Crop Post Harvest Programme (CPHP)

Rural Transport Services Project for Kenya

Engineering and issues of IMT adoption, use and servicing in Kenya

Compiled by:

MUTUA, J., OCHENG, F., ORAM C. and KAUMBUTHO P.

For

KENDAT

Kenya Network for Draught Animal Technology
P.O. Box 2859,
00200 City Square
Tel/Fax: 254-2-766939
Nairobi, Kenya
Email: KENDAT@Africaonline.co.ke
Web: http://www.ATNESA.org/KENDAT

March 2003

Project Title: **Improved Agricultural Rural Transport for Kenya**

Research Programme: **CPHP**

Project Leader/Institution: **Pascal Kaumbutho / KENDAT**

NRIL Contract Number: **ZB0293**

DFID Contract Number: **R8113**

Production System: **Cross-cutting**

Reporting period Year 1: April 2002 to March 2003

Start Date: **April 2002** End Date: **March 2005**

A Kenya National Forum Group for Rural Transport and Development Initiative
Supported by Crop Post-Harvest Programme (CPHP/NRIL), Infrastructure and Urban Development Department (DFID/IUDD) and Swedish International Development Agency (SIDA)
and
Implemented by a KENDAT Consortium, with professional assistance from Swedish University of Agricultural Sciences, Silsoe Research Institute, University of Warwick and the International Forum for Rural Transport and Development (IFRTD).
Development support backed by ITDG, East Africa and ILO ASIST

Executive summary

This report is an outcome of a recent study conducted in five areas, Mwea in Kirinyaga, Kalama in Machakos, Ngurumani in Magadi, Lari in Limuru and Busia to assess the status of rural transport technologies with particular reference to operation and support service infrastructure.

The study was carried out through interviews using carefully designed questionnaires. Specifically the study focussed on Intermediate Means of Transport (IMTs) and the supporting infrastructure. The questionnaires were classified into two categories, one covering artisans and the other transporters. The first was designed to bring out issues of capacity to support IMT technology development and its maintenance. The second was meant to bring out issues on availability of IMTs, cost and their contribution to the local economy. A total of 16 and 26 artisans and transporters were interviewed respectively.

Types of IMTs and use

The most common types of IMTs were found to bicycles, donkey and ox-carts used for both personal, commuter and goods transport. Goods transported varied from agricultural produce, firewood water and building materials depending on the area.

The type and design of IMTs varied from area to area depending on purpose, area characteristics such terrain and the raw materials used in their manufacture.

Ownership and control

Generally, ownership was largely in the hands of men but women had fair degree of access, and in some cases even control. Access and use varied from area to area depending on tasks and cultural/traditional background. In Magadi for instance, men owned and controlled the use of donkeys but traditionally it was women who used.

In Lari, Mwea and Busia, ownership of donkey/ox carts was largely by men but both sexes had access and control. Variations in extent of utilisation by gender however varied depending on the area, commodity transported and point of use. Rice transportation in Mwea from the farms to the milling points was usually undertaken by women and children whereas in the urban centres transportation of water was undertaken by men. In Lari, women transported produce from the farm to the roadside or nearby collection point where men took over. In Busia and Machakos the use of ox-carts was mostly by men and boys (Machakos).

Ownership, use and control of bicycles was generally found to be men's domain. There seemed to be a strong universal cultural barrier restricting bicycle use by women. The culture however seemed to be waning in some urban centres, especially in areas with large numbers of bicycles such as Busia and Mwea.

Existence of IMTs affected the way labour use was distributed in the household. Men were found to be willing to undertake tasks otherwise considered to be women's so long as they had access to IMTs such bicycles and wheelbarrows thus dramatically shifting the balance in load sharing between gender.

Local production and service capacity

Production of IMTs and the supporting infrastructure varied from area to area in direct proportion to density of IMTs. Mwea, Lari and Busia with relatively large numbers of IMTs had a large capacity for fabrication of carts and supply of bicycles and components. But only 25% of their total business turnover was taken up by manufacture and maintenance of IMTs. Kalama in Machakos and Magadi had very little capacity for manufacture and maintenance of IMTs, a reflection of the low levels of IMTs in these areas.

Most artisans lacked adequate technical skills and tool base required for the production of quality IMTs. Even though 75% and 37% of them had attained secondary and college education respectively, only 12.5% had attended low level village polytechnics. Most of the artisans were self-taught. Their apparent lack creativity and flexibility of mind was compounded by customer's unwillingness to risk new technology options.

Quality, cost and availability of raw materials

Most of the materials for fabrication and repair of IMTs were available locally or within easy reach, except axles for carts which were sourced from Nairobi. Variations in quality and prices of materials and spare parts were observed across all the study areas. This tended to affect the quality and cost of repairs and the finished product.

Profitability of IMTs and their contribution to local economy

About 56% of artisans claimed 25% of their total turnover was from IMT business while another 12.5% claimed a turnover of 50% from IMTs. Only 12.5% of artisans claimed 75% of their total turnover was from the production and servicing of IMTs. The total monthly net income from artisans was Ksh. 10,000 and Ksh. 7,500 for transporters. The proportion of this income attributable to IMT business was therefore little indicating fierce competition for business (Mwea, Lari and Busia) or lack of it (Magadi and Machakos). On average, an artisan makes Khs. 2,400 net profit from making a cart after discounting for materials and labour charges. Annual demand for carts was < 10 in Machakos, 25 in Mwea, <10 in Magadi, 15 in Busia and 30 in Lari. With a high level of competition between artisans not much profits could be realised from making carts.

This is not to diminish the importance of IMTs and their contribution to the local economy. The typical artisan employs 2-4 people on full time basis. The boda boda, rice and water transport business in Busia and Mwea has created hundreds of jobs. There many outlets for bicycles and their spares in Lari, Mwea and Busia which must add to the livelihoods of the people in these areas.

In addition to these benefits, IMTs are sometimes the only link between walking and motor vehicles in a rural set up with dilapidated road network. Figures we have show that 31% of men and women travel to market and work places using IMTs, 58% of farm produce is transported to homestead and nearby market centres using IMTs, while 47% and 38% of building materials and water respectively are transported by use of IMTs. Evidently, IMTs fulfil important economic and social functions.

Appropriateness of IMTs

Appropriateness of IMTs is measured on basis of availability, cost, versatility and how dependable and durable they are. These variables are again depended on area of use characteristics such as family incomes, production levels, economic activities and infrastructure – which include roads network and condition, raw materials and other support services.

Based on these parameters, the following analysis was made:

In Machakos, IMTs were found to be less suited to the rough and hilly terrain. The low levels of agricultural production, high levels of poverty and lack of a meaningful cash economy made this complicated.

In Mwea, Lari and Busia, the relatively flat terrain rendered itself suitable to IMTs. The already vibrant cash economy based on rice (Mwea) and horticultural crops (Lari and Mwea), and the existence of high profile market centres has led to high demand of both IMTs and motorised means of transport. However, the element of cost and road network still remains a big hindrance to adoption of IMTs.

1. Introduction

Transport demand in rural areas is characterised by low speed and low volume movement of goods over relatively short distances. The distances involved are usually not long enough to justify the use of motor vehicles and the cost outlay associated with such means. In addition, the poor state of existing road network greatly curtails the adoption of full-steam motorisation strategy. It is now recognised that Intermediate Means of Transport (IMTs) – intermediate in the sense of filling the gap between human walking, head loading and large-scale transport can play a bigger role in the lives of a greater number of people in rural communities. Studies show that IMTs offer appropriate local transport solutions that increase transport capacity and reduce drudgery at a relatively low capital cost.

However, the development of IMTs and their successful adoption is depended on many challenges that need to be addressed to improve the use of local transport solutions for rural people. Among the many challenges is ensuring appropriate IMT options are readily available at affordable prices and that adequate support structures exist to ensure sustainability.

This report contains findings of a recent study conducted in five carefully selected areas in Kenya to assess the status of rural transport technologies with particular reference to operation and support service infrastructure.

1.1 Study objectives

To assess the existing capacity of rural transport services in all study zones with particular reference to:

- technology development, availability and use
- development of IMT based economy and
- local institutional roles and responsibilities in the provision of transport services

2.1 Specific objectives

- Analyse the modal composition of local traffic, distance and payload capacities of the different types of IMTs
- Assess the types of transport technologies available, and their mechanical efficiencies
- Analyse local capacity for manufacture and maintenance of the transport technologies
- Assess the contribution of IMTs to the local economy
- Assess the costs and benefits to operators of IMTs based transport services
- Examine the structure/process of supply of IMTs, and components used in manufacture
- Assess how the IMT industry could be financed

- Assess how stakeholders relate to one another as providers, users, competitors or regulators in the local transport industry
- Identify key local regulatory issues that may obstruct or facilitate the development of a vibrant transport service sector

2. Study Methodology

The study was carried out through interviews using carefully designed questionnaires divided into two categories.

The first category was aimed at artisans and the ultimate goal was to assess their capacity to support technology development and it's maintenance, with particular emphasis to IMTs. Specific, issues probed included educational and technical skill levels, business skills such as costing and accounts, tool base, availability of materials/components used in manufacture of IMTs, access to capital, and profitability.

The second category covered transporters and was designed to bring out issues on availability of IMTs, the structure/process of their supply and their contribution to the local economy - as a service to users and business for operators. Other enabling environment such as demand and condition of the infrastructure was also enquired.

In category one and two, 16 and 26 artisans and transporters were interviewed respectively. Apart from filling out the questionnaire, the enumerators were requested to make observations and record any pertinent issues coming out their discussions with the respondents.

Data collected for all categories was verified and entered into a database ready for collation and analysis.

3. Results and discussions

3.1 Overview of Technology and support infrastructure

3.1.1 IMT technology

Table 1 shows the most common modes of transport means found in the study areas and the percentage of households owning means of transport. Three types of IMTs (bicycle, donkey carts and ox-carts) stand out as the most popular means of transport. Other modes of transport are used to a relatively less extend. The purpose and extent of use of these IMTs vary from area to area. Bicycles are very common in Mwea and Busia where a thriving boda boda industry exist. Boda boda's are used for personal transport as well as ferrying farm produce. In Lari bicycles are mostly used in ferrying farm produce, water and firewood. Donkey carts are very common modes of transport in Mwea and Lari, both in the interior and around market centres where they are largely used to transport farm produce, water and firewood. Kalama and Magadi have very low densities of IMTs.

Design features of the IMTs vary according to purpose, availability and source of raw materials. In Lari, the open type wooden cart has evolved due to the need to transport large bags of Kales, Cabbages and Potatoes, which would be difficult to load on the normal cart with full body. Its wooden body is as a result of availability of wood from the nearby Kinale forest. In Mwea, Magadi and Kalama in Machakos, metallic carts are preferred as there are no other readily available materials for construction of carts. The use of larger wheels in Magadi and Kalama (size 15) is reflection of the ground terrain, which is harsher than in Lari and Mwea. Not too long ago, carts with huge metallic wheels used to be a common sight in these areas but have to date become very rare due to their high costs in manufacture. They also require highly skilled manpower to fabricate.

Boda bodas, said to have originated in Busia, have undergone extensive modifications in both Busia and Mwea to suit both passenger and general merchandise transportation needs.

Table 1: Common types of IMTs and percentage ownership

Means of transport	Percent of households owning means of transport				
	Lari	Mwea	Kalama	Magadi	Busia
Sledges	-	-			
Wheelbarrow	-	-	30		-
Hand carts	-	-	-		-
Donkey cart	38	33	-		-
Ox-cart	0	-	<10		<5
Bicycles	42	57	<15		68
Motorcycle	-	-	2*		1.5
Motor vehicle	4	2	2	<0.5	1

Source: KENDAT RTS project - Socio economic survey and engineering case study data 2002.

*Figures seem unrealistically high. This may be due to sample size or biased selection of households

3.1.2 Support infrastructure

The level of development of IMTs support structures is depended on the level of demand for IMT based services. In Kalama where IMTs are very few, there is virtually no capacity for manufacture and maintenance within the area. The few IMTs in the area rely on distant sources for support. In sharp contrast, Mwea, Lari and even Busia have huge capacity for supply, fabrication and maintenance of IMTs spurned by the high demand for IMTs in these areas. However competition is very high with each of the competitors taking a small share of the demand. Consequently, artisans have to undertake other none transport related businesses to survive.

Magadi too has low capacity for supply, fabrication and maintenance of IMTs, again a reflection of the low densities of IMTs in the area. With the exception of Ngurumani area, the larger agro-pastorist community relies on distance sources for acquisition and maintenance of IMTs

4. Ownership, use characteristics and load sharing

Ownership of means of transport, as is most other resources, is invariably by men although women have access to them. Few exceptions have been observed in Lari and Mwea and in women-headed households. Traditionally, men own and control the use donkeys in Magadi even though it is women who use them for transportation of building materials and movement of households during migration. In Lari, Mwea and Busia, ownership of donkey/ox carts is largely by men but both sexes have access and control. Variations in extent of utilisation by gender however vary depending on the area, commodity transported and point of use. For instance, transportation of rice in Mwea from the farms to the milling points in urban centres is usually undertaken by women and children whereas in the urban centres transportation of water is a mans job. In Lari, movement of farm produce from farm to nearby collection point tend to be a woman's job, usually using their backs, while men, using carts, undertake most of the transportation of the produce to other collection points, mostly in urban centres. In Busia, the use of ox-carts is mostly by men while in Machakos the use of carts and sledges seems to be restricted to men and boys.

In the villages across the study areas, ownership, use and control of bicycles is men's domain. There seems to be a strong cultural barrier restricting bicycle use to men, a culture now slowly being broken in some urban centres such as in Busia and Mwea where occasionally women are seen riding bicycles. Other modes of transport such as the wheelbarrow are not culturally bound to any particular sex although men still seem to have an upper hand in their use and control. Their existence has however changed the way labour use is distributed in the household. For instance, men can proudly participate in fetching water and firewood using a bicycle or a wheelbarrow, a task hitherto preserved for women. Where these modes of transport exist, the balance of load sharing can dramatically shift in favour of women who usually bear most of the family's transport burden.

In the wet season, when the use of most IMTs may become difficult due to bad roads, load sharing often shift to women who have to move most of the farm produce on their backs.

Although, by far and large, the ownership and control of means of transport is still in the hands of men, women increasingly continue to have access and even some control to these means of transport. IMTs have also influenced load sharing and gender roles in household transport needs. Their promotion, where feasible, can therefore play a critical role in alleviating most transport needs of rural people and in balancing the load between men and women.

But IMTs commonly need a critical mass of users and support services if they are to be successful. Critical mass of users helps reduce costs, encourages the development of service facilities and parts availability and helps improve cultural acceptability. In trying to create a critical mass of users the issues of appropriateness and technology transfer needs become important.

5. Local production and service capacity

Capacity for manufacture, maintenance and its sustainability is influenced by the existence of a critical mass of IMT and other forms of transport users. In Mwea, Lari and Busia where demand for IMTs is relatively high, there is large capacity for fabrication of carts and supply of bicycles and their repair components as well as motor garages. But the fact that only 25% of the total business turnover from the service providers in these areas is taken up by manufacture and maintenance of IMTs, suggest that this capacity is under-utilised. Kalama, Machakos has virtually no capacity for manufacture and maintenance of IMTs and motorised vehicles within the area. The low levels of IMT use in the area is not adequate to stimulate enough demand for such services. Magadi too has very low capacity for fabrication of carts and only a limited capacity for the repair of bicycles in Ngurumani area - a high horticultural production pocket. Otherwise the larger agro-pastorist community relies on distance sources for acquisition and maintenance of the few IMTs in the area.

5.1. Tooling and technical skills

Whereas the study revealed adequate capacity in areas with critical mass of IMTs, the quality of services was found wanting due to limited technical skills, poor tool base, lack of creativity and flexibility of mind. This is in spite of good educational background (75% and 37% of respondents reported having acquired secondary and college education respectively). Although 12.5% claimed to have attended village polytechnics, most the polytechnics specialise in carpentry and masonry. They have very limited capacity for teaching basic metal work. Graduates of these polytechnics are therefore are not adequately skilled in metal work and other skills necessary to ensure production of high quality IMTs. For instance, 62% of artisans interviewed did not know the grade of their welding filters and most hardly used them anyway. Indeed the study showed most artisans were self taught or acquired their skills from others in the trade.

Figure 1: A Jua Kali Workshop: Ill equipped both in tools and technical skills to undertake high quality fabrication of IMTs.

This apparent lack of adequate basic skills is made worse by inadequate tool base and use of tools which are in poor state. Although most artisans expressed satisfaction with the state of their tools, most of the tools were observed to be in poor state. Bare welders with exposed wires, drills used without bit securing keys, vices with no jaws etc are a common site.

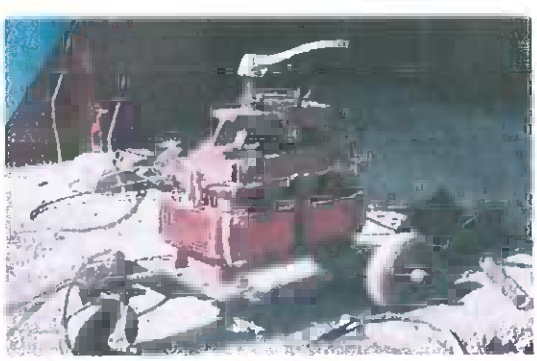


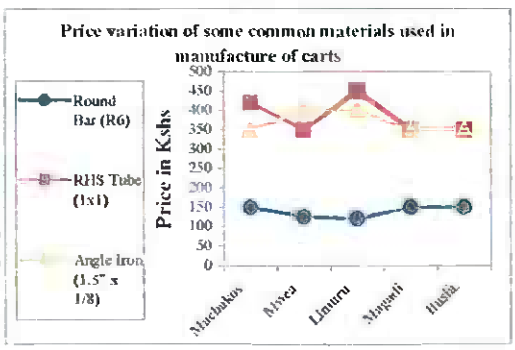
Figure 2: A Jua Kali welder

The lack of creativity and flexibility of mind is constrained by customers unwillingness to risk new technologies or the lack of knowledge on other technology options. The study revealed that owners of IMTs hardly discuss design options with artisans and show very little interest in purchasing other IMTs unknown to them.

5.2. Quality, cost and availability of raw materials, spares and components

Depending on type of IMT, most materials for fabrication and repair of IMTs were found to be available locally or within easy reach in most of the study areas. Axles for carts, which constitute a major cost element of a cart, are made using parts which are normally sourced from the major urban centres. In some cases like Ngurumani in Magadi, the source of the materials could be as far as 150 km. The cost of transporting these can add significantly to the cost of the cart.

Figure 3: Variations in the cost of some raw materials across study areas



Variations in quality and prices of materials and components was also found to vary across and even within the study areas indicating different sources for the materials and components and lack of standardization in their manufacture. In Busia for instance, a lot of price variation in raw materials and quality within a small area was observed. This often forced artisans to cross over to Uganda for better quality materials but at higher cost.

In Mwea, artisans reported variations in the brittleness of sheet metal, RHS sections and angle irons used in manufacture of carts making it difficult to achieve good quality welding. There were variations too on the quality of component parts used in bicycle repairs such as spokes, bearings etc and accessories such tubes and tyres indicating existence of cheap imports and the possibility of counterfeits in the market.

Table 2: Cost of transporting cart axles

Study area	Source of material	Distance to source (km)	Cost of transport	Cost of axle
Machakos	Nairobi	103	400	4,500
Mwea	Nairobi	113	500	4,500
Magadi	Nairobi (Kiserian)	150	800	5,000
Lari	Nairobi	67	300	4,500
Busia	-	-	-	4,500

5. Profitability of IMTs

On average a typical artisan/transporter makes approximately Ksh. 10,000 net per month from his/her business, which, in the case of artisans include activities unrelated to transport. As a matter of fact, the bigger proportion of an artisan's business is from other

Busia	Donkey carts	1	0.8	2	2	0.8	6.6
	Ox-carts	1	0.8	2	2	0.8	6.6
	Bicycles	1.5	1	2.5	0.5	0.8	6.3
	Bicycle with trailer	1.3	0	2.5	1.5	0.8	6.1
	Motorcycle	0.5	0	2.5	1.5	0.8	5.3
	Pick-up	05	0.5	2	2.5	1	6.5

Key:
0-4: Not feasible
4-7: Feasible with modifications
7-10: Very feasible

Table 6: Mean scores of appropriateness - IMTs versus motorised transport means

Study area	Mode of transport	Measure of appropriateness					Total score
		Affordability (2)	Availability (1)	Adaptability (3)	Dependability (3)	Profitability (1)	10
Kalama	IMTs	0.62	0.54	1.17	1.18	0.43	**3.94**
	Motorised	0.15	0.25	1.25	1.25	0.8	**3.7**
Mwea	IMTs	1.27	0.7	2.25	1.05	0.67	**5.94**
	Motorised	0.35	0.4	2	1.75	0.9	**5.4**
Lari	IMTs	1.27	0.52	1.8	1.27	0.58	**5.44**
	Motorised	0.35	0.25	1.75	1.5	0.9	**4.75**
Magadi	IMTs	1.17	0.32	1.42	1.3	0.53	**4.74**
	Motorised	0.35	0	2	1.75	0.9	**5**
Busia	IMTs	1.27	0.7	2.25	1.3	0.67	**6.19**
	Motorised	0.5	0.25	2.25	2	0.9	**5.9**

From the tables 5 and 6 above, it is quite apparent that:

In Kalama, Machakos, the score of 3.94 suggest that under the existing conditions it would be very difficult to promote the use of IMTs. Low agricultural production levels and lack of cash based economy has led to high poverty levels and the majority of the people cannot afford to purchase and sustain IMTs. The rough and hilly terrain, coupled with poorly maintained road network, does not also render itself very suitable to the most common types of IMTs. The use of large metallic wheels on carts in some parts of Machakos is an attempt in trying to improve rolling resistance and overcome the many obstacles the cart is likely to encounter. These however require skilled craftsmen to make and can be expensive (between 1,200 - 2000 per wheel). Their use is therefore becoming almost extinct.

The same can be said of the use of motorised means of transport. The condition of the road network inflicts a high level of tare and ware on vehicles, making maintenance very costly. This impacts negatively on the cost of transport. Charges are very high relative to distance travelled.

Therefore, promotion of IMTs would probably not be the best option for alleviating transport needs of the people in this area as it would be very difficult to attain a critical mass of users necessary to support a vibrant and sustainable IMT based transport sector.

The best approach in Kalama seems to be the incorporation of non-transport solutions (e.g. increasing the number of water sources, health centres, schools, improvement of telecommunication etc) and the stimulation of a cash based economy through introduction of cash crops such as fruit trees, cotton among others, and improved agricultural production through improved farming techniques such water harvesting.

In Mwea, Lari and Busia, unlike Machakos, the relatively flat terrain renders itself highly suitable to IMTs. The already vibrant cash based economy based on rice and horticultural crops production and high profile market centres has led to high demand of both IMTs and motorised forms of transport means. Competition for services however is high. Interior road network (feeder roads) is poorly maintained and difficult for both IMTs and motorised transport modes, especially during heavy rains. This limits the use of IMTs and motor vehicles in the interior.

In spite of the cash economy, ownership of IMTs, especially carts, is still low (Table 1). Table 3 suggests the major issues of concern in this area are affordability and dependability. Provision of credit, reduction in production costs of IMTs and improvement of the infrastructure would greatly improve appropriateness of IMTs and boost chances of higher adoption rates.

7.2. Making IMTs affordable

The ranking of IMTs in table 1 and 2 emphasise their niche in rural set-up due to their versatility under the poor infrastructural conditions that exist in the study areas. However, the issue of affordability sticks out as an area which needs major attention. Affordability is a function of cost and access to finance. These are issues, which, if resolved to could substantially lead to increased adoption of IMTs.

7.2.1. Cost reduction in local manufacture

Through prudent design options and fabrication processes, the cost of IMTs can be reduced substantially. Exploitation of local materials where available can be of great advantage in cost reduction. A case in mind is Lari where use of timber has led to comparatively cheaper carts. At policy level, waiver of tariffs for materials used in fabrication and assembly of IMTs can cut cost of IMTs drastically. The reduction of duty on bicycles in the 2001 budget led to substantial reduction in the prices of bicycles.

7.2.2. Access to credit

Although IMTs are much cheaper relative to motorised options, they are still expensive in relation to local incomes. Studies in northern Senegal have shown that provision of credit facilities can boost sales of IMTs. However care must be taken to ensure repayment of

credit. This call for innovative ways of advancing credit such as formation of groups and establishment of revolving funds.

policy/regulatory issues e.g tariffs waiver on spares and other materials
Critical mass

8. Infrastructure improvements

Nearly in all areas, interior road network is in poor state and usually impassable in rainy weather. Bridges are non-existence in most parts of Magadi and Kalama, while in the few that exist in other area are poorly maintained and dangerous in heavy rains. Paths and trucks are too narrow in most cases limiting the use of IMTs and making walking difficulty in wet conditions, especially when carrying goods. Repairs are irregular and far between, and when they do happen, they are hurriedly and shoddily done. Most of the repair on murram and earth roads is carried out by communities and local institutions.

9. Environmental concerns of means of transport

Observations revealed some concerns that may need additional investigations to quantify their impact on the environment. The use of sledges in Machakos was observed to exacerbate the risk of soil erosion along tracks and roads. Wooden carts in Lari may have a negative impact in afforestation if their manufacture entails the removal of large quantities of timber from the nearby forest.

Apart from IMTs, the issue of dust raised by motorised means of transport especially during extremely dry weather also need to be studied to establish the extent of environmental degradation it causes and whether there are any serious health issues to people living on roadsides.

10. Way forward

Training to improve business and technical skills:

To boost capacity and quality of IMTs it will be necessary to conduct specialised training to improve technical skills for artisans in areas with high demand such Mwea, Busia and Lari.

Action research for defined needs eg. motorcycles for boda bodas in Mwea and Busia:

Indications are that time is ripe for introduction of motorcycles as boda bodas particularly in Busia and Mwea. Action research should be initiated in these areas by introducing viable options of this form of boda boda and study its impact in the local transport scenario.

Enhancing collaborative links (stakeholders) for information exchange and credit provision:

By linking IMT users and service sector with key stakeholders at local and policy levels, the profile of IMTs can be raised leading to increased adoption rates. Regulatory issues such as bicycles lanes and rules for use of IMTs can effectively be applied. Safe use of IMTs can greatly encourage their use.

Standardisation and quality control:

Engineering specifications and quality control for manufacture of IMTs are needed to safeguard exploitation manufacturers.

Waiver of tariffs and local taxes:

Lower tariffs and local taxes means cheaper IMTs – thus more affordable

Improvement of Infrastructure and transport avoidance measures

Current infrastructure does not endear itself to full exploitation of IMTs. In some areas, it may be more useful to encourage transport avoidance measures.