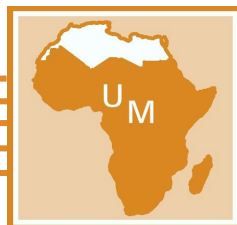




Assessment of the Non-Motorized Transport Program



Kenya and Tanzania

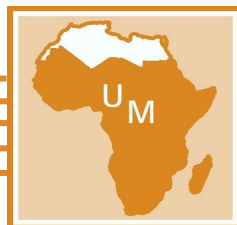




Assessment of the Non-Motorized Transport Program



Kenya and Tanzania



**Assessment of the Non-Motorized Transport Program
in Kenya and in Tanzania**

Prepared by Scott Wilson

The sub-Saharan Africa Transport Policy Program (SSATP) is a joint initiative of the World Bank and the United Nations Economic for Africa (UNECA) to facilitate policy development and related capacity building in the transport sector of sub-Saharan Africa.

The findings, interpretations, and conclusions expressed here are those of the authors and do not necessarily reflect the views of the World Bank, UNECA or any of their affiliated organizations.

CONTENTS

Abbreviations	iii
Foreword	v
Executive Summary	vii
1 Introduction.....	1
2 Non Motorized Transport Program overview.....	3
3 Overall Impact and Achievements of the NMT Pilot Activities.....	5
3.1 National Policy.....	5
3.2 Mobility Planning Techniques.....	5
3.3 Physical Interventions [Spot Improvements].....	6
3.4 Links with KUTIP and USRP	7
4 Detailed Assessment of NMT Program Activities.....	9
4.1 Project Planning Units.....	9
4.2 Engineering Test Interventions.....	14
4.3 Targets set by performance indicators.....	25
4.4 User Participation Components	29
4.5 Management of the NMT Program.....	40
5 Overall Conclusions.....	47
Appendix A: Contact Details	51
Appendix B: Study Team	52
Appendix C: Terms of Reference.....	53
Bibliography	59

ABBREVIATIONS

CBD	Central Business District
DSM	Dar es Salaam
IRP	Integrated Road Project
IT	International Team
ITDG	Intermediate Technology Development Group
KUTIP	Kenya Urban Transport Infrastructure Project
NMT	Non-motorized Transport
NT	National Team
PPU	Pilot Project Units
SW	Scott Wilson
TOR	Terms of Reference
UMU	Urban Mobility Unit
UP	User Platform
USRP	Urban Sector Rehabilitation Project

FOREWORD

Between 1995 and 1999, an important Program on non-motorized transport was carried out in Kenya and Tanzania, as part of the Urban Mobility Component of the Sub-Saharan Africa Transport Policy Program (SSATP) and with financial contribution from the Dutch Ministry of Foreign Affairs.

The Program consisted of two parts. The first part primarily served to establish Pilot Projects Units within the Municipal Government. In the second part, user participation was established and interventions were carried out to test implementation scenarios and monitor methods. The Program was implemented in Nairobi and Eldoret (Kenya) as well as Dar es Salaam and Morogoro (Tanzania).

The long-term objective of the NMT Program was to “facilitate the establishment and reinforcement of the municipal capacity of SSA cities to design and implement affordable urban mobility policies, in particular non-motorized transport policies, targeted at the urban poor”.

This SSATP Working Paper contains the technical assessment of the NMT Program. The assessment took place in early 2002 and was presented at the twelve Steering Committee Meeting of the SSATP-Urban Mobility Component in Maputo, Mozambique, early July 2002.

This assessment includes valuable information and lessons on the achievements and effectiveness of the Project Pilot Units, the capacities of the municipal staff, the impacts of test interventions as well as the outputs from the User Participation Platforms. It also confirms that significant improvements can be made through relatively small and well-designed NMT interventions.

In most of the sub-Saharan African cities, half of the trips are made on foot. Pedestrians and cyclists are the most affected by the growing number of road accidents. Therefore, the lessons learnt from the NMT Program in Kenya and Tanzania are a valuable tool to improve the daily mobility of those who are the most affected by such a crisis. The dissemination of the NMT assessment, together with NMT guidelines, are expected to contribute to such an objective.



Patrick Bultynck
SSATP-Urban Mobility Component Manager

EXECUTIVE SUMMARY

Introduction. Scott Wilson was appointed by the Sub-Saharan Africa Transport Policy Program (SSATP) to undertake a technical assessment of non-motorized transport pilot projects implemented in Kenya and Tanzania between 1995 and 1999. The pilot projects were implemented under Phase II of the Non-Motorized Transport [NMT] Program. They followed studies of urban non-motorized transport issues undertaken in 1993 and 1994, which comprised Phase I of the program.

The pilot projects were implemented in Nairobi, Eldoret (Kenya), Temeke Municipality (Dar es Salaam) and Morogoro (Tanzania). The long-term objective was to “facilitate the establishment and reinforcement of the municipal capacity of sub Saharan African (SSA) cities to design and implement affordable urban mobility policies, in particular non motorized transport policies targeted at the urban poor”¹.

Management of the pilot projects. International and National Consultant Teams managed the interventions in close liaison with the local authorities. The consultants were responsible for controlling project finances, technical input to designs of NMT infrastructure, training, advising on management systems for the local authorities, reporting and dissemination of lessons learned. The conclusion of this assessment is that these activities were generally carried out diligently and in accordance with the Consultant’s Terms of Reference.

Outputs. The primary output of the pilot activities was the experience gained through the testing of spot interventions to support NMT. It was demonstrated that significant improvements can be made through relatively small interventions. The second main output was a significant increase in awareness amongst politicians, planners, engineers and the public of the importance of addressing the needs of non-motorized transport users. The two areas of weakness of the project were:

- ❑ Lack of true empowerment of the local authorities participating in the project (the NMT Consultants were firmly in charge of the process)
- ❑ Lack of effective dissemination of the lessons learned

The assessment of the pilot projects is based on a review of available literature, site visits to view spot interventions, and interviews with key informants. A significant proportion of the project reports were not made available to the assessment team, so it was not possible to verify compliance with all of the detailed requirements of the NMT Consultant’s TOR. The primary source of written information was the guidelines produced by the Consultants following the

¹ SSATP Urban Transport Component. Non Motorized Transport. **Terms of Reference Phase II Part 1.** The World Bank. January 1995.

project². These provide comprehensive information relating to the project, but were produced in the format of a textbook. They include few details of the delivery of outputs in relation to the original program of activities.

Pilot Project Units. Pilot Project Units were established within the municipal organizational structure to implement the pilot interventions. They were answerable to the City/Municipal Engineer and were subsequently renamed as Urban Mobility Units, because it was intended that they should assume a more encompassing role. The PPU were manned by an engineer, a town planner and a social scientist. They were responsible for the identification, design, construction and monitoring of spot interventions. They were required to ensure user participation in this process.

The effectiveness of the four PPUs varied. In Temeke the PPU was headed by the social scientist, who was committed to the success of the project and unhindered by the natural conservatism of some engineers and planners. The PPUs in Eldoret and Morogoro were led by engineers, and the acceptance of intervention proposals made by the NMT Consultants was slower than in Temeke. Nairobi flatly refused to implement most of the interventions proposed by the NMT Consultants, which they considered would be too disruptive to motorized transport.

Financial incentives were paid to PPU staff to “compensate” them for the high level of commitment required to ensure success of the pilot interventions. Other incentives were also provided in the form of training and access to resources like secretaries, computers, stationery etc. These incentives appear to have been successful in motivating PPU members. But there was still some resentment against the Consultant’s National Team members, who were seemingly more highly rewarded for their role in the project.

Despite their crucial role in the implementation of the pilot interventions, the PPUs were still given limited control over project activities. They were not given details of the budgets for the spot intervention works. They relied heavily on the National and International Consultants for direction, technical input, the planning and coordination of activities and approval of funding. All four PPUs were dissolved on completion of the pilot project construction phase and a short period of monitoring.

Mobility planning. The NMT Program introduced “mobility planning” techniques to local authorities in Nairobi, Eldoret, Dar es Salaam and Morogoro. This system seeks to improve mobility and accessibility, but at a lower overall cost, and meet the needs of all residents, rather than simply the needs of motorists.

² De Langen, M and Tembele, R. Productive and Liveable Cities. **Guidelines for Pedestrian and Bicycle Traffic in African Cities.** IHE Delft. Version 1.3. January 2001.

Two components of mobility planning were identified:

- ❑ The preparation of Urban Mobility Plans for pedestrians and bicycles
- ❑ The provision of spot improvements to non-motorized transport infrastructure in accordance with an overall Urban Mobility Plan

The preparation of the mobility plans is a complex process that requires inputs from external consultants, but the provision of spot improvements within the context of the plans requires relatively little technical know-how. Significant improvements can be achieved with few resources.

Three distinct intervention “menus” were identified to provide for non-motorized transport:

- ❑ Build special infrastructure for pedestrians and cyclists
- ❑ Introduce “traffic calming” measures to reduce vehicle speed and thus improve safety for NMT users
- ❑ Interventions to improve the supply of non motorized transport (e.g. increased bicycle ownership)

Test interventions. Pilot projects were carried out to test interventions under all three menus. Infrastructure improvements included foot and cycle paths, tree planting to shade pedestrians, small NMT bridges, road shoulder separation, and stopping places for buses. Traffic calming measures included speed bumps, raised pedestrian crossings and road narrowing. Interventions on the “supply side” of NMT focused on facilitating easier access to bicycles.

Field inspections indicate that the quality of construction of most of the interventions was acceptable. Attempts were made to use local materials, skills and labor for the construction, but some works were given to large contractors, indicating that achieving program deadlines was considered more important than building capacity within the local construction industry.

The field-testing of the spot interventions indicated deficiencies in the engineering design of some physical works. This included a lack of durability of some elements of the infrastructure, excessive collisions between motorized vehicles and NMT infrastructure, theft of road furniture and high maintenance requirements. Some new pedestrian infrastructure was not well used. The deficiency of some of the designs was anticipated, given the ‘testing nature’ of the interventions and significant lessons were learned about how designs of NMT infrastructure can be improved for local conditions.

The pilot project experiences demonstrate that the design of some NMT infrastructure, whilst appearing straightforward on the surface, can be extremely complex. This is due to the need to understand the behavior patterns of non-motorized and motorized transport users, and to design for lack of maintenance capability and low levels of law enforcement.

Monitoring. Monitoring was carried out on all spot interventions. The monitoring indicators suggested in the NMT Consultant's Terms of Reference were used, but some proved to be inappropriate. Other, more relevant indicators were introduced. The monitoring exercises demonstrated high levels of success with most interventions. NMT users generally tended to use the new infrastructure provided and travel times for NMT reduced. There were fewer conflicts between motorized transport (MT) and NMT and reduced vehicle speeds, leading to fewer accidents. But some infrastructure produced negative results e.g. the pedestrian crossings provided on Jogoo Road in Nairobi appear to have resulted in higher driver speeds as MT users tried to stop pedestrians from using them. (It should be noted that these crossings were proposed by the local authority, and not by the NMT Consultants). In Morogoro the local authority destroyed some spot interventions soon after construction following complaints from MT users that driving was being impeded.

User participation. The PPU's involved non-motorized transport users in the prioritization, design, construction and monitoring of interventions. User involvement in the identification of interventions was limited by the time it took to form the user groups, and the need to progress the physical works in the meantime.

Four levels of user participation were identified:

- ❑ Focus group discussions with existing user-based organizations and key stakeholders in the project areas
- ❑ General User Platforms comprising representatives of the existing user groups and stakeholders (These later became known as Community Transport Committees, which acted as an advisory group to the local authorities)
- ❑ Local User Platforms to design and monitor specific interventions
- ❑ User Associations, which are permanent organizations emerging from the Local User Platforms, and responsible for the operation and maintenance of specific NMT infrastructure.

The General User Platforms and Local User Platforms were effective in giving voice to the community in the prioritization NMT infrastructure proposals. Participants were initially unable to contribute significantly to designs due to lack of technical experience, but this improved significantly over time. They made a major contribution to public awareness campaigns in each of the four centers. Participation was voluntary (unpaid) and whilst allowances were initially paid to some groups, these were found to be inappropriate and were eventually stopped.

The User Platform groups were disbanded at the end of the project. Their role was specifically to contribute to the NMT pilot activities. They were closely linked to the Pilot Project Units, whose existence depended on allowances paid by the project. One group graduated into a User Association: the group responsible for the upgrading and management of Mwembe Ladu

recreational park in Temeke³. It was eventually concluded that such facilities are better managed by [efficient] local authorities, but this did not discount that view that similar organizations could potentially play a role in the operation and maintenance of other types of NMT infrastructure.

The User Platforms contributed positively to the outcome of the pilot interventions. Their confidence, pride and level of contribution increased as they gained experience. New ideas and initiatives started to emerge from group activities. It is therefore unfortunate that they could not continue in a form (perhaps simply as a lobby group) that would enable ongoing input to the management and improvement of NMT infrastructure.

Links to other programs. The NMT Program activities were required to develop strong links with the Kenya Urban Transport Infrastructure Program [KUTIP] and the Tanzanian Urban Sector Rehabilitation Program [USRP]. These are major World Bank-funded infrastructure investment programs. The intention was to ensure that measures to cater for NMT were incorporated in sub-projects implemented within these two programs.

However, aside from some small infrastructure works, awareness raising and training, the NMT Program had a much smaller impact on KUTIP than had been originally planned. This was due to timing constraints (KUTIP designs for projects in Nairobi were well advanced by the time the NMT Consultants tried to exert influence) and, in Nairobi, a lack of cooperation between the local authority and the team managing KUTIP in the Ministry of Local Government. Some later KUTIP projects in Nairobi did have specialized NMT input to the design, but the recommendations of the NMT consultant were not all adopted. These projects have not yet been implemented due to a recent suspension of World Bank funding to KUTIP.

NMT measures were, however, built into works funded by USRP in Morogoro. And major road rehabilitation funded and implemented by the Japanese Government in Dar es Salaam benefited from NMT measures following involvement of the Japanese contractor in the construction of the NMT pilot interventions in Temeke municipality.

Dissemination of lessons learned. The findings of the performance of the spot interventions have not yet been synthesized and presented in a form that could be used on a daily basis by planners, engineers and technicians. This is crucial to ensuring that the full benefits of the pilot projects are achieved. This could include the production of an NMT design manual or (preferably) incorporation of NMT requirements into existing urban road design manuals. Until this step is taken the full potential of the project to contribute to capacity building in local authorities will not be realized. But it is also apparent that there is room for further improvement in the design of some components of NMT infrastructure, and much to learn about its effectiveness over longer periods of time.

³ A busy NMT route crosses the park, which is primarily why it became part of the project.

Summary and recommendations. It is evident that the pilot interventions have generated a significant body of technical information for the planning and implementation of NMT measures. Evidence was produced that simple, cost effective measures can be used to relieve severe pressures on existing transportation infrastructure. Important lessons were learned about how to involve users at all stages of the project cycle. Awareness levels increased amongst politicians, planners and engineers of the importance of considering the needs of non-motorized transport in the management of urban transport networks. But capacity building in the local authorities was limited to awareness raising, the training of some municipal staff and practical experiences with the performance of the spot interventions.

The assessment of the NMT pilot interventions has raised a number of key issues that could be addressed in future interventions in support of NMT under the Urban Mobility Component of SSATP. These include:

- ❑ Is it feasible to expect technical staff within local authorities in SSA to deal with the complexities of designing effective NMT infrastructure?
- ❑ Are transportation planners and engineers who are used to traditional approaches willing to give equal priority to NMT and motorized transport?
- ❑ What is an appropriate level of user participation that can be sustained within the resource constraints experienced by most local authorities?
- ❑ Are local authorities willing to promote and facilitate direct user financing of NMT infrastructure in exchange for greater accountability? Are users willing to take up this challenge?

Further activities that could be undertaken to consolidate and further develop the achievements of the NMT pilot projects include:

- ❑ Undertake a survey of standard NMT infrastructure design details already used by local authorities in SSA. Assess the potential usefulness of consolidating these designs and the experiences of the pilot projects into a design manual for NMT infrastructure.
- ❑ Establish a Challenge Fund that enables committed local authorities in SSA to access funds to develop their own capacity for addressing the needs of NMT.

1 INTRODUCTION

Scott Wilson was appointed by the SSATP/World Bank to undertake a technical assessment of pilot projects implemented in Kenya and Tanzania under Phase II of the Non-Motorized Transport [NMT] Program between 1995 and 1999. This report is submitted in response to the requirements of the Terms of Reference for the assessment. It provides an overview of the various program activities and their strengths and weaknesses. An assessment is made of whether the pilot projects have contributed to achieving the long-term objectives of the NMT Program.

The assessment of the pilot projects is based on a review of the literature that was made available to the assessment team, and interviews with key informants. An attempt has been made to seek independent views with minimal dependence on input from the NMT Consultants. However, most of the project reports were produced by the consultants, either directly or under close supervision. The **Guidelines for Pedestrian and Bicycle Traffic in African Cities**⁴, which was written by the consultants and published by Delft University after the project had ended, is the only comprehensive record of the various NMT activities.

A significant proportion of the project reports were not made available to the assessment team. The team was referred to the Guidelines produced by the NMT Consultants as a comprehensive source of information relating to the project. However, the Guidelines were produced in the format of a textbook, and include few details of the process followed by the project team, or the delivery of outputs in relation to the original program of activities.

However, what is clearly evident is that the pilot interventions have generated a significant body of technical information for the planning and implementation of NMT measures. Important lessons have been learned about how to involve users at all stages of the project cycle, and about building capacity in local authorities. This information will be of enormous benefit to governments, local authorities, planners and engineers throughout Sub-Saharan Africa.

⁴ De Langen, M and Tembele, R. Productive and Liveable Cities. *Guidelines for Pedestrian and Bicycle Traffic in African Cities*. IHE Delft. Version 1.3. January 2001.

2 NON MOTORIZED TRANSPORT PROGRAM OVERVIEW

The Sub-Saharan Africa Transport Policy Program [SSATP] emerged from a transport workshop convened in Norway in 1987 to review and set out an agenda for transport investments in Sub-Saharan Africa [SSA]. The workshop identified four core areas, which were to be addressed by the World Bank in its future transport investments in SSA:

- Transport policy reform
- Non-motorized transport
- Improved mobility using the integrated infrastructure approach
- Transport data [Transport statistics and efficiency levels]

The World Bank, with the support of the governments of France, Belgium, the United Kingdom, and the Economic Commission for Africa, conducted a major study on urban public transport in twelve cities of sub-Saharan Africa in 1990. The study examined policies, regulations, and management in the public transport sector. This provided a basis for a 'strategy paper' of the World Bank, which finalized the first phase of the "Sub-Saharan Africa Transport Program Urban Transport Component".

This second phase of the Urban Transport Component started in 1992, with the main objectives of implementing Urban Transport Policy Actions Programs in selected countries. Within this framework a study commenced in 1993 to analyze urban NMT development issues in Mali, Burkina Faso, Senegal, Tanzania, and Kenya. The outcome of this study was a decision by the SSATP in 1993 to proceed with a program of actions on NMT in Kenya and Tanzania. The focus of the interventions would be the cities of Nairobi, Eldoret, Dar es Salaam and Morogoro.

Phase I of the program comprised various studies of urban non-motorized transport issues, which were undertaken in 1993 and 1994. These studies were followed by Phase II, which included the implementation of various interventions. This included establishing Pilot Project Units [PPUs] within the four municipalities and the development of urban mobility plans. User Platforms were established to contribute to the identification, prioritization and design of "spot interventions" in each of the four cities. The spot interventions were built and their impact was monitored.

The NMT Program activities were required to develop strong links with the Kenya Urban Transport Infrastructure Program [KUTIP] and the Tanzanian Urban Sector Rehabilitation Program [USRP], which are major World Bank-funded infrastructure investment programs⁵. The intention was to ensure that measures to cater for NMT were incorporated in sub-projects implemented within these two programs.

⁵ KUTIP has a budget of \$155 million over 6 years. It started in 1997.

The NMT pilot project activities were funded by the Dutch Government. The spot interventions were implemented by the Pilot Project Units under the guidance of national and international consultants.

3 OVERALL IMPACT AND ACHIEVEMENTS OF THE NMT PILOT ACTIVITIES

3.1 NATIONAL POLICY

The NMT Program succeeded in raising the profile of NMT issues amongst planners and engineers in the government, local authorities and local design consulting industry in Kenya and Tanzania. It created awareness that all road users should be included in the planning process. Evidence was produced that simple, cost effective measures can be used to relieve severe pressures on existing transportation infrastructure. In Kenya, NMT concepts were brought into National Development Plans during the implementation of the NMT Program. NMT courses have now been introduced into engineering curricula at the universities of Kenya and Dar es Salaam.

The Road Sector Management Strategic Plan will provide for:

- Capacity building and increased reliance on the private sector for road maintenance and construction
- Provision of adequate funds for road maintenance
- Establishment of guidelines for transparent management and use of roads
- Modalities for setting priorities for road investments
- Establishment of additional dual carriageways and replacement of roundabouts with flyovers or traffic signals
- **Provision for pedestrian and bicycle routes along future roads**

Republic of Kenya National Development Plan, 1997-2001

3.2 MOBILITY PLANNING TECHNIQUES

The NMT Program introduced “mobility planning” techniques to local authorities in Nairobi, Eldoret, Dar es Salaam and Morogoro. This system seeks to improve mobility and accessibility, but at a lower overall cost. It caters for non-motorized traffic, attempting to balance the needs of NMT with the needs of motorized traffic, and meeting the needs of all residents, rather than simply the needs of motorists.

Mobility planning includes the following interventions:

1. The preparation of Urban Mobility Plans for pedestrians, bicycles and other forms of non-motorized transport
2. The provision of non-motorized transport infrastructure in accordance with an overall Urban Mobility Plan
3. Modifications to motorized transport infrastructure to accommodate the needs of NMT.

The preparation of the Mobility Plans is a complex process that requires significant inputs from external consultants in most SSA cities. However, the provision of spot improvements to motorized and non-motorized transport infrastructure within the context of the Plan requires relatively little technical know-how. Significant improvements can be achieved with few resources. Opportunities are provided for the involvement of community-based user groups and individuals.

3.3 PHYSICAL INTERVENTIONS [SPOT IMPROVEMENTS]

Three distinct intervention “menus” were identified to provide for NMT:

1. Build special infrastructure for pedestrians and cyclists
2. Introduce “traffic calming” measures to reduce vehicle speed and thus improve safety for NMT users
3. Interventions to improve the supply of non motorized transport.

Pilot projects were carried out to test interventions under all three menus. Infrastructure improvements included foot and cycle paths, tree planting to shade pedestrians, small bridges, road shoulder separation, and stopping places for buses. Traffic calming measures included speed bumps, raised pedestrian crossings and road narrowing. Interventions on the “supply side” of NMT focused on facilitating easier access by users to bicycles.

Monitoring of the interventions indicated reduced accident rates [mainly due to reduced motorized vehicle speeds], reduced journey times and increased flows of NMT users.

However, the field-testing of the spot interventions indicated deficiencies in the engineering design of some physical interventions. This included a lack of durability of some elements of the infrastructure [particularly in heavily trafficked areas], collisions between motorized vehicles and NMT infrastructure [e.g. bollards], theft of road furniture and excessive maintenance requirements. Some pedestrian infrastructure was not well used, with pedestrians preferring to use shortcuts, even if this involved walking across difficult terrain or coming into conflict with motorized vehicles.

The deficiency of some of the designs was anticipated, given the ‘testing nature’ of the interventions and significant lessons were learned about how designs of NMT infrastructure

can be improved for local conditions. What is important is that these lessons are effectively disseminated.

3.4 LINKS WITH KUTIP AND USRP

The NMT Consultants conducted training courses on non-motorized transport for engineers and planners from government, local authorities and private consultants. This training contributed to the incorporation of NMT measures into KUTIP designs in several centers in Kenya. Works funded by KUTIP included improvements to road shoulders that act as pedestrian walkways, and tree planting along NMT routes. NMT measures were built into works funded by USRP in Morogoro.

However, aside from some small infrastructure works, awareness raising and training, the NMT Program had a much smaller impact on KUTIP and USRP than had been originally planned. KUTIP designs for projects in Nairobi were well advanced by the time the NMT Consultants tried to exert influence. Redesign to accommodate NMT was resisted by the government and World Bank due to the risk of delays. A breakdown in communication had also occurred between the Nairobi City Engineer and the team managing KUTIP in the Ministry of Local Government. This restricted the ability of the Urban Mobility Unit [UMU] established within the City Engineer's Department to influence the KUTIP designs.

Some later KUTIP projects in Nairobi did have specialized NMT input to the design, but the recommendations of the NMT consultant were not all adopted. These projects have not yet been implemented due to a recent suspension of World Bank funding to KUTIP.

The USRP did not fund road works in Dar es Salaam. Major rehabilitation of roads was funded and implemented by the Japanese Government. The Japanese contractor engaged in these works was fortuitously involved in constructing some of the pilot NMT traffic calming interventions, which resulted in the inclusion of significant NMT measures throughout the wider rehabilitation program.

4 DETAILED ASSESSMENT OF NMT PROGRAM ACTIVITIES

4.1 PROJECT PLANNING UNITS

4.1.1 Introduction

The terms of reference of the Project Planning Units [PPUs] were described in a memorandum of understanding signed between the municipality and the NMT Consultants. The PPU were the nerve center of the project because they were responsible for implementation. They were located within the municipal organizational structure under the City/Municipal Engineer's Department, to whom they were answerable. The PPU were later named Urban Mobility Units because they subsequently assumed a more encompassing role. They were manned by persons from different professional backgrounds, i.e. an engineer, a town planner and a social scientist. In Nairobi, Eldoret and Morogoro, the city/municipal engineer responsible for Transportation/Traffic headed the PPU. In Temeke, Dar es Salaam⁶, the head of the PPU was a social scientist.

It is interesting to compare the effectiveness of the four PPU given the contrasting backgrounds of their leadership. For example, the engineers who headed the PPU tended to be proponents of orthodox and conventional approaches. NMT modes were factored into the traffic matrix only when they became negative externalities to motorized traffic. Public participation in the conceptualization, planning and implementation of engineering interventions was either unheard of or took a back seat. Hence the acceptance of intervention proposals designed to give these issues prominence was slow. On the other hand, once the social scientist had been convinced of the merits of the project, she steamed ahead with gusto and enthusiasm because she could easily relate to these 'new' perspectives. Consequently the interventions in Temeke Municipality [Dar es Salaam] were rapidly implemented. When controversy emanating from the automobile lobby threatened to derail implementation, the interventions were successfully defended by the team. Contrast this scenario to the Morogoro Municipality, which at the first sign of complaints from motorists removed all of the test interventions under the pretext that they wanted to reseal the pavement. Similarly Nairobi flatly refused to implement some interventions, even after being given assurances that the works would be removed if they did not improve the existing situation.

⁶ Temeke is one of three municipalities comprising Dar es Salaam.

4.1.2 Staffing of Pilot Project Units

The Pilot Project Unit [PPU] posts were filled by municipal staff in Eldoret, Nairobi and Morogoro. This ensured that a cadre of municipal officials trained and sensitized to issues relating to the provision and promotion of NMT would always be available when the municipalities required their services. In Temeke, however, a consultant hired from the private sector headed the PPU. While the social scientist, who was appointed to this post was of great value to the PPU, this variation created problems in terms of continuity once the contract had run its full term. The advantage was that once contracted to the position, the incumbent's energies were directed at fulfilling the requirements of the position. On the other hand, internal candidates' loyalties were with the posts from which they had been seconded. Once the novelty of the new project had waned, so did the commitment of some of the PPU staff.

4.1.3 PPU staff turnover

There was a general turnover of staff in all the project municipalities. There were many reasons for this including:

- Natural staff movements [seeking greener pastures or new challenges] e.g. Temeke and Nairobi
- Reassignment of staff in normal staff job rotation [Morogoro; Nairobi]
- Death [Eldoret]
- Retirement to pursue personal projects [Eldoret]

4.1.4 Role of PPUs in the project

PPUs had the following roles:

- Development of User Participation Modules
- Formation of User Participation Groups/Platforms
- Participation in NMT problem analysis and prioritization
- Participation in the planning, design, implementation and monitoring of test interventions
- Organization of activities around NMT awareness, educational and promotional campaigns within the municipal area
- Dissemination of project findings at various fora, including professional gatherings and seminars locally and internationally
- Liaison with the relevant national government ministry e.g. Ministry of Local Government on matters specific to the project and others related to NMT issues in urban areas.

4.1.5 Incentives for municipal staff

Remuneration for municipal officials is relatively low, particularly if it is compared to the private sector. What tends to happen is for these officials to moonlight. Being seconded to the PPU entailed extra responsibilities, which had the effect of lessening the time for moonlighting. Without incentives from the project, the commitment of the officials to the extra responsibilities demanded by the PPU would immediately be in doubt. Therefore financial incentives were provided to PPU members. Commitment to the project was also enhanced through:

- Opportunities to be trained in computers
- Provision of computers and printers
- Access to secretaries and other support staff

Some officials within the municipalities questioned the provision of incentives to the PPU. Within the PPU itself, the project leader earned more than the other members. These rumblings, which appear to have had deeper roots in Nairobi, did not constitute a significant threat to the running of the PPUs or their effectiveness.

4.1.6 Municipal contributions to the project

All the four municipalities made contributions to the project by way of:

- Staff costs of officials in the PPU as well as support staff
- Equipment such as graders, rollers, paint spray guns, etc. for the construction of interventions
- Fuel costs for vehicles and machinery
- Office space and stationery.

Subsequent to the implementation of the NMT pilot interventions in Eldoret, the Town Council has approved NMT budget votes for maintenance, upgrading and extension of NMT facilities. This is indicated in the table below.

Eldoret City Council Expenditure on NMT Infrastructure		
Year	Applied	Actual
1999-2000	Kshs 720,000	Kshs 700,000
2000-2001	Kshs 720,000	Not indicated but estimated same as 99-00
2001-2002	Kshs 828,000	Kshs 254,000
2002-2003	Kshs 908,500	

4.1.7 Observations: roles and relationships

Relationships between the NMT Consultants and the PPU were sometimes not as strong as they should have been, particularly in Nairobi. The PPU felt that the National Team took them for granted, looked down upon their members and was prone to taking unilateral decisions on the project. “The National Team hijacked the process,” a social scientist commented. In addition, the PPU were not given details of the project budget for works. In Nairobi, although not openly hostile, the relations were strained, particularly in the latter part of the project⁷. It is therefore not surprising that some of the designs proposed by the Consultants were rejected outright by the PPU. There also appeared to be an element of the ‘brashness’ of youth versus the ‘conservativeness’ of older professionals. The National Team was made up of younger engineers keen to make their mark, while the PPU consisted of engineers who had ‘seen it all’. The young engineers who were ‘juniors’ to the decision makers at City Hall were ‘calling the shots’ on the project. Without allowing sufficient time and committing sufficient resources to enable perceptions of mobility to change, and also to manage the team dynamics, this conflict was always going to get worse. There appeared to be no formal mechanism for PPU staff to channel grievances and seek redress.

It was also felt that in terms of remuneration, the National Team benefited more than the PPU and, as such, the PPU felt used. The underlying cause of this misunderstanding was the decision to withhold details of the overall budget for physical works from the municipalities. The PPU members were aware that projects funded by agencies such as the World Bank generally command significant budgets. Yet the funding for interventions was being provided in drips and drabs. They concluded that the bulk of the benefits were going to the consultants. In the case of Nairobi, morale dipped as the project progressed and commitment to the success of the project correspondingly fell. The other centers were more tactful in expressing their concerns about this issue than the Nairobi PPU, but the sentiment appears to have been felt throughout.

What is also of interest is the fact that the national and international teams have not formally communicated to the participating municipalities about the current status of the project. The local authorities are still waiting in suspense for the closure.

The above impressions were gained in all four PPUs, but there was relatively less polarization in the smaller municipalities of Eldoret, Morogoro and Temeke than in Nairobi. Reasons for this included:

- Fewer personality clashes between National Team and PPU members
- Save for Temeke, the physical distance between the National Team and the PPUs

⁷ Source: Correspondence between the City Engineer’s Department and the NMT Consultants relating to proposals to reduce traffic speeds on Jogoo road.

- ❑ The dearth of capital investment in smaller municipalities, which necessitated the need to play down any conflicts between the municipality and the source of funding

Project Budget

“Although part of the reason for not disclosing the project budget to the local authorities involved was to keep their interest in the project high, in hindsight, it is probable that had funding been channeled through the municipalities, there could have been more commitment from them [the fact that municipalities were kept in the dark regarding the budget was a source of serious disquiet for all of them]. Checks and balances relating to the investment could be guaranteed by opening an account dedicated to the project with several signatories. In this scenario the National Team becomes advisors and not bean counters. This way, the municipalities are empowered, the project budgets become transparent, suspicions are circumvented and it becomes a win-win situation.”

Interview with Professor Rwebangira, University of Dar es Salaam, May 2002

It is of interest to note that all four municipalities [with varying degrees of emphasis] were of the opinion that:

- ❑ More time could have been spent sensitizing PPU members on mobility issues
- ❑ More time could have been spent building team work
- ❑ A Steering Committee made up of relevant stakeholders could have steered the ship to calmer waters, e.g. when a stalemate arose between the National Consultants and the Nairobi City Council engineers on the implementation of speed restricting devices on Jogoo Road, a Steering Committee could have intervened to resolve the problem
- ❑ Information dissemination could have been better handled e.g. institutionalizing routine information dissemination and more widespread distribution of the project guidelines [one of the deliverables of project]
- ❑ The budget for the physical interventions could have been developed more transparently in consultation with the local authorities, thereby deflecting suspicions from the National Team, aiding better planning, and thwarting a crisis of expectation within the beneficiary communities
- ❑ If the municipalities had been given more information on the budget for the physical interventions, the choice of sites [roads] to be treated may have been made differently
- ❑ The budget for interventions could have been bigger

It is worth noting that despite the breakdown of communication and cooperation between the NMT Consultants and the Nairobi City Engineer, there have been some positive outcomes.

There is an increase in awareness of the importance of NMT in the City Council and the public. Three NMT bridges have been built in Nairobi in recent years and funds have been requested to construct a bridge for NMT across the Nairobi River in the next financial year. There is a significant demand for speed humps in the city, and an average of five are being constructed each month⁸.

Managing innovation and change

Because the idea of local authorities having to consult with community stakeholders in planning and implementation of projects as well as the fact that the provision of facilities for NMTs represented a new way of conceiving of mobility, there was always going to be resistance to change/ rigidity to anything unconventional from motorists and some engineering professionals. A period of acclimatization for both NMT modes and motorists alike would have been necessary. For this, there was need for sustained campaigns and lobbying before, during and after the project. The power of promotion with appropriate messages for different audiences to mainstream the concept should have been better deployed.

Interview with Professor Mairura Omwenga, May 2002

4.2 ENGINEERING TEST INTERVENTIONS

4.2.1 Introduction

Two cities and two towns were chosen for the implementation of pilot interventions: Nairobi, Dar es Salaam, Eldoret and Morogoro. The rationale for choosing the capital cities of the two countries was that if the project succeeded in these cities, then it would have a significant demonstration effect on other cities and towns. In addition, capital cities in developing countries have large populations that are unemployed and poor are dependent on NMT modes, as they cannot afford motorized transport services. The smaller towns had to fulfill the following conditions to be selected⁹:

- The municipalities had to demonstrate a history of good governance including sound financial management

⁸ Source: Interview with City Engineer.

⁹ Omwenga, M., Obiero, S. & Malombe, J. SSATP: Preliminary Assessment of NMT Potential in Eldoret, September/Dec 1994 [Report No. 15].

- They had to be smaller than the capital city with an urban-rural character and depicting transport patterns typical of secondary towns, e.g. In Morogoro, the modal share is 80 per cent NMT while motorized traffic constitutes 20 per cent
- In terms of impact, these urban centers had to be small enough to be covered within the limited time and financial resources dictated by the TOR.

The choice of sites to be treated followed a consultative process that included:

- Baseline surveys indicating the main problems areas and challenges, culminating in workshops
- User Participation Platforms helping to prioritize the sites, and in some cases, the interventions.

The guiding criteria for intervention selection and implementation were safety and effectiveness. Detailed design was influenced by maintainability, flexibility, aesthetics, strength, visibility, cost, materials, availability and working methods.

It is important to note that although most of the equipment employed in the construction is not too expensive, the smaller cities such as Eldoret could not afford some of the implements, such as hand rollers, hand sprayers, durable paint, concrete mixers, moulds for culverts and spares for machinery.

4.2.2 Intervention selection and design process

The National and International Teams and the urban mobility units undertook the design of the interventions jointly. The design process involved detailed topographical surveys of identified sites, site visits, traffic counts and other specific requirements for the prioritized interventions. In the case of Kenya, the NMT Consultants then submitted the proposals to the Urban Development Department [UDD]/KUTIP consultants for comments. The drawings and designs were then reviewed via design workshops attended by the National Team, local authority officials, UMUs, users and other stakeholders. The workshop recommendations and comments were then incorporated in the designs in accordance with national standards [e.g. the Standard Specifications for Road and Bridge Construction of the Kenya Ministry of Transport and Communications, 1986 and Road Design Manuals, Parts 1 and 2]. Thereafter, the designs were submitted to the respective local authority for the normal development approval process.

4.2.3 Construction and supervision

The approach to construction varied. Some local authorities undertook most of the works and to a limited extent contracted out where they did not have the equipment [e.g. Eldoret]. Others contracted all of the works out through a standard tendering processes with competitive bidding [e.g. Eldoret and Temeke]. Supervision was undertaken by the National Team, a resident engineer and the UMU.

The following sections of this report provide an overview of some of the pilot NMT infrastructure build in the four cities. It was not possible to visit all sites during the assessment period. It was also not possible to undertake detailed monitoring of the effectiveness of the interventions. Detailed records of the interventions, and analysis of performance, are included in the Guidelines produced by the NMT Consultants.

4.2.4 Nairobi City Council

Jogoo Road Interventions

Although an impressive and ambitious list of interventions was proposed for Jogoo Road, a limited number of test interventions were implemented. The reasons for this are discussed in sections 4.1.7 and 4.4.8.

The Jogoo road interventions were meant to improve safety by reducing the tendency of NMT traffic to cross at any location on a road section, particularly the busy ones. The interventions consisted of:

- ❑ Paving the pedestrian waiting area at busy crossing points
- ❑ Demarcation of the waiting area with steel bollards
- ❑ Paved areas in the central median of the road [including crossing slabs over the drain]
- ❑ Painted regular zebra crossings on the carriageway
- ❑ Road signs warning of the zebra crossings ahead
- ❑ Guardrails placed at a roundabout to channel the pedestrians towards the crossing point.

Paving of pedestrian waiting area. The paved areas are still in good condition. However, in many areas, hawkers have taken over to display their wares. This has significantly undermined the usefulness of the paved areas to pedestrians.

Bollards. Concrete filled steel bollards were employed to discourage MT from interfering with NMT infrastructure at road crossings. Bollards are generally considered vandal-proof. When hit by vehicles they might tilt but without moving out of the original position. They require low maintenance. But most of those hit by motorists on Jogoo Road have not been repaired.

Regular zebra crossings. On Jogoo Road the regular zebra crossings that were provided are no longer visible because of lack of maintenance as well as the fact that when the road was resealed, the zebra crossings were not re-painted. However, before they faded off, they were not respected by motorists and became pedestrian ‘death traps’, as motorists, particularly *matatus*¹⁰ would speed up to harass pedestrians crossing. Because the interventions did not include design elements that forced traffic to slow down or stop for pedestrians, visible and

¹⁰ Minibuses

continuous enforcement over a long period would have been needed to complement such interventions.

Proposals for more significant interventions on Jogoo Road were abandoned because the City Engineer did not approve the designs. The reasons given for rejecting the proposals were that the proposed designs comprised narrowing the road and pedestrian crossings. It was felt that this would aggravate traffic problems and increase the risk of conflicts rather than resolving them. The City's favored solution to reduce conflicts along the road was to construct pedestrian bridges. This view was opposed by the NMT Consultants, who pointed to local and international evidence that pedestrian overpasses tend to be white elephants, and is borne out by the performance of pedestrian bridges constructed across Jogoo Road subsequent to the NMT activities.

Nile Road [Nairobi] Interventions. Speed calming measures [speed humps and signage] were provided along Nile road where there are two schools. These interventions have generally been successful as speeds have reduced considerably and an improved sense of safety is apparent. The speed humps and the approaches are unlikely to require maintenance during their design life because the road is well drained.

4.2.5 Eldoret Municipal Council

“ The project was a resounding success. For example, it had positively impacted the accident situation. Accidents have reduced substantially. I would say that the project was 80 per cent successful.”

Eldoret Town Clerk

The selected test interventions for Eldoret that were implemented were:

- ❑ Uganda Road works including parking rearrangement, pedestrian crossings and NMT tracks
- ❑ Kisumu road layout realignment for traffic calming
- ❑ NMT only route: Sosiani walkway, new low concrete bridge and new steel footbridge
- ❑ Support to increased bicycle ownership and use.

Steep learning curve

Because mobility planning as espoused in this project was a completely new way for planning for transport, continuous education and training for project team members were therefore very critical components of the project. “We were all on a steep learning curve – some of the designs we were required to implement were completely new. In addition, involving communities in such an intense way, was completely alien to what we had been used to”. The seminars that were organized by the national and international teams were therefore of great importance.

Communities also needed to be educated. “Definitely more sensitization on the proper use of facilities for road users is required to change the collective psyche of the community to respect all road users and road interventions. This could be extended to the national level where radio and television could be employed.”

Interview with the former Municipal Engineer of Eldoret, May 2002

Uganda Road [Eldoret] Interventions

Solid concrete blocks. Solid concrete blocks are dependent on their weight to create a physical barrier between MT and NMT modes. On Uganda road, the blocks were built onto the surface. They discourage MT from parking onto the cycle path. This has been aided by development control with enforcement by the municipality, which has forbidden hawking on pavements. Pedestrians can now freely walk on the sidewalk while cyclists can use the created path. The blocks are largely maintenance free and vandal proof.

Bollards. Concrete filled steel bollards were employed to discourage MT from interfering with NMT infrastructure at road sections, junctions and at crossings. Bollards that have subsequently been damaged by vehicles have not been repaired.

Kisumu Road [Eldoret] Interventions

Guardrails. Guardrails are largely made from cylindrical hollow pipes welded together and anchored into the ground. These are prone to vandalism as they find a ready market in informal business involving metal work. The impact from MT can also damage them. The performance of guardrails is dependent upon the education and sensitization of road users and the public about their importance and use. On the Sosiani Bridge [Kisumu road] the guardrails were vandalised to make way for NMT traffic seeking to cross at that point.

Open drains. Open pre-cast concrete drains [concrete lined with rectangular side slabs] were constructed on Kisumu road on the approach to the Sosiani river bridge from the airport. Performance of an open drain mainly depends on the surrounding soils and the base on which the drain is laid. In this case, the drains are not performing well because of erosion – the drains are now silted.

Pre-cast concrete kerbs. Kerbs manufactured as pre-cast concrete units were laid along section of the road. Their purpose was to prevent road and sidewalk pavement materials from dispersing. They provide a channel for drainage as well as making it difficult for vehicles to encroach off the road. While kerbs are easy to maintain [by manually knocking off the damaged section at the cement/sand mortar joint], those that have been damaged have not been repaired.

Towards the Kisumu Road Bridge from the CBD, the interventions such as humps, raised and central islands, are performing well. However, beyond the bridge on the road to the airport, a speed hump has been damaged and pushed out of position by heavy vehicles. Pre-cast concrete kerbs and bollards installed to discourage MT from parking on the pedestrian path are not fully effective. This is compounded by the fact that the open drain constructed as part of the project is silted. The Municipal Engineer remarked, “we could have done more to improve drainage on the site, but we could only make do with what we were provided with”.

Sosiani River [Eldoret] Interventions. The capacity of the existing footbridge was found to be insufficient and access to the bridge tortuous. In addition, laden NMT modes found it difficult to use the existing bridge. Thus, there was a need as prioritized by the user groups to raise the access approach to the bridge as well as to widen it to accommodate the increasing pedestrian traffic. Sosiani pedestrian bridge is used by pedestrian and cyclists, as well as, to some extent narrow gauge hand-pulled carts. Save for hawkers who have taken positions along the bridge to display their wares, the bridge is performing well. The redeeming factor is the vendors keep the bridge tidy.

Supply-side interventions in Eldoret. Interventions to increase ownership of bicycles were generally successful, although the biggest constraint was affordability, even with project-funded support. Purchases required the payment of a deposit, which presented an insurmountable problem to many potential buyers. The bicycle user platform felt that if they had more control over the project funds, they would have been able to leverage the funds more effectively to maximize the number of bicycles bought.

4.2.6 Temeke Municipality

Temeke Road Interventions. The significant difference in speed between MT and NMT and existing road shoulder chaos [stopping, parking of MT etc.] resulting from the absence of physical separation between the carriageway and shoulders, combined with poor driver behavior on Temeke Road was a cause for concern in terms of accidents. In order to protect NMT a combination of segregation of traffic and speed calming interventions were implemented. The interventions were also meant to discourage MT from parking on NMT infrastructure. Because Temeke Road had a reserve of greater than three meters, physical segregation between MT and NMT was provided by bollards, pre-cast concrete kerbs and blocks.

One of the challenges on Temeke Road is dealing with sand pushed off the road by vehicles and accumulated on the road reserve. Pedestrians, pushcarts and cyclists have difficulty traversing this sand and therefore tend to move back on to the road.

Pre-cast concrete kerbs. Pre-cast concrete non-mountable kerbs were laid along sections of the road. Those that have subsequently been damaged have not been repaired. In addition, where they have been employed in conjunction with an island to reduce speeds, they have not been successful because the carriageway was not made sufficiently narrow to force MT to significantly reduce speed. However, without adequate street lighting and proper signage as well as traffic discipline, further narrowing may have led to increased accidents, thereby defeating the original objective. The design therefore appeared to be a compromise between the two extremes.

Raised zebra crossing. Although raised zebra crossings provided on Tameke Road have been effective as crossing places for pedestrians, they have also become picking and dropping zones for *daladalas*¹¹. The development of potholes on the approach to crossings is a problem that requires attention. The other issue that requires further research is the location of the raised zebra crossings, since they are not all well used by pedestrians.

Ward 14 pedestrian bridge. A pedestrian bridge was built in Ward 14 as a result of user group recommendations. However, part of the bridge has since been washed out because of lack of maintenance and shallow foundations. Debris trapped against the bridge and blocking the river channel caused the river to undermine the foundations and part of the bridge was washed away. A timber log has now been placed across the resulting gap and the bridge is largely functional for pedestrian traffic. People in Ward 14 used to walk long distances to access socio-economic activities on the other side of the river. This distance has now been cut by half.

It is of interest to note that:

- ❑ Bollards and kerbs placed to discourage *daladalas* from leaving the road have been damaged and knocked out and the *daladalas* have been slowly encroaching back on to the shoulders.
- ❑ Some raised crossing points were poorly located and are not optimally used.
- ❑ Before and after each hump, potholes had developed largely because of drainage problems. This prompted the Temeke Acting Municipal Engineer to comment that “humps cause potholes and destroy the road.”

Despite some of the design faults, traffic on Temeke Road has become calmer and accidents have declined significantly. Perceptions of safety by NMT users have improved.

Measuring the success of the project in Temeke. Members of the Temeke UMU interviewed were of the opinion that the hard work they put in to sensitize beneficiary communities, as

¹¹ Minibuses

well as the physical interventions, appear to have persuaded people slowly but surely to regard this as a beneficial community project. Appreciation of the project has grown, judging from communities calling for traffic calming measures in their areas, as well as letters to newspapers and to the city authorities expressing similar sentiments. The success can also be measured by the fact that the Japanese Aid Agency [JICA] road project in Dar es Salaam included significant NMT measures.

Road safety and traffic calming

There was an article in the local daily newspaper that narrated a dramatic story of learners who, in a show of solidarity and civic disobedience, gathered together on one of the 'dangerous' roads close to their school, and literally lay on the pavement oblivious to on-coming traffic to demonstrate their disgust at city authorities not taking action against speedsters after one learner was killed. The city eventually relented and promised to construct humps to slow down traffic. This demonstrated the power of communities exercising their civic right to clamor for interventions that have been shown to work. "If communities are sensitized enough about the benefits of providing for NMT infrastructure, which necessarily involves traffic calming measures, they are mostly likely going to put pressure on various levels of government to provide for such, without being prompted by a tragedy. Awareness creation and promotion are therefore integral to such project."

Interview with Mrs Tembele, former UMU Team Leader in Temeke, Dar es Salaam

4.2.7 Morogoro Municipality

Most of the test interventions in Morogoro were removed soon after construction on the pretext that the road needed to be resealed. The few that remain include the reconfiguration of a Y-intersection into a T-junction to reduce conflicts, raised pedestrian crossings, bollards, solid concrete blocks and a bicycle parking facility. Save for the bicycle parking facilities, which have fallen into disrepair due to lack of use, the other interventions are still in reasonable condition and performing well.

The UMU, in conjunction with the National Team, persuaded two programs, namely the Integrated Road Project [IRP] and the Urban Sector Road Program [USRP] to include NMT infrastructure within their projects in Morogoro. The UMU and the National Team helped the two programs with designs for the NMT infrastructure. The result was separated pedestrian and cycle tracks, raised zebra crossings, *daladala* stops, and open drains separating MT from NMT.

On sections of road with a reserve greater than three meters, physical segregation of MT and NMT was achieved by construction pre-cast concrete open drains, raised kerbs and bollards.

Raised zebra crossing points were also constructed, but in some cases badly positioned. The paint has worn off on the busy sections. The drains are performing well and there is no problem with siltation.

4.2.8 Comments on the Construction of Interventions

Quality of workmanship. Except for the pedestrian bridge in Temeke Ward 14, whose foundations appear to have been shallow, there was no evidence of shoddy workmanship.

Use of local resources. The construction process sought to maximize the use of local resources, e.g. local gravels and concrete aggregates, bitumen and local labor. In some cases, the municipalities undertook the interventions themselves. Where they did contract the work out, local contractors, artisans and general hands were employed. But in some cases there was an urgent need to complete the work and international contractors were employed [e.g. JICA in Tameke]. The completion of the works was regarded as more important than maximizing the opportunities for local contractors and suppliers. Little was achieved in terms of capacity building for local contractors.

4.2.9 Summary of expenditure on interventions

The graph below indicates the allocation of expenditure between the four centers for Phase II. The highest expenditure was in Dar es Salaam (Temeke) followed by Eldoret. Expenditure in Nairobi and Morogoro was significantly lower than in the other two centers. In Nairobi this was largely due to failure to reach agreement on the design of interventions between the NMT Consultants and the Nairobi City Engineer. The low level of expenditure in Morogoro was due to delays in the implementation of the pilot projects, and an apparent lack of initial commitment to the project within the municipality. However, NMT measures were later built into road improvement works in both Nairobi and Morogoro with funding from KUTIP, USRP and IRP.

The overall expenditure on interventions was \$622,000 compared with a budget of \$400,000. The additional funds came primarily from the budget contingency, which was \$189,000, and the balance from savings in the cost of the NMT Consultants.

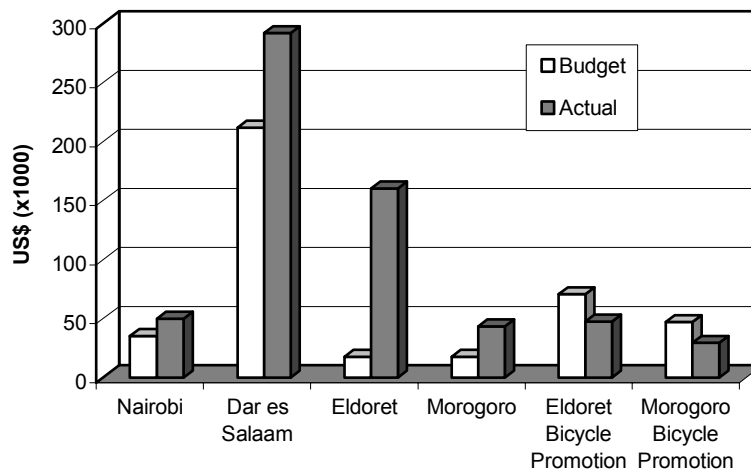


Figure 1. Summary of expenditure in each Municipality

The following are general perceptions of the cost effectiveness of the interventions in each center based on the amounts spent and observations on the ground.

Of the amount allocated to Nairobi (US\$50,000), 93% was allocated to the Jogoo Road pedestrian crossings and the balance to the Nile Road speed humps. Yet this was insufficient to make a significant impact on a busy route such as Jogoo Road. If the allocation had been greater, it is possible that the local authorities would have taken the project more seriously.

The amount of US\$160,000 allocated to Eldoret appears to represent good value for money in terms of the interventions implemented and the enthusiasm generated in the city council. Indeed if the amounts allocated to Temeke and Eldoret are compared, it is apparent that better value for money was achieved in Eldoret. The Temeke Bridge has since been partially washed away, some raised pedestrian crossings are not being used, and there is significant damage to much of the infrastructure built for traffic calming. In Morogoro there was not much evidence on the ground of the US\$44,000 spent, though this was mainly due to lack of commitment to the project by the municipality.

Smaller municipalities in Kenya have been participating in a program of local government reform emphasizing accountability, customer orientation and participation by the greater majority of the people. A project such as this one, which promoted these issues, was easily taken on board. This may explain the comparative success of the NMT projects in Eldoret.

Interview with Peter Njenga - IFRTD Regional Coordinator: Eastern and Southern African Region - May 2002

The cost of the bicycle promotion activities in Eldoret (US\$48,000) and Morogoro (US\$29,000) is high. Consolidated data indicating how many residents benefited from obtaining bicycles has not been made available for this study, but it is apparent that the amount spent on bicycles was a small proportion of the overall cost of the intervention. It is likely that if the local authority had been given more control of the allocation of the budget amounts, more would have been spent on buying bicycles and less on the promotional activities.

4.2.10 Conclusions on the effectiveness of the test interventions

Significant practical experience has now been gained on the design of NMT infrastructure for Sub-Saharan African cities. This experience and the lessons learned are described in detail in the Guidelines produced by the NMT Consultants. Some interventions are now well understood and can be implemented on a wider scale e.g. traffic calming devices such as speed humps, bollards and raised kerbs. Interventions such as raised zebra crossings have been found to be particularly effective as crossing points for NMT. But it is apparent from reading the Guidelines, and through observations on the sites, that the complexity of designing effective NMT infrastructure in SSA should not be underestimated. A keen understanding of human behavioral patterns is essential. Designs that work in the developed world are not necessarily appropriate in parts of Africa where local authorities don't maintain infrastructure, driver behavior is far less predictable, and law enforcement is weak.

Of particular concern was the obvious number of collisions that have occurred between motorized vehicles and NMT infrastructure. Pedestrian islands at new crossing points appear to have been particularly vulnerable. The damage to vehicles must have resulted in considerable cost and inconvenience to the vehicle owners. The NMT Consultants argue that driver behavior was seen to improve during the monitoring period, with fewer collisions as drivers became more aware of the obstructions. But this seems to be a rather extreme case of the public having to "learn the hard way". Once the reflective paint had worn off bollards, concrete blocks etc., it is not surprising that there were collisions, particularly at night and during times of poor visibility. Most locations do not have street lighting. Many vehicles do not have adequate headlights.

Encroachment of vendors onto NMT paths is a significant problem that can undermine the effectiveness of interventions. This can only be controlled through increased collaboration between those in municipalities responsible for planning and constructing NMT infrastructure, and those responsible for controlling the activities of the informal sector.

Some specific areas that could benefit from further research include:

- Construction materials for NMT infrastructure that are highly visible to drivers and yet require low maintenance
- Speed reduction and appropriate crossing point design on collector roads such as Jogoo Road
- Appropriate traffic calming measures for different classes of road

- ❑ The optimal spacing of speed humps and optimal location of raised zebra crossings
- ❑ Design of speed humps and raised zebra crossings such that the approaches are not susceptible to potholing
- ❑ Appropriate infrastructure for other NMT such as pushcarts.

The experiences on the Jogoo Road in Nairobi demonstrated that if interventions are to be effective, their costs must be proportional to the amount of motorized and non-motorized traffic using the road.

4.3 TARGETS SET BY PERFORMANCE INDICATORS

4.3.1 Introduction

The monitoring procedures were based on the requirements of the NMT Consultant’s Terms of Reference. After construction of the interventions, inspection and post-monitoring data were carried out a month later. The post-monitoring was then repeated to establish impacts created after users were familiar with the interventions. The PPU and National Teams carried out the monitoring.

Some of the performance indicators listed in the Terms of Reference proved to be not achievable or impossible to measure. For instance a reduction of 10% in door-to-door travel times was inappropriate for most interventions. Most of the pilot interventions were too small to have a significant impact on an entire journey. Few “missing links” were provided in the overall NMT Mobility Plans for each city. The required 1% increase in bicycle traffic was simply too small to be relevant. The NMT Consultants therefore developed an expanded and more appropriate list of indicators against which to measure the success of interventions.

The following sections provide a **sample** of monitoring activities and results in Nairobi, Eldoret and Temeke and Morogoro. The results indicate that the interventions generally contributed to achieving the specified performance indicators.

4.3.2 Monitoring activities [Nairobi]

The post monitoring exercise along Jogoo Road was undertaken in 1998 by the NT. Pre-intervention [1998] and post-intervention [1999] monitoring tests were done at the steel speed hump installed on Nile Road. The teachers working in the two nearby schools were interviewed in both instances. User groups were marginally involved in the monitoring exercises through workshop discussions.

Suitability of interventions Jogoo Road [Nairobi]. According to available data, the provision of a painted zebra crossing on Jogoo Road made no positive difference to road user behavior. It was observed that there was:

- ❑ Total disregard of zebra crossing by drivers
- ❑ No change in vehicle speed
- ❑ No reduction in traffic accidents
- ❑ An increase in pedestrian discomfort

Table 2: Performance Indicators on Pilot Areas in Nairobi					
Interventions	Parameter	Target	Pre-intervention	Post-intervention	Change
Zebra crossing Jogoo Road	Reduction in pedestrian accidents	10%	20 deaths 1996	20 deaths 2000	No reduction in accidents
	Change in motor vehicle driver behavior	10%	0	0	No reduction in driver behavior
	Vehicle speed reduction	10%	63 km/hr	64 km/hr	Increased speed i.e. increased risk of accidents
	Reduced average waiting time for pedestrian	50 sec	20	25-26	Insignificant change
Speed hump Nile Road	Vehicle speed reduction	10%	62 km/hr	20 km/hr	Target achieved
	Reduction in accidents	10%	0	0	No accidents in the year after construction

Source: Desk survey 2002

The decision-makers in the City of Nairobi had argued that conventional zebra crossings would alert drivers who in turn would respect pedestrians and drive carefully. However, this was not the case. The provision of painted-only zebra crossings in Nairobi showed the lowest cost/benefit ratio of all pilot interventions. The table below indicates the estimated benefit/cost ratios of the interventions in Nairobi.

Table 3 : Benefit/Cost Ratio of NMT Interventions in Nairobi				
Intervention	Location	Number	Total Cost [US\$]	B/C Ratio
Regular zebra crossings without speed calming	Jogoo Road	10	32,000 [10m crossing]	0.0
Speed hump	Nile Road	5	2,400	2.2

Source: de Langen et al, pp.160-164

4.3.3 Eldoret monitoring activities

Monitoring was undertaken by the Eldoret UMU and the National and International Consultants. Pre-intervention data was collected in September/October 1998, while intervention results were established in January 1999. The post-intervention monitoring was carried out in February 1999 but in view of the interventions being new to users, a repeat post-monitoring was done in November 1999. Finally, a household survey was carried out in 1999.

Not all performance indicators outlined in the Terms of Reference for the UMU team were achieved in the monitoring period.

The table below contains a sample of monitoring results obtained in Eldoret.

Table 4 : Performance Indicators In Pilot Areas: Eldoret Interventions						
Intervention	Parameter	Target	Before	Post 1	Post 2	Change [%]
Kisumu Road Bridge Raised & middle islands	Cyclists waiting time	10 sec or less	60%	30%	71%	11% change means road is safer and cyclists wait less
		10 sec or more	40%	60%	29%	Doubtful results hence repeat in post intervention 2
Kisumu road NMT count	Pedestrians footpath usage	10%	86%	99%	98%	Increased use of footpath of 12%
	On the carriageway	10%	14%	1.5%	2%	
At Harambee junction using carriageway	Cyclists count	10%	57%	7%	9%	Number of cyclists went down because day of count was national exam day
NMT count on Kisumu Road	Fewer cyclists on road	10%	100%	50%	84%	16% reduction achieved
	Cyclists on new track	10%	N/a	50%	16%	
	Fewer pedestrians on road	10%	40%	0.5%	0.4%	Pedestrians now use NMT track
	Pedestrians on new track	10%	60%	99.5%	99.6%	
Street Links - Uganda Road Muliro-D link	Cyclists on track	1%	N/a	12%	7%	Majority of cyclists prefer carriageway to cycle tracks
	On carriageway	1%	N/a	88%	93%	
Kago-Tagore link	Cyclists on track	1%	N/a	8%	5%	Majority of cyclists prefer carriageway to cycle tracks
	Cyclists on carriageway	1%	N/a	92%	95%	
Tagore-Paul's Bakery	Cyclists on track	1%	Not measured	Not measured	5%	Pedestrian monopoly of cycle track
	Cyclists on carriageway	1%	Not measured	Not measured	95%	
Walking time Market road to Footbridge	Pedestrian speed minutes	-	8	6	4	Faster speed due to improved surface
	Km/h	-	2.25	3.0	4.5	

Source: Desk Survey, 2002; Test Interventions Working report Dec. 1998

Suitability of interventions. On main corridors, the separation of NMT and MT by physical barriers showed good results. The carriageway was rendered safer because of reduced MT/NMT conflicts, and reduced dangerous overtaking manoeuvres. On Kisumu Road the separation was combined with redesign of the on-street parking to accommodate a cycle lane, as well as the construction of humps to reduce speeds. As a result of these measures, virtually all pedestrians moved from using the carriageway to the footpath. In addition, the construction of improved *murram* footpaths elsewhere on Kisumu Road resulted in more pedestrians using the footpaths

[86% of the pedestrians used the paths before improvement and 98% afterwards]. The upgrading or construction of new footpaths separated from the carriageway ranks highly among the more successful NMT interventions.

The NMT bridge over the Sosiani River, and the improvement of the NMT track, proved an extremely cost effective investment. This intervention had an estimated total benefit/cost ratio of 4.4, which translates into recouping investment on the route after one and a half years. The number of cyclists on Sosiani bridge had increased by 100%.

4.3.4 Monitoring of traffic calming measures in Temeke¹²

A package of traffic calming interventions was implemented along Temeke Street in Dar es Salaam. The street previously displayed a “chaotic traffic environment” with conflicts between mini-buses, trucks, cars, pedestrians, bicycles and handcarts. Then the condition of the road was good, allowing speeds of up to 70km per hour.

Interventions along the road included raised pedestrian crossings, pedestrian refuge islands, intersection realignments, humps and bus bays. The objective was to reduce vehicle speed (but keep traffic moving), reduce road shoulder chaos and eliminate dangerous intersections. The works were implemented and monitored by the PPU and the NMT Consultants. Results were as follows.

Table 5: Performance Indicators In Pilot Areas: Temeke Traffic Calming					
Intervention	Parameter	Target	Before	After	Comment
Raised Zebra Crossing	Vehicle speed	30km/h	50km/h	14-25 km/h	Speed depended on shape and location of crossing. Target achieved.
Speed hump	Vehicle speed	30km/h	50km/h	10km/h	Target achieved.
Pedestrian refuge island	Vehicle speed	40km/h	60km/h	35km/h	Target achieved.
Changombe St. junction realignment	Traffic conflicts	Not specified	Approx 16 conflicts between 7am and 6pm	3 conflicts	Significant reduction in conflicts
Everett St. junction realignment	Traffic conflicts	Not specified	30 conflicts	3 conflicts	Significant reduction in conflicts
Combined impact	Traffic accidents	10% reduction	12 accidents in first half of 1996	0 accidents in first half of 1997	Target achieved.

Source: Kisisa, I. **Traffic Calming Experiments in Tanz...** and World Bank SSATP. **Test Intervention Report DSM 1.1.**

¹² Refer to Kisisa, I. Pilot Projects on Urban Mobility and Non-Motorised Transport. **Traffic Calming Experiments in Tanzania.** Prepared for the National Seminar 15-16 December 1998.

The traffic accident data provides a clear indication of the positive contribution that relatively inexpensive spot interventions can make to improved road safety.

4.3.5 Monitoring of bicycle promotion in Morogoro¹³

A study of changes in mobility in Morogoro was undertaken to assess the impact of the bicycle promotion activities implemented in the town. These activities included credit facilities for bicycle purchase, bicycle-parking facilities, teaching cycling and bicycle rental. The monitoring was based on data obtained through household surveys undertaken in 1995 and 1998. Key results of the study are summarized in Table 6 below.

Table 6 : Mobility Changes in Morogoro 1995-1998			
Indicator	Target	Before	After
Mobility of residents	Not specified	1.9 trips/person/day	2.5 trips/person/day
Use of bicycles for trips over 5 km	1% increase	55% of trips	79% of trips

Source: Sambali. G.I. **Urban Travel Situation in Morogoro Municipality**.

4.4 USER PARTICIPATION COMPONENTS

4.4.1 Introduction

The participation of users in the planning of interventions is a key component of the Mobility Planning approach to urban transportation. It is this that essentially differentiates Mobility Planning from traditional transportation planning approaches. The involvement of users can result in:

- More transparent prioritization of interventions
- Increased control of project finances
- Increase in optimism and pride in local communities and confidence that improvements are possible on the basis of joint efforts and commitment

The involvement of user groups was initially viewed as a time consuming process. Some municipal officials felt that it slowed down the project. Some users were skeptical of the effectiveness of their involvement in municipal issues. Engineers had to get used to simplifying and translating technical matters for residents.

¹³ Refer to Sambali. G.I. Pilot Projects on Urban Mobility and Non-Motorised Transport. **Urban Travel Situation in Morogoro Municipality**. Prepared for the National Seminar on Bicycle Promotion. August 1999.

The NMT Consultants identified four stages of user participation as indicated below.

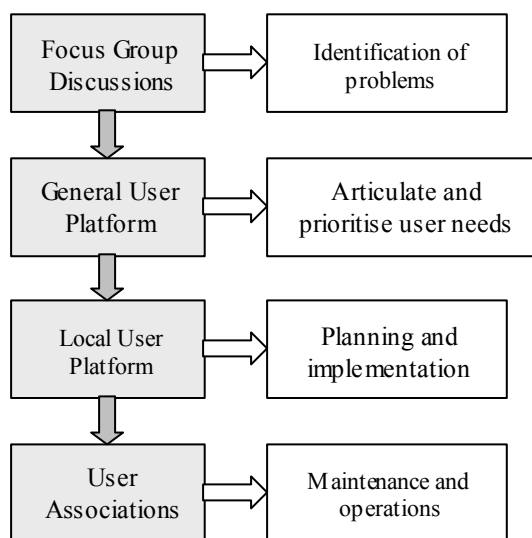


Figure 2. Stages of user participation

The focus group discussions were held with existing community based organizations, user groups and key stakeholders. These groups were then invited to form the General User Platform. Local User Platforms were formed for specific interventions, and encouraged to develop into permanent User Associations. The General User Platform and the Local User Platforms were formed for specific projects. They were not intended to continue beyond these projects¹⁴.

4.4.2 Formation of user platforms

The Urban Mobility Units in each of the four project centers undertook a survey of existing user groups and prominent stakeholders in the project areas. The user groups included resident's associations, bicycle associations, *matatu/daladala* operators' associations etc. Stakeholders included community leaders such as teachers, business people, senior police officers and representatives of service organizations. Focus group discussions and interviews were held with each of these organizations and individuals to establish their views on non-motorized transport.

The UMUs then established a General User Platform in each center comprising representatives of the user groups and the stakeholders. The User Platforms (UPs) became known as Community Transport Committees (CTCs), which were formally recognized by the City

¹⁴ Source: de Langen et al. P. 333

Councils. Additional user platforms, such as the Eldoret Bicycle User Platform, were established by the UMUs for specific project interventions.

The following factors were taken into account in the final selection of the UP committee members:

- ❑ Members had to live or work within the Pilot Area [i.e. within a 2 kilometer radius]
- ❑ Members should have non-motorized transport as their main mode of transport
- ❑ The committee should include equal representation of men and women and represent different age groups, income/social groups and special interest groups such as cyclists, handcart pullers and persons with disabilities
- ❑ The group should include stakeholders with influence and resource capability in the pilot area
- ❑ The members should be willing to participate in the pilot project activities.

The process for the formation of the User Platforms, their relationship with the municipality and their Terms of Reference were recorded in documents known as “User Needs Plans” produced by each of the Urban Mobility Units. Efforts were made to ensure gender balance in the representation on the UPs. Analysis of the attendance list of 41 participants at a meeting of the Nairobi Community Transport Committee on 18 January 1996 indicates that about 30% were women¹⁵.

The User Platforms were established solely for the purpose of the NMT pilot activities and were not consulted by the municipalities for any other purposes. At the end of the project they were all disbanded.

¹⁵ Source: Kenya National Team. Urban Mobility and Non-Motorised Transport. **Jogoo Road User Participation Experience, Nairobi – Working Report**. June 1997.

Formation of Eldoret Community Transport Committee

The Municipal Engineer reported that the Eldoret Urban Mobility Unit [EUMU] had set up a local transport committee called Eldoret Community Transport Committee as part of the World Bank requirement that each pilot project town should include the user and stakeholder participation in articulating urban Non-Motorized Transport Program right from Planning to implementation and sustainability.

Functions

After consideration, it was, **RESOLVED:**

that the establishment of the Eldoret Community Transport Committee [ECTC] be approved and that the following be adopted as the functions/terms of reference for the Eldoret Community Transport Committee [ECTC].

1. Have an input into a decision-making, approval of intervention proposals from Eldoret Urban Mobility Unit. [EUMU].
2. Eldoret Community Transport Committee is to identify problems, needs and issues and forward the same to Eldoret Urban Mobility Unit for professional assessment before implementation.
3. To assist in monitoring the implementation of the Project by Eldoret Urban Mobility Unit.
4. To assist in monitoring the implementation of the Project by Eldoret Urban Mobility Unit.
5. To participate in public awareness and education on the urban mobility in general and non-motorized transport project in particular.
6. May also undertake more functions as circumstances warrant on the recommendation of Eldoret Urban Mobilization unit and approval of the Local Authority National Team and the International Team.

Source: **Minutes of Eldoret City Council Minutes 25/96.**

Bicycle User Platform [Morogoro]

The bicycle user platform [UP] is needed to provide a forum for discussing, articulating and reviewing possible bicycle promotion measures. The bicycle UP includes members from a variety of interest groups. They are the experts on bicycle/cycling issues so that their views need to be incorporated in any plans. The first bicycle user platform was established on November 10th 1997. It comprises of 8 members:

- 2 members from prominent bicycle dealers
- 1 member from traffic police
- 1 member from hires association
- 1 member from vocational training center
- 1 member from SIDO
- 2 members from MUMU

These members were nominated by MUMU according to their importance in managing the intervention. The MUMU team drew the terms of reference for the UP. This UP was used to discuss in bicycle promotion.

Source: Mosi, J. et al. **Bicycle Promotion in Morogoro Municipality.**

4.4.3 User platform meetings

The UP groups met on a monthly basis or more frequently when necessary. Representatives of the UP groups also participated in project workshops and seminars, thus facilitating contact between the groups and enabling the users to influence the overall management and direction of the program.

The groups were provided with refreshments and lunch and reimbursed for travel expenses. Great importance seems to have been attached to attendance at these meeting by most members. Some groups initially received small cash incentives for attendance at meetings. There is little recorded about the specific impacts of the cash incentives paid to user representatives, but it is recorded that the process “lacked transparency” and was “time consuming for administration”. It was recommended that the payments should be stopped^{16,17}

4.4.4 Influence of user platform groups

The UP groups contributed to the prioritization of problem areas where interventions were necessary. These interventions were initially identified by the UMUs following their focus group discussions with the user groups and their analysis of traffic data, accident rates etc. The recommendations of the committee were presented to the City Council for approval. The lack of participation of the user representatives in the initial identification of the interventions was due to the time it took to establish the groups, and the need to progress towards program objectives [i.e. the construction and monitoring of the spot interventions] in the meantime.

The detailed design of interventions was undertaken by the UMUs with support from the NMT Consultants. The UP members were less able to contribute to this aspect of the program due to lack of technical expertise. The designs were, however, discussed with the committee members and their likely impact explained. The committee was required to approve the designs.

¹⁶ Source: Rwebangira, T. Pilot Projects on Urban Mobility and Non-Motorised Transport. **Summary of Findings July 1995–December 1998**. Prepared for the National Seminar, 15-16 December 1998. Sheraton Hotel. Dar es Salaam. Page 7.

¹⁷ Source: de Langen et al. p326

Operation of Eldoret Community Transport Committee

The Municipal Engineer reported and after consideration, it was, **RESOLVED:** that the following list of interventions in order of priority as recommended by the Eldoret Community Transport Committee [E.C.T.C] be adopted.

1. Public awareness and education.
2. Provision of N.M.T. facility for cyclists in the Central Business District.
3. Footpath from Trocadero to the District Hospital.
4. Paul's Bakery/Mitaa Road junction widening to provide a waiting lane for traffic to the west.
5. Zebra Crossings painting at designated places.
6. Accessibility to Tunnel from Kidiwa and Furfunal Road.
7. Footpath from National Bank to District Commissioner's Office on upper Olco Street.
8. Bicycle Shades at Town Hall, District Commissioner's offices, Hospital and Wholesale Market.
9. Footpath from market towards Rotary Footbridge across Sosiani.
10. Construction of a footbridge at Kapsaos Primary School across Sosiani River.

Source: **Minutes of Eldoret City Council Minutes 25/96.**

As the user groups gained experience some members became more proactive in their participation in the design and implementation of the interventions. In this way the attitudes of professionals and technicians in the municipalities were influenced. Some were surprised at the level of understanding and contribution by user group members.

The major finding is that the seeming apparent lack of concern by the community with transport issues has really been lack of an institutional framework to address such issues.

Municipal Engineer's Department. **Eldoret User Needs Plan.** Eldoret Municipal Council. July 1996.

The influence of the User Platforms was also restricted by their lack of legal status. The city councils could disregard decisions made by the committees since there was no legal basis to enforce them.

4.4.5 Monitoring of interventions

The monitoring of the pilot interventions by the UPs was restricted to their visual observations of the performance of the infrastructure as they experienced using it on a daily basis. These observations were reported back at the committee meetings. The performance of the test

interventions was summarized by the National Consultants and reported to the National Seminars in December 1998¹⁸.

4.4.6 Sense of ownership

There is little evidence that the participation of the users resulted in the development of a sense of ownership in the NMT infrastructure to the extent that the users would contribute to its maintenance. This is not surprising, since it is not common for local communities to maintain public infrastructure without payment. An exception is the group registered as an NGO to manage Mwembe Ladu recreation park in Temeke. But this group is focused on wider issues than NMT, including securing the right of the community to continue to use the park area for recreation against private developers interested in the land.

4.4.7 Public awareness campaigns

Major Public Awareness and Education campaigns were implemented in each of the four centers. The campaigns were targeted at all segments of the society including school children, pedestrians, cyclists, handcart pullers, public transport operators, motorists, and law enforcement agencies. The objective was to encourage all road users to respect the right of others to share the available road space and to improve road safety. Information was disseminated through posters, leaflet distribution, visits to schools and factories, television and radio programs, bumper stickers for cars and bicycles, “traffic safety weeks”, “bicycle weeks” and the production of videos. The awareness campaigns were organized by the social scientists on the UMUs in collaboration with their colleagues in the municipalities responsible for education. Members of the Community Transport Committees were highly active in the campaign activities¹⁹.

The public awareness and education campaigns were well designed and implemented. No independent assessment is available of their impact at the time of implementation, but it is apparent that they contributed significantly to the dissemination of information and raising the profile of NMT issues in local communities and on a wider basis. Feedback from users

Even after the Public Awareness campaign, the number of cyclists turning right at the Mitaa Zebra crossing has not improved. It appears most cyclists [up to 77%] do not reach the Zebra crossing but instead “short circuit” at Mitaa road junction. The junction had previously been a dangerous spot, but with the installation of the speed humps, it is now safer and hence the reluctance by cyclists to reach the Zebra crossing.

Kenya National Team. Urban Mobility and Non-Motorised Transport. **Eldoret Test Interventions – Working Report.**

¹⁸ For example see: Rwebangira, T. Pilot Projects on Urban Mobility and Non-Motorised Transport. **Summary of Findings July 1995–December 1998.** Prepared for the National Seminar, 15-16 December 1998. Sheraton Hotel. Dar es Salaam.

¹⁹ Refer to: Municipal Engineer’s Department. **Eldoret User Needs Plan.** Eldoret Municipal Council. July 1996.

during the campaign added to the understanding of the problems faced by both motorized and non-motorized transport users²⁰. The scope and effectiveness of the campaigns was eventually constrained by the availability of funds to support the various activities.

However, it was observed that the awareness campaigns had little influence on the **behavior** of road users [see box]. It is apparent that the design of infrastructure is a more significant factor affecting the way road users behave than creating awareness. In real situations a pedestrian will make a decision on, for example, where he/she will cross a road based on an instantaneous assessment of the perceived risks and travel times for the available options. By building appropriate infrastructure, or through effective law enforcement, it is possible to narrow these options to encourage the pedestrian to use the safest option. But this is unlikely to be achieved simply through short-term measures to create awareness.

4.4.8 The Nairobi user participation group

The Nairobi Community Transport Committee was established on the same lines as the other three centers, and a User Needs Plan was produced for the Jogoo Road interventions²¹. [Although it is noted that the Nairobi User Plan was apparently written by members of the consulting team rather than by the Nairobi municipality]. But the Committee was dissolved in early 1997 after only one year of operation²². The Nairobi User Needs Plan identified threats to the successful operation of the Committee. These are apparently the main reasons for its eventual collapse:

- ❑ Mutual suspicion between council and users. The user-groups wanted more participation at whatever cost while the council wanted to retain the final say in whatever interventions despite users views in the process
- ❑ Political interference due to lack of support from some factions within the council
- ❑ Conflicting expectations especially regarding allowances for the user group members to attend meetings
- ❑ The lack of clear TOR defining the roles, responsibilities and functions of the group
- ❑ Lack of personal stake in the interventions. Some representatives had little to gain personally from the project activities. Some participants lived away from the pilot zones, only operating businesses there.

The failure of the KUTIP Program to incorporate NMT measures in Nairobi appears to have further undermined user involvement.

²⁰ Refer to: The City Engineer. Non-Motorized Urban Transport Study. Pilot Project Implementation. **Public Awareness Campaigns and Education**. Nairobi City Council. Draft Report. July 1996.

²¹ Malombe, J. Urban Mobility and Non-Motorised Transport. **User Needs Plan for Jogoo Road Nairobi**. 1996.

²² Source: Kenya National Team. Urban Mobility and Non-Motorised Transport. **Jogoo Road User Participation Experience, Nairobi – Working Report**. June 1997.

Following the collapse of the Committee, the Nairobi UMU and the NMT Consultants were required to look for “other ways” of involving users and continuing with the public awareness and education campaign²³. One of the ways that this was achieved was through stakeholder workshops organized by the NMT Consultants²⁴

The Nairobi experience brought out the key lessons for user participation including²⁵:

- ❑ At the policy level the role of the users should be formalized through appropriate by-laws and regulations
- ❑ Resources for user participation should be provided through specific budget lines in local authority budgets
- ❑ Community involvement can be promoted through use of local materials and expertise, respecting local values and preferences and developing a “habit of envisaging cooperation from the community leaders”
- ❑ User groups should be as functional and active as possible
- ❑ User group meetings should be a forum to discuss community ideas as well as disseminating information on project activities
- ❑ The views and opinions expressed by users should be incorporated as much as possible in interventions.

4.4.9 Training and capacity building for user participation

The training courses presented by the NMT Consultants focused on²⁶:

- A broad overview of NMT issues
- Improving traffic safety for NMT
- Improving mobility and accessibility for NMT
- Technical design of NMT interventions

This training was delivered to engineers and planners from central government, local authorities and private consultants.

Relatively little attention seems to have been given in the training to the role of **users** in addressing the needs of NMT. This may have tended to reinforce the top-down approaches to problem solving traditionally adopted by engineers and planners.

²³ Source: Kenya National Team. **Jogoo Road User Participation...**

²⁴ See City Engineer’s Department. Proceedings of Workshop on User Participation in Urban Mobility and Non-Motorized Transport in Nairobi – Jogoo Road Corridor. YMCA Conference Hall. June 1997.

²⁵ Source: Kenya National Team. **Jogoo Road User Participation...**

²⁶ Source: Kenya National Team. World Bank and UNECA Urban Mobility and Non Motorized Transport Pilot Projects, Kenya. **Report on Short Course Training for Kenyan Engineers and Planners**. December 1999.

4.4.10 Sustainability of user participation groups

The UP groups were established solely for the purposes of the NMT pilot activities. At the end of the project they were all dissolved, except for the UP established for the upgrading of the Mwembe Ladu park, which progressed to registration as a user association.

Analysis of the performance of the UP groups indicates that their effectiveness increased as the members gained experience and confidence in NMT issues. Clearly much could be gained if these groups could continue to operate both as a pressure group, and as a resource for the municipality in their ongoing planning and upgrading of transportation infrastructure.

Associations of residents are becoming more common, particularly in Nairobi, in response to the failure of municipalities to provide adequate services. Some, such as the Westlands Association, have already implemented some spot interventions to control traffic and improve the environment in their areas. The UP groups contributing to NMT planning might be more sustainable if they were built on existing umbrella institutions for organizations such as residents' associations, rather than creating new structures. The groups would then have other issues on their agendas in addition to NMT. Obviously it is important that whatever approach is taken, all sections of the community should be represented.

Westlands Residents Association

Mr Shirish Khan is a Westlands Residents Association [a suburban area in Nairobi] member responsible for transport issues. The association has developed proposals [to be funded by the private sector] that seek to improve mobility by accommodating all forms of transport modes. The association's Mr Khan has lobbied in vain with the city council with a view to get permission and an opportunity to test to test these interventions in his neighborhood.

Mr Khan indicated some frustration with the inability of the Nairobi City Council to communicate development issues to its constituencies in general and stakeholders [in this SSATP NMT Pilot Project] such as the Westlands Residents Association in particular. "Although we have been consistently engaging the city council with regard to generating mobility plans with a specific slant for NMT – pedestrians and cyclists, the city council has not been candid with us. They have not revealed the existence of an SSATP NMT Pilot Project with similar goals, from which we could tap a considerable wealth of information. Thus, we have been groping in the dark to generate solutions for our area."

Interview with Mr. Shirish Khan of the Westlands Residents Association, Nairobi, May 2002

There are also opportunities to engage the private sector more in the implementation of NMT measures. Businesses in downtown Nairobi commonly provide bollards to prevent vehicles from parking on the pavement [sidewalk]. This prevents vehicles from interfering with the flow of pedestrians.

The final outcome of the analysis of the user association managing the Mwembe Ladu park was that such facilities should rather be managed by the local authorities. It was felt that there were “no legal and practical guarantees that user associations will operate and maintain the place in the best general public interest”²⁷. This did not, however, discount the possibility that user associations could have a positive role in the maintenance of NMT-only infrastructure. An example could be maintenance by local residents of a pedestrian track through a housing area.

4.4.11 Conclusions on user participation

The NMT Program made significant progress with the involvement of users in the mobility planning process. But due to program timing requirements the UP groups were established relatively late in the process of identifying and prioritizing interventions. Initially the groups were also not able to contribute significantly to the design of the interventions due to lack of experience and technical know-how, and their most important contribution was to assist with the implementation of the public awareness campaigns. As users gained experience they were able to contribute more to the implementation of the pilot interventions.

It was noted that to involve users in the management of NMT infrastructure can lead to:

- ❑ Greater transparency in the selection of interventions
- ❑ Financial transparency because costs are discussed in user meetings [leading to savings]
- ❑ Increased optimism and pride in communities
- ❑ The triggering of other new ideas and initiatives

The disbanding of the groups at the end of the projects was predictable because 1] their existence depended on financial support from the donor, 2] they were closely linked to the UMUs which were also reliant on donor funding and 3] both the UMUs and the UP groups were established for the NMT activities and therefore effectively remained peripheral to core municipal activities.

From the focus group discussions it was established that the users are capable of articulating clearly their problems in the transport sector in general and NMT issues in particular. They are able to recommend solutions for consideration by other bodies and the concerned institutions.
Municipal Engineer’s Department. **Eldoret User Needs Plan**. Eldoret Municipal Council. July 1996

The sustainability of user participation depends on 1] operating outside of program timescales, 2] reducing dependence on donor support by operating within existing municipal budgets from the outset, 3] working with umbrella user groups that are dedicated to addressing a range of issues in addition to NMT and 4] identifying true champions within local communities. Users need to be at the core of the mobility planning framework, rather than simply being “involved” in the project cycle.

²⁷ Source: de Langen et al. p323

4.5 MANAGEMENT OF THE NMT PROGRAM

4.5.1 Introduction

A team of consultants was appointed by the World Bank SSATP Program to manage the NMT pilot activities. This included overall coordination, reporting on progress, managing project funds, raising awareness and providing training and technical assistance. They were required to assist with the establishment of Pilot Project Units [later known as Urban Mobility Units] within the four target municipalities. The NMT Consultants provided an International Team drawn mainly from Delft University in the Netherlands and National Teams in Kenya and Tanzania, which were staffed by local consultants.

The NMT Consultants were required to establish links with national authorities and local government, as well as other programs including the Kenya Urban Transport Infrastructure Program [KUTIP] and the Urban Sector Rehabilitation Program [USRP] in Tanzania. They were required to ensure regional cooperation and dissemination of lessons learned²⁸.

4.5.2 Quality assurance procedures

The quality of work produced by the Urban Mobility Units was checked by the NMT Consultant's National Teams, and the work of the National Teams was checked by the International Team. This was the basis of the Quality Assurance Procedures. Furthermore, much of the design work was done in workshops attended by the UMU, NT and IT. Designs were produced through teamwork, rather than through individual efforts.

Detailed recording of program activities and efficient administration systems meant that staff changes in both the UMUs and the consulting teams could be achieved with relatively little disruption to progress. This strategy appears to have been successful.

4.5.3 Personal financial incentives

Allowances were paid to the municipal staff seconded to the UMUs. In Nairobi, the amounts paid were Ksh.8 000 per month for each member of the unit and Ksh.10 000 per month for the head of the unit. The rationale for paying these allowances was that most municipal staff found it necessary to engage in outside activities to earn additional income, given the low salaries in the public sector. But having been allocated to a project such as NMT, they would have less time to devote to these additional activities.

The payment of allowances facilitated the formation of the UMUs and the identification, prioritization, design and construction of the spot interventions. This enabled significant

²⁸ Source: SSATP. Urban Transport Component. Non-Motorized Transport Kenya and Tanzania. Terms of Reference. Phase II. Part 1. January 1995.

lessons to be learned about user participation and the engineering design of the various measures. However, the UMUs were too closely identified with the NMT Program, and were dependent on the payment of allowances. It is not surprising that they disbanded at the end of the project. Engineer Kisisa [formerly a Temeke UMU] aptly summed this up when he commented, “It was like a get together party where everybody goes home before or after it is finished.”

4.5.4 Monitoring indicators

The “Guidelines for Pedestrian and Bicycle Traffic in African Cities” contain detailed recommendations for monitoring the use of the road network. This includes measuring:

- Utilization of road capacity
- Importance of the different modes
- Inefficiency due to adverse behavior

Indicators that can be used to monitor change are discussed. They include:

- Traffic counts
- Average travel time
- Accident data and conflicts
- Traffic behavior

Recommendations are provided for the design of a Monitoring Plan.

Whilst the monitoring guidelines are comprehensive, it is unlikely that municipalities in SSA will be able to implement them, unless they can be presented in a more accessible form than as a chapter of the NMT Consultant’s guidelines.

4.5.5 Management structure

The management structure for the program can be represented as shown below.

The structure adopted was essentially “top-down”, which was probably necessary to ensure that deadlines were met and physical outputs achieved. But the sustainability of the pilot activities depended on the local authorities and the users occupying the center of the implementation framework, and in charge of the development process. It is interesting to note that the local authorities claim that there has been no formal project completion or handover. They believe that more NMT activities will follow, but they are in the dark as to what they might comprise.

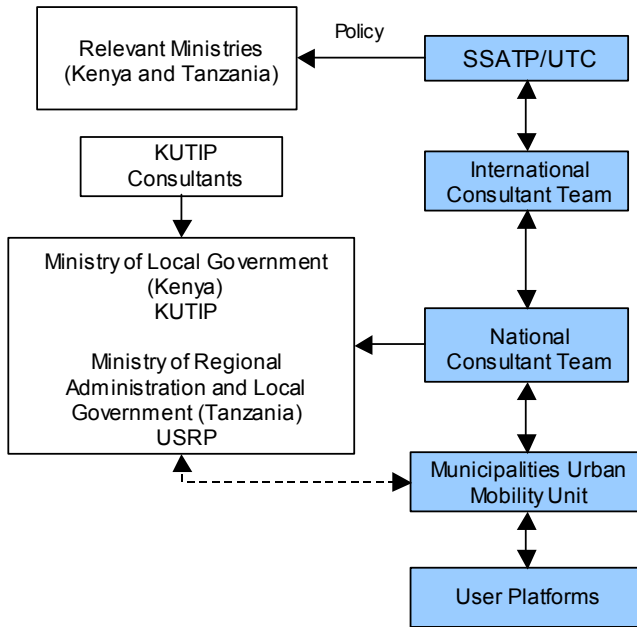


Figure 3. NMT Pilot Projects Management Structure

The following is a representation of how the management structure could perhaps have functioned. This structure shows the local authorities and the users closer to the center of the processes for implementing spot improvements and managing the interface between the NMT Consultants and the KUTIP/URSP investment programs.

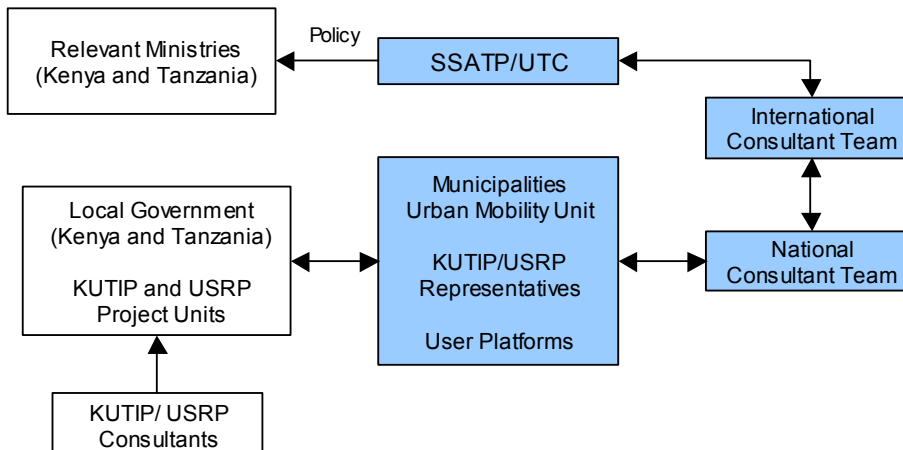


Figure 4. Alternative NMT Pilot Projects Management Structure

One of the important objectives of local authority control over interventions such as the NMT pilot activities is to balance potentially conflicting approaches being championed by stakeholders and influence groups with the actual needs of residents.

According to the Terms of Reference for Phase II Part 1, the consultant's National Team was required to "operate as an Advisory Unit" to the Tanzania Ministry of Works, Communications and Transport and the Kenya Ministry of Local Government. They were to "meet regularly with the relevant staff" in these ministries to "keep them informed of the progress of the pilot projects and advise them on urban NMT issues. The main reasons for failure of the NMT Consultants in Kenya to contribute meaningfully to KUTIP are discussed in section 3.4. But a key constraint was the effective sidelining of the local authorities through the organizational structures put in place for both the NMT Program and KUTIP.

4.5.6 Human resource adjustments

The Kenya National Team had several changes in personnel during its life. But these changes do not appear to have negatively affected performance because capable replacements were found. In Tanzania, the NT largely remained intact.

There were also human resource changes in the UMUs in the municipalities. For instance in Morogoro, the planner and the engineer were both transferred to other posts. But these changes do not appear to have seriously affected progress, and should be regarded as normal in the planning process for this type of project.

4.5.7 Reporting

Limited access has been provided to the monitoring and evaluation reports produced by the NMT Consultants. However, it is apparent that significant numbers of reports were produced, and an assessment of the sample made available indicates that significant effort was invested in their preparation. Full details of the design and construction process for the spot interventions are recorded, as well as observations during the monitoring of their effectiveness.

However, the true value of the reporting will only realized once the experiences and lessons learned have been condensed into workable design manuals and specifications.

The NMT Consultants produced a document entitled "Guidelines for Pedestrian and Bicycle Traffic in African Cities". This document includes significant technical details of the pilot activities and the lessons learned. It provides a wealth of information of interest to urban transportation planners, academics and students. But the information is less readily usable on a day-to-day basis by municipal transport planners and engineers. At the time of this assessment, copies of the guidelines had not been distributed to local authorities or government ministries, except for Nairobi City Council, which had only recently received its copy.

The detailed technical findings of the NMT pilot projects might have been better disseminated through the [additional] production of a practical guide to NMT interventions for use by the local authorities, or [preferably] inclusion of NMT measures in existing urban road design manuals²⁹. However, it is reasonable to expect that this task should have been taken up by the appropriate government ministries in Kenya and Tanzania, rather than putting the onus on the NMT Consultants.

A document entitled “Additional Specifications for KUTIP Nairobi NMT Works” was produced by the National Consultants³⁰. It contains detailed designs of NMT interventions, and could be used as a basis for the preparation of a more practical NMT provision guidelines.

4.5.8 Calendar of activities

Part 1 of Phase II of the project was designed to be completed in 16 months [December 1994 to March 1996]. Part 2 started in July 1996, indicating a slippage of four months. Part 2 was scheduled for completion in July 1998 [24 months], but reporting and dissemination of lessons learned continued into 1999 and 2000. The National Workshops scheduled for July 1998 were held in December 1998.

The main reason for the time extension was that the objectives for Phase II part 2 had not been fully achieved by September 1998, particularly with regard to the inputs to KUTIP and USRP. Planning for the transition to a third phase, i.e. scaling up the implementation from a pilot scale to a more area-wide application had also not been achieved. Slow disbursement of World Bank funding for the project contributed to the delay. The SSATP therefore agreed to a no-cost extension in September 1998 to provide an opportunity to further the cooperation with KUTIP and USRP. In Tanzania the cooperation was extended to the UNCHS sustainable cities program.

An assessment has been made of compliance with specific target deadlines set by the Terms of Reference for Phase II Part 1 and Part 2. This assessment is based mainly on the dates of reports issued during the project and records of workshops convened. Since not all progress reports were made available to the assessment team, it has not been possible to verify the compliance with all target dates. Details of the requirements of the TOR and the actual achievements are provided in Appendix A.

Project Implementation Workshops. These were held approximately quarterly in accordance with the TOR.

²⁹ But note that there is no existing manual for the design of urban roads in Tanzania.

³⁰ Kenya National Team. Urban Mobility and Non-Motorised Transport. **Additional Specifications for KUTIP Nairobi NMT Works.** August 1997.

National Workshops. These were held at the end of Phase I and Phase II and mid-way through Phase II in accordance with the TOR.

4.5.9 Overall compliance with the TOR

The Terms of Reference for Phase II Part 1 focused on the long-term objectives of institutional capacity building, training etc. The various capacity building, user participation and spot intervention measures proposed were a means to achieving the long-term objectives. However, the TOR for Part 2 tends to focus more on the testing of the spot interventions and NMT vehicle supply measures, with less mention of the longer-term objectives. Perhaps there was a realization at the end of Part 1 that the long-term objectives were largely beyond the scope of the assignment, due to the relatively short timeframe available.

Therefore it can be concluded that the NMT Consultants substantially fulfilled the requirements of their contracts with the World Bank. Failure to meet some of the program targets was mainly due to circumstances beyond their control. A weakness in the output of the pilot activities was the failure to disseminate the findings and lessons learned in a format accessible to local authorities in SSA, thereby contributing to the long-term objectives of the NMT Program. But as noted above, this task was probably beyond the scope of influence of the NMT Consultants.

The TOR also required the NMT Consultants to contribute to the expansion of NMT activities on a wider basis including recommendations for³¹:

- A “transition to regular and larger scale implementation”
- An appropriate management structure for the municipal tasks and continued capacity building
- Financing of NMT interventions.

These recommendations do not appear to have been produced.

4.5.10 Project Expenditure against Budget

The overall expenditure of the NMT pilot projects (Phase II) is shown below. The total spent was US\$3.36million of which about 81% was spent on the cost of the NMT Consultants (budget 82%) and about 19% on the interventions (budget 12%). Overall expenditure was within budget, with the contingency amount \$190,000 (6% of budget) spent mainly on interventions.

³¹ SSATP. TOR Phase II Part 2 paragraphs 55-59

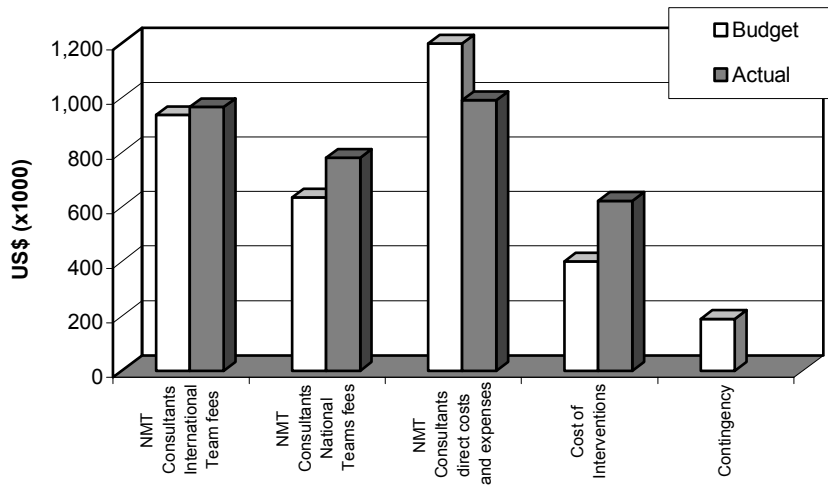


Figure 5. Summary of expenditure

The proportion of the total budget of US\$3,291,000 allocated to the interventions was small (19%). This is largely a reflection of the high cost of engaging international consultants. It is apparent that if the local authorities had been aware of the overall budget amounts, and the relatively small amounts allocated to physical interventions, there might have been even greater resistance to participation in the program.

However, the amounts spent on the pilot projects, and in particular on the consulting services must be viewed in relation to the potential of the pilot projects to contribute to improvements to NMT infrastructure throughout sub-Saharan Africa. It is for this reason that dissemination of the outputs of the project in formats that encourage policy changes in governments and road authorities, and are useable by engineers and planners in local authorities, is crucial.

5 OVERALL CONCLUSIONS

The long-term objective of the NMT pilot projects was to “facilitate the establishment and reinforcement of the municipal capacity of Sub Saharan African cities to design and implement affordable Urban Mobility policies, in particular Non Motorized Transport policies targeted at the urban poor”³². The pilot projects were to contribute to achieving this objective through practical testing of NMT measures and policies, institutional development and capacity building in local authorities and training of professional staff.

Significant work was done on testing spot interventions to support NMT. But the proportion of the overall budget spent on the physical interventions was small. Therefore the experience gained is the primary output of the project, and the main contributor to the long-term objectives. The amounts spent, in particular the high cost of consulting services, will only be justified if further progress can be made to influence government policy on a wider basis throughout Sub-Saharan Africa. The challenge is to bring appropriate NMT infrastructure design into government policy and urban road design manuals, with equivalent importance to standards required for motorized transport.

The research demonstrated that there is a need for more engineering input to the design and testing of interventions. Some solutions that work in the developed world were shown to be unsuccessful in developing cities, which lack capacity to maintain infrastructure and to enforce the law. The second main output of the pilot interventions was a significant increase in awareness amongst politicians, planners, engineers and the public of the importance of addressing the needs of non-motorized transport.

The approach to providing for NMT was based on the Mobility Planning approach, which seeks to put **road users** at the center of the planning process. But the pilot project activities were constrained by short time frames and the need to “show results”. As a result it was the NMT Consultants that took charge of the process. This resulted in an increase in public awareness of NMT issues, and the testing of a wide range of NMT measures, but possibly undermined progress towards the other core objectives of the project, namely institutional development and capacity building in local authorities.

The lack of existing capacity within the local authorities and lack of existing organized user groups in the project areas were clearly constraints to achieving the institutional and capacity building outputs. But if the local authorities had taken charge of the process from the outset, and had been allowed to progress at their own pace within the constraints that they experience

³² SSATP Urban Transport Component. Non-Motorized Transport. **Terms of Reference Phase II Part 1**. The World Bank. January 1995.

on a daily basis, it is possible that more progress to achieving sustainable solutions in these areas would have been achieved within the same overall time period.

The participation of users in the identification and prioritization of the pilot interventions was initially limited by the length of time it took to establish the User Platforms. The lack of technical know-how of the participants was also a constraint, but the contribution of the users increased significantly as they gained experience over time. Key lessons learned on user participation were: 1] successful interventions were those where users were active and 2] when dealing with user groups, avoid “talking without doing”.

The analysis of the public awareness and education campaigns showed that awareness does not necessarily immediately translate into behavior changes, particularly where law enforcement is weak. Behavior change of road users can, however, be promoted through carefully designed infrastructure, leading to significantly reduced travel times and improvements in road safety. But the engineering design of interventions is still less crucial for achieving sustainability than the need to seek ways of mainstreaming NMT issues in the daily operations of local authorities.

The assessment of the NMT pilot interventions has raised a number of key issues that should be addressed in future interventions in support of NMT under the Urban Mobility Component of SSATP. These include:

- ❑ Is it feasible to expect technical staff within local authorities in SSA to deal with the complexities of designing effective NMT infrastructure, even if guidelines are provided in the form of a manual? Or will it be necessary to provide permanent technical assistance either from the private sector or from central government?
- ❑ Are transportation planners and engineers who are used to traditional approaches willing to give equal priority to NMT and motorized transport? Are local authorities prepared to allocate funding on an equal basis?
- ❑ What is an appropriate level of user participation that can be sustained within the resource constraints experienced by most local authorities? How can a balance be achieved between the need to involve users and the need for local authorities to exercise control?
- ❑ Are local authorities willing to promote and facilitate direct user financing of NMT infrastructure in exchange for greater accountability? Are users willing to take up this challenge?

In order to answer these questions it is likely that it will be necessary to work with a much wider number of local authorities in SSA. Activities that could be undertaken to consolidate and further develop the achievements of the NMT pilot projects include:

- ❑ Undertake a survey of standard NMT infrastructure design details already used by local authorities in SSA. Analyze the suitability of these designs in relation to the lessons learned on the pilot projects. Establish the need for a manual of standard designs that could be used widely in the region. Establish the appropriate level of sophistication for such a manual.

- Encourage wider awareness and higher profile for NMT issues by establishing a Challenge Fund. Develop simple bidding arrangements that require local authorities to develop their own concepts for small interventions based on the lessons learned on the NMT pilot projects and their previous experiences. Funds would be allocated to those demonstrating commitment to the needs of NMT, and to long-term capacity development in their own organizations.

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APPENDIX B: STUDY TEAM

<i>Name</i>	<i>Role</i>
Robert Geddes	Team Leader/Institutional Adviser
MacDonald Mashiri	International Transport Specialist
Silvester Kasuku	Local Consultant [Institutional]
Lilian Macharia	Local Consultant [Interventions]
Rayywa Seng'enge	Local Consultant [Tanzania]
Joanna Leyland	Logistics Co-ordinator

APPENDIX C: TERMS OF REFERENCE

Background

1. As part of the Urban Mobility Component of the Sub-Saharan Africa Transport Policy Program [SSATP] coordinated by the World Bank, a team of consultants has carried out a program of activities [hereafter referred as “the NMT Program”] to improve urban mobility in general and Non Motorized Transport [NMT] in particular, through pilot projects in four cities, Nairobi and Eldoret in Kenya, and Dar es Salaam [DSM] and Morogoro in Tanzania. The Program is the second phase of, and the follow-up to, a study conducted by the same team, under the SSATP, of urban non-motorized transport in Kenya and Tanzania in 1993 and 1994. The team of consultants for the Program consists of three components: a Municipal Pilot Project Unit [PPU] in each of the Municipalities [four in total, one in every municipality], a national Urban NMT team [NT] in both Kenya and Tanzania, an international team of experts for support to PPU's and NT's and coordinate the overall Program of activities [IT].
2. The Phase II of the Program consisted of two parts. The first part primarily served to establish the Pilot Project Units [PPU's] as part of the Municipal Government, and staffed by regular Municipal staff in each of the pilot cities. Then User Participation had to be established, a first set of small test interventions had to be carried out to test implementation scenarios and monitoring methods, and a more complete set of infrastructure and other interventions in favor of NMT had to be worked out, to be implemented and monitored during part two of the second phase of the Program.
3. The complete list of the part one tasks was specified in the Terms of Reference [TOR] for the NMT Program [see Annex A, contract signed on February 24, 1995]. That TOR also contained a description of the general background and objectives of the entire NMT Program, as well as of its linkages with ongoing other urban transport projects in Kenya and Tanzania financed by the World Bank [Kenya Urban Transport Infrastructure Project in Kenya, or KUTIP and Urban Infrastructure Rehabilitation Project, UIRP, in Tanzania]. Part two of the Program covers a period of two years, extended to a third year, starting December 1, 1996.
4. The whole NMT Program was financed by the Dutch Ministry of Foreign Affairs under a Trust Fund managed by the World Bank as part of the SSATP-Urban Mobility.
5. The amount of human resource allocated to the performance of the Program, as well as the particular definition of some of the costs associated with some activities justified, at the time of the negotiation, that a certain room for uncertainty was considered and accepted by the Dutch Ministry of Foreign Affairs as part of the nature of the test interventions which characterized the whole NMT Program.

6. It is the desire of the Dutch Ministry of Foreign Affairs as well as the World Bank to make available a technical audit/assessment of the Phase II of the NMT Program [part one and part 2] in order to have an accurate and independent evaluation on its technical performance.

The Urban Mobility Component Business Plan for CY02-CY03:

7. The current CY 2002 & 2003 Business Plan for the SSATP-Urban Mobility Component builds upon:

- The 1998-2002 Urban Transport Strategic Development Plan [SDP] approved by the component's constituencies during the Steering Committee Meeting held in September 1998 in Cape Town, South Africa, [re] debated and confirmed at the latest UM Steering Committee Meeting held in Accra, Ghana in April 2001;
- The Urban Transport Strategy Review *Cities on the Move* recently prepared by the World Bank with its main partners;
- The Private Sector Development and Infrastructure [PSDI] strategy of the World Bank's central efforts to reduce poverty through higher economic growth and improved efficiency of infrastructure and services.

The Business Plan has two prongs:

- To develop an updated strategic framework for identifying complementary needs based interventions and policy reforms leading to safe, efficient and less polluting transport in Sub-Saharan African cities with a special attention to the most affected by the urban mobility crisis: the urban poor
- To strengthen the focus of the on-going program of policy reform actions to address specific demonstrated regional needs, building on the results achieved so far and maintaining the momentum of reforms.

8. In order to achieve its purpose, namely to progress pro-poor urban mobility policy development, the UM component has identified various outputs and related activities in 2002 and 2003, which have been classified under 4 headings: [i] understanding of urban mobility prioritized needs in selected cities, [ii] Knowledge dissemination, [iii] urban transport micro-enterprise regulation issues and options and [iv] support to the development of sound policy reforms.

Objective of the technical assessment of the NMT

9. The objective of the technical audit is to carry out a fair, independent and comprehensive assessment of the results achieved by the NMT Program, Phase II in each of the four selected cities regarding the following five key technical and managerial areas:

- a) Achievements, effectiveness and sustainability of the Project Pilot Units, PPU, the national teams and the international team

- b) Assessment of the sustainability of the municipal and NT capacities as developed during the NMT program
- c) Effectiveness and lessons learned of the engineering tests interventions in the pilot areas
- d) Outputs compared with the performance indicators
- e) Effectiveness and lessons learned of the User Participation
- f) Program's management

Scope of the services

10. The assessment to be made by the selected consultant will be carried out through the combination of [a] an in-depth analysis of the progress reports produced by the team of NMT consultants and [b] one mission in the field, including technical visits of the four cities and meetings with the main stakeholders such as PPU's, UP's, NT's and Project Implementation Units of KUTIP [Kenya] and UIRP [Tanzania].

The selected consultant will carry out the assessment along five key areas identified which include the following main issues to be addressed by key area.

A. Effectiveness and sustainable development of the PPU's

11. One of the key issues of the NMT program in the four selected cities is how the PPU's activities will be continued at the end of the NMT Program, absorbed in the regular municipal structure, financed, at least partially, by the municipal budget and considered as part of the development of NMT concepts into the work program of the municipalities. The PPU's were expected to play a central role in developing local capacity in the area of NMT. Hence, the sustainability of the Municipal capacity on NMT is considered as one of the vital aspect of the NMT Program. In view of this overall objective, the consultant will assess the following main issues:

- I Existence of counterpart funding [or financing mechanisms] and human resource from the municipality during the implementation of the NMT program as well as for the next three fiscal years following its completion related to the management, maintenance and construction of urban road infrastructures targeted and NMT interventions;
- II Adoption of NMT procedures, guidelines and existence of a complete set of working procedures and planning methods and implementation;
- III Capacity building: output of the training and guidance provided by the NMT Program to the municipal staff, local capacity strengthening in the field of planning, design and implementation of NMT activities and urban transport infrastructures and policies in the related metropolitan areas;
- IV Effectiveness and achievements of PPU's contributions and commitments made in the Memorandum of Understanding signed between the Municipalities and the team of NMT consultants;
- V Role and initiative of the PPU's with regards the overall project's management;

VI Production of design and organization documents needed for the implementation of the test interventions.

B. Effectiveness of the engineering test interventions in the pilot areas

12. A number of test interventions have been carried out under the NMT Program in the four cities or with its technical assistance, to improve the safe mobility in the pilot areas. Hence, the pilot interventions were considered as being practical tests to enhance safe walking and cycling. The NMT team has been responsible for the production of all design and organization documents required for the implementation of the test interventions. The assessment to be made by the consultant will cover the following areas:

- I Relevance and impacts of the traffic management measures and NMT infrastructures designed and implemented by the NMT Program such as: traffic calming, pedestrian crossings, route cleaning, sidewalks, bus lanes and bays;
- II Number and effectiveness of the missing network links designed and established/constructed through the NMT Program or with its assistance;
- III Impact of the training provided to the local staff by the NMT Program, including training and supervision provided to local contractors.

C. Performance Indicators

13. Although it was recognized at the time of the preparation of the NMT Program that a certain room for uncertainty should be admitted due to the test nature of the NMT Program, a set of performance indicators was agreed upon between the World Bank and the team of consultants to measure the impacts of the NMT Program on the urban mobility in the selected areas. The consultant will assess the degree of achievements of these performance indicators. As indicated in the contract between the World Bank and the NMT consultant on November 4, 1996, the overall targets of the NMT Program, to be reached by mid 1998 are:

- I A 10% reduction in traffic accidents in the pilot areas;
- II A reduction in average door-to-door travel times of 10% on those routes in the pilot areas along which test interventions have been carried out;
- III An increase of 10% of NMT traffic flows on test intervention routes;
- IV An increase of 1% in the use of bicycles in the pilot areas;
- V An increase of 5% in the attractiveness of lands served by test intervention routes.

D. User Participation [UP]

74. The NMT Program is basically designed and implemented along the concept of ownership and stakeholders participation. By maximizing demand-oriented contribution and community support, the NMT Program has pursued the objective of local capacity strengthening. Although the impacts of the user participation on the achievement of the NMT

Program is difficult to measure by referring to figures and data, the consultant will take into account the following means of measurement:

- I Frequency, impacts and efficiency of the User Participation [UP] meetings;
- II UP size, membership, stability and degree of representatives of the different interest groups, including the transparency of the procedure of selection;
- III Impact of the UP on the development of public opinion and political platform convincing decision makers and engineering professionals on the importance and role of the NMT;
- IV Integration of the recommendations/findings of the UP's into the work program of the municipalities to promote and develop NMT investments;
- V Impact and output of the UP on the organization and follow up of the Project Implementation Workshop [PIW] held during the implementation of the NMT Program;
- VI Impact of the involvement of the UP in the planning and decision making process on the test interventions, as well as on the monitoring of the effects of the interventions.

E. Management of the NMT Program

15. Although the NMT Program contains a part of uncertainty, due to the “testing nature” of most of the interventions, the compliance with the agreed terms of reference and the effectiveness of the managerial framework is considered as one of the assess its performance in view of the expected results. Hence, the consultant will take into consideration the following aspects of the implementation of the NMT Program:

- I Degree of effectiveness and consistency of the monitoring and evaluation reports, including the use of the Quality Assurance Procedures [QAP];
- II Effectiveness of personal financial incentives allocated to the user representatives;
- III Regular follow up of the technical steps expected to be made in accordance with the terms of reference of the team of consultants [effective compliance with the calendar of activities as scheduled in the terms of references;
- IV Development of a data base or set of indicators related to the urban mobility in the four selected municipalities;
- V Effectiveness and efficiency of the management structure set up by the team of consultants vis-à-vis [a] its relationship with key stakeholders such as the municipalities, national ministry of transport as well as the SSATP-Urban Transport component and [b] the impact of the monitoring procedures of the results/outputs of the NMT Program;
- VI Adjustments made during the implementation of the NMT Program in terms of [a] human resource allocated and [b] set of activities and compliance with framework of adjustments allowed by the terms of reference attached to the contracts signed between the NMT consultants and the World Bank;
- VII Overall compliance of the implementation of the NMT Program with the contracts signed between the NMT consultants and the World Bank.

General

16. The consultant will be given access to all contractual and technical documents, reports and any other information he/she may deem necessary, associated with the NMT Program.

Expected scope of the services

87. It is expected that a period of three weeks will be required for the field surveys. The total human resource for the technical audit assignment is 4 person-months [two international two local experts], including reports preparation and communication.

Selection criteria

18. The services of an experienced recognized team of consultants in urban mobility issues in Sub-Saharan Africa, and fluent in English are required for the purpose of undertaking the assessment. In order to be selected, the consultants will have to submit together two proposals: a technical proposal presenting the methodology used to address the elements described in Section IV as well as a financial offer. Each member of the team must be identified and his relevant experience as well as his own contribution to the study specified in the proposal.

19. On a hundred points score, 30 points will be allocated to the professional experience in Sub-Saharan Africa, 40 points for the relevancy of the proposed methodology and 30 points for the CV of Staff allocated.

Organization and management

20. The SSATP-UM team will supervise the whole study and disseminate the outputs through SSATP channels such as technical notes and information on the SSATP web page. Any report has to be submitted [a] by electronic version together with [b] four hard copies to the UM component's manager, Patrick Bultynck [pbultynck@worldbank.org, 1818 H. Street Washington DC, N.W. 20433, Room J 11-101] with electronic copy to Hubert Nove-Josserand [Email hnovejoss@worldbank.org] and Serge Martin [smartin1@worldbank.org].

21. The consultant is expected to attend a SSATP regional conference due to be held in Maputo, Mozambique the first week of July 2002. He is due to present the conclusions of the study during a special session on urban mobility issues in sub-Saharan Africa.

Time schedule of the Services

22. The consultant is expected to provide:

- (1) an inception report 20 days after the signature of the contract, no later than April 30, 2002
- (2) a draft final report by June 15, 2002;
- (3) the final report by July 31, 2002, including the comments and suggestions made during the SSATP Regional conference due to be held in Maputo early July 2002 [see point 15].

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