds that as a women she is treated poorly by the bus staff and “They cheat me into getting on the bus by saying there is a free seat or that someone will get off the bus at the next stop”. The result of this is that she has to stand during the trip and she travels to work in overcrowded buses with loud music and noisy hooting horns.

She does not own a bicycle and cannot afford to buy one and also she does not see cycling as a possibility because of the traffic congestion. Walking, which is one of the transportation modes that she uses, is made difficult by the absence of walking routes and the unpaved route surfaces.

The speed of cars is not excessive, she thinks, and the roads are good but the physical condition of vehicles is very poor with pollution and noise. In her own neighbourhood she would primarily want better bus-stops, improved bus conditions and more buses to improve public transportation. She has never been involved in any planning process directed at improving transport but would welcome it.

Concerning air pollution from vehicles, she is aware of that it may cause harm to health and the environment. The health implications are “inhalation of air which is polluted with oil and grease from cars”, while she cannot elaborate much on the environmental impacts. She is also aware of climate change and elaborates in the following way about its effects and causes: “Destruction of the environment can affect human health as well as the environment. In the case of health, the changes can cause the spread of diseases while environmentally they cause a shortage of rainfall and hot conditions”

5.7.2 My car is my castle

Another tale comes from a man, 36 years old and living in Mikocheni, in a dwelling with one family and five members. He works as an accountant and he only travels by car and never walks, cycles or uses daladala buses. By car it takes 10-30 minutes for him to go to work and that, he thinks, is a reasonable time. He bought a car in order to avoid “the daladala disturbances” with transport services that are far from reliable. His weekly expenditure on transport is about 25, 000 Tsh (about 80 US$) and he thinks that is OK. He does
not only use his car for commuting to work but also to reach some of the important services lacking in his neighbourhood such as a market, a hospital, shops, schools and churches.

In contrast to the daladala services, he finds that the bus stops are acceptable. His previous experiences of using daladalas are very negative; the comfort is very poor, the buses are unclean, the conductors’ language is poor and the music too loud. Also, seating conditions are very poor with “squeezed chairs to maximize profits”. He thinks that the employment situation of the conductors contributes to the poor quality of services rendered “Conductors do not care about their work, maybe because they do not have any signed contract with the bus owners”. He never travels by bicycle because it is too difficult and too dangerous.

Despite the apparent benefits of using a private car, he is concerned about traffic: speeding cars and the poor condition of many vehicles. He is not overly concerned about vehicle pollution or noise levels and he thinks that roads are generally OK. A main problem on the roads, according to him, is that drivers do not obey traffic rules and this is exacerbated by the corruption among traffic police “Drivers do not know the traffic regulations and even if they know about them they don’t follow them. Even the police contribute because they take money from the drivers of the daladala.”

He has never taken part in any planning process in his neighbourhood but would like to. In such case he would argue that the daladala owners should sign a contract with the operators to facilitate responsibility in an attempt to seriously manage daladala operations.

He is not very satisfied with the air in his neighbourhood because “the area is somehow congested, you cannot compare it with a low density settlement and there are industries in the neighbourhood” These industries are, however, not near enough to create noise but he is worried that they may cause air pollution. Air pollution from cars and buses he says can affect health and environment because of the smoke coming out of them but is no more specific than that. He has also heard about climate change and knows that the cause is air pollution and that the effects are “floods due to reduced ozone layer”.

The two cases described above illustrate the large disparities in everyday transportation life that exist in Dar-es-Salaam today, but also the similarities. Both subjects experienced the same traffic environment with its risks for safety and health and both were disturbed by it and would like to be involved in participatory planning to ameliorate it. However, apart from that their abilities to cope are entirely different. The women, who represents the poorer segment of the city’s population, often without formal employment, has to rely entirely on the poor daladala services for earning her livelihood and she daily has to cope with expenditure that is problematic, conductors who try to cheat her out.
of her meagre resources and the unreliability of the only transportation system she can afford and manage. The low cost option of walking is closed to her because of safety and comfort and even if she could raise funds for buying a bicycle she would not be able to use it. Poverty and the existing traffic system have trapped her. On the other hand, the man with a high income and a formal employment has used his economic advantages to buy himself a car which is now his only transportation mode wherever he is going. He refrains from using any kind of non-motorised transport for safety reasons and therefore opts out of possibilities for everyday exercise that would increase physical activity in an otherwise probably rather sedentary lifestyle. Both persons have everything to gain from a reformed traffic system.

5.8 Conclusion

As Dar-es-Salaam city grows, the need to travel increases in different parts of the city. After the public-operated transport company failed to deliver services in the city, the Government was compelled to deregulate public transport services. Today there is no monopoly of public service operation but free, and sometimes fierce, competition between different providers of public transport services. Each minibus is a separate economic unit and competes with others. The operation of daladalas is now dominated by private individuals who own one or several buses. Because of the questionable financial sustainability of this business, most of the operators are non-professionals. They are also vulnerable as they depend on the revenue for their subsistence living. Many civil servants are involved in this sector. Running daladalas is a side activity for most bus owners and that does not encourage investment and long-term management. As a result, most buses in the business are in very poor physical condition, which poses safety risks for the customers. The low fare charged to passengers probably also contributes to the poor condition of the buses, as funds for repair and maintenance are hard to raise. The bus fare has not been increased for up to ten years, although the operating costs in terms of fuel and spare parts have increased several-fold.

Many drivers do not have proper training to drive public buses in Dar-es-Salaam. As a result, the number of road accidents continues to increase every year in Dar-es-Salaam with an increasing number of casualities with both financial and human costs to the nation. The fact that drivers and conductors do not have employment contracts and the way in which they are remunerated contribute to poor transport service delivery. The payment of a driver and his helpers depends solely how well they can win customers. Once the daily fixed amount has been paid to the bus owner, the surplus is for the crew. Reckless driving is the result of this mode of payment as filling up the bus to the maximum and driving fast is the best tactic for commercial success. Likewise, commuters are prevented from reaching their work places because bus operators do not start the journey before they collect enough customers for fear that they may not collect enough revenue during the trip. As people are delayed in reaching work, productive time is lost during travel. The cost for low bus
quality is also borne by passengers as clothes are torn and valuables are stolen in the over-crowded and badly maintained buses.

Although, there are large segments of the population for whom the low fare is a real problem even today, part of the population would be prepared to pay more for public transport if the quality was higher. Some of these people would then use their own car less, thus contributing to less congestion on the roads. So far, no company has tried to approach these people offering bus services at their standard, albeit to a higher cost. Such a proliferation of public transport services would, however, be feasible in the market economy approach that Tanzania has embarked upon recently. Reckless driving has scared away people who would otherwise have used non-motorised transport such as bicycles. The number of accidents involving cyclists and pedestrians has been on the increase in Dar-es-Salaam. Reckless driving and lack of proper routes for cyclists and pedestrians will continue to constrain the promotion of public transport in Dar-es-Salaam.

Travelling in Dar-es-Salaam has become a frustration to many commuters because it is unprofessionally operated. Poverty excacerbates the problem but as shown later in Chapter 7, the lack of a competent authority to manage transport in Dar-es-Salaam is one of the main causes for its current state.
Chapter six

6.0 Public Transport as a Common Good

Like most cities in developing countries, Dar-es-Salaam has faced a growing number of people moving into the city since the middle of the last century. Between the census in 1948 and the census in 2001, the population in the city increased from less than 70 000 inhabitants to about 2 500 000. This means that there are 35 times more people living in the urban area today than five decades ago (Table 6.1). During the 1950s, it was possible to reach the boundaries of the urban area within a distance of five kilometres. Today, this distance has tripled.


<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1942</td>
<td>69 227</td>
</tr>
<tr>
<td>1952</td>
<td>99 140</td>
</tr>
<tr>
<td>1959</td>
<td>128 742</td>
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<td>1978</td>
<td>843 090</td>
</tr>
<tr>
<td>1988</td>
<td>1 360 850</td>
</tr>
<tr>
<td>2002</td>
<td>2 497 940</td>
</tr>
</tbody>
</table>

Source: Kombe et al., 2003, URT 2002.

Large migration flows can scarcely be met by adequate planning for housing, transport, water supply, education or other measures promoting social welfare. Semi-urban and peri-urban living environments are concepts often used to describe the situation in newly established settlements in the urbanization process, indicating that housing areas are established more or less spontaneously where immigrants settle (Satterthwaite, 2001; Zetter and White, 2002). Some areas become more integrated into the urban structure, while others more or less become something in between a rural settlement and an urban area.

However, during a longer time period there are people not only moving into the city, but also changing housing situation and housing area within the urban area. The migration within the urban area leads to a process of differentiation and segregation whereby more affluent households settle down in dwellings located in attractive areas and poor households have to stay in dwellings in overcrowded areas or in squatter areas. That kind of differentiation processes has led to a situation in Dar-es-Salaam where segregation can be clearly identified, as was shown in the presentation of the case study areas.
The quality of infrastructure, e.g. streets with a hard surface, water supply and public transport, education and social services and commercial services, differ between the areas. Although differences exist, a common situation for almost all areas in the semi-urban and peri-urban positions is that the supply of public services is far below the demand. For example, transport services cannot meet citizens’ needs for transport for commuting to workplaces, schools, care centres or commercial centres. Schools and education services have not expanded sufficiently to meet the growing number of school children in newly established areas. Lack of services in areas increases the demand for transport not only in the rapidly growing Dar-es-Salaam, but in any urban area with a fast and steadily growing population. In 1965, 18% of Dar-es-Salaam’s commuters travelled by public transport and 65% walked (Kombe et al., 2003). In 1982, the situation had changed almost completely, 60% of the city’s commuters travelled by public transport and 25% walked. Today most people living in any housing area have to go to work and schools outside the area using some mode of motorized transport. Public transport carries the greatest number of commuters, while a small but growing number of inhabitants use their private cars.

6.1 The equality goal: Treatment of stigmatised customers

One major goal of public transport is to provide a service to all inhabitants. However, since expansion and renewal of the bus fleet has not been able to meet the demand for transport, the daladala buses are often overcrowded. Concerning safety, there are robbers – pickpockets, mainly unemployed youths – who take money and mobile phones from pockets and handbags (according to Mr. Benjamin). That situation is often valid in peak hours for people commuting to workplaces and schools.

Customers paying full fare have the benefit of being accepted first. School children paying a reduced fare have to wait for the next bus and are late for school for this reason. Some categories of women are treated in the same way, especially if they are pregnant or are accompanied by children paying a reduced fare. Women, students and also disabled persons often find themselves stigmatised just for paying a reduced fare and are very often brutally put off the bus (Kombe et al., 2003). The results from interviews show a wide range of complaints, but also creative proposals for improving the quality of bus services. The low quality of the transport service affects the passengers in different ways. Women try to avoid overcrowded vehicles by using service hours with fewer passengers. School children get too tired to perform adequately in school due to early mornings, queuing for their turn to get on board, long school days and queuing again to travel home.
6.2 Women and travel situations

The increasing importance of women as travellers has implications for the way that transport policy has to be reviewed, especially as women attending the labour market more frequently have their workplace outside their home and housing area. At one level, there is the issue of gender equity with respect to how transportation strategies are devised. Appreciation of the nature of women’s travel situation and their behaviour may actually facilitate an easier path to sustainability (Root et al., 2002). Women are generally physically smaller than men, and they more often travel with children. This can evoke real fears of attack and perception of the safety of travel particularly at night (ibid.).

The results from the case studies in Dar-es-Salaam show that on average women feel that they are treated badly when they use daladala bus services (Figure 6.1). In Mikocheni, 47% felt that they were treated badly or very badly, and 53% felt that they were treated well or very well. At Kurasini, 49% felt that they were treated badly or very badly and 51% felt that they were treated well or very well. At Kawe, 28% felt that they were treated badly or very badly, and 68% felt that they were treated well or very well. At Tabata, 49% felt that they were treated badly or very badly and 51% felt that they were treated well. At Mbagala, 49% felt that they were treated badly or very badly, and 51% felt that they were treated well or very well. At Ilala, 54% felt that they were treated badly or very badly and 46% felt that they were treated well.

![Figure 6.1. Treatment of women in daladala buses in the six case study areas](image)

This study showed that there was no difference in the treatment of women for areas of higher or lower socio-economic status. Thus the poor treatment of women was almost exclusively related to gender. The mistreatment of women seems to be at its worst during peak hours, when the buses are overcrowded.
Conductors direct passengers to stand back to back. However some male passengers do not follow this order. Instead they stand facing the back of the female passengers (Kombe, et al. 2003). Often many women shout when sexual harassment events occur. Some conductors are very arrogant when a woman complains. They answer “If you feel you are too beautiful, why did you not take a taxi?”. During peak hours women compete with men to get a seat. However, they are often pushed aside and have to stand during the travel. Standing is a more vulnerable position for sexual harassment.  “As we were travelling in an overcrowded bus, a lady shouted, complaining that a man wanted to rape her. At the same time she slapped him on the face. The lady complained that the man had already unzipped his trousers”. Fortunately a policeman in the bus apprehended the man and took him to the police station (ibid.). The male passengers agree that sexual incidents are common, but on the other hand they blame some women for using transparent clothes and mini-skirts, which increase the risk of being harassed in overcrowded buses. As shown earlier in Section 5.5.3, the population interviewed complained about poor or very poor language being used to passengers everywhere.

In general, the results regarding the treatment of women in all case study areas showed that about 50% of women felt that they were mistreated when they used daladala. However, at Kawe we found a high percentage of women saying that they were treated well. Kawe is served exclusively by daladala buses. There is no other alternative public bus service, which makes it difficult for the inhabitants to compare customer treatment with other bus agencies.

The negative attitude of women to daladala bus services was due to the unpleasant treatment that they receive from male passengers but also from bus drivers and conductors. This includes abuse and insults and mistreatment while in the buses. Such mistreatment includes:

(i) Drivers not waiting for passengers to be seated before driving on,

(ii) Abusive language and insults by the conductors,

(iii) Buses not stopping when they reach their destination,

(iv) Buses not waiting until passengers have properly dismounted before driving on,

(v) Women may sometimes be treated well when they board the buses, but become mistreated during the travel because conductors have already taken the money – bus conductors care only about getting money and not the services.

Generally, women argued that they are disregarded by the conductors, who are street boys and disrespectful young men with no families, according to their description. In Tanzania, there is a tradition to give priority to pregnant women
and elderly people. Hence a lack of consideration for pregnant women and those with children is a gross divergence from the perceived norms in the society.

Despite their dissatisfaction about daladala services, women use daladala buses often or very often. At Tabata, 80% said that they use daladala services often or very often. At Mbagala, 73% use the daladala services often or very often. At Ilala, 70% use daladala often or very often. At Kawe, 70% use daladala services often or very often. At Kurasini, 60% use daladala often. At Mikocheni, 72% use daladala often or very often. As the main public transportation agency, daladala operators provide their services in a negative way to women.

Women have different needs than men concerning the services that are offered by daladala. During this study, women had the opportunity to put forward their concerns regarding what urban transport in Dar-es-Salaam could possibly be. For instance, women claimed that they could not enter the buses through the windows, as is sometimes the case during the struggle to enter the buses. They felt that young boys who abused women should be excluded as bus conductors. In addition, women felt that on boarding the buses, they should be given priority, pregnant women and those with babies should be seated first and, most importantly, women should not be discriminated against and abused, instead they should be treated like other people. Other suggestions included employment of women in the urban transport sector and replacement of daladala buses with other better buses. But since these women do not participate in planning, it was not possible to have their recommendations included in any planning activity for improved public transportation.

At Mikocheni, 90% of the women were not involved in any planning programme for transport, and around 10% were involved. At Kurasini, 100% of the women were not involved in any planning activity for transportation while the corresponding figures for Kawe, Ilala, Mbagala and Tabata were 98, 100, 100 and 98% respectively. Hitherto, only a small proportion of women in more affluent areas have been involved in activities for transport planning.

The study also shows that women have a strong wish to participate in planning for public transportation if they are given the opportunity. All case studies showed a high percentage of women with the desire to participate in planning for public transport, i.e. 98% at Ilala, 98% at Tabata, 93% at Mbagala, 88% at Kawe, 89% at Kurasini and 95% at Mikocheni.

6.3 Pupils and travel situations

During recent decades, families have moved from the inner city of Dar-es-Salaam to housing areas in suburban areas. The rapid increase in the population in such areas has not been met by an adequate expansion of schools in the neighbourhoods. Schools in the centre of Dar-es-Salaam have, on the
other hand, been left with a surplus of places for pupils. Thus most families have to find a school for their children far away from home. Most of the school children have to go by bus to their school during several years of their education.

Pupils frequently use the daladala buses for commuting to and from their school. As school children, they pay reduced fare, 50 Tanzanian shillings. They are not as attractive passengers as those paying full fare. Their peak hours coincide during the morning with those commuting to work. They compete with everyone about seats in buses, which most often are overcrowded. The results from all the case studies in Dar-es-Salaam showed a very strong discontentment among pupils concerning the daladala services (Figure 6.2). In all the case studies, the highest proportion felt that the services were either poor or very poor as follows: Mikocheni, 81%; Kurasini, 93%; Kawe, 83%; Ilala, 75%; Tabata, 85%; and Mbagala, 88%. The differences among housing areas were very small, which means that socio-economic background is unimportant. Every school child, irrespective of background, is mistreated to the same extent.

![Figure 6.2. Pupils’ opinions of daladala bus services in the six case study areas.](image)

Pupils gave a number of reasons for their strong dislike of daladala bus services. However, the central reason that makes daladala operators mistreat students is that they pay a fare of 50 Tanzanian shillings instead of the normal 150 Tanzanian shillings. Often daladala conductors refuse to allow students to sit in the bus seats. This happens even when there are vacant seats. The pupils are delayed on their way to their schools and back home because daladala buses do not stop to pick up uniformed pupils. When the buses do stop, they give preference to non-student passengers and since pupils travel during peak hours...
they usually arrive late to their final destinations. The bus conductor also use abusive and insulting languages to pupils. In some cases, conductors physically abuse pupils by hitting them. Such incidents of fights have occurred between conductors and bigger male pupils. Female pupils were among the most affected because they could not scramble to board daladala buses equally with male students. During our interviews, some pupils remarked that they usually felt helplessness and frustration, as they faced humiliating daladala services to school every day. Since there was no other alternative they had no other choice. Accordingly, pupils felt that the poor services daladala offered had negative effects on their school performance.

6.3.1 A common school day

For most of Dar-es-Salaam’s school children, the day starts very early when they commute to their school by daladala buses. They wake up at 5.00 am every morning (Table 6.2). “Every day they have to queue for a place on the bus, which has the consequence that the students very often arrive at school after the official time of 7.30 am. If that happens they get punishments such as watering the garden or cleaning the grounds at school. In most cases my daughter arrives at school in time because she wakes up very early before the build up of vehicular traffic in the road (A father in Mikocheni area).

Table 6.2. A typical school day for children studying in a secondary school situated away from their housing area

<table>
<thead>
<tr>
<th></th>
<th>Girl in secondary school</th>
<th>Boy in secondary school</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mikocheni</td>
<td>Ilala</td>
</tr>
<tr>
<td>Leave home</td>
<td>6.15 am</td>
<td>5.30am</td>
</tr>
<tr>
<td>At the bus stop latest</td>
<td>6.30</td>
<td>6.15</td>
</tr>
<tr>
<td></td>
<td>queuing</td>
<td>queuing</td>
</tr>
<tr>
<td>Arrive at school</td>
<td>7.30-7.50</td>
<td>7.30-7.55</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Afternoon session ends</td>
<td>6.00pm</td>
<td>6.00pm</td>
</tr>
<tr>
<td>At home in the night</td>
<td>7.00-8.00pm</td>
<td>8.00pm</td>
</tr>
</tbody>
</table>

Source: Interview with parents, March 2004
The school children have to be at the bus stop a long time in advance. As students pay a reduced fare they are not very popular as passengers and conductors push them aside in favour of passengers paying full fare. For that reason they have to watch a number of buses passing before they are allowed to get on. *The reason that contributes to waking up very early is to get a margin of time in case some daladala operators refuse to admit them into the buses (A mother of three school children in Mikocheni)*.

Very few school children go to school with modes of transport other than daladala buses. *About 90% of the school children in our school use daladala to come to school. About 5% of the children are brought to school by their parents and about 5% come to school by special transport or school buses (An assistant head teacher at Bunge primary school)*. This school informs parents about bus operators willing to arrange school buses for children. The cost of transportation is 15,000 T. shillings per month, which means a price 6 to 7 times higher than for daladala transportation. Few parents can afford such a price payable at once. Despite that, six small buses are now operating for this school in cooperation with some other schools in the neighbourhood.

### 6.3.2 Time table and waiting for the bus

As described in Chapter 5, bus services are run without any time table. It is not possible to know when buses will be arriving or leave at a certain bus stop or terminal. However, during peak hours buses run frequently. School children and adult commuters compete for the places on board with priority given to adult passengers. Bus conductors allow on board only a very small number of school children. It is not possible to know when bus conductors would allow pupils to travel. The children can never know in advance for how long time they will be queuing. *Often buses stop far away from the bus stop to avoid students getting into the buses (a father of two school children in Mikocheni)*. The reliability of daladala buses is estimated to be low (see Section 5.5.9 above and Figure 6.3 below).
Hindering school children from entering the bus is accompanied by brutality …. Conductors do sometimes push away pupils as they scramble to enter the daladalas. They push them away …. Thereby limiting the number of pupils that enter the buses. In one case a pupil was pushed so hard that his bag fell into the water (A teacher at Olympio primary school). It is common that pupils get pushed by the conductors. One case we know is of a pupil whose leg was broken because he was pushed by a conductor and fell out of the bus. However the matter was taken to the police (A mistress at Benjamin Mkapa secondary school).

Small bus size, with low capacity in combination with a growing demand for transport, creates in itself a more or less unsustainable situation, where the weakest group of passengers will lose. Besides insufficient capacity, the conditions at the bus stop are inadequate. The major problem for this bus stop is that it is chaotic and unorganised because buses and cars move around without any organized pattern. The area is full of pot-holes, and as a result during the rainy season stagnant dirty water splashes on to waiting passengers as cars pass by. The bus stop lacks shelter for passengers and toilet facilities as well. The environment surrounding the bus stop is filthy (Kombe, et al 2003).
Figure 6.4. Bus stop conditions in the six case study areas.

Thus the situation while waiting for the bus is frustrating for more or less all passengers, and especially for the weakest groups waiting for their turn an extra long time. The conditions at the bus stop are not only uncomfortable (Figure 6.4), but also unsafe with respect to accidents. The chaotic situation during peak hours may also force the conductors to use more violence than necessary, especially to less attractive passengers.

It is not only going to school that is cumbersome for pupil, but also, it is not easier to come home in the evening. After school hours, daladala operators often deliberately drive on without stopping at the bus stop to pick up the pupils. As a result they wait for a long time at the bus stop before being admitted onto the buses. Thus they often are very delayed because of recurrent refusal to admit them onto the buses and also due to long queues, which cause very slow vehicular traffic flow. The arduous travel situation makes the children very tired, to the extent that they often skip their school homework in the evening (A father of six children at Ilala).

When children arrive late in the evening the parents are often very worried about what has happened. We are worried maybe the conductor has pushed or kicked them. As a parent one is always worried until the child is back home (A mother of three children at Mikocheni).

The frustrating situation for school children to be able to be in time for school and also to be able to come home as early as possible sometimes forces them to make friends with conductors. The magnitude of the problem of travelling to school has induced a phenomenon whereby girls are compelled to make friendships with daladala drivers and conductors. Such type of friendship leads
into sexual relationship with favours to the girls that include allowing the girls to enter the buses during peak hours and to travel either free or with a reduced fare. This behaviour has resulted in incidents whereby school children become pregnant with daladala conductors and drivers (A mistress at Benjamin Mkapa secondary school). There is a mental stress as well as a physical stress on pupils commuting to their school, which makes them very tired when they arrive home. School work is neglected, they perform less well in school. Parents as well as teachers witness to these effects of a long school day in combination with the travel situation.

6.3.3 Safety during travel

As shown in section 5.5.7, most of the daladalas are old and in a bad condition due to lack of service and adequate repair. That is a risky situation per se. During peak hours a bus with 14 seats often carries twice as many passengers, which makes for a second kind of risky situation. Many passengers remain standing during the travel. This situation is especially valid for school children. There are, however, less attractive seats, which are offered them. Journey to and from school is not safe and comfortable for the pupils. There are so many reasons for this, but one is that conductors offer students a seat near the door on top of a warm seat, popularly known as ‘kiti moto’, situated over the motor engine. Since most of the daladala buses are old and run down, the ‘kiti moto’ is usually too hot. Conductors force the students to sit on this seat because of the low fare that they pay. Adults seldom sit on this chair. They pay full fare (a teacher of Olympio primary school).

Another aspect of safety, apart from the standard of the buses and overcrowded vehicles, is the way the buses are driven. There are a set of formal procedures to be accepted as a daladala operator. The Dar-es-Salaam Regional Transport Licensing Authority (DRTLA) is charged with the responsibility of issuing licences to an institution or a person who owns a bus and meets the legal operating requirements for a public service vehicle as prescribed under the Transport Licensing Act 1973:1 Sections 4 and 16(1)a-b (Kombe et al., 2003). As described in section 3.3, the operator is allocated a route. The licensing authority may require more details to be submitted before a licence is issued to the operator. The procedure required has to be followed and an amount of money to be settled before one gets an operating licence. In spite of the formal rules, there are a lot of pirate daladalas operating the routes. Most of the drivers are young people in their early 20ties. Only 2 out of 10 drivers had gone through formal driving schools, while the rest had learnt driving in garages or through their engagement as conductors (Kombe et al. 2003). As pointed out in section 5.5.10, the drivers are employed on flimsy grounds. They can very easily lose their job and they seldom know in advance if their financial agreements with the owner will be honoured. The conclusion is that in spite of formal rules, the number of drivers without a proper driving licence is very high. The turnover of drivers is probably also high due to unsafe rules for employment. Most passengers know about the situation, but have no other
choice than going with the daladalas. We are worried about the safety of our children because of the reckless driving by daladala bus drivers (The father of six children at Ilala). I am worried for the safety of my children when they cross roads amid passing vehicles. Daladala drivers do not drive safely and this may cause accidents as children cross roads (The father of six children and chairperson of Ilala sub-ward).

The lack of safety during the travel can be attributed to several sources: i) old vehicles in bad condition, ii) lack of total formal control of operators and drivers, iii) a high proportion of drivers without driving licences, iv) poor road condition and inadequate arrangements for bus stops.

6.3.4 Another mode of transport and living

Most pupils have to use motorized transport to go to school. Daladala buses are the most common mode of motorized transport. There are a numbers of bus operators offering special transport by school buses. These buses serve school children exclusively and often drive a route passing two schools or more. The costs to bring the student to school by these buses is paid by the parents themselves. The school bus system is an arrangement between bus owners and parents. Parents pay 15 000 Tsh per month for each child. However, bus operators charge 20 000 Tsh per month for pupils living in the suburbs far from the urban area. The school is not involved in these arrangements. Bus operators have their offices near our school outside the school compound. Consequently the operators are easily reachable by parents who need transport services for their children (Teachers at Olympio primary school)

Better-off families avoid transportation for their school children by organising a hostel for them during the school week. Some financially able parents arrange for their children to stay at specified hostels. This gives them a good environment for studying instead of commuting and staying at home. These pupils come to school by a bus – a transport arrangement that was organized by the parents. The condition to stay in hostels is that a parent has to inform the head teacher by letter that his/her children wish to stay at a hostel. The head teacher must endorse the letter as a condition of admission by hostel management (Mistress at Benjamin Mkapa secondary school). Very few families can afford this kind of living for their school children.

6.3.5 School performance

The stress situation during travelling to school, anxiety about not being in time, a long school day and worries about how to get home affects the pupils in a negative way. They get tired. Although some daladala buses do not stop to pick up students, at least some stop to pick up a limited number of students. In the end they arrive home, but with a price, namely of being delayed … my girl becomes tired of such delays and the general travel discomforts towards home. This situation affects negatively her ability to do her school homework in the
evening (The father of two children at Mikocheni). When he comes home late he takes a shower, rests for a while, eats and afterwards he does some schoolwork. But sometimes he is so tired that he is unable to do his schoolwork (The mother of three children at Mikocheni). Tiredness due to travelling affects their disposition as regarding doing their homework (The father of six children at Ilala).

Parents are anxious about the school situation for their children. There is often very little they can do about it. It is too expensive for most families to pay for school bus transport. There are few schools close to their residential area. So they are more or less obliged to apply for and accept a place in a school far away from home. The few households that have been able to get a school in the neighbourhood are happy for that. I cannot see any remarkable negative effect on my children regarding how they go to school. This is due to the fact that schools are located at walking distance from home, so transport is no problem. I am grateful that my children do not go through the arduous travel situation as do children who use daladala buses (The father of six children and chair person of Ilala sub-ward).

The teachers at school notice very clearly the differences in performance between pupils with differences in travel situation. Pupils who use daladala usually come late to school and are usually tired. They are besides that, punished for late arrival. Often they appear sleepy in the classes and are often dirty because of the conditions during their travel. Sometimes they complain over lost property such as bags and books. Tiredness due to travelling affects them negatively. We had one pupil, who used to be brought to school by his father in a private car. Unfortunately he lost his parent and now he comes by daladala. His performance at school has declined because he is often tired due to laborious conditions of travel (According to a teacher at Olympio primary school).

Teachers can compare the school situation and performance of pupils travelling daladala with the few who travel to school by an organized school bus. In general pupils coming by daladala become tired. Whenever they leave the classroom they think about the arduous transport situation going back home. It is chaotic (Assistant head teacher at Bunge primary school). Students coming to school by organized transport arrive early at school... Such students are well settled in the class... The swift arrival of students travelling by organized transport affects positively the way they concentrate during the lessons (Mistress at Benjamin Mkapa secondary school).

Some schools give information and recommendations to parents in order to make the school days for their children easier and improve their performance. Information is given about bus operators supplying services by school buses and networking several nearby schools in arranging school bus services. They also give recommendations to choose the nearest school for their children.
However, for families, lack of money often means being unable to afford more safe and comfortable transport for their children. At the same time the building of schools has not been fast enough to meet the demand in peri-urban and suburban residential areas. There is often no other choice for parents than to accept a place in a school wherever it is situated.

6.3.6 Costs for commuting to school in relation to family finances

The fare for students travelling by daladala buses has been the same for several decades, 50 Tanzanian shillings. Most parents consider the fare low in relation to the costs for the operation and maintenance of the bus fleet, but on the other hand, it is a burden for most families to afford the costs for their children travelling to school. From the parent point of view I find that the fare I pay for my children is an economic burden because of the level of my income. However, I do not see it as very high given the running costs incurred by bus operators (A mother of three children at Mikocheni). The fare that students pay is reasonable with regard to costs for bus operators. But as he has a big family with four school children that he supports, the total fare and food expenses is very high. If the fare were to rise, the financial burden to send his children will be great (A father of six children at Ilala).
Table 6.3. *Family expenditure for children’s travels to school and school lunches in relation to monthly income in T sh.*

<table>
<thead>
<tr>
<th>Family</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ilala</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of school children</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Costs for commuting and school lunch</td>
<td>45,000</td>
<td>15,000</td>
<td>40,000</td>
<td>45,000</td>
</tr>
<tr>
<td>Income/month</td>
<td>-</td>
<td>75,000</td>
<td>400,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Percentage of income</td>
<td>-</td>
<td>20</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Interview with parents, June 2004

About 20% of the monthly income goes to the school children for their transportation in a family with extremely low income (Table 6.3). In a family with a very common level of income (Family C), the cost for the school children is about 10% of the monthly income. The high income family (C) owns two private cars. Although having better finances and two cars, both parents commute to their work places and are not able to drive the children to school. Ownership of at least one car is common in high income families, they are an extended family supporting parents and some relatives.

### 6.4 The elderly and the disabled

The elderly and the disabled require special treatment when they board public transport due to circumstances related to age and associated impairments. This group deserves equal rights in receiving transport services to other members of the public. The elderly assessed the quality of daladala buses in the case study areas thus: At Ilala, 22% considered that daladala services were poor or very poor. The proportions of respondents in the other case study areas showing the same concern were 43% at Kawe, 63% at Mbagala, 50% at Tabata, 66% at Kurasini and 33% at Mikocheni. The reasons cited by most of the respondents who thought that daladala services were poor were: i) that buses moved on before they (old people) were properly seated, ii) old people were forced to descend from the buses hurriedly and in so doing risked injury, e.g. breaking a leg. In addition, old people were required to stand in the buses regardless of their advanced age. Other factors that bothered the old people included bad language and abuse they received from the bus conductors. Some old people claimed being told to shift into the villages because Dar-es-Salaam was not an appropriate place for them to live in. These assaults were made on the basis that the dynamics of activities in Dar-es-Salaam were faster, including the services supplied by daladala, and as a result, operators had little time to wait for old people. Most of the elderly people had never been involved in
planning for public transport. The proportion that had not been involved in planning was 100% at Ilala, 93% at Kawe, 100% at Mbagala, 100% at Tabata, 100% at Kurasini and 89% at Mikocheni. However, over 90% of the respondents were willing to be involved in planning for public transportation if they had that opportunity. Had the elderly who responded in this study been given the opportunity to participate in planning, these would be their recommendations: i) conductors to respect the elderly, ii) prohibit young people working with daladala operations iii) free transport for the elderly and iv) community roads to be improved so that public transport services can reach the elderly near their homes.

With regard to disabled respondents, their assessment in the respective case study areas showed that the services they received were poorer according to: 100% at Tabata, 100% at Kurasini, 100% at Mikocheni, 100% at Ilala, 100% at Kawe and 50% at Mbagala.

The reasons that were given by the disabled people for the poor daladala services were: i) refusal to pick them because of their disabilities ii) not given adequate opportunity to cross the roads, iii) occasionally being pushed and harassed in the buses, iv) to be hurried to dismount irrespective of their disabilities, v) abusive language by the operators.

None of the respondents had ever been involved in any planning activity for public transportation, although all the respondents would have liked to be involved. Aspects that they wished to recommend included: specific buses for disabled, free transport for them and the elderly, bus operators should respect them and roads should be improved so that bus routes can be planned near their homes.

6.5 Customer recommendations for the future

The customers are reminded every day of the troubles they have with public transport. To them, short-term solutions stand high on the improvements agenda. On the other hand they are very well aware of the long-term aspects and the problems of funding for society to implement a well-functioning public transport.

Many of our informants stress the need to integrate the commuters, parents of school children, school administrative staff, organisations in housing areas, DRTLA and bus owners to chart the whole picture of needs and problems that need solutions. The City Council is mentioned as the proper working organisation for such discussions and coordination of planning efforts. However, there are several obstacles to getting people activated to take part in local planning. There is a gap in the concept of participation ... it fails to be effective at the bottom of society (A sub-ward chairman). The administrative staff are paid for their job, while locals are supposed to take part in processes by free will. It is difficult to promote participation when signs of success are
few. An exception is the strong will to promote improvement in transportation for school children. Parents, teachers and school administrators are eager to participate and propose solutions.

In the long-term perspective there is a need to have designated bus routes in all parts of Dar-es-Salaam (Mistress at Benjamin Mkapa secondary school), and not only along the radial big roads. As the urban area enlarges, distances within the urban suburbs increase. Some customers and especially school children living in such areas have a long walk before they reach a bus stop. The introduction of the planned Rapid Bus System is mentioned as important. In order to improve the travel situation the government should buy buses. There is a need of having one company running public transport to serve the whole area of Dar-es-Salaam (A father of two children at Mikocheni). It would be more effective to control capacity and quality of the transport service in that way. The number of illegal and private bus-owners who operate with extremely low quality could be decreased in that way.

A special bus transport system for school children is an often repeated short-term solution. The students’ travel situation would be improved if a school bus system was introduced. This system should receive strong financial support from the government (A father of six children). The current situation when few privileged students in some schools get school bus service has psychological implications among students. Those who do not receive services may feel poor in their school life (A high income father of six children). A bad functioning transport situation has also long-term consequences for school children as it has contributed to deterioration in the standard of education in Tanzania, hence the government should intervene – there is a need to invest in student travelling in order to solve the current situation (Teachers at Olympio primary school). Parents should discuss as one group and not according to economic classes. This should lead to setting a common fare for all students in order to enable a good transport system for students to be designed (Teacher at Benjamin Mkapa secondary school).

Almost all parents and teachers interviewed stressed the importance of government subsidies for students. When asked about the present level of the fares for students, they also find them too low. Student fare is very small and does not satisfy the running costs of buses (A father of six children). The fare level of 50 Tsh is manageable, but if the fare rises it will be difficult and affect the household negatively (A father of two children). However, when public as well as household economies are weak, improvements take a long time to visibly make everyday transportation easier.

Improving interpersonal quality is mentioned as important, especially for women and students. A number of recommendations that could improve the travel situation are mentioned: students should be allowed a seat; bus operators should treat students like other human beings; students should be treated like other passengers (from interviews).
Although all passengers in public transport deserved a safe, comfortable and fitting service, school children form a big part and special group for the future. Their daily commuting to school is part of the process to mould them as citizens. In parallel with this, students and women citizens are least involved in participation processes for sustainable development. The interesting thing in this study is that all the pupils like their parents interviewed, were willing to become involved in the planning process and thus contribute to a better public transport situation. None of the students interviewed had ever been involved in any kind of planning that could improve their travel to school and home, although they wanted to be involved. The exclusion of children from transport planning is a problem in most countries. Children are very often excluded from planning processes although they have relevant knowledge, experience and also a substantial number of proposals for improving transport.

6.6 Conclusion
One major goal of public transport is to provide a service to all inhabitants. However, as the services of public transportation deteriorated in Dar-es-salaam over the years, school children, women, older persons and the disabled are worst affected.
Priority to travel is given to customers paying full fare leading to delays of pupils to reach school because they pay reduced fare. On the other hand, when pupils arrive at school late they may face some kind of punishment such as cleaning school compound or watering of flower gardens etc. Teachers encourage the pupils to start travelling very early before many people going to work are out queuing for buses. The frustration of travelling to school is obvious for pupils. They become impaired to perform well in school due to tiredness from various reasons which include early mornings and queuing for their turn to get on board, long school days and queuing again to travel home. Pupils’ travel situation is also made hard by the different forms of physical abuses they receive from the bus crews such as fights or being seated on hot seats.

Similarly mistreatment of women is common by bus crews even if when they are pregnant or are accompanied by children paying a reduced fare. Likewise, bus crews do occasionally not take into consideration the conditions of elder persons or disabled people as they board the buses. This way of giving services defies the fundamental principle of sustainable transportation, namely to provide equal and just travel opportunities to everybody. Definitely, bus transport services is the most common mode of motorised transport that most people including women, school children, the elderly and the disabled depend upon in Dar-es-Salaam although its services are poor. There is lack of public participation for the affected groups namely women, school children, elderly, and the disabled people. On the other hand, there is a very strong desire for the latter category of people to be involved in planning for public transportation.
The fare to travel to school seem to be reasonable for many pupils and parents, though they acknowledge that it may not be enough to meet the costs of operating bus in the city. However, any step to increase the fare would not be affordable by many parents as the costs to school cover also other expenses such as food during the day. Schools do not usually provide lunch meal for pupils. About 90 percent of pupils use daladala to school and about 10 percent of pupils from financially capable parents travel by privately organised bus services to school. The performance of pupils with organised transport perform well at school compared to those travelling by daladala buses. There was a strong appeal from, pupils, parents and teachers to introduce a system of transporting all pupils irrespective of their economic capacity to school by introduction of government fare subsidy or introduction of special buses for pupils.
Chapter Seven

7.0 Institutional and technical issues for sustainable public transportation

Sustainable public transportation in an urban area is positively affected by the competence of institutional organisations and by the existence of technical capacity in a city. Urban development conditions for sustainable urban transportation can be created as an integrated process, which ensures that sustainability is built in as a primary objective at all levels across the range of policies – energy, transportation, pollution and so on - that affect the environment. Planning, implementation, operation, maintenance and regulation of, for example, city transportation, involve complex processes encompassing numerous modes, users, agencies and the framework within which the system functions. Failure to deliver an acceptable transport system is immediately evident to transport system users – passenger queues, traffic congestion, slow journey times, accidents, air pollution and so on (Greenhuizen et al., 2002).

Making transport sustainable is no simple matter. According to TRB (2002), the reasons for the difficulties can be seen in the World Bank’s description of sustainability with three characteristics:-

(i) Economic and financial sustainability: To be economically and financially sustainable, transport must be cost-effective and continuously responsive to changing demands.

(ii) Environmental sustainability: Transport has significant effects on the environment and should be addressed explicitly in the design of programmes and systems in general. Making better use of readily available and cost-effective technology is necessary, but not in itself sufficient. More strategic action is also required in the form of better-directed planning of land use and stricter management of demand, including the use of pollution and congestion charges to correct the relative prices of private and public transport.

(iii) Social sustainability – equity: Transport strategies can be designed to provide the poor (women, children, disabled and elderly people – our addition) with better physical access to employment, education and health services.

The problem with these otherwise lofty ideals is that they lead to conflicts in the sphere of ‘governance sustainability’. In developing countries for instance, if one works the first sustainability principle through economically healthy transport, one finds that transport operators, whether public or private, will fight higher costs imposed by the second principle, environmental sustainability. With fares for public transit barely covering costs, few operators want to improve their vehicles or fuels and risk not covering the incremental costs (TRB, 2002).
On the other hand, achieving a better public transportation balanced between competing transport modes and interests relies on competent transport institutions working within a clearly defined framework of responsibilities. A body should exist which has a clear responsibility for the development of urban-transport planning and development to meet the aims and objectives. The organisation must be staffed by a professional cadre of transport planners, analysts, economists and engineers with sufficient financial support to undertake the necessary continuing surveys. They must work closely and interactively with urban planners, contributing significantly to the urban development plan (UNCHS, 1993). In developing countries, it is common to find poor coordination of investment for public and private transport modes, facilities for inter-modal journey changes between bus, rail and car, and land use controls over urban densities and location of urban functions. These are some of the institutional and sectoral constraints that lead to poor public transport in urban areas. Our investigation in Dar-es-Salaam showed how in a number of ways sustainable public transportation remains weakened by the technical incapacity and institutional weaknesses, exemplified by the operation of some actors, institutions and agencies involved in the sector of urban transportation.

### 7.1 Management of urban planning

Land use planning is particularly important in moulding the built form of cities to enhance sustainability, especially policies on urban density, land use zoning, location of public services and provision of open spaces. Density is a vital tool in providing viable transport: the higher the density, the better the level of service that can be provided. Public transport services that provide a genuine alternative to the private car will only work where there are sufficient people, hence the need for clusters of higher density within walking distance of public transport stops and interchanges. The precise density and the catchment area will vary with the type of public transport, but should at least be designed to justify the provision of a regular bus service.

The segregation of living, working and shopping is a trend that needs to be reversed. The mixing of uses (residential, work, retail) in the same area is one of the most obvious ways of reducing the current average distances travelled. Mixing uses in these ways ensures that a range of services is within a reasonable distance, thus encouraging cycling or walking and giving new opportunities for social contact and interaction. Locating major centres of working and shopping near to public transport interchanges and connecting them into the local cycle or footpath network helps to persuade people to leave their cars at home (Randal, 2003).

In Tanzania, the Ministry of Lands and Human Settlement Development is the main body charged with the responsibility for urban development planning and it is responsible for stipulating policies for urban development in Tanzania. The Ministry acknowledges that planning and implementation in the city of Dar-es-Salaam have not gone hand in hand with the requirements for public transportation. This drawback is closely linked to the fact that there is no unit for
transport planning working closely with the unit for town planning with regard to promoting viable public transport in Dar-es-Salaam.  

Although the Ministry of Lands and Human Settlement Development draws up urban development policies, it is the City Council in Dar-es-Salaam that is responsible for planning and monitoring implementation of plans in the city. However, there is widespread evidence that planning and implementation have not always occurred according to the guidelines provided by the masterplan. This has led to the city developing in an unbalanced manner, characterised by land use development without any requirement for public transport. For example, the 1979 masterplan provided that concentration of activities in the city centre of Dar-es-Salaam could be lessened by decentralisation through the creation of satellite towns/centres on the outskirts of the city. The areas that were designated for this scheme included the Mbezi sub-district along Bagamoyo Road, intended for the development of both service and employment centres. However, these centres did not materialise. Instead, the City Council planned for expansion of residential development. This breach of the masterplan has resulted in what is nowadays a continued demand for transportation to the inner part of the city by inhabitants on the outskirts. Sprawling land-consuming urban structures and deteriorating traffic conditions have made the journey to work, particularly for some of the very poor, the physically disabled, and the elderly, excessively long, costly and tedious.

The City Council acknowledges that land use planning and its implementation should be integrated with transport planning. However, this does not necessarily occur in practice. As illustrated in the example above, development of residential areas in Dar-es-Salaam occurs without consideration for provision of public transportation. Likewise, the City Council has made no efforts either to determine the capacity of its roads or to investigate transport demands in different areas of the city.

Contravention of the masterplan leads to disorderly development of the city. It is common to come across building permits that allow a change of use of vital amenities in residential neighbourhoods. A respondent in the Mikocheni case study area described this situation thus: “When we first came to live in this area about fifteen years ago, we had several open spaces in our neighbourhood for recreational activities, but now they no longer exist – they have been replaced with buildings for commercial and residential activities. Nowadays children have a shortage of open spaces for playing”. In the same way, a permit may be granted to develop a certain area contrary to its original use without regard for how much traffic it can generate. As an example, an open space at the centre of the city, part of the Gymkhana grounds, was carved up in 1993 and allocated to a private firm for the construction of a hotel. There were various protests against

29 Interview with the Ministry of Lands and Human Settlement Development—May 2003
30 Interview with Ministry of Lands and Human Settlement Development—May 2003
31 Interview with the City Council planner—May 2003
the scheme from sports lovers, environmentalists and several of the city residents who respected open spaces, but to no avail (Kironde, 1995).

Narrow roads dominate the inner part of the city because they were planned during the colonial period, when the traffic volume was smaller than it is today. Expanding the roads to increase their capacity would mean demolishing nearby buildings and the Government does not have sufficient financial resources to provide compensation for demolished properties. However, the narrowness of roads in Dar-es-Salaam is attributable not only to the physical characteristics of the older fabric of the city, but also to the contemporary practice of granting permits to build close to the roads. This reduces the capacity of the roads by taking over space that is meant for parking, walking and bicycling.32 Such discrepancies in planning and management of the city arise partly due to the insensitivity of practitioners to the guidelines set for the development of the city. Another major observable land use phenomenon in Dar-es-Salaam is what Kironde (1995) calls ‘spontaneity’, which means that residential land and open space are being converted for commercial use, particularly along major thoroughfares, bus terminals and main road junctions, without Government approval. A stunning example is the area at the junction of Bagamoyo Road and the road to the drive-in cinema, popularly known as the Namanga shopping centre. This centre was developed on a road reserve and hazard land without any permission (Kironde, 1995). Other large-scale changes from residential to commercial land use can be observed along Morocco road, at the Mwenge bus terminal, along Shekilango Road and in many other places. Along several major roads such as the Port Access road, there are notable informally developed shops on road reserves and on industrial land. In most cases, these conversions or constructions have neither planning consent nor building permits, although the businesses being carried on usually have trading licences. Yet neither the Central Government nor the Dar-es-Salaam City Council have deemed it necessary to take any action (Kironde, 1995). Similarly, it is common to see street traders occupy space designed for pedestrian and vehicular traffic in Dar-es-Salaam. This effectively reduces the capacity of the road, causing congestion and thus affecting traffic flow and compromising safety. So far, the lack of alternative spaces for both street traders and parking places in many areas of Dar-es-Salaam has complicated the work of traffic police in enforcing the law against the violations of traffic regulations.33 In light of this, a conclusive statement by a City Council planner during our interview was that “the quest for sustainable public transportation in Dar-es-Salaam is restrained by the way urban development is mismanaged in the City”.

Integration of town, transport and traffic planning is a necessity if a viable public transportation is to be achieved in an urban area, but the town plans produced by physical planners have little input from specialists in transport or traffic planning. As pointed out above, there is no unit dealing with transport and traffic

32 Interview with the City Council planner—May 2003
33 Source: Interview with Dar-es-Salaam Region Traffic Police Authority—May 2003
planning in the Ministry of Lands and Municipal Authorities, which works closely with the town planning units. Lack of a planning system that integrates the field of town planning with that of transport and traffic planning has partly prevented the development of infrastructure necessary to promote a public (bus) transport system supported by non-motorised modes of transport. Special provision for cycle and pedestrians plays an important role in encouraging such alternative modes of travel. Block sizes can be designed to give a balance between ease of access and a mix of uses and privacy, while the careful layout of grids and connections between neighbourhoods ensures that routes for pedestrians and cyclists are as direct as possible. Street width, the treatment of different types of street and shop frontages contribute to the variety of experiences that those on foot or cycle can notice and appreciate, but those in cars can not (Randal, 2003). The city of Dar-es-Salaam lacks this quality of design for non-motorised modes. As illustrated in section 5.6, a high proportion of respondents during the interview are dissatisfied with both cycling and walking conditions in Dar-es-Salaam. The field survey of stakeholders in Dar-es-Salaam carried out in this study as well as physical observations gave the following picture with respect to pedestrians and cyclist environment:

7.1.1 Pedestrian facilities

Shortcomings in the planning system in Dar-es-Salaam regarding the quality of pedestrian provision include: i) lack of genuine consideration for pedestrian needs in the planning of different neighbourhoods in Dar-es-Salaam; ii) the focus of existing pedestrian measures is on controlling pedestrians in order to assist motor vehicle flow rather than to serve pedestrian needs; iii) poor footpath maintenance; iv) provision of symbolic pedestrian facilities which are neither in the right place nor safe to use; vii) lack of institutional capacity to deal with pedestrian issues. There is a lack of clear expertise in dealing with the issues of good pedestrian facilities, planning, implementation, control and maintenance. Accordingly, pedestrian needs and facilities are the least provided of all travel parameters and are not treated within the traffic management strategy – see section 7.2. In brief, the problems that are particularly visible in Dar-es-Salaam are:

- Footpaths not always provided, particularly in outer areas of city;
- Pedestrian needs are subjugated to vehicle needs and footpaths often utilised for parking of private cars;
- Footpath capacity insufficient to meet pedestrian demands in city centres, close to rail or bus stations, etc.;
- Existing footpaths often occupied by street traders, pavement dwellers and disrupted by poor maintenance. Pedestrians thus compelled to walk in the road, risking accident and impeding vehicular traffic;
- Footpaths obstructed by illegal encroachment by shop owners beyond their frontage limits;
- Lack of continuity in footpaths, with frequent breaks for access;
7.1.2 Bicycling conditions

Bicycling is generally considered a cheap and efficient mode of travel, suitable for various urban journeys and hence meaningful to at least some of the poorer sections of Dar-es-Salaam’s community, as well as to all people of some wealth. However, conditions for cyclists, like those for pedestrians, are poor in Dar-es-Salaam. The physical design of bicycle facilities is given little consideration in the planning tradition of Dar-es-Salaam city. In addition, bicycling is not treated as an integral part of the traffic management system and strategies – see section 7.2. The problems facing bicycle transport can be summarised as follows:

- Increased motorisation exacerbates safety problems for cyclists, particularly at heavily trafficked intersections;
- Reduction in street space for bicycles as pressure for road space from motorised vehicles increases;
- Longer distance journeys as urban sprawl continues;
- Lack of interest by urban traffic planners and government bureaucrats.

7.2 Traffic management in Dar-es-Salaam

Traffic management embodies the wider concept of comprehensive management of the road-based transport system and deals with policies and measures for the entire urban transport system. Traffic management is only one element, although an important element, of an integrated transport strategy. Traffic management measures go hand in hand with strategic transportation planning which favours transit, walking and cycling and does not facilitate further urban sprawl (Newman and Kenworthy, 1999). The goal of urban traffic management is to make the most productive use of the existing (road-based) transport system by adjusting, adapting, managing and improving the system. Specific objectives include:

- Improving the movement of people and goods and not necessarily vehicles;
- Improving the quality and safety of the traffic and transport system;
- Contributing to the improvement of the traffic-related environment.

In Tanzania, the Ministry of Transport and Communication is responsible for issuing national transport policy, which includes policies for a safer, effective and more environmentally friendly transport system. According to this Ministry, public transport in Dar-es-Salaam is inefficient and specifically, daladala buses services can be characterised as follows:

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34 An interview with the Ministry of Transport and Communication—May 2003
Most daladala buses are overloaded at the expense of passenger comfort and safety;

Many daladala operators, including many civil servants, own one to two vehicles. This signifies the presence of many operators in the market - a factor that constrains regulation and law enforcement;

Services are concentrated in major arterial roads which are in good condition and have a high concentration of passengers. Fewer buses enter newly developed suburban areas due to lack of feeder roads or poor condition of existing roads - bus operators avoid higher operating costs on such kinds of routes with poor road conditions;

Most of the daladala buses are old and not safe to provide public transport services;

There is no comprehensive and mandatory mechanism to test the roadworthiness of the daladala vehicles;

The daladala buses are a major source of air pollution in Dar-es-Salaam;

It is common for defective daladala buses to abandon routes when they sense the presence of traffic police. This situation creates a scarcity of buses, thereby inconveniencing commuters.

In addition to the above factors, interviews with institutions have also shown that incompetent driving is widespread among daladala drivers and is the main cause of accidents involving daladala buses. This situation arises due to the widespread availability of fake driving licences. Young people find it expensive to secure a genuine driving licence and for that reason, owners of daladala buses obtain licences through unscrupulous means for young boys who then become drivers of their buses. In addition, the poor quality of traffic training that is offered in many driving schools increases the poor traffic safety of daladala bus services.\[35\]

With respect to air pollution in Dar-es-Salaam, the Ministry of Transport and Communication cited several probable sources, including vehicle exhaust emissions, and leakage and spillage from vehicles, garages and fuel storage facilities. Likewise, imported vehicles are already old and therefore it is difficult to limit pollution levels.\[36\] The respondent stressed further that there was no control over vehicle maintenance standards due to lack of vehicle mandatory tests.

Once the vehicles have entered Tanzania, those intended for public transport should be inspected for roadworthiness by the Department of Traffic Police. The Department of Traffic Police then issues a certificate which is presented to the Dar-es-Salaam Region Transport Licensing Authority (DRTLA) by the bus owner. With this certificate it is possible to obtain a road licence and a route that the bus can serve is allocated. Buses ought to be checked for their roadworthiness every year as a condition for renewal of road licences.\[37\]

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\[35\] Interview with the Principal, National Institute of Transport, Dar-es-Salaam—May 2003

\[36\] Interview with the Ministry of Transport and Communication—May 2003

\[37\] Interview with Dar-es-Salaam Region Police Traffic office—May 2003
Department of Traffic Police, however, has a number of problems pertaining to inspection of vehicles. First of all, the large numbers of daladala buses requiring inspection overwhelms the traffic technicians who do this work. Secondly, mechanical inspection of vehicles is conducted using old and outdated techniques and for this reason, a lot of unfit daladala continue to move on the road.  

It is estimated that only 30% of the daladala buses operating in Dar-es-Salaam are roadworthy.

In an interview with Traffic Police officers in Dar-es-Salaam, the specific factors that impair public transport services in Dar-es-Salaam apart from the lack of inspection capacity were identified as follows:

- Lack of road signs, or outdated road signs meant for a city with fewer vehicles;
- Misinterpretation of modern automated traffic lights by untrained drivers, thereby increasing the risk for accidents;
- Lack of lighting on many roads, making it difficult to see road signs clearly at night;
- Narrowness of many roads and lack of pedestrian footpaths or cycle ways;
- Lack of parking spaces in many areas of Dar-es-Salaam and hence difficulties for Traffic Police in enforcing parking regulations;
- Location of most services and major activities in the city centre, thus creating unprecedented attraction of vehicular traffic and leading to traffic congestion, which increases pollution;
- Insufficient capacity of daladala bus stations;
- Overloading of buses.

The latter characterisation of the problems and causes of public transport in Dar-es-Salaam is similar to the picture obtained from interviews with households in the case studies (see Chapters 4, 5 and 6). This shared knowledge between the people and the public institution about the problems and causes of public transport will be useful if the public were to become involved in planning for improving public transportation in Dar-es-Salaam.

7.2.1 The laws and public transportation in Dar-es-Salaam

Traffic management cannot be implemented, enforced or play its full role in transport strategy without the necessary supporting legal structure. Issues commonly relevant for developing countries include (i) lack of adequate traffic regulations and powers to enable effective schemes to be implemented and enforced, (ii) lack of powers to apply adequate charges (say for parking), (iii) lack of adequate sanctions for violation of traffic regulations - the levels of

38 ibid.
39 Interview with the Secretary, DRTL—May 2003
fines for contravention of traffic regulations in many developing cities are
derisory and act as no deterrent to drivers who contravene regulations, etc. If
traffic management is to be successful, any traffic management programme
must consider the legal framework within which it has to operate. In many
cities, there is an understandable reluctance to seek amendments to laws as this
is a time-consuming process and the political dimension often means the
outcome of seeking change is uncertain (Cracknell, 2000).

In Tanzania the provision for traffic offences is based on the Road Transport
Licensing Act of 1973. According to the traffic police, this law has been
overtaken by the changes that have taken place in the society. For example,
penalties in the form of fines are very low due to the devaluation of the
Tanzanian shilling over the years. Violations of transport rules by daladala
operators persist as the low fines do not deter unscrupulous drivers.

Denying passengers a place on the buses simply because they pay a reduced fare
is neither supported nor prohibited by the law. The fare for students aged 0-7
years is regulated and according to the 1973 Licensing Act, children aged 0-7
years ought to pay half fare. The pupils/students that commonly board the
daladala buses nowadays are older than 7 years. However, the Government has
overruled the law by issuing a directive which says that the fare paid by any
pupil is 50 Tshillings. This is not half fare but a rate set by the government
because most parents cannot afford the full fare for their children. All the
daladala operators ought to comply with this directive.40 As described in Chapter
5, in 1992 the Deputy Minister for Home Affairs declared that pupils should pay
half fare in daladala buses.41 However, the declaration did not say that students
should be offered a seat in the buses.42

Even during the era of DMT and UDA, commuters who had no seats used to
stand as they travelled but DMT and UDA buses were specifically designed with
standing spaces for public transport services in the city – this is not the case with
many daladala operating in the city. As pointed out in Chapter 5, in 2002, an
accident involving an overloaded daladala bus at Gongo la mboto in Dar-es-
Salaam claimed the lives of many standing passengers. The incident prompted
the Traffic Police officers to prohibit standing in the buses and to introduce what
is now popularly known as ‘level sitting’ on all daladala buses. However,
although Traffic Police officers pursue overloaded buses, there is no legal basis
for police to prosecute operators of overloaded buses because there is no law
which prohibits overloading. The Traffic Police Department considers that the
action it took to pursue overloaded buses was logical in order to prevent deaths
and injuries. The high demand for transport during peak hours impairs the work
being done by Traffic Police officers to keep watch over many overcrowded
buses. The few officers available are overwhelmed by the demand to travel from

40 Interview with the Secretary, DRTL, May 2003
41 Interview with Regional Traffic Police officers in Dar-es-Salaam, May 2003
42 Interview with Regional Traffic Police officers in Dar-es-Salaam, May 2003
the accumulation of people at bus stops who scramble to get into daladalas to avoid delays in reaching their destinations.\textsuperscript{43}

Similarly, Traffic Police officers do not pursue vehicles that appear to excessively pollute the environment because there were neither standards nor legislation against excessive emissions.\textsuperscript{44} Instead, the police pursue vehicles that appear to excessively emit smoke into the environment on suspicion that they may be defective. Apprehended vehicles are then examined for possible mechanical faults.\textsuperscript{45}

Indeed, the work of Traffic Police is made difficult by the poor legal support.

7.3 Institutional roles and coordination

What is the basic reason for the existence of institutions? One important reason is that they provide a basic level of justice and equity in societies. An important question is whether institutions also matter in the achievement of sustainability, particularly sustainability in transport. Movements toward sustainable transport are in many ways influenced by institutional conditions. Urban policy makers and decision makers approach the challenges of the sustainable city from a very different starting point. They are constrained by time, resources (staff and financial), institutional framework and statutory responsibilities (Rietveld, 2002). Managing and co-ordinating the public transport and traffic system is a complex task. In some cities, there is “no agency that is specifically responsible for traffic management planning and design” and “the meaning of the term traffic management is undefined and its status is low” (Cracknell, 2000).

Where traffic management agencies exist, they are often under-resourced and lack adequate powers to initiate comprehensive schemes for policy implementation. However, even if a traffic management agency does exist its remit is often comprised by the large number of other agencies with some involvement in traffic matters, typically:\textsuperscript{46}

i) The city highway agency with responsibility for roads;

ii) The traffic police with responsibility for enforcement of traffic regulations and in many cases for ‘basic’ traffic engineering (signs, markings, streets parking, circulation etc).

iii) State or national highway agencies if national or federal roads are involved;

\textsuperscript{43} ibid
\textsuperscript{44} Environment bill was approved by the parliament in November, 2004
\textsuperscript{45} Interview with Regional Traffic Police officers in Dar-es-Salaam, May 2003
\textsuperscript{46} Cracknell, J. 2000. Experience in Urban Traffic Management and Demand Management in Developing Countries
iv) Bus and para-transit operators;

v) The public transport regulatory agency

vi) Private transport operators and associations (trucks, taxis, para-transit, etc);

vii) Strategic transport - land use planning and development control agencies.

As pointed out in section 7.2, the Ministry of Transport and Communication is responsible for issuing national transport policy, which includes policies for a safer, more effective and environmentally friendly transport system in Tanzania. Although the Ministry of Transport and Communication is responsible for the latter roles, it has not fully stepped in to solve the problems of public transport in Dar-es-Salaam. In general, the transport sector in Tanzania is characterised by low quality services for various reasons, including:

i) Lack of infrastructure maintenance and restoration work;

ii) Inadequate institutional arrangements, or laws, regulations and procedures that are inconsistent or incompatible with each other in creating a climate conducive to investment and hence growth of the sector;

iii) Inadequate capacity caused by low level of investment in resources;

iv) Low level of enforcement of safety, environmental sustainability and gender issues.

More specifically, persistent weaknesses in the development and management of the transport sector lie with the ministries responsible, which are:

* Communication and Transport (Road Transport Licensing),
* Works (axle-load control, safety control),
* Home Affairs (traffic law and regulations enforcement),
* Finance (motor vehicle registration, road tolls),
* Regional Administration (regional transport licensing)
* Vice-President (environment),
* Planning Commission (key transport utilities).
* Trading and Industry (vehicle licensing).

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47 Interview with an official at the Ministry of Transport and Communication—May 2003
49 ibid.
Major weaknesses inherent in the above-mentioned institutions in connection with the transport sector include:-

i) Poor governance (corruption) and poor enforcement.

ii) Lack of coherent policy guidance to those concerned with the planning and development of the transport sector, leading to disjointed plans and programmes.

iii) Shortage of adequately trained and experienced personnel in the transport planning departments and units (see also section 7.2).

iv) Inadequately formalised coordination and consultation among principal actors. Whenever Ministries do take steps for coordination, they turn out to be erratic and lack continuity.

The following are some excerpts from interviews concerning poor coordination in addressing public transportation in Dar-es-Salaam:

“The City Council sees that coordination between itself and the three municipalities of Dar-es-Salaam is inadequate. For instance, whenever requests are made to convene meetings for the City Council’s working groups, it is common that attendance is poor among municipal engineers and planners. Municipalities do not put priority on transport planning, instead they put more attention on road building.” The City Planner.

“When the Ministry of Works embarks on building of Dar-es-Salaam’s roads, the Traffic Police Department is not consulted although its staff have everyday experience of traffic management which could be accommodated during design of roads and in the provision of associated infrastructure. On the whole, coordination is poor amongst Traffic Police, road planners and engineers, the Traffic Licensing Authority and the Ministry of Transport and Communication: In fact there is no effective coordinating organ.” The Dar-es-Salaam Regional Traffic Police.

“Poor coordination involves all the institutions that have a role in the operation of public transportation in Dar-es-Salaam. These include the City Council, the Traffic Police, the Municipal Councils. There is no well-organised system of coordination between these institutions. It is common to find overlapping areas of responsibilities which in some way bring about conflicts during execution of duties.” The Dar-es-Salaam Regional Road Licensing Authority.

“Lack of coordination and organising organs are the factors which affect the public transport industry. There is no coordinating body or an explicit system of coordination that ensures that a policy for transportation is implemented in a coherent manner. What usually occurs is some kind of consultation without a
continuous follow-up among agencies or government institutions.” The Principal, National Institute of Transport.

The lack of clear coordination among institutions can be exemplified by citing schemes that are being contemplated by both the DRTLA and the City Council with respect to improving the public transportation in Dar-es-Salaam. The DRTLA announced a plan aimed at banning small daladalas, commonly known as ‘vipanya’ (mice), from operating on the city centre roads so as to reduce congestion in Dar-es-Salaam. In a statement, the Chairman of the Dar-es-Salaam Regional Transport Licensing Authority (DRTLA) said: “We have not and will not change our minds - the plan to phase out minibuses (daladala) from the city centre roads is there.” The Chairman reinforced his statement by referring to the inefficient public transport system in Dar-es-Salaam in terms of increased road accidents, traffic congestion caused by vehicles and pushcarts, etc. (Guardian, 2004.01.15). Under the proposed plan, minibuses will be required to pick up and drop off commuters at the peripheral areas of the city centre such as Kariakoo. Big buses dubbed ‘city buses’ will then transport the passengers to city centre areas like the main Post Office (Posta) and the ferry (Kivukoni). “We are slowly phasing out minibuses, and I hope they will be out of the central business district (city centre) roads,” said the Chairman of the DRLTA. He explained further that the implementation of the plan would be gradual and there was no way that it could be effected abruptly - but declined to state an exact dead line: “It is not possible to impose a ban on minibuses in a day. We will cause numerous problems to city residents who solely depend on these services.” (ibid.).

On the other hand, as described in Chapter 3, the 1997 Transport and Licensing Act, which was amended in 1999, empowers the City Council to manage public transport in Dar-es-Salaam. However, the City Council currently has no department equipped with competent transport planners and engineers who can adequately plan and manage public transport in Dar-es-Salaam. This is why the DRTLA, despite being inadequately professionally equipped to manage public transport in Dar-es-Salaam, is assured of the role for some time to come. The City Council also recognises its legal role in planning and managing public transport in Dar-es-Salaam. In light of this, as described in Chapter 3, the City Council Authority announced that it will begin to develop a new city-wide mobility plan for public transport that will include plans for a world-class Bus Rapid Transit system. It is of interest to note that the plan contemplated by the DRTLA is not clearly coordinated with a plan to modernise public transport by the help of Rapid Bus Transit (RBT) which is being initiated by the Dar-es-Salaam City Council. As pointed out earlier, the target of the City Council is to make the BRT project operational by 2005 (Guardian, 2003.10.11). But what is BRT and how is the City Council prepared to deal with the challenges posed by built-up structure of the city in achieving a realistic BRT?

50 Interview with the City Council Planner—May 2003
**Bus Rapid Transit** is a new paradigm in delivering bus services which is being developed in a number of countries, particularly in Latin America, and it shows promise for revolutionising bus systems around the world (IEA, 2002). As argued by the International Energy Agency (IEA), separating buses out of the general traffic by assigning specific lanes, increasing their average speed, improving their reliability and convenience, and increasing system capacities can ensure high ridership levels and increase the profitability of the Bus Transit system (IEA, 2002). Upgrading the performance of bus services to meet the objectives of Bus Rapid Transit will require policies that give priority to bus operations and provide for investment in crucial system components: infrastructure that separates bus operations from general-purpose traffic; facilities that provide for increased comfort and system visibility; and technology that provides for faster and more reliable operations (FTA, www.fta). New guidance, information and fare technologies offer an expanded range of possibilities for operating bus systems that have the potential to produce marked improvements in performance, surpassing previous standards and changing public perceptions of bus service (ibid). Bus Rapid Transit provides maximum benefit when developed in close coordination with land use policies and community development plans. These operations will require improved land use options that provide for compact, pedestrian-friendly and environmentally-sensitive development patterns that can sustain the development of Bus Rapid Transit.

Clearly, implementing Bus Rapid Transit poses a number of challenges in Dar-es-Salaam. These include the need for adequate lanes on city streets to provide separate rights-of-way for buses, yet maintaining the quality of general-purpose traffic flow. These challenges require detailed analysis in the context of specific local applications to identify appropriate solutions and to determine where Bus Rapid Transit can have the greatest benefit.

As the City Council proposal to introduce BRT in Dar-es-Salaam is worked out, the following specific steps may be considered:

i) Develop plans for infrastructure upgrades, including dedicated bus lanes and better bus stops;

ii) Plan appropriate headways and specific timetables for adequate services;

iii) Determine services to be licensed and possibly tendered to a private operator;

iv) Determine the best form of relationship of the driver and crew to the overseeing company;

v) An entire corridor should be included (not just one bus route on a multi-route corridor) in order to co-ordinate traffic and services on the corridor.
The corridor should be the arterial street. Dedicated bus lanes should be used;

vi) The route should allow linkage to other rapid-bus corridors;

vii) Bus terminals need to be upgraded to ensure they do not hinder the performance of the demonstration route.

The City Council has earmarked some major roads in Dar-es-Salaam for expansion in order to improve the city’s public transportation. Roads identified in the initial phases of the BRT programme include Nyerere, Mandela, Morogoro and Ali Hassan Mwinyi. The intention of the City Council is to expand these roads in order to provide room for another lane to be used by passenger buses that will serve the public under the BRT programme. No other vehicles will be allowed to use these additional lanes set aside for BRT. According to the statement from the City Council, the buses to be used in the BRT programme would be owned and operated by private firms (Guardian, 2004.01.20). In addition, the City Council plans to conduct a number of surveys in 2004 to collect standard data for use during the planning and other stages of execution of the project. These will include an Origin and Destination (OD) survey to determine the number of commuters from each part of the city and their travelling patterns in order to allocate a sufficient number of buses at appropriate times (ibid).

Probability of success must be high in implementing BRT in Dar-es-Salaam in order to maximise momentum toward long-term changes. The City Council’s plan must be successful in convincing authorities and other interested parties that the approach is better than the current practice and can eventually be applied to other parts of the bus system. The challenge to reorganise public transport and introduce BRT within the existing built environment in Dar-es-Salaam is great and requires the concerted coordination of many stakeholders. The question is whether and how the City Council will work closely with all other stakeholders to ensure that BRT becomes a success?

Inadequate coordination among institutions can be further exemplified by a recent row between the Dar-es-Salaam authorities and daladala operators when they temporarily increased their fares in May 2004 due to the increase in oil prices. On this occasion, the operators unilaterally increased their fares to 250 shillings and 100 shillings for adults and students respectively, without prior notice to their customers. The original fares were 150 shillings and 50 shillings for adults and students respectively. The new fares were charged for only a week, from 10-17 May 2004, before the Regional Commissioner for Dar-es-Salaam instructed the bus operators to reduce the fare to the original level. According to the Regional Commissioner “bus operators held secret meetings during which they decided to raise the bus fares. This is against the principles of a free market economy, which requires the consumers, in this case the
commuters, to determine the price” (Guardian, 2004.05.18). During this process, the Chairman of the DTRLA defended the increased fare levels. He identified four factors that might have justified the increase in bus fares even without the current increased fuel prices. One was the heavy tax imposed by the Tanzania Revenue Authority (TRA), another the insurance premiums, a third the high costs of spare parts and a fourth illegal fines imposed by the Traffic Police on the daladala crews (Guardian, 2004.05.20). The Government directive to stop daladala operators raising the fare contradicts the Fair Trade Practice Act of 1994, which allows competition among service providers (see section 5.3).

Ineffective coordination exists between the National Environment Management Council (NEMC) and other Government sectors. For instance, according to NEMC the Ministry of Trade may give the go-ahead for the construction of a certain industry before NEMC has ascertained that the environmental considerations are well covered by the project. In view of that, NEMC considers that unclear overlaps of responsibilities contribute to inadequate coordination among different institutions. As an example, there is no clear-cut mechanism to control the importation of vehicles. Many public agencies are involved before vehicles reach the roads, such as the Tanzania Licensing Authority, Tanzania Revenue Authority, NEMC, Traffic Police etc. All these agencies preserve their own interests in granting permission for operation of vehicles. \(^{51}\)

On the other hand, according to the coordinator\(^ {52}\) for preparation of environment legislation, if one sees institutional overlap as a problem one must find a solution for it – “Efforts have not been made to see positive aspects of overlaps. Clearly negative overlap creates problems and to have complementary overlap we need co-ordination. Co-ordination entails that ministries coordinate with one another so that the Government can carry out its functions”.

The coordinator adds that in Tanzania, the notion of co-ordination in the Government system is supported by the law and coordination needs more than one piece of legislation such as;

i) Local Government (Urban Authorities Act of 1982, Act No. 8;

ii) Local Government (District Authorities Act of 1982, Act No. 7;

iii) Industrial and Consumers Chemicals (Management and Control Act of 2003);

iv) Petroleum Bill 2004; v) Town and Country Planning Ordinance, Cap 378 of 1956 etc. In other words, pieces of legislation support co-ordination mechanisms and forums:

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\(^{51}\) Interview with NEMC officials—April 2004

\(^{52}\) Interview with the coordinator for preparation of environmental Legislation —April 2004.
“Co-ordination mechanisms comprise committees. For instance, in Dar-es-Salaam there are 3 municipalities - all these municipalities give reports and consult each other in order to coordinate their reporting. In order to do so what do they do? Refer to the Local Government Act”.

Furthermore “Consultation is a mechanism of co-ordination whereby a sector or an agency has to be informed or inform to create awareness, and these guidelines are usually in our existing laws. The problem that we have in our institutions is that practice defies the laws, guidelines and circulars. What is intended to be a mechanism of coordination among institutions becomes a conflict”.

In addition, “It is common that schemes and programmes are being planned without looking at the instructions from the books of law. For instance, what is the role of the City Council in running public transport in Dar-es-Salaam? What about the Dar-es-Salaam Regional Road Transport Licensing Authority? Which authority should run the public transport services in Dar-es-Salaam according to the law? In what way should these authorities coordinate? Many stakeholders do not read the law to know their mandates. Schemes are established to meet short-term gains irrespective of what the laws direct”.

The inadequate coordination described above shows that there is a lack of a well-defined, clearly identifiable authority or administrative system responsibility for overseeing the formulation and implementation of a coordinated strategic vision. Many environmental policies will need to be coordinated and implemented across governmental boundaries, given the nature of urban impacts on wider environments. However, coordination of policies will not be effective without greater citizen participation.

7.4 Citizen participation in transport planning

The political advantages of decentralized structures of governance in developing countries are, as in other countries, generally regarded as manifold. Decentralisation is said to increase the ability to influence and take part in local politics. In short, decentralisation makes democracy more vigorous due to its emphasis on participatory power strategies.

Decentralisation is also said to contribute to sustainable development in a number of areas. When control over institutions is transferred to the local level, people become more engaged in ongoing development projects since they feel they have a say in matters connected to their immediate surroundings. When residents are empowered, they include grassroots knowledge about ecology, environment, local livelihood problems and resource mobilisation in planning processes.

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53 ibid.
54 ibid
However, decentralisation also faces a number of problems in developing countries (Johnson, 2001). Drawing on earlier studies, we can identify four problems that often prevent decentralisation being conducive to good governance. The first concerns the ability to solve inequalities within and between areas. Whose experience is most important in the process, appointed groups or individuals or all inhabitants? Second, the knowledge that is needed in order to make use of civil rights and to fully understand information about laws and policies might be deficient. The third problem lies near at hand and concerns the difficulties of inciting poor people to accept the costs of engaging in action. The working conditions of civil servants, small businessmen, self-employed and wage-workers may not be in tune with expectations and expenditures of participation, for instance taking part in meetings.

The findings of this study are that there is a weak involvement of citizens in transport planning and that this has weakened the planning process. This deficiency in planning was already known in recent decades by authorities in Dar-es-Salaam. Due in part to the deterioration of the urban environment in Dar-es-Salaam, the Ministry of Lands and Human Settlement Development requested UN Habitat technical support in updating the 1979 masterplan for Dar-es-Salaam. UN Habitat highlighted that the urban management problems facing the city required an approach that was stakeholder-driven, focusing especially on the interaction between environment and development, and with a major emphasis on cross-sectoral and inter-agency coordination. It thus proposed the application of an Environmental Planning and Management Approach (EPM) to improve the capacity of the local authorities to plan, coordinate and manage urban development in a manner that optimises the use of available resources, including manpower and natural resources (SUDP, 1999). EPM provides an environment for the local government to manage and mobilise for change by building linkages and synergies with partners in the urban development process. EPM emphasises formulation of urban development priorities through collaborative initiative and consensus among the key stakeholders. Although EPM emphasised the importance of effective participation of the public in the planning and management of the urban environment, most planners and urban managers in Tanzania have had great difficulties in practising this according to Kombe (1999). This shows that the current system of planning lacks effective mechanisms for communication with the citizen.

In other parts of the world, such mechanisms may be better developed. Haughton and Hunter (1994) cite the case of Curitiba and argue that participatory field work precedes desk-top design. In Curitiba, planning officials, architects and other professionals have always been encouraged to look at the problem, talk to people, discuss the main issues, and only then reach for the pen (ibid).

However, Haughton and Hunter (1994) argue further that for all the lip service increasingly paid to the ideal of public participation and community empowerment in recent years, progress remains patchy. This is in part because
effective means of community involvement are still only gradually emerging. In addition, there are limits to what community-based projects can achieve in isolation from wider initiatives, whilst central and local government have displayed an inability to let go some of their powers. This lack of willingness to devolve responsibility stems largely from inertia, including a protective fear of job losses among urban professionals, and also from a recognition that devolved community responsibilities and powers may occasionally result in perverse outcomes (ibid.).

The lack of citizen participation revealed in this study also shows that local institutions have not been accorded their rightful position with regard to the urban development management process although most of the actions and environmental problems occur at local level. Problems that hinder grassroots participation were exemplified by a grassroots leader in Dar-es-Salaam.

In Tanzania, every municipality is divided into a number of wards and every ward into a number of sub-wards. The sub-ward is the lowest level of administration and it is at that level that grassroots action is supposed to occur. The highest organ in the structure of the sub-ward is a bi-annual meeting where a sub-ward chairperson is elected by the inhabitants in the sub-ward. This chairperson then regularly calls meetings with the residents, normally every two months. In these meetings members who form three sub-ward development committees are elected namely: (i) Planning and Finance, (ii) Defence and Safety and (iii) Social Welfare. Each committee is headed by a committee chairperson. As an example, the Committee for Social Welfare covers aspects such as health, environment and education. The three committees work in collaboration with the ten cell-leaders55 and they report to the sub-ward chairperson and the sub-ward residents at the bi-monthly meetings. These committees have the mandate and authority to take decisions pertaining to the development of the sub-ward. However, it is common that the ten cell leaders extend weak cooperation to the sub-ward committees and sub-ward chairperson. Likewise, the sub-ward committees extend weak cooperation to the sub-ward chairperson.

7.4.1 The dynamics of poor participation at the sub-ward level

According to a sub-ward chairperson, poor participation in the sub-ward can be explained in three main ways: (i) Absence of remuneration to the members of the sub-ward development committee; (ii) Lack of finance at the sub-ward level to carry out required development activities at the sub-ward; (iii) Poor system of interaction between the sub-ward level and higher system of governance.

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55 A ten-cell leader is the lowest level of leadership, which oversees people living in a collection of about 10 to 20 houses within a neighbourhood area, with a ten cell leader as the head of the unit.
i) Absence of remuneration for members of the sub-ward development committees

Neither the chairperson nor the members of the development committees and the ten cell leaders receive an allowance or pay for the time they put into the development of their sub-ward areas. Nonetheless, the ten cell leaders suspect that members of the development committees receive a certain kind of pay for the work they do. Likewise members of the development committees suspect that the sub-ward chairperson receives pay. This situation inhibits full cooperation among key members responsible for the management of development activities at the sub-ward level because everybody feels disadvantaged. This lack of motivation for key leaders at the sub-ward level was pointed out during an interview with the municipal health officers at Kinondoni:

“One of the noted obstacles for carrying out health related programmes at the grassroots level is non-motivation of ward and sub-ward health committee members. It was reported that while committee members at municipal level are paid sitting allowances, the same is not done at ward and sub-ward levels. Given the prevalent poverty among members of local communities, the result has been a poor response of these members to volunteer their unpaid time for matters related to mobilization of residents to address health related and environmental issues”.

The question of remuneration at the sub-ward level was raised by the Government in the past. On 7th January 1994, the Government announced guidelines regarding the operation of sub-ward chairpersons in the local government. The guidelines were designed in line with the Local Government (Town) Authority Act No. 8 of 1982 that governs the operation of local government and town authorities.

According to these guidelines, the sub-ward chairperson would be paid a maintenance allowance ‘posho’ which would be set by the municipality in which a sub-ward belongs. The guidelines were explicit: “The maintenance allowance of the sub-ward chairperson will not be less than three per cent of the income collected from the residents economic venture according to the efforts of his/her achievement”. These guidelines became operational on 1st January 1994 (URT, 1983). When the present study was carried out, sub-ward leaders were not being remunerated, nor was there a scheme to collect revenues from business activities being carried out in the sub-ward areas.

The plight of grassroots leaders was also echoed by the coordinator for the preparation of environment legislation: “Local leaders at the lowest level (or villages) should be paid by local government for their work. They are not paid because of poverty. Although chairpersons have very low education and are not paid for what they do, they are however responsible for the lives of residents in

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56 Interview with Kinondoni Municipal Health officer in Dar-es-Salaam—April 2004
their streets, wards etc. Indeed, the Government has forgotten the leaders who work for the grassroots communities”. 57

According to the sub-ward chairperson, meetings ought to have a main agenda to be discussed and preparatory work is commonly needed in order to prepare an agenda for the meeting, which should be done by various committees of the sub-ward. But members of various committees are unenthusiastic about carrying out this task because they are not paid. Due to a lack of a main agenda, people keep discussing Any Other Business (AOB), and as a result the meetings lose their effectiveness as platforms on which people at grassroots level can manage their environmental and other problems. 58

ii) Lack of finance at the sub-ward level to carry out required development activities

The sub-wards face a shortage of funds to organise activities and forums that are necessary for local people to be involved and participate in the development programmes at the local level. This lack of funds is illustrated in this excerpt from a sub-ward leader:

“When there is a meeting, I sometimes incur all the costs for the meeting myself. As a sub-ward leader, I have to call meetings every 2 months. To do so I have to prepare up to 100 letters and distribute them to all members in our area, prepare the meeting place including chairs, tents, as well as soft drinks i.e. soda and water. At one time I spent 96,000 Tsh from my own pocket to prepare the meeting.”

According to a sub-ward chairperson, these practical matters are very important if they are to sustain a tradition of holding meetings. “As people attend the meeting, they become thirsty and therefore they need to get water or soda.” According to a sub-ward leader, failure to provide such incitements discourages people from coming to the meetings, which are very important as a forum of participation. “Financing such activities should not be seen as a luxury but should be seen as a way of promoting democracy by authorities”.

Sub-ward meetings are very important because they give residents the opportunity to express their views, which are then forwarded upward to the top government levels.

iii) Poor system of interaction between the sub-ward level and higher system of governance

According to a sub-ward leader, the outcome of the sub-ward meeting is submitted to the leaders concerned, namely the District Commissioner, Ward Executive Officer, Municipal Officers etc. However, the people responsible at

57 Interview with the Coordinator for the preparation of environmental legislation—April 2004
58 Interview with a subward leader—April 2004
these levels seldom act on decisions or issues that are raised by the residents at the sub-ward meeting. “Usually the Ward Executive Officer (WEO) submits all agenda to the Municipal Director. When the municipal officials receive the contents of people’s concerns they promise that they will do something, but in reality they do nothing”. Accordingly, there is inadequate feedback from the higher level of governance for proposals and programmes that emanate from the sub-ward level. Another factor that could be linked with the irresponsiveness to schemes brought about by sub-ward management is the attitude towards the status of sub-ward leadership: “We leaders at the lowest levels of the society, we are disregarded by people at the top. We are in some way considered as uneducated and in some way I sense that our work is considered as unimportant to the society”.

7.5 Environmental policies and management in Dar-es-Salaam

Widespread community participation in strategy formulation, and in policy implementation and management, increases public awareness of environmental issues and fosters a sense of community responsibility for improving and maintaining environmental quality. Maximum use of local initiatives and knowledge is always desirable in guiding the local urban development process. This is not only about improving the local environment, but enhancing the sense of stewardship for the global environment (Haughton and Hunter, 1994).

As already shown in the previous chapters, public transportation in Dar-es-Salaam is not environmentally efficient. In Tanzania, it is the Department of Environment under the auspices of the Vice-President’s office which is responsible for formulating environmental policies and guidelines for sustainable development. According to an interview carried out with representatives of the Department of Environment, this office operates under conditions that may invariably lead to formulation of environmental policies based on outdated research results that do not reflect changing environmental conditions. Work is hampered by the lack of regular environmental audits — only sporadic studies are carried out from time to time to assess the environmental situation. With reference to Dar-es-Salaam, the same informants think that unbalanced demographic growth and land use activities contribute to environmental problems. Ineffective town development control and monitoring mechanisms in the city are the core cause of the environmental problems, including those of public transportation in Dar-es-Salaam. Furthermore, the deterioration of the urban environment is caused by conflicting interests, i.e. some goals for the development take little consideration of environmental protection.

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59 Interview with a sub-ward leader—April 2004
60 Interview with the Director of the Department of Environment—May 2003
61 ibid.
62 ibid
A closely related agency to the Department of Environment is the National Environment Management Council (NEMC), also operating under the auspices of the Vice-President. NEMC was established by an Act of Parliament in 1983 and became operational in 1986, but had its activities and mandate limited by the absence of a legal framework to make it discharge its duties effectively (Sunday Observer, 03.12.20). NEMC is responsible for monitoring environmental quality. However, NEMC has not established the state of air pollution in urban areas, including Dar-es-Salaam, due to its limited capacity to do so. Likewise, this agency has not managed to produce documentation on pollution levels from vehicles of different types, something that is seen as crucial for pollution control. NEMC adopts many standards issued by the World Bank (WB) and World Health Organisation (WHO) due to the lack of locally formulated standards. Lack of funding is a great problem facing NEMC. It gets funding from the Government mainly to meet salary expenses and there is not enough additional funding to conduct auditing concerning the environment.  

The first environmental legislation for Tanzania (The Environment Management Act) was approved by the Government on 11th November 2004 (Guardian, 04.11.12). This means that although NEMC was charged with the responsibility of monitoring the quality of the environment in Tanzania, it had no mandate provided in law to enforce the policy guidelines for the management of the environment until now. Instead, NEMC used information through media facilities - radio, television and newspapers - to improve public awareness about environmental management. NEMC is a highly centralised agency in Dar-es-Salaam. This situation has hampered its efficiency to execute its duties in the remote regions of Tanzania and thus it plans to start training district officers to be able to handle environmental problems.

The Environment Management Act is expected to provide a solid basis for the management of the environment and the conservation and utilization of the natural resources in the country. The law will enhance the operations of the semi-autonomous NEMC, especially in areas of enforcement, pollution control and technical arbitration of Environmental Impact Assessments – EIAs. The Environmental Management Act will be the framework legislation for co-ordination of environmental management. The legislation will not repeal other sectors’ legislation, in other words the Act does not replace other laws, but the environmental law prevails. This means that in the event of conflict with other laws about the environment, the environment legislation must be used and will not conflict with other laws. Other existing laws that touch on environmental concerns include: Local Government, Industrial and Consumers Chemicals, Petroleum Bill, Town and Country Planning Ordinance (see also section 7.3).

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63 Interview with National Environment Management Council—April 2004  
64 ibid.  
65 Ibid.  
66 Interview with Coordinator for the preparation of the environmental legislation—April 2004
Under the Act, the Vice-President’s Office (VPO) will implement the ministerial functions on environmental management and coordination, especially in matters pertaining to legislation, implementation and international cooperation. The National Environment Management Council (NEMC), on the other hand, will be responsible for enforcement and compliance, pollution prevention and control, Environmental Impact Assessments (EIAs), Environmental Information Systems (EIS) and research and development. Each sector ministry will undertake environmental management functions under the area of its respective jurisdiction. Likewise, each sector ministry and local authority will undertake certain EIA functions. Local government authorities will implement and enforce environmental management functions in line with decentralization by devolution outlined in the Local Government Reform Programme (Sunday Observer, 03.12.20).

We asked a direct question to the coordinator for the preparation of the Environment Management Act: What is the specific strength of the legislation on tackling environmental problems in Tanzania? The reply was: “The law gives a mandate to any citizen individual to open case in the court if he/she sees any kind of environmental destruction anywhere, this can be in the form of environmental pollution or any other kind of environmental degradation. The law empowers an individual person to sue another person/institution that causes pollution to the environment”.

According to the coordinator, “the main problem in Tanzania is not whether the environmental legislation existed or not. Instead the issue lies in our culture and the mindset of the people divorced from preservation of own living environment— lack of a strong civil society that can work on these matters without coercion”.

In recognition of this, the Lawyers' Environmental Action Team (LEAT) has embarked on a public awareness campaign through education, as well as working on capacity building schemes.

LEAT is the first public interest environmental law organization in Tanzania. It was established in 1994 and formally registered in 1995 under the Societies Ordinance. Its mission is to ensure sound natural resource management and environmental protection in Tanzania. LEAT carries out policy research, advocacy, and selected public interest litigation. Its membership largely includes lawyers concerned with environmental management and democratic governance in Tanzania.

The coordinator for the preparation of the environment legislation concluded our interview by outlining pertinent points to promote sustainable development namely:
• Supporting public participation in environmental planning — decision making in policy formulation and programmes to prepare Environmental Impact Assessment (EIA).

• Supporting education and awareness on environment — issues will arise due to the enactment of environmental law, hence people should be educated to know their rights and obligations. This should be carried out by central government and local authorities.

7.6 Improving the environmental quality of petroleum products

Sub-Saharan African countries made a commitment to phase out leaded petrol by 2005 during a conference held in Dakar in June 2001. As pointed out in Chapter 4, it was also decided to create the AFRICACLEAN network of air quality practitioners (at all levels) both throughout the region and internationally (World Bank, 2003). As a follow up of this issue, a workshop was held in Nairobi in June 2002 under the auspices of United National Environmental Programme (UNEP) and another workshop was held in South Africa in 2003. In both these conferences, Tanzania was represented.67

There is a gradual increase, albeit small, in awareness about the effect of lead on people’s health in Tanzania. In 2001, some members of Parliament raised the issue of phasing out lead from gasoline. In addition, a workshop was organized by the Ministry of Energy and Minerals in Dar-es-Salaam in June 2003 to discuss the issue of phasing out lead from petrol. It is probable that these efforts will eventually bring about a general discussion about fuel quality encompassing also adulteration and sulphur content. The question here is what are the constraints and potentials for improving the environmental qualities of fuel in Tanzania?

7.6.1 The lead question

As described in Chapter 4, major world refineries produce large amounts of unleaded petrol because of high demand for it on the world market. Tanzania has not banned leaded petrol but over 50% of the petrol which enters the country is unleaded. The same importer may bring in leaded and unleaded petrol and mix them in the same fuel tanks, with the result that levels of lead in petrol vary greatly. The Ministry of Energy and Minerals did a survey in some stations to measure the content of lead in the petrol and found that levels varied from 0.018g/litre to 0.35g/litre. The standard stipulated by the Tanzania Bureau of Standards (TBS) for unleaded petrol is 0.013 g/litre maximum and 0.4 g/litre for leaded petrol.69 Small quantities of leaded petrol are enough to transform unleaded petrol to leaded petrol and usually there is no rigorous distinction between leaded and unleaded petrol as they arrive at the port.70 Some suppliers

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67 Interview with the Ministry of Energy- April 2004
68 Interview with the Tanzania Association of Oil Marketing Companies—April 2004
69 Interview with the Ministry of Energy and Minerals –April 2004
70 Interview with British Petroleum (T) – April 2004
bring in oil from a refinery in Mombasa. The petrol products from Mombasa have a high lead content because of its small scale of production. In addition, lead content is high because of the old technology of the refinery and the desire to use a cheap method to get higher octane numbers by the addition of lead.\textsuperscript{71} There are about 16 oil companies that sell fuel products in Tanzania, yet only the British Petroleum (BP) Company has started to sell unleaded petrol.\textsuperscript{72} BP Tanzania started to sell lead-free petrol at two stations in Dar-es-Salaam in June 2003. In March 2004, there were 9 out of 72 BP petrol stations (12.5\%) in the whole country selling unleaded petrol. Five of these stations were in Dar-es-Salaam, two in Arusha and two in Moshi. When BP opened the stations for unleaded petrol, the price of unleaded petrol was higher that of leaded by 80 Tsh per litre, but since October 2003 the price of leaded and unleaded are the same.\textsuperscript{73} According to an interview with British Petroleum conducted in April 2004, about 25\% of the vehicles in Tanzania operate by using either leaded or unleaded petrol. Only 1\% of the vehicles use solely unleaded petrol and these are owned by international organisations such as the United Nations and the embassies. BP is so far the only oil company in Tanzania that has carried out a pilot scheme to keep unleaded and leaded petrol in separate tanks at a very few stations. In general, petrol stations in Tanzania still mix unleaded and unleaded petrol in the same storage tanks. It is therefore inevitable that leaded petrol is in continuous circulation in Tanzania.

According to BP(T), the demand for leaded petrol is still high in Tanzania as most of the vehicles in use were manufactured before 1992 and many owners believe leaded petrol to be the best fuel for their vehicles. There is unsupported fear in the country that the use of unleaded petrol may damage vehicles.\textsuperscript{74} This attitude has a negative impact on the inclination of oil companies to promote unleaded petrol: “we nowadays find that we have a shortage of leaded petrol. We need some quantities of leaded petrol to add to unleaded petrol” \textsuperscript{75}

According to BP(T), the company nowadays sells unleaded petrol without economic losses. However, the initial costs for selling unleaded petrol were high as the company had to invest in a parallel system as it was not feasible to cut the supply of leaded petrol completely. Cleaning the old tanks and pumps required the use of fuel and then steam to flush the system.\textsuperscript{76} A different and cheaper strategy is to stop the sale of all leaded petrol at once but this option was not open to BT(T) as there is no legislative and institutional back-up for a nation wide ban on leaded petrol.

\textsuperscript{71} Interview with the Ministry of Energy and Minerals – April 2004
\textsuperscript{72} Interview with the Tanzania Association of Oil Marketing Companies—April, 2004
\textsuperscript{73} Interview with British Petroleum (T) — April 2004
\textsuperscript{74} Interview with Tanzania Association of Oil Marketing Companies—April 2004
\textsuperscript{75} Interview with British Petroleum (T) — April 2004
\textsuperscript{76} ibid.
Other oil companies view the initiative of BP(T) with some suspicion and think that it is “because your headquarters (BP) are in Europe you go single-handedly”. According to BP(T) there is poor institutional back-up for their lead-free initiative as well. Verbally all institutions say “Yes” about the phasing out of leaded petrol but in practice nothing happens, there is an inbuilt “wait and see attitude”, according to a company representative. There is a need to initiate focused discussion between parties, i.e. politicians and oil companies, about this issue.\textsuperscript{77}

A number of institutions in Tanzania have a direct role in the process of phasing out leaded petrol. One of these is the Tanzania Bureau of Standards (TBS). TBS was established by the Parliament Act No 3 of 1975 to undertake measures for quality control of commodities of all descriptions and to promote standardization in industry and commerce. In 1998, the government enacted the “Standards (Compulsory Batch Certification of Import) Regulation of 1998”, governing the collection of samples of imported products from a consignment either at the port of entry into the United Republic of Tanzania or at the source of importation.\textsuperscript{78}

The Tanzanian Bureau of Standards (TBS) is short of well trained people to conduct tests of petroleum products and lacks adequate equipment for testing and funds to carry out tests. When petroleum is brought in by big ships it should be off-loaded within 6 hours, but TBS commonly takes about three days (36 hours) to test the product — in the end petrol is off-loaded without it being ascertained whether it abides by stipulated standards or not. The law which regulates TBS in testing fuel is the Standard Act Regulation of 1998, but it has not been put into full operation.\textsuperscript{79} Today TBS neither carries out systematic checks of the incoming petroleum products nor manages to check adequately the quality of fuel at petrol stations.\textsuperscript{80}

Public acceptance of policy-making on both local pollutants and greenhouse gas emissions reductions requires, at the minimum, a basic understanding of the issues and stakes involved. Motorists and non-motorists need to develop an understanding of how the sum of their individual decisions affects the quality of life they live on a day-to-day basis. The need for this understanding suggests that public education and awareness are prerequisites, not afterthoughts, to sound policy-making and implementation.

The Ministry of Energy and Minerals is convinced that the use of solely unleaded petrol is possible with no serious problems “Indeed, engines and valves for vehicles designed for leaded petrol can be worn out quickly by putting unleaded petrol if the vehicle is driven for 10 hours at a speed of 100 km/h or more. This mode of driving is unlikely to be the case on Tanzanian roads. For

\textsuperscript{77} Interview with the British Petroleum (T)—April 2004
\textsuperscript{78} Interview with Tanzania Bureau of Standards—April 2004
\textsuperscript{79} Interview with Association of Oil Marketing Companies—April 2004
\textsuperscript{80} Interview with Tanzania Bureau of Standards—April 2004
this reason, most vehicles designed to use leaded petrol can as well use unleaded petrol without any technical problem.”

However, this knowledge is not shared by the public and by all relevant institutions according to an interview with an environmental NGO, Lawyers’ Environmental Action Team, LEAT. According to LEAT, the lack of correct information hampers the efforts to phase out leaded petrol. “If the public was informed of the effect of lead on the environment, there would be an awareness which could lead to public involvement in the campaign to phase out leaded petrol. There is a need to urge decision-makers and politicians to take up this issue into their programmes”.

LEAT has developed a project aimed at phasing out leaded petrol by sensitising the public and raising awareness about the negative effect of leaded petrol on health, and in particular to children. LEAT links the issue of leaded petrol with air pollution in the roads, which is exacerbated by old vehicles. In the year 2001-2003, LEAT pursued a campaign called Preventive Urban Pollution with the explicit task of phasing out leaded gasoline. LEAT conducted free radio programmes and feature articles in the newspapers to educate the public on the impact of using leaded gasoline on people’s health and the environment. The challenge that faces LEAT is to mobilize funds so as to work effectively. LEAT also considers that current taxation rates hampers the introduction of unleaded petrol as “unleaded petrol is taxed more than leaded petrol”.

The Government has prepared a bill about petroleum products which is awaiting to be tabled to Parliament for approval. When the bill is passed, it may help to address the efforts of phasing out lead from petrol.

7.6.2 Sulphur content in diesel and adulteration

The Tanzania Bureau of Standards specifies a maximum of 5,000 ppm sulphur (0.5%) by weight for diesel fuel in Tanzania. On the market, sulphur content in diesel varies greatly. It is common to find diesel with sulphur content as high as 1.5 %. The problem is that the Kenya refinery from which much of the diesel is imported cannot produce diesel with a sulphur content lower than 1% by weight. BP(T) is currently exploring the possibility of obtaining diesel from South Africa, which produces diesel with as little sulphur as 0.1 percent.
As described above, it has been hard for Tanzanian institutions to monitor whether companies follow standards or not. According to a BP(T) spokesperson, the impression is that companies may not be abiding by specified petroleum guidelines if these conflict with the objective of making profit.91 As long as there is no efficient control system, irresponsible companies will continue to import diesel with high sulphur content and to adulterate petrol with other substances. Corporate responsibility in Tanzania is an area in need of development.

91 Interview with British Petroleum (T)
Chapter Eight

8.0 General conclusions

Dar-es-Salaam city is experiencing unprecedented growth, which is placing great pressure on services. Public transport, which is central to development, is one of the services that has to be provided in an expanding city. Thus, city administrators are faced with immense challenges in developing a sustainable transport system that is responsive to changing demands. The analysis of public transport in Dar-es-Salaam by the use of the Tjallingii model has shown that the poor quality of public transport services and the way such services are being managed does not present Dar-es-Salaam as a ‘living’, ‘participating’ and ‘responsible’ city. Public transportation does not enhance quality of life, its operation is not based on people’s participation and it impacts on the environment and health in a destructive manner through harmful exhaust emissions and frequent accidents.

Public transport in Dar-es-Salaam seems to have failed in almost every aspect that makes transport a good service product. All classes and groups of people who have experienced travel within Dar-es-Salaam city complain about the poor quality of the current public transport system.

Until the early 1980s, the fleet of vehicles used for public transportation consisted of large buses. Nowadays, such buses are quite rare and most bus services are performed by small vehicles, most of them with a maximum capacity of about 20 seats. The large number of small buses contributes to congestion and impacts air quality negatively according to several measurements, although scattered over time and place. All inhabitants in the proximity of traffic are exposed to such exhaust emissions and, in particular, levels of suspended particulate matter, sulphur dioxide and lead are alarmingly high. Inhabitants in the low income area of Ilala are most affected, as well as people living in the city centre or close to bus stations and junctions.

Apart from the arterial roads, which are in quite good condition, the poor condition of roads in the suburbs and within the neighbourhoods in Dar-es-Salaam has contributed to the deterioration of the public transport system. Features of today’s public transportation system are the non-existence of timetables and the low level of services provided by the daladala buses, which make it almost impossible to calculate the waiting time for queuing during peak hours. Bus stops are often overcrowded and of a poor standard as regards traffic safety. Most of the bus stops lack facilities to protect passengers from rain and hot sunshine. The vehicles have too few seats to meet the demand for transport. They are almost always overcrowded during peak hours, with people standing during the journey. Many vehicles are in a bad condition technically and badly sustained internally. The poor quality of vehicles contributes to increased air pollution and accidents. The number of people killed in accidents involving daladala buses continues to increase every year.
The behaviour of conductors is unpleasant against women, elderly persons, people with disabilities and school children in particular. Pupils are the future engines of development and it is through travelling to school that they can be effective in the future building of Tanzania. Their arduous travel situation to and from school by daladala buses was seen as unacceptable by most of the stakeholders interviewed in this study.

The organization of public transport during the 1970s, with regulation of routes as well as supervision of drivers and driving licences, was efficient and contributed to a well-functioning public transport system. However, the increasing demand for transport and insufficient funding to enlarge the bus fleet overwhelmed the transportation system, which could not cope. Economic deterioration seems to be a key factor in the degradation of transport quality.

There is a clear relationship between socio-economic characteristics and travel situation in Dar-es-Salaam. The immigrants to Dar-es-Salaam from rural areas have moved from a situation of low income and unemployment to find a better situation in both aspects. Although Dar-es-Salaam provides an enlarged labour market, temporary employment, part-time employment and to a great extent self-employment, which generate less revenue, are the most common situations for a new city dweller. The income thus earned is not high enough to adequately meet the increasing need for public services, including public transportation typical of a large city.

A large proportion of the population in Dar-es-Salaam has a very low income, something which affects the quality of the public transport system. This is one of the reasons why the fare level has stalled at the same level over the years, while the demand for public transport and the costs for providing it have increased. The financial situation for ministries, the transport company and the bus-owners is developing in an unsustainable direction. There is not enough finance for public organizations to own vehicles and modernize the fleet. On the other hand, private bus owners cannot repair and modernize their vehicles as the low fares do not bring in enough revenue for such measures.

The development of urban form has been one of the root causes of many transportation problems in Dar-es-Salaam. The rapid, unplanned, and uncoordinated growth of the city has dispersed the population, with more people moving from the city centre to its urban periphery. This dispersion reduces access to public transportation and makes the cost of building and maintaining new public transportation systems prohibitive.

As the population continues to grow, physical planning for housing, schools, roads and other forms of infrastructure has been deeply affected by the rapid growth of urban structures and spontaneously developed housing areas. The planning of infrastructure has not taken into consideration a growing demand
for transport by upgrading road infrastructure from the city centre to peripheral urban areas. As the city has expanded, the radial roads have had to accommodate an increasing number of vehicles, buses and private cars to serve the population with transport services. The possibility for the roads to cope with the intense traffic has reached its limit. Planning of housing areas, including service institutions like schools and care centres for the population, has not been able to keep up with demands created by the population increase. All inhabitants have become more and more dependent on motorized transport for going to workplaces, schools and service centres.

Weak institutional coordination leads to poor planning for public transport in Dar-es-Salaam. There is a lack of a well-defined, clearly identifiable authority or administrative system that has the responsibility of overseeing the formulation and effective implementation of a coordinated strategic vision involving different sectors for better public transportation. For example, such an authority would make sure that while a certain institution ensures that well trained people drive public buses, another would revise old traffic laws and a third design the legal frameworks to meet the challenges of the future urban transportation system.

Dar-es-Salaam’s planning institutions are inadequately equipped financially to cope with the current rapid increases in motorization and travel demand. There are no coherent methods and approaches for funding investment in transport planning and infrastructure provision and hence traffic and general transportation conditions are declining in the city. There is no emphasis on charging transport users, especially private vehicle users who are the least efficient users of transport networks, for the costs of the facilities and services being provided to them at public expense. Tanzania is not adequately equipped with modern techniques to test the roadworthiness of the increasing number of second-hand imported vehicles. Likewise, the country has a low technical capacity to measure the magnitude of air pollution in urban areas or to test the quality of petroleum products imported into the country.

Many people in Dar-es-Salaam know that the quality of air from traffic is poor because of the visible smoke and the breathing problems they experience from breathing the air. People also have a general knowledge that air pollution is not good for the environment. People in Dar-es-Salaam are uninformed about the real risks of living and working in a polluted atmosphere. They do not know anything about the pollution levels in their own neighbourhoods because there is no comprehensive monitoring of air pollution in the city. However, from what is known about the negative health effects of long-term and short-term exposure to air pollution, it is very plausible that segments of the population in Dar-es-Salaam are suffering from current pollution levels. People who are already weakened by HIV or malaria are likely to suffer more.

Although many countries in the world have abolished the use of leaded petrol, Tanzania has so far not done so in practice. The institutional and corporate
arrangements in Tanzania constrain the process to phase out leaded petrol because there is no effective check on fuel quality when it enters the country. Because of this, fuels of various kinds are imported and mixed in the same fuel tanks and fuel is adulterated. Support for change in this area will undoubtedly have to include institutional and corporate management strategies, as well as systems for quality control and legislation. Without this, fuel quality can never be guaranteed except within a few selected companies and any effort to make operational the catalytic converters that most imported cars are equipped with will eventually be futile. Creating an efficient system for fuel monitoring is indeed a key area for lowering pollution from traffic in Dar-es-Salaam. Although leaded petrol is still popular in Tanzania, there are no specific benefits from its sale to either the public or the oil companies. Information campaigns directed at the public and at institutions would be a way to speed up the phasing out of leaded petrol. Up to now, Tanzania has had no national environmental legislation in place to protect either public or private sector interests or to ensure that the general public receives better public transport services without damaging the environment. The newly approved Environmental Act is expected to be a supporting tool in promoting better public transport in Dar-es-Salaam.

Another obstacle to a more user-friendly and participative city is that there is no coherent culture of involving inhabitants in planning for public transport in Dar-es-Salaam. In the past, expert solutions to public transportation problems lacked a wide public participation. This deficiency is due to a lack of clear mechanisms for how different stakeholders, including grassroots communities, can be involved in the planning process. More research is needed to find suitable methods and approaches for participatory planning in an environment such as Dar-es-Salaam.

The persistent and the growing problems of public transport in Dar-es-Salaam do not mean that there are no solutions to these problems. It is obvious that the population of Dar-es-Salaam will continue to grow and the city will continue to increase in size in the foreseeable future. This means that the authorities concerned must seek solutions to the challenges if Dar-es-Salaam City is to be a good habitat for people now and for future generations.
Chapter Nine

9.0 The way forward
9.1 Policy instruments for change

Effective public transport and traffic planning in Dar-es-Salaam must involve new ways of designing and implementing policy, as well as new policy objectives. These changes will require clear action by the Tanzanian Government to put the right conditions in place to allow local authorities to do their work effectively. A clear policy framework must be backed by adequate human resources. The City Council, together with its sub-area Councils, needs to develop its own transport sector policies that are consistent with the national transport policy. Such policies must articulate the objectives of urban transport in relation to economic growth; infrastructure maintenance; provision of an affordable and efficient public transport system, particularly for the urban poor, women, children, the elderly and the disabled; resource use minimization by making more effective use of existing facilities; and protection of the environment.

The intention of policy instruments in this context is to promote more careful use of technology and more environmentally friendly behaviour or to promote solutions where impacts on safety and the environment are minimized. One such instrument may be a single measure addressing defined groups. In Sweden, information campaigns about the advantages of public transport over private cars have been used on a number of occasions, beginning with the oil crisis in the mid-1970s, to reduce the use of fossil fuel and, more recently, to reduce negative environmental impacts. Taxation of fossil fuels is an economic measure affecting all drivers of vehicles powered by petrol or diesel. Laws regulating the emission of CO$_2$ from cars and physical measures such as the construction of speed bumps in residential streets to influence drivers to drive slowly are other types of policy measures.

Every form of policy instrument used to promote a behavioural change establishes a relationship between at least two actors, whether private individuals, authorities or industry. The content of a defined measure serves as a communication from the sender to the receiver. It is almost always the partner receiving information or experiencing economic measures or control programmes who makes decisions about whether to change decision or behaviour (Lindén, 2001). The receiver, e.g. a company, household or private individual, thus becomes extremely important, as the decision-maker. On the other hand, the sender, e.g. the authority, must do its best to inspire and motivate the receiver to accept its argument and begin improving efficiency in technology and/or behaviour within their organisation. Four groups of policy instruments can be identified, namely information, economic instruments, administrative instruments and physical improvements (Table 9.1). Policy instruments are often used in various combinations to increase efficiency (Helby et al., 1999; Jordan et al., 2003).
Table 9.1. Policy instruments, influence on actors and effects

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Influence</th>
<th>Effect</th>
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<tbody>
<tr>
<td>Information</td>
<td>Voluntary</td>
<td>Slow</td>
</tr>
<tr>
<td>Economic instruments</td>
<td>Catalytic</td>
<td>Short-range</td>
</tr>
<tr>
<td>Administrative instruments</td>
<td>Immediate, forcing</td>
<td>Middle-range</td>
</tr>
<tr>
<td>Physical improvements</td>
<td>Reminding, repeating</td>
<td>Change in habits</td>
</tr>
</tbody>
</table>

Source: (Lindén, 2001; Lindén & Carlsson-Kanyama, 2002)

*Information* represents several aspects of knowledge mediation. Written information in pamphlets and advertisements is most often used but other options include awards and labelling of products or services. The common denominator for all of these is that they attract attention. The receiver of information is expected to notice and benefit from the new arguments voluntarily. Even if a campaign is very intensive, and uses several forms of media, the effect in terms of new attitudes and changed behaviour takes time to register (Henryson et al., 2000). As a policy instrument, the effects of information appear gradually over quite a long time span.

*Economic instruments* include taxing, pricing, subsidies, discounts and reducing interest rates on investments. The policy instruments always have a fixed starting date. Changes in actors’ behaviour are checked frequently, evaluated and reported directly to the authorities, which often leads to changes in the design of the economic instrument. However, frequent changes in the definition of an economic measure have the disadvantage of reducing the motivation for changes in decisions and behaviour by receiving actors. Investments in new technology, construction or organisational renewal in particular need to be based on long-term perspectives and consistency in important policy measures. Thus a number of economic instruments, e.g. taxation, subsidization, more often promote short-term changes in decisions and behaviour. However, economic instruments function as catalysts for changes in the future. One step towards more energy saving vehicles is often followed by an increasing awareness of, and plans for, other energy saving measures. It is possible to develop very efficient economic measures, but they must be succeeded by other economic or other measures promoting effects in the long run.

*Administrative instruments* have an immediate effect on all the actors they are intended to affect from an announced date. Non-compliance in traffic situations is punished by sanctions, e.g. fines, which are usually known to the culprits in advance. As for economic instruments, the authorities are responsible not only for the introduction of administrative instruments but also for enforcing observance of the laws. Instruments belonging to this group include national...
laws, quality norms, technical norms regulating safety or environmental impacts, emission limits for CO₂, restrictions of trade, permits, prohibition and statutory regulations. A licensing organisation, the traffic police or other transport organisation, supervises traffic flows and transportation, but strong administrative policy instruments strengthen their authority and increase their efficiency in supervising and controlling the transport system.

*Physical improvements*, e.g. construction of speed bumps in the street, are intended to encourage a new pattern of behaviour. Such improvements are very often combined with some other instruments pushing the behaviour in the same direction, e.g. norms regulating maximum speeds.

All four groups of instruments share a top-down perspective and are intended to motivate an actor to *change routines or behaviour by external means*. That means that they are formulated, established, controlled and evaluated by an authority on behalf of national policy decisions. Those affected by the instruments have to accept them as far as economic, administrative and physical instruments are concerned. Information as an instrument represents an exception, as there is usually no control over the receivers and their behaviour. Top-down perspectives have the advantage of getting an immediate result, but seldom inspire long-term reconsideration of behaviour and routines by the receiver (Lindén, 1994; 1996). New routines are forced upon the receivers, which may occasionally provoke them to avoid the rules and their consequences.

Internal motivational factors refer to actors’ socio-psychological factors. In developing environmental awareness, the environmental effects of behaviour and consumption must be known. However, to process such knowledge, an actor must already have a set of values for environmental issues. Values indicate a wider and more general set of attitudes (Ajzen & Fishbein, 1980). Attitude, on the other hand, represents a view about, and an evaluation of, a specified phenomenon. Most often there is some correspondence between values and attitudes, but when attitudes are specified and close to personal behaviour, divergence often becomes more frequent (Gardner & Stern, 1996). Although drivers may have a high environmental awareness, their behaviour frequently contravenes traffic laws. Internal motivation is very often counteracted by external expectations. The motivational factor behind controls and negative sanctions is to get people’s external and internal motivation in line with social norms.

It is not always so that knowledge, values and attitudes in sequential order lead to behavioural change (Lindén, 1994). On the contrary, behaviour performed more or less haphazardly may end in a change of values and/or attitudes or strengthen those already existing. Both ways of bringing about behavioural change, either by improving knowledge or simplifying practices, are important. Another important aspect is connected with signals of lifestyle and the
impression decisions or behaviour make on other actors. It has been shown for example that actors who are concerned about the environment also tend to exhibit environmentally friendly behaviour (Lindén, 1994; Klintman, 2000; Lindén & Klintman, 2003). Visible consumption and behaviour rapidly denote a green identity or a responsible identity. When authorities sanction a certain type of behaviour, the processes of identity formation tends to be accelerated (Popenoe, 1983). Thus the degree of visibility of behaviour and its relationship to identity formation and image is important. Environmental awards and safety awards are examples, where the appointed companies get an added value in marketing their services or products.

Voluntary agreements are considered to be an instrument where reciprocal communication is needed. To allow agreements to be formulated, there is a need for creativity provided by both partners. Voluntary agreements require a continuous communication process (Dexter, 1964; McQuail, 1987; Schramm, 1961). This is a horizontal process, where both partners represent the same share of importance (Lindén & Carlsson-Kanyama, 2000; Jordan et al., 2003). The role of the sender differs from that in top-down processes, as the communication includes phases of initiating, advising on, supporting and evaluating innovations and behaviour of the receiver (Figure 9.1). The latter, on the other hand, formulates goals and measures adjusted to the assumptions and the situation in their organisation. Both partners are expected to agree on the goals, the ways to handle strategies, reporting periods and report contents, ways to handle, reformulate or reduce divergences from goals and strategies, and define evaluation variables in terms of methodology, statistics or qualitative measures. The receiver, on the other hand, is expected to propose goals and strategies, and to regularly report on the outcome. Thus the roles of both partners are different from those associated with other policy instruments with a top-down perspective. The partners in a communication process act as both sender and receiver during the progress of the programme. As a consequence, the time allocation must in one way or another differ from situations where top-down policy instruments are used. On the other hand, certain studies indicate clear efficiency advantages in bottom-up. As a broader knowledge pool is involved in participatory bottom-up procedures, certain scholars argue that the feedback loop may actually be shortened, that is, "the distance and time between decisions, action, effect, observation and reconsideration in public action." Accordingly, these specific experiments reflect "a nimble style of collective action that can quickly recognize and respond to erroneous or ineffective strategies" (Fung & Olin Wright, 2001:26).
The relationships between sender and receiver when using voluntary agreements as a policy instrument are different from those that apply when other instruments are used. The planned communication between partners is a conversation where questions and answers during the phases of the energy efficiency programme widen the base of knowledge and hopefully increase the ambitions of the local partner (Windahl & Signitzer, 1992). Feed-back is extremely important in processes like this, and can be achieved in a number of ways, for example in direct communication, or through educational activities, indicators and visits. The feed-back can also be given in a general format valid for all partners in the programme by indicators, papers, awards or network meetings. Although feed-back activities are usually initiated by the sender, they can just as well be proposed by partners. In that way, the sender is encouraged to be a sensitive listener, rather than the expert and controller exclusively.

Using top-down or horizontal communication strategies in implementing a national policy is an important choice for the efficiency of the measure used. There are several factors to take into consideration in the implementation process, e.g. the policy goal, defined actors, measures in relation to actors and the evaluation process (Jordan et al., 2003; Lindén, 2004). In cases where the measures have to differ for actors in the production and consumption chains, a vertical, top-down, strategy could be effective (Table 9.2). A national aim for energy consumption is to lower the level of CO₂ emissions. The energy production companies are addressed by government authorities via a policy instrument taxing their CO₂ emissions. However, taxing CO₂ would probably not be the right way to address households as actors in energy consumption. Measures appropriate to the household situation include information, inspection
and advice, bonus programmes etc., promoting a greater awareness of the amount of fossil fuels required for cars and thus motivating drivers to use buses, where safety and environmental aspects are declared. Other actors in the consumption phase, e.g. bus owners, could be addressed by voluntary agreements informing and reducing the use of fossil fuels by e.g. awards or reduced taxes for introducing new energy saving technology (Table 9.2).

Table 9.2. A vertical communication process including policy measures

<table>
<thead>
<tr>
<th>Phase</th>
<th>Actors addressed</th>
<th>Policy measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy production</td>
<td>Energy company</td>
<td>Economic instrument: Taxing CO₂</td>
</tr>
<tr>
<td>Distribution</td>
<td>Distributors</td>
<td>Informative instruments: Advice, information</td>
</tr>
<tr>
<td>Consumption</td>
<td>Bus owners</td>
<td>Informative instruments: Technical advice, education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economic instruments: Reducing interest rates</td>
</tr>
<tr>
<td>Consumption</td>
<td>Households</td>
<td>Informative instruments: Information</td>
</tr>
</tbody>
</table>

However, policy measures can also be communicated in horizontal policy processes. A national goal of reducing CO₂ emissions from cars might be quantitatively defined, but not all actors can reduce their emissions by the same proportion during the defined time period. A national authority using a voluntary agreement strategy hands over the responsibility for the formulation of local goals to a number of specific actors (Table 9.3). The goals formulated have to be defined in such way that a share of the national goal can be addressed. In the horizontal strategy, the goal is defined with the same variables for all actors addressed, but the proposed levels to be achieved during time periods are set taking local factors into consideration.
Table 9.3. A horizontal communication process including policy measures

<table>
<thead>
<tr>
<th>Actors addressed</th>
<th>Policy measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus producers</td>
<td>Economic instruments: Investment programmes</td>
</tr>
<tr>
<td></td>
<td>Informative instruments: Education, efficient behaviour</td>
</tr>
<tr>
<td>Transport companies/</td>
<td>Informative instruments: Awards, ECO-driving education</td>
</tr>
<tr>
<td>Bus owners</td>
<td>Economic instruments: Investment program for hybrid</td>
</tr>
<tr>
<td></td>
<td>Technology including subsidies, reduced interest rates</td>
</tr>
<tr>
<td>Households/commuters</td>
<td>Informative measures: Information about safety,</td>
</tr>
<tr>
<td></td>
<td>environmental impacts, labelling bus companies or</td>
</tr>
<tr>
<td></td>
<td>services</td>
</tr>
</tbody>
</table>

In implementing national policy, there are a number of crucial obstacles to take into consideration in reaching defined goals. The national goal has to be defined in such a way that it is possible to evaluate with quantitative and qualitative measures. The appropriate actor has to be defined and communicated with regarding relevant policy measures. The better the knowledge about the actors addressed and, relevant policy measures, the better the ultimate result and goal achievement. The policy strategy has to be either as a vertical top-down process or as a horizontal process.

9.2 Towards improvement of public transportation in Dar-es-Salaam

The environmental and social impacts of the inefficient public transport are significant because they have a direct affect negative effect on the quality of life and urban productivity in Dar-es-Salaam. People living in poverty, women, children, youth, older persons and people with disabilities are particularly disadvantaged by the lack of accessible, affordable, safe and efficient public transport. The variation in social-economic characteristics and the question of poverty in Dar-es-Salaam are factors that need to be considered in planning for public transportation. Policies devised to ensure that the transport needs of people of different classes and income levels are met must link the poverty situation with mobility and transport by promoting cost-effective modes of transport for the urban poor. The quest for solutions to public transport in Dar-es-Salaam goes beyond the borders of Dar-es-Salaam. As argued in Haughton and Hunter (1994), the growth of large cities may well be a matter of national concern in terms of internal urban hierarchies, but the economic forces fuelling this growth are largely global – articulation of production, services and cultural transactions on a global scale. From this perspective, ‘the metropolis is indisputably a global settlement, an international phenomenon, a nodal point in
the international division of labour. It serves multiple social, economic and cultural functions across national and international borders (ibid.)’.

In view of these challenges, public transport planning authorities must seek strategies to create a sustainable public transportation system with options that cover the needs of various groups of people, while guaranteeing a safe and healthy environment for all. The adverse effects of inefficient transportation, including the increasing number of road accidents and the high incidence of diseases caused by air pollution, create substantial costs for the society. Solutions must be sought to reduce adverse effects such as congestion, energy consumption, air pollution, discomforts, delays and accidents.

Application of a variety of policy instruments as discussed in section 9.1 is useful when developing strategies to address problems of public transportation in Dar-es-Salaam. However, these should be accompanied by other supporting measures. For example, while analysing a sustainable city from a physical form standpoint, Haughton and Hunter (1994) argue that strategies of physical form for urban settlement have been superseded by more holistic strategies, which incorporate land use issues, but which place much greater emphasis on restructuring the political, social, economic and managerial dimensions of existing cities as the basis for bringing about sustainable urban development. For example, this study has shown that parents and other stakeholders would like the Government to intervene to solve the difficult conditions that pupils face as they travel to and from school by daladala buses, either through subsidized fares or by provision of school buses. However, the economy may constrain the ability of the Government to do so. The problem is that there is currently no clear mechanism in Dar-es-Salaam for incorporating popular demands into an effective policy.

A politically powerful and well coordinated city planning system is needed in Dar-es-Salaam to approve and implement the building of a quality public transport system. The participation of the public in city planning is also essential. Solutions for public transport must adequately express community values through the planning system. Radical policies will have to be introduced at a variety of spatial and governmental levels. At the national level, legislative and fiscal changes, plus general example setting, could make a profound contribution to sustainable public transportation.

Policy initiatives for public transportation should fully reflect the desires and aspirations of local communities. Thus, consistent with the aim of effective implementation, decisions should be made at the lowest effective level. Policy making must avoid excessive centralization and instead maximize the involvement of those whose daily living environment will be affected by changes in public transport, while ensuring that there is consistency between the details of proposed development and the broader policies at regional and national levels.
Local councils should take the lead in creating an awareness and understanding of environmental issues, in developing council-wide programmes. Effective planning for a sustainable public transportation will rely heavily on good information, both about the current state of the environment and about the various key factors which have been identified as requiring change if environmental sustainability is to be achieved. One essential source of data will be local environmental audits, which will be required to measure the amount and rate of change in parameters such as the level of pollutants in air. Equally important will be an organised programme of regular monitoring to measure progress in changing transport efficiency.

The development of sustainable transport in Dar-es-Salaam must be accompanied by an environment that is conducive to development. A transparent and symbiotic partnership has to exist between central and local governments, the private sector and civic societies, who have to share the common goal of developing an economically and environmentally sustainable transport system. Problems with public transportation in Dar-es-Salaam are a result of the interrelationships that exist between different urban trends and impacts. Addressing problems in isolation would not be very effective because of the complex and holistic nature of the urban transportation system. Interrelated problems require ‘integrated strategies’ implemented over time, from the immediate and short-term to the gradual and long-term.

Town planning can provide solutions through strategic planning where a city-wide government provides a plan for the entire city. In such planning there should be strategic networks of transportation, strategic land use that complements this, and comprehensive processes and initiatives to encourage the implementation of the plan. The following policies can be adopted to improve the quality of public transportation as part of town planning:

i) Traffic calming — to slow down traffic so that the environment is safer and more conducive to pedestrians, cyclists, shoppers and residential life. Traffic calming is best done by physically altering the street environment through different road textures; changing the geometry by speed plateaus and bumps and other traffic engineering devices; introducing new street equipment designed to create a more humane, safe environment; and creating an attractive landscape. Accidents, particularly severe accidents, are generally significantly reduced by traffic calming because speed is the most critical factor in road accidents—particularly regarding the risk of serious injury and the danger to pedestrians and cyclists.

ii) To promote public transport and non-motorized means of transport at the expense of private vehicles. With respect to planning for public transport, the following issues should be considered:
Operational and service delivery—reliability, timetables, adequate service frequency especially off-peak, availability of night services.

Terminals and bus stop environments—cleanliness, accessibility, security, provision of lighting, trash cans, weather protection and toilet facilities.

Quality, comfort, condition and security of public transport vehicles—should be guaranteed.

Protected rights-of-way and priority at traffic signals through a ‘green wave’ for public transport vehicles.

Provision of timetables, maps, and other information at bus stops, thus preventing unnecessary queuing.

With respect to biking and walking, there is a need to protect and enhance these most sustainable of all transportation modes in Dar-es-Salaam. This can be done through selective pedestrianization and traffic-calming schemes, as well as through traffic management strategies that limit private modes and improve public transport and that foster non-motorized modes for basic access. Land use planning that is compact and mixed in character will also help enhance the role of walking and cycling. Coordinated land use and transport planning to encourage spatial settlement patterns that facilitate access to such basic necessities as workplaces, schools, health care, places of worship, goods and services, and leisure, and would reduce the need to travel.

iii) The city centre of Dar-es-Salaam remains an important employment, business and entertainment centre for the whole city. Because of the intense activity and traffic that this generates, it is a major focus for energy consumption and pollution. Decentralization of some central area activities to major multi-purpose sub-centres would be helpful, leading to improved accessibility and providing scope for necessary central area restructuring and contributing to more economical public transport through more balanced distribution of activities. Combined with these land-use adjustments, a comprehensive programme for improved traffic management – including more attractive and efficient public transport, reduction in car parking, more extensive pedestrian-priority areas, well-designed cycle and pedestrian routes made attractive by high-quality paving and street fittings, more trees and greenery – would reduce pollution levels and sustain long-term viability.

iv) The suburbs of Dar-es-Salaam constitute one of the great challenges, as they contain a high proportion of the population and the existing housing stock. A change to more sustainable forms of urban development must be accomplished. Urban sprawl and lack of variety in land use reduce accessibility to employment and services, increasing the reliance on motorised trips.
Planning for sustainable transportation will thus require changes in the spatial arrangements of the suburbs. Increasing density needs to be achieved with maximum involvement of the residents. Since poverty is one of the factors that constrains the development of sustainable public transportation, strategies on how public transportation can complement poverty alleviation should be developed.

Other specific measure to improve public transport in Dar-es-Salaam include:-

* Ensuring that existing transport facilities are fully available for use by improving maintenance. For example, traffic signs cannot be installed and forgotten; management is needed. Traffic signals should be optimized to deal with traffic flows as these change over time. It should be the first task of a traffic management agency to adjust signal timings to match traffic demand and, even with out-dated and limited traffic signal control equipment, benefits can still be gained at little cost and with little effort.

* Constraining ‘inessential’ road use by inefficient users of road space (low occupancy private vehicles) by ensuring that system users meet the true costs of travel through various forms of vehicle and user charging mechanisms; in parallel and as part of a realistic user charging system, raising revenue for transport investment.

* Encouraging efficient modes to promote an effective, attractive, affordable, physically accessible and environmentally sound public transport and communication system, giving priority to collective means of transport with adequate carrying capacity and frequency that support basic needs and main traffic flows.

* Adopting transport planning procedures which ensure that all transport investments are evaluated objectively, prioritized and targeted within realistic budgets and that transport policies and measures are economically, financially, operationally and environmentally sound, are sustainable and form a realistic ‘implementable’ programme. This should include investment in relatively inexpensive improvements in the environment for pedestrians and cyclists.

* Reducing road-based vehicle emissions and reducing adverse environmental impacts of transport investments and operations through vehicle testing, fuel improvement, etc. Implementation of systems for control of fuel quality as it enters the country. Without such a control system, many efforts for pollution control will be in vain;

* Improving the safety and security of road-based transport by effective enforcement of regulations. Traffic management cannot be implemented, enforced or play its full role in transport strategy without the necessary supporting legal structure. This should be provided in order to implement and
enforce effectively powers for: i), traffic regulations, (ii) charges (say for parking), (iii) adequate fines for violation of traffic regulations – the levels of fines for contravention of traffic regulations in Dar-es-Salaam are derisory and act as no deterrent to drivers who contravene regulations.

* Adopting innovative policies for financing transport including involvement of private sector participation in the supply and operation of transport services, by realistic road user charges and by realistic public transport fare systems. Authorities in Dar-es-Salaam must be prepared to introduce parallel physical and economic restraints on private transportation and the revenue should be used to support the investment in infrastructure for public transportation.

* Formulating a policy on truck traffic as part of a strategy to involve truck routes, designated loading areas and break bulk terminals, since efficient urban road freight distribution is essential if public transportation is to be improved in Dar-es-Salaam.

9.3 The potential of Dar-es-Salaam for sustainable public transport

Despite the enormous problems with public transport shown in this study, Dar-es-Salaam city has the necessary potential, if used wisely, to enable it to solve the existing problems.

Most of the households interviewed in Dar-es-Salaam know the scale of the public transport problem in terms of its causes and its negative environmental and socio-economic effects. This understanding is equally shared by officials in the public institutions. Lack of institutional coordination is widely seen as the main reason for continued poor public transportation in Dar-es-Salaam. The fact that there is a consensus in the characterisation of the public transport problems and how they directly affect people’s lives is a useful starting point when strategies to solve public transportation are considered.

The city of Dar-es-Salaam has institutions that are suited to work for improved public transportation. These include legal institutions, enforcement agencies, planning departments, training institutions, standard stipulation agencies, etc. Since planning for sustainable transportation will require integrated approaches, a framework to coordinate effectively different institutions will need to be constructed.

The interviews with public institutions and the assembly of stakeholders from different disciplines in the workshops in Dar-es-Salaam show that there is no shortage of trained people who could carry out planning for a sustainable public transportation. The Government will have to create an enabling framework within which these experts can work effectively.
The study also shows that none of the relevant groups of people, i.e., young children, the elderly, the disabled, men, women and school children are involved in any way in planning public transport in Dar-es-Salaam. However, most of the people interviewed indicated the desire to be involved in the planning. This desire to be involved in the planning process will be useful whenever a framework of effective participatory planning to improve public transportation is instituted in Dar-es-Salaam.

Dar-es-Salaam city already has existing transport infrastructure facilities, providing a starting point for strategies to enhance public transportation. The City Council’s proposal to introduce a bus rapid transit project in Dar-es-Salaam, starting with the existing infrastructure, is a potential move in that direction. Low-cost investments in infrastructure, equipment, operational improvements and technology could provide the foundation for Bus Rapid Transit systems that substantially upgrade bus system performance. Conceived as an integrated, well-defined system, Bus Rapid Transit would provide significantly faster operating speeds, greater service reliability and increased convenience of public transport.

The Environment Law which was approved by the Tanzanian Parliament in November 2004 aims at ensuring that sound environment management becomes one of the major dynamics for sustainable development in Tanzania. The National Environment Management Council (NEMC) is now expected to be effective in its responsibility for enforcement and compliance, pollution prevention and control, Environmental Impact Assessments (EIAs), Environmental Information Systems (EIS) and research and development. The Environment Law is now expected be a supporting tool in implementing sustainable transport policies in Dar-es-Salaam.

Tanzania has no operating petroleum refinery at the moment. Refineries using outdated technologies have been a hindrance in the efforts to phase out leaded petrol in other African countries. According to TBS, most of the petrol imported into Tanzania since April 2004 is unleaded. This situation ought to make it easier for the Government to put forward a policy that prohibits the use of leaded petrol. The Government has prepared a Petroleum Bill which will be tabled before Parliament for approval. The enactment of the law will be vital in the management of the standard oil that is imported into the country. BP Tanzania Ltd started to sell unleaded petrol at some of its stations in Tanzania in June 2003. Other companies should be encouraged to follow the example of BP(T) Ltd in order to reduce the health and environmental risks caused by leaded petrol.

The Lawyers’ Environmental Action Team (LEAT) has started a project aimed at phasing out leaded petrol by sensitizing the public and raising awareness about the negative effect of leaded petrol on health, and in particular to children. Other organisations and institutions can be encouraged to do the same.
The Government of Tanzania has poverty eradication as one of its main goals. In addressing the key challenge of strategizing to reduce pervasive poverty, Tanzania prepared and adopted Development Vision 2025, which spells out a vision for the society with reduced poverty and improved social conditions (URT; www.tanzania). Ongoing programmes to eradicate poverty could be useful strategies to integrate into planning for sustainable public transportation by enabling people to meet transport costs in Dar-es-Salaam.

In this study we discovered that some of the inefficiencies that characterize the current transportation system in Dar-es-Salaam are caused by the non-existence of participatory planning practices among the various stakeholders. These include different classes of people and different genders, as well as public authorities and private agencies. The question that is asked here is: how can participatory transport planning involving suppliers and consumers work best in Dar-es-Salaam? Further research in this direction is required to come up with knowledge useful for understanding the effective mechanism of participation that could be applied in practice in planning for public transport in Dar-es-Salaam.
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BRT</td>
<td>Bus Rapid Transit</td>
</tr>
<tr>
<td>BT (T)</td>
<td>British Petroleum, Tanzania limited</td>
</tr>
<tr>
<td>CIA</td>
<td>Clean Air Initiative</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>CTLA</td>
<td>Central Transport Licensing Authority</td>
</tr>
<tr>
<td>DARBOA</td>
<td>Dar-es-Salaam Bus Owners Association</td>
</tr>
<tr>
<td>DMT</td>
<td>Dar-es-Salaam Motor Transport Company</td>
</tr>
<tr>
<td>DRTLTA</td>
<td>Dar-es-Salaam Region transport Licensing Authority</td>
</tr>
<tr>
<td>JICA</td>
<td>Japan International Cooperation Agency</td>
</tr>
<tr>
<td>LEAT</td>
<td>Lawyers’ Environmental Action Team</td>
</tr>
<tr>
<td>NEMC</td>
<td>National Environment Management Council</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen dioxide</td>
</tr>
<tr>
<td>NOₓ</td>
<td>Oxides of nitrogen</td>
</tr>
<tr>
<td>O₃</td>
<td>Ozone</td>
</tr>
<tr>
<td>PMU</td>
<td>Project Monitoring Unit</td>
</tr>
<tr>
<td>ppm</td>
<td>Particles per million</td>
</tr>
<tr>
<td>SPM</td>
<td>Suspended particulate matter</td>
</tr>
<tr>
<td>(SO₂)</td>
<td>Sulphur dioxide</td>
</tr>
<tr>
<td>TANROADS</td>
<td>Tanzania Roads</td>
</tr>
<tr>
<td>TBS</td>
<td>Tanzania Bureau of Standards</td>
</tr>
<tr>
<td>UCLAS</td>
<td>University College of Lands and Architectural Studies</td>
</tr>
<tr>
<td>UDA</td>
<td>Usafiri Dar-es-Salaam</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>URT</td>
<td>United Republic of Tanzania</td>
</tr>
<tr>
<td>VOCs</td>
<td>Volatile organic compounds</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
<tr>
<td>ug per m³</td>
<td>Micrograms per cubic metre</td>
</tr>
</tbody>
</table>
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Sunday Observer, 2004.05.23  


URT, [www.tanzania.go.tz/poverty.html](http://www.tanzania.go.tz/poverty.html).


Appendix 1
Households questionnaire about Public transportation for Dar-es-Salaam, Tanzania: Field work April - June 2003

1. Name of the interviewer ...........................................................................................................
   Name of Study area ........................................ (Municipality)..................................................
   (a) Number of inhabitants in the area ......................................................................................
   (b) Characteristics of the settlement (eg high income, low income, mixed)
   .................................................................................................................................................

2. Household respondent
   Status of respondent in the household: (eg household head/member)
   .................................................................................................................................................
   Age................. Sex .............. Number of households in the house.................................
   Total number of inhabitants in the house ................................................................................

Questions for the respondent
3. What is your occupation? .......................................................................................................
4. What is the mode of transport that you use? (a) walking (b) bicycle
   (c) Dada-dala buses (d) a car (e) Taxi
5. Do you use more than one mode? Yes ☐ No ☐
6. If YES, explain type and why .............................................................................................
   .................................................................................................................................................
7. What is the travel time to your work place? ...........................................................................
8. How do you assess the travel time?
   (a) Short time ☐ (b) reasonable time ☐ (c) long time ☐
9. If it takes longer time, what are the reasons? .........................................................................
   .................................................................................................................................................

10. How many connections do you make with dada-dala buses before reaching your destination?
    (a) one ☐ (b) two ☐ (c) three ☐
11. If it is more than one connection, why? .............................................................................
    .................................................................................................................................................
12. How much do you spent in Tshs for public transport in a week?...........................................
13. How do you assess the weekly expenditure on transport?
    (a) very minimum ☐ (b) minimum ☐ (c) normal ☐ (d) high ☐ (e) very high ☐
14. Does the household own a private car? Yes ☐ No ☐
15. If YES, do you travel with it to your work? ...........................................................................
16. If YES, why don’t you use dada-dala buses? ........................................................................
17. How do you assess the reliability of daladala buses whenever you need to travel?
    (a) very reliable ☐ (b) reliable ☐ (c) less reliable ☐ (d) least reliable ☐ (e) poor ☐
18. If you do not use your car or daladala buses to go to work, what other modes of transport do you use.............................................................................................................
19. Why do you use the specified mode of transport? ...............................................................
    (a) I get picked by a company car ☐ (b) others (specify)......................................................
20. How often do you use this mode of transport?  less often ☐ often ☐ very often ☐
21. What are the most important services that are lacking in this neighbourhood?
   (a) ............................................. (b) ............................................. (c) .............................................
   (d) ............................................. (e) ............................................. (f) .............................................

22. How do you reach these services?
   (a) by dala-dala (b) by bicycle (c) by walking (d) by taxi (e) private car
   (f) others .............................................

---

Users assessment of the Dala-dala transport mode's environment

23. How do you assess the quality of the bus stops for dalalas in terms of protection from rain and the sun?
   (a) very poor (b) poor (c) good (d) very good (e) excellent

24. Explain the comfort conditions inside the dala-dala buses including the ability to see outside through the windows
   (a) very poor (b) poor (c) good (d) very good (e) excellent

25. Explain the cleanliness conditions of the dalalala buses
   (a) very poor (b) poor (c) good (d) very good (e) excellent

26. Explain the conditions of seating and standing in the buses
   (a) very poor (b) poor (c) good (d) very good (e) excellent

27. Explain how?

---

28. Could you specify about your experience with the dala-dala buses with regard to:
   (i) Crowding
      (a) overcrowded (b) moderately overcrowded (c) required capacity
      (d) less capacity (e) least capacity
   (ii) Music
      (a) very much loud (b) moderately loud (c) loud (d) normal (e) no music
   (iii) Hooting horns noise
      (a) very much noisy (b) moderately noisy (c) noisy (d) normal (e) not noisy
   (iv) Conductors' language use
      (a) very poor (b) poor (c) acceptable (d) good (e) very good

29. Do you travel by bicycle? Yes ☐ No ☐

30. If NO why?

---

31. If YES briefly explain the convenience of cycling within the built environment
   (a) very poor (b) poor (c) less convenient (d) convenient (e) very convenient

32. Do you walk to work? Yes ☐ No ☐

33. If NO why?

---

34. If YES, what is the condition of walking routes?
   (a) good condition (b) unpaved route surfaces
   (c) absence of walking routes (d) conflicts with vehicles
   (e) narrow streets (f) other (specify)

35. If you use dalalala buses, specify in your opinion about safety conditions and public health with regard to:
   (i) speed of the cars
      (a) too fast (b) fast (c) normal speed (d) slow (e) too slow
(ii) the physical condition of vehicles
(a) very poor (b) poor (c) good (d) very good (e) excellent

(iii) Pollution
(a) highly polluting (b) polluting (c) normal (d) good (e) excellent

(iv) Engine noises
(a) very noisy (b) noisy (c) normal (d) good (e) excellent

(v) The condition of roads
(a) very poor (b) poor (c) good (d) very good (e) excellent

36. In your opinion, what do you think are the most important aspect which should be done to improve public transportation in your neighbourhood with respect to the following? Rank them according to priority:
(a) fare reduction (b) improvement of road conditions (c) improvement of Time table (d) improved bus stop (e) improvement of bus conditions
(f) improvement of bus routes (g) improved language by bus operators

37. Have you ever been involved in any planning process in public transport issues in your neighbourhood? Yes No

38. If yes, explain how?

Specific for a women respondent in a household
39. How often do you use Dala dan services? (a) very often (b) often (c) less often (d) average (e) not at all

40. What do you rate the services of Daladala regarding treatment of women?
very poor poor good very good excellent

41. Specify briefly how you get treated by daladala bus operators. Give possible reasons for the kind of treatment that you experience.

42. Have you ever been involved in any way by authorities to plan for women’s travel situation? Yes No

43. If No, would you like to be involved in planning to improve women’s travel situation? Yes No

44. If Yes Explain briefly what you think could be done to improve your travel situation?

Specific for students/pupils respondents
45. What is your opinion about Dala-dala bus services?
very poor poor good very good excellent

46. Specify briefly how you get treated by daladala bus operators. Include the possible reasons for the kind of treatment that you experience.

47. Have you ever been involved in any way by authorities to plan for students’ travel situation? Yes No

48. If No, would you like to be involved in planning to improve students’ travel situation? Yes No

49. If Yes Explain briefly what you think could be done to improve your travel situation?

Specific Question for disabled
50. What is your opinion about Dala-dala bus services?
very poor poor good very good excellent
51. Specify briefly how you get treated by daladala bus operators. Include the possible reasons for the kind of treatment that you experience.

52. Have you ever been involved in any way by authorities to plan for travel situation of the disabled? Yes ☐ No ☐

53. If No, would you like to be involved in planning to improve your travel situation? Yes ☐ No ☐

54. If Yes Explain briefly what you think could be done to improve your travel situation

55. What is your opinion about Dala-dala bus services?
   very poor ☐ poor ☐ good ☐ very good ☐ excellent ☐

56. Specify briefly how you get treated by daladala bus operators. Include the possible reasons or the kind of treatment that you experience.

57. Have you ever been involved in any way by authorities to plan for travel situation of the elderly? Yes ☐ No ☐

58. If No, would you like to be involved in planning to improve your travel situation? Yes ☐ No ☐

59. If Yes Explain briefly what you think could be done to improve your travel situation

60. How clean is the air in your neighbourhood?
   (a) very clean ☐ (b) clean ☐ (c) not very clean ☐ (d) polluted ☐ (e) very much polluted ☐

61. To those who answered (c), or lower, what reasons is it not clean?

62. To those who answered (b), or higher, why is it so clean?

63. How noisy is it in your neighbourhood?
   (a) very noisy ☐ (b) noisy ☐ (c) not noisy ☐ (d) calm ☐ (e) very calm ☐

64. To those who answered (b) or lower, for what reasons is it so noisy?

65. To those who answered (c) or higher, why is it not noisy?

66. Have you heard that pollution from cars and buses might be harmful to health?
   Yes ☐ No ☐

67. To those who answered Yes: How can it affect your health?

68. Have you heard that pollution from cars and buses might be harmful to the environment?
   Yes ☐ No ☐

69. To those who answered Yes: How can it affect the environment?

70. Have you heard about something called climate change?
   Yes ☐ No ☐

71. To those who answered Yes, elaborate about effects and causes
## Appendix 2

Ideas, clusters and votes from the workshop about sustainable transportation in Dar es Salaam the 29th of May 2003.

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Idea</th>
<th>Positive votes</th>
<th>Negative votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulations</td>
<td>Taxes and insurance are responsible</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Road tolls in the city centre during daytime</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No push carts in roads</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Good language</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduction of noise around schools</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No garage in residential areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Car free in the centre during weekends</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No more touts/wapigadebe</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One fare in all dalalala</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restriction of used imported car</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased fines for bus violates</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Removal of minibuses and add big buses</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fair treatment by traffic police</td>
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<td>Abolishment of food vendors around bus stops</td>
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<td></td>
<td>Tax differentiation, high taxes for old vehicles</td>
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<tr>
<td></td>
<td>Minimize/avoid overcrowding. Not congested buses</td>
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<td>Infrastructure and land use planning</td>
<td>Important services in the neighbourhood</td>
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<td></td>
<td>Bridge to Kigamboni</td>
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<td>2</td>
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<tr>
<td></td>
<td>Decentralize activities in satellite towns</td>
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<tr>
<td></td>
<td>Improved infrastructure</td>
<td>10</td>
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<tr>
<td></td>
<td>Railway line from Ubungo to city centre</td>
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<tr>
<td></td>
<td>Bus lanes and integrated roads</td>
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<td></td>
<td>Drainage systems</td>
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<td></td>
<td>Pedestrian roads and galleries in commercial centres</td>
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<tr>
<td></td>
<td>Introduce grade separated crossing</td>
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<tr>
<td></td>
<td>Good roads in city</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>New planned suburbs with improved infrastructure</td>
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<tr>
<td></td>
<td>Improvement of settlement roads to shorten travel time</td>
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<tr>
<td></td>
<td>A clear road hierarchy</td>
<td></td>
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<td>Decentralized centre with ring roads</td>
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<td></td>
<td>Roundabouts instead of traffic lights</td>
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<td>Cluster</td>
<td>Idea</td>
<td>Positive votes</td>
<td>Negative votes</td>
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<td>Transport services</td>
<td>Speed boat for passengers</td>
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<td></td>
<td>Traffic light between Mandela and Uhuru road</td>
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<td>Modern petrol station for bus</td>
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<td>Modern and reliable garages</td>
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<td></td>
<td>Provision of school buses for students</td>
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<td>Passenger service and safety</td>
<td>Services for bus passengers/toilets</td>
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<td></td>
<td>Seasonal tickets for buses</td>
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<td></td>
<td>Big buses with capacity of 50 pass.</td>
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<td></td>
<td>Operate within the centre</td>
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<td>Twenty four hours bus service</td>
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<tr>
<td></td>
<td>Modern dustbins around bus stand</td>
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<tr>
<td></td>
<td>Reasonable fare and good transport system</td>
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<td></td>
<td>Toilets at the bus stops</td>
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<td></td>
<td>Free bus service for handicapped</td>
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<tr>
<td></td>
<td>Good transport service to students</td>
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<tr>
<td></td>
<td>Clearly separated zones for fare fixing</td>
<td></td>
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<td></td>
<td>Soldier should pay fare and students should go free</td>
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<td></td>
<td>Bus fares acceptable by operators</td>
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<td></td>
<td>Bus staff are clean</td>
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<td></td>
<td>A city with people who are able to meet their appointment due to reliable transport</td>
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<tr>
<td>Management of public transport</td>
<td>Bus time table in place and adhered to</td>
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<tr>
<td></td>
<td>One company operating whole fleet of buses</td>
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<tr>
<td></td>
<td>Institute for training bus operators</td>
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<tr>
<td></td>
<td>God time table from destination A to B</td>
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<td></td>
<td>Well trained and paid bus operators</td>
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<td></td>
<td>One institution for transportation</td>
<td>2</td>
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<td></td>
<td>One licence authority</td>
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<td></td>
<td>Fair salaries for traffic officers</td>
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<td></td>
<td>Representative company for transport operators</td>
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<td></td>
<td>Parking yard for all private vehicle owners</td>
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<tr>
<td></td>
<td>Well trained drivers/proper driving licence</td>
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<td>Drivers and conductors recognised and legally employed by the bus owners with signed contracts</td>
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<tr>
<td>Cluster</td>
<td>Idea</td>
<td>Positive votes</td>
<td>Negative votes</td>
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<tr>
<td>Management of public transport cont.</td>
<td>Transport services operated by those with required competence</td>
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<tr>
<td></td>
<td>Encourage sharing of transport/vehicle</td>
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<td>Transport technology</td>
<td>Modern technology to limit emissions</td>
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<tr>
<td></td>
<td>Buses driven by gas and power cells</td>
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<td>Computerized traffic monitoring systems</td>
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<td>Introduction of electrical city transportation system</td>
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<td>Modern traffic signals</td>
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<td>Modern buses-natural gas</td>
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<td>Pollution free efficient bus service</td>
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<td>Computerized centre for bus system</td>
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<td></td>
<td>Climate change positively</td>
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<td>Non pollution vehicle</td>
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<td>Transportation planning</td>
<td>Participation in decision making</td>
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<td>Non motorised system is more popular mode of transportation</td>
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<td>Trams</td>
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<td>Pedestrian sidewalks</td>
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<td></td>
<td>Modern car parks</td>
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<td>High speed with separated roads</td>
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<td>Separated bicycle lanes to centres</td>
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<td></td>
<td>Safe bicycle parking spots at the bus stops</td>
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<td></td>
<td>Different modes of transport, eg. railway, sea waterway</td>
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<tr>
<td></td>
<td>Fare according to distance travelled</td>
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<td></td>
<td>Reliable and efficient transport network</td>
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<tr>
<td>Not clustered</td>
<td>Good environment in the city</td>
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<td></td>
<td>Increased salaries for people to afford fares</td>
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<td>Sustainability</td>
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<td>Environmentally friendly transport</td>
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<td><strong>Total</strong></td>
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