Rural transport: Options and strategies for scaling up of intermediate means of transport

Engineering team report

Compiled for

Rural Transport Services Project

By

Joseph M Mutua (Group leader)

and

Fred Ochieng

1. Introduction

The rural transport services (RTS) project has been implemented in five selected areas country wide, each with unique topographic, agro-ecological, socio-economic, infrastructure and general access characteristics, including the use of intermediate means of transport (IMTs). During the first year of project implementation, information about the status and potentials regarding rural and peri-urban transport services was gathered and analysed in order to establish the ground for the second year action research interventions.

The project has been structured around three basic complimentary themes under which information geared towards achieving the objectives of the project were gathered using appropriate research tools. Three teams were set up to tackle the themes namely: policy and institutions, socio-economics and engineering and logistics. In the first phase of the project, the engineering team was charged with ascertaining 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. The outcomes were area specific recommendations on choices of IMTs and support infrastructure, which formed the basis for interventions during the project's second (current) phase.

2. Overview of Year I

The study in Year I focused on intermediate means of transport (IMTs) as a way of providing viable solutions to transport bottlenecks in rural and peri-urban areas, and the support infrastructure required for successful transfer of transport technologies. Specific areas of focus were capacity to support IMT technology development and its maintenance and servicing, availability of IMTs, as well as cost and their contribution to the local economy. Other areas covered included transport infrastructure in improving rural accessibility, and environmental concerns emanating from utilisation of various means of transport.

Towards acquiring new knowledge and insights as a basis for policy choices on ways in which transport services provision can enhance the livelihoods of poor men and women in rural communities, the engineering team was assigned specific deliverables as outlined in the objectives.

2.1 Specific objectives

- Analysis of modal composition of local traffic, distance and payload capacities of different types of IMTs
- Assessment of types of transport technologies available and their mechanical efficiencies
- Analysis of local capacity for manufacture and maintenance of the transport technologies
- Assessment of the contribution of IMTs to the local economy
- Assessment of the costs and benefits to operators of IMTs based transport services

- Examining the structures/processes of supply of IMTs, and components used in their manufacture
- Assessment of how IMT industry could be financed
- Assessment of how stakeholders relate to one another as providers, users, competitors or regulators in the local transport industry, and
- Identification of key local regulatory issues that may obstruct or facilitate the development of a vibrant transport services sector.

2.2 Research findings

2.2.1 IMT ownership and utilisation

The table below shows the common types of IMTs used in the study areas and their percentage ownership by households. The purpose and extent of use of these IMTs varied from area to area. Bicycles were found to be very common in Mwea and Busia where a thriving *boda boda* industry exists. In Lari, bicycles were 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 were largely used to transport farm produce, water and firewood. Kalama and Magadi had very low densities of IMTs.

IMT ownership was found to be largely in the hands of men but women had fair degree of access and in some cases even control. Access varied from area to area depending on tasks and cultural/ traditional background. In Magadi for instance, even though men owned and controlled the use of donkeys, women were the users.

Table 1: Ownership of means of transport

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

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 in women's domain so long as they had access to IMTs such bicycles and wheelbarrows thus dramatically shifting the balance in load sharing between gender.

2.2.2 Local production of IMTs 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 percent 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. Although 75 percent and 37 percent of them had attained secondary and college education respectively, only 12.5 percent 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.

2.2.3 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. In the case of Lari, and Machakos, the axles 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.

2.2.4 Profitability of IMTs and their contribution to local economy

About 56 percent of artisans claimed 25 percent of their total turnover was from IMT business while another 12.5 percent claimed a turnover of 50 percent from IMTs. Only 12.5 percent of artisans claimed 75 percent of their total turnover was from the production and servicing of IMTs. The average total monthly net income from artisanry was Kshs. 10,000 and Ksh. 7,500 from transport service provision. The proportion of this income attributable to IMT business was therefore little indicating fierce competition for business, especially for Mwea, Lari and Busia; or lack of it as the case was in Magadi and Machakos.

On average, an artisan made a profit of Kshs. 2,400 from making a cart after discounting for materials and labour charges. Annual demand for carts was less than 10 in Machakos, less than 25 in Mwea, less than 10 in Magadi, less than 15 in Busia and about 30 in Lari for the artisans interviewed. 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. A typical artisan was found to employ an average of three people on full time basis. Meanwhile, the *boda boda*, rice and water transport business in Busia and Mwea created hundreds of jobs for the residents. There were many dealers in bicycles and their spares and parts in Lari, Mwea and Busia, which added to the livelihoods of the people in these areas.

The importance of accessibility cannot be over-emphasized. In addition to other benefits, IMTs were sometimes the only link between walking and motor vehicles in a rural set up with dilapidated road network. There was evidence that over 31 percent of men and women travel to market and work places using IMTs, where as 58 percent of farm produce is transported to homestead and nearby market centres using IMTs. Similarly, 47 percent

and 38 percent of building materials and water respectively are transported by use of IMTs. Clearly, IMTs fulfil important economic and social functions.

2.2.5 Roads and their network

Nearly in all areas, interior road network is in poor state and usually impassable in rainy seasons. Bridges are non-existence in most parts of Magadi and Kalama, while the few that exist in other areas 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.

2.2.6 Environmental concerns

Observations revealed some concerns that may need additional investigations to clearly 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 the form of deafforestation 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 needs 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.

2.2.7 Constraints hindering use and uptake

In spite of the obvious benefits of IMTs their use is generally limited. From observations in the five study areas, it was obvious that the level of use of IMTs is linked to the dynamics of the local economy. A strong market economy, high population densities and close proximity to urban centres can influence rapid adoption of IMTs. In areas such as Mwea, Lari and Busia where local markets are relatively well developed, the level of use of IMTs is much higher than say Machakos, where population densities and agricultural production levels are low. – demand and supply?

3. Interventions proposed based on research results

The process of choosing transport technologies for the project areas was rationalised to the extent of setting criteria for their consideration and selection. Selecting technologies entailed recognition that inappropriate choices can and do occur, and hence the importance of inclusiveness in the process of decision making. The views of the intended beneficiaries were collected through questionnaires and discussions, and in that connection three important aspects put into consideration:

- The understanding of the needs that specific technologies were intended to serve;
- Information and knowledge of the options available; and
- Techniques, skills and the resources entailed in choosing and using particular technologies.

3.1 Proposed interventions

3.1.1 Machakos

The existing conditions of Machakos would make it 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 tear and wear 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.

3.1.2 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 Mwea, Lari and Busia, the relatively flat terrain renders itself highly suitable to IMTs. The cash based economy built around vibrant local and distant markets, suggest a high demand for IMTs and motorised forms of transport. However, ownership of IMTs is still low. The major issues limiting ownership in these areas are affordability and dependability.

In spite of the cash economy, ownership of IMTs, especially carts, is still low. 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.

Generally, provision of credit or micro-financing, reduction in production costs of IMTs and improvement of the infrastructure would greatly improve appropriateness of IMTs and boost chances for higher adoption rates. However the poor state of feeder roads limits the use of both IMTs and motorised transport in the interior of most regions. As a result, human portage is still common.

3.2 Justification of proposed interventions

Before prescribing a technology to an area or people, it is critical to first determine if the uptake pathway is well defined, and that the technology meets the purpose for which it was intended. The appropriateness of any technology can be viewed in terms of five measures:

- Capital or resource absorption (affordability)
- Material absorption (raw materials availability and costs)
- Human absorption (ratio of people required to successfully transfer a technology to those available)
- Technological absorption (dependability or whether the technology meets the needs of the intended beneficiary)
- Cultural absorption (Acceptability/ flexibility)

It was necessary to first determine what IMTs need to be promoted in the project areas and the underlying reasons. As such, the measures were ranked and weighted against certain relevant community based characteristics. Table 2 was an attempt to determine the appropriateness of selected modes/means of transport common in the study areas and those thought to have a potential for introduction

In matching the characteristics of each area against the various IMTs, and considering their intended use, the various IMT options were assessed for appropriateness in placing them in specific project areas. This assessment formed the basis for making area specific recommendations concerning interventions to be implemented in so far as rural transport service provisions. Table 2 shows the measures of appropriateness and total score for each type of IMT in the five study areas.

Table 2: Measure of appropriateness of modes of transport in the five study areas

Study area	Mode of transport	Measure of appropriateness					Total score (10)
		Affordability (2)	Availability (1)	Adaptability (3)	Dependability (3)	Profitability (1)	
Kalama, Machakos	Sledges	1.5	0.8	0.5	0.5	0.3	3.6
	Wheelbarrow	1	0.8	2	0.3	0.3	4.4
	Hand carts	0.5	0.6	0.5	1.5	0.5	3.6
	Donkey carts	0.5	0.6	1	2	0.5	4.6
	Ox-carts	0.5	0.6	1	2	0.5	4.6
	Bicycles	0.8	0.8	1.5	0.3	0.3	4.0
	Bicycles with trailer	0.4	0	1	1	0.5	2.9
	Motorcycle	0.3	0	1.5	1	0.8	3.6
	Pick-up	0	0.5	1	2.5	0.8	4.8
Mwea	Sledges	1.5	0	0.5	0.5	0.3	2.8
	Wheelbarrow	1.8	0.8	2.5	0.3	0.3	5.7
	Hand carts	1	0.8	2	1.5	0.5	5.8
	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
	Bicycles with trailer	1.3	0	2.5	1.5	0.8	6.1
	Motorcycle	0.5	0.3	2.5	1.5	0.8	5.6
	Pick-up	0.2	0.5	1.5	2	1	5.2
Lari	Sledges	1.5	0	0	0.5	0.3	2.3
	Wheelbarrow	1.8	0.8	2	0.3	0.3	5.2
	Hand carts	1	0.5	1.8	1.5	0.5	5.3
	Donkey carts	1	0.8	1.5	2	0.8	6.1
	Ox-carts	1	0	1.5	2	0.8	5.3
	Bicycles	1.5	1	2	0.3	0.3	5.1
	Bicycles with trailer	1.3	0	2	1.5	0.8	5.6
	Motorcycle	0.5	0	2	1	0.8	4.2
	Pick-up	0.2	0.5	1.5	2	1	5.2
Magadi	Sledges	1.5	0	0.3	0.5	0.3	2.6
	Wheelbarrow	1.5	0.5	2	1	0.3	5.3
	Hand carts	1	0.3	1	1.5	0.5	4.3
	Donkey carts	1	0.3	1	2	0.8	5.1
	Ox-carts	1	0.3	1	2	0.8	5.1
	Bicycles	1.5	0.5	1.5	0.3	0.3	4.1
	Bicycle with trailer	1	0	2	1	0.5	4.5
	Motorcycle	0.5	0	2.5	1.5	0.8	5.3
	Pick-up	0.2	0	1.5	2	1	4.7
Busia	Sledges	1.5	0	0.5	0.5	0.3	2.8
	Wheelbarrow	1.8	0.8	2.5	0.3	0.3	5.7
	Hand carts	1	0.8	2	1.5	0.5	5.8
	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

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

In Machakos, for instance, 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 sector. The best approach would likely to be one that incorporates non-transport solutions and the stimulates a cash based economy through introduction of cash crops such as fruit trees, cotton among others, and improved agricultural production through improved farming technologies such water harvesting.

4. Meeting community transport needs

4.1 Priority ranking by communities

During Year II kick-off workshop held on August 5th – 6th 2003, each study area presented their plan of action based on problem trees developed earlier by the communities themselves. On basis of these action plans, activities were drawn and the roles of respective partners defined in plenary sessions. Each area was asked to prioritise their activities in order of importance (Table 3). The purpose of this exercise was to ensure the

most pressing problems were addressed bearing in mind recommendations from research work and expected project outputs.

Table 3: Ranking of activities for implementation by each area

Order of importance	Lari	Machakos	Busia	Mwea
1	Acquisition of IMTs	Group formation	Expansion of urban roads	Spot improvements
2	Donkey carts, motorcycles with trailer	Training on group dynamics, donkey handling, agriculture	Spot improvements	Improvement of marketing channels
3	Improve roads	Construction of donkey shades	Establishing bicycle spare shops	Improved *boda boda*
4	Marketing of farm produce	Purchase of donkeys, panniers and carts	Improve *boda boda*	Financial support
5	Preservation equipment	Water harvesting-dams, pans, tanks	Micro financing	Capacity building

4.2 Community parliaments

Community parliaments consist of members of community clubs drawn from different geographic locations in each of the five project areas. The idea of community parliament was born after several brain storming meetings with the communities aimed at discussing Year I research findings and develop area specific action plans and the best way of operationalising them. Out of these meetings, a select group of community representative was tasked with refining the action plans for further discussions at Year II kick-off Workshop. This group came to be known as community *parliament*.

Discussions during the kick-off workshop and after defined area specific interventions around which interest groups were formed (e.g. single mothers, *boda boda* or roads). Each interest group selected a representative (*minister*) who became part of a community *cabinet* and would represent the interests pertaining to his interest group in the *cabinet*.

The parliament meets at least once every month to discuss and review prescribed activities, the recommendations of which are taken on by the cabinet for further discussions and linkup with KENDAT. KENDAT plays the role of facilitation.

5. Strategies for adoption and scaling up

5.1 Stakeholder analysis and capacity building

Stakeholder analysis is a vital tool for identifying those people, groups and organisations who have significant or legitimate interest in the implementation of the project, and by

extension the development of the communities they are working with. Generally, stakeholders can be categorised in three groups:

- Those whose interests are affected by the issues or whose activities strongly affect the issues being addressed;
- Those who possess information, resources and expertise needed for implementation of projects or programmes that address the above issues; and
- Those who control relevant implementation implements or tools.

In rural transport services (RTS) project, there are a number of stakeholders that are participating directly or indirectly in the implementation of the project with their roles defined within the overall context of providing for adequate rural transport services. Institutional and organisational stakeholders and their roles are tabulated (Table 4).

Table 4: Stakeholder mapping and roles

COALITION PARTNERS	ROLES
Community parliaments	Project ownership and implementation
KENDAT	Project leadership and coordination, logistical and engineering support
ILO- Advisory Support Information and Training	Training and advising on labour based methods in infrastructure development
Intermediate Technology Development Group (ITDG)	Support and training and community empowerment, rickshaw and cycle trailer advancement
International Forum for Rural Transport and Development (IFRTD)	Policy status analysis
Ministry of Agriculture, Horticultural Department	Policy guidelines and vision for agriculture and rural transport, linkages with government
Horticultural Development Centre	
Donkey Placement Response Unit	

A framework for mapping and assessing stakeholders and designing strategies to build capacities is shown.

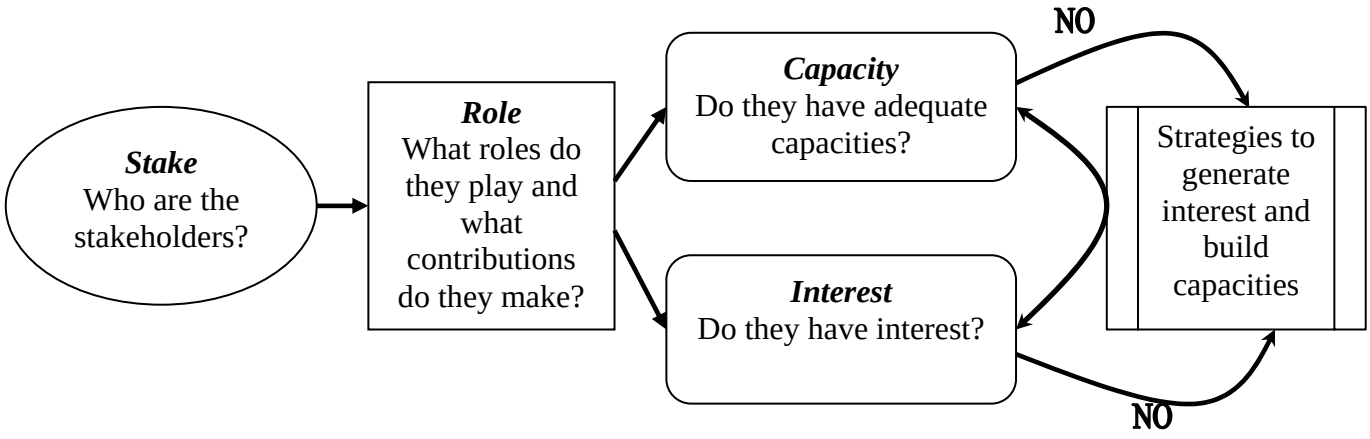


Table 5: Problem assessment and strategies

PROBLEM	MAIN ISSUES	SUGGESTIONS FOR IMPROVING SITUATION	REASONS UNDERLYING SUGGESTION
Weak co-ordination of community groups as well as actors/ partners	- Range of stakeholders remain unexploited - Poor communication between actors - Lack of linkages between actors	- Mobilising all stake holders - Strengthen the communication between stakeholders	- Broader support to the initiative is need - Awareness of the on-going activities need to be created
Lack of or inadequate entrepreneurial and organizational competencies among community groups	- Poor exploitation of available resources and opportunities - Parliaments are not yet psychologically sensitized and motivated to engage in community activities. - Key gender concerns in groups not catered for.	- Create awareness of available resources. - Train on group dynamics and strength of community voice - Poor involvement of women	- Available resources and opportunities can be better exploited. - Sustainable rural development requires well-defined structures and sound management of resources and inclusiveness.
Inappropriate or poor selection of technologies for trials/ use by the community groups within the project areas.	- Poor access to adequate information on selection criteria and standards by groups - Lack of resources for technology acquisition - Lack of testing and evaluation procedures for technologies	- Develop manuals, information leaflets - Train and administer soft loan or lease schemes - Encourage group ownership of equipment	- Technology transfer package, including M&E procedures, is made available

5.2 Access to credit

It is important that the communities share in the new technological innovations for ownership. To facilitate this, KENDAT needs to set up a micro-leasing scheme in collaboration with a micro-finance development organisation. This would imply that the communities/ community parliaments would have to come up with proposals on income generating activities, and the technologies or transport means would be leased or sold to them. The income generated by the project would be used to pay for the use or acquisition of the equipment. For Kenya, such a scheme could be administered by KREP Development Agency (KDA). KDA is a non-governmental, micro-finance development organisation, which focuses on expanding financial services to those traditionally left out by finance institutions.

The micro-leasing scheme would provide to community groups fully financed, machines such as motorbikes, tuk tuk and rickshaws, and repayment would be recovered from the income generated. This fully financed lease will enable even poor transport service providers to acquire income generating transport means without having to pay for it immediately and benefit from its utilisation. KDA would then monitor their cash flow and design an appropriate repayment schedule. KDA would also train the groups under the

umbrella of community parliaments on credit management, and advise on ways of establishing the necessary structures for leasing and management.

5.3 Marketing and market intelligence

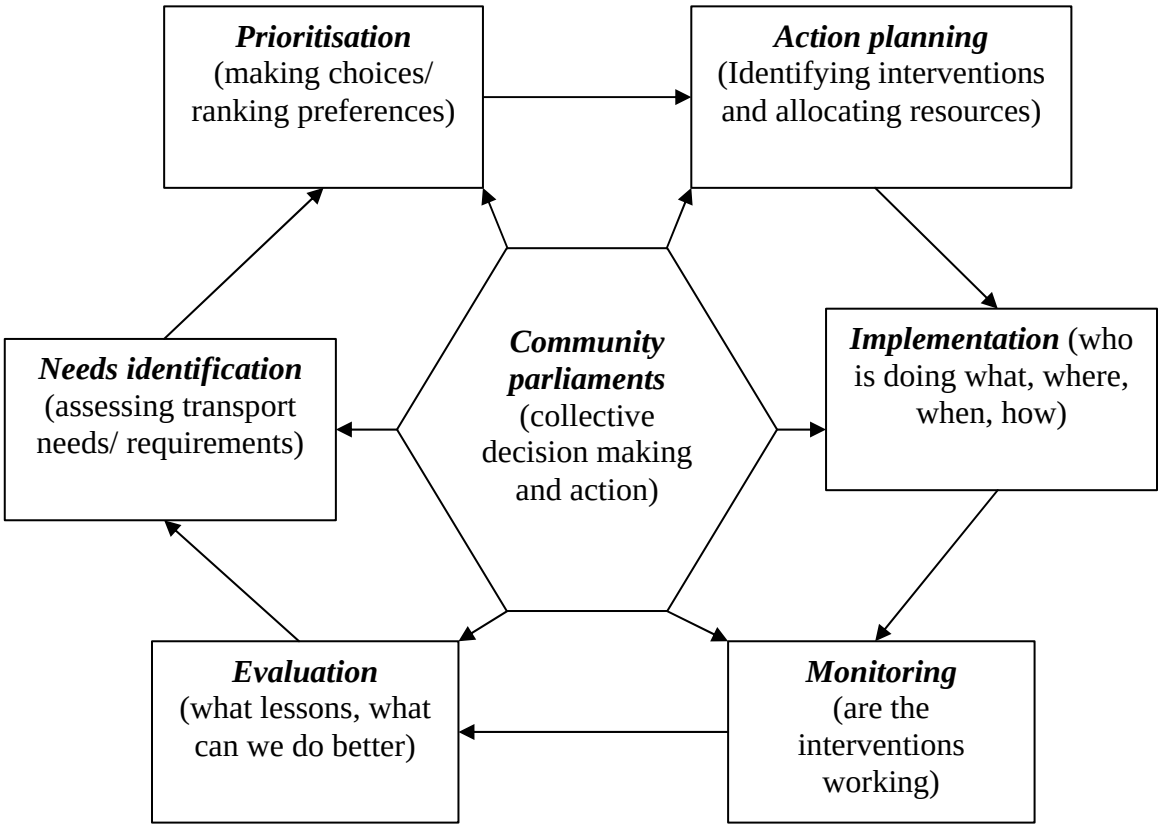
KACE

6. Participatory monitoring and evaluation

6.1 Framework for PM&E

Participatory monitoring and evaluation (PM&E) is based on the concept of inclusiveness that ensures all stakeholders participate in the process of analysing their own situation and prescribing solutions which can best address the issues of community development. The main technique in PM&E is group discussions.

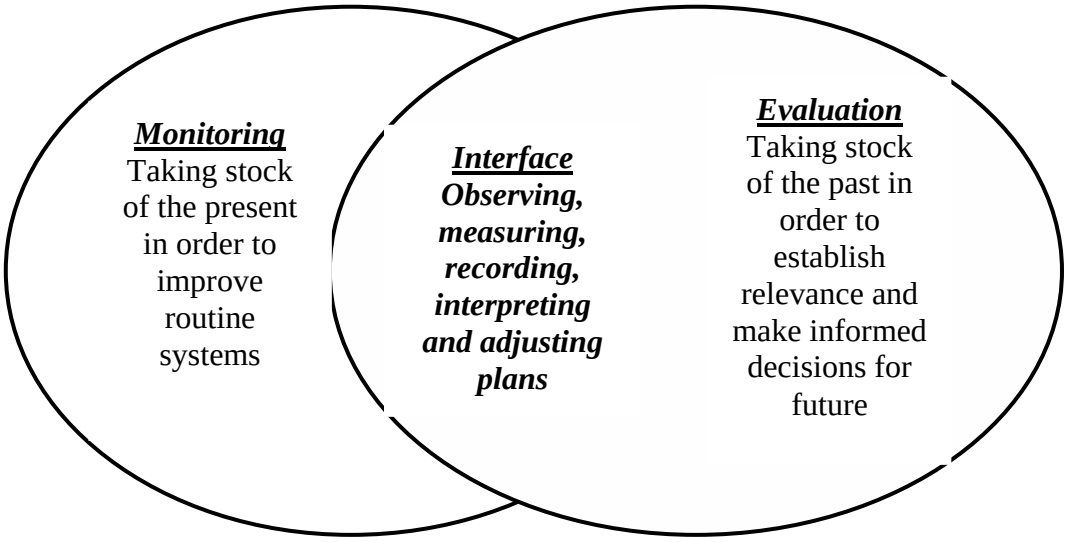
The framework for active participation in the context of rural transport services



6.2 Structures for PM&E

Monitoring and evaluation are words that have been used time and again by a number of people who are not able to distinguish between the two. Monitoring describes the process of systematic and continuous collected and analysis of information about the progress of a

piece of work over time. Evaluation on the other hand concentrates on whether the objectives of that piece of work have been achieved and what impacts have been made.



6.3 Menu of indicators for monitoring and evaluating change

In RTS project, six activities were found to be cross-cutting among the parliamentary groups in all project areas, some of which are on-going. These include:

i. Promoting effective community groups (group institutionalisation and self reliance)
ii. Capacity building for the constituent groups
iii. Placement of transport means e.g. bicycles, motorbikes
iv. Infrastructure improvements, e.g. clearing of paths, spot improvements
v. Non transport solutions e.g. provision of market access, mobile phones, etc
vi. Fostering networks and linkages

For any given activity, there are indicators that can be used as a check to gauge whether the project is meeting its overall objective. For RTS, a number of indicators were compiled for use by community groups in order for them to monitor and evaluate their activities, and help keep on tract with their set milestones. A menu of indicators is shown (Table 6). The indicators have widely been designed based on a number of criteria:

- Amount of benefit to the community;
- Degree of community participation;
- Sustainability of the project;
- Equitability in distribution of benefits;
- Technical feasibility;

Table 5: Menu of indicators for major activities

ACTIVITY	QUALITATIVE INDICATORS	QUANTITATIVE INDICATORS

Promoting effective community groups (group institutionalisation and self reliance)	Potential autonomy: meeting without donors/ sponsors, legal status, group leadership, resource mobilisation, decision-making methods, sense of ownership. Ethics: discipline, quality of discussion, assignment of tasks, presence of clear role definition, evidence of group cohesion, extent of participation in project ideas.	Membership base: number of members, records Meetings: frequency of meetings, proportion of members attending meetings. Implementation: magnitude of contribution to projects (labour, materials, finances), proportion of men to women, ability to influence local policies.
Capacity building	Scope of variety of skills, declining dependency on external support, level of self-sufficiency in technical know-how	Proportion of members utilising their skills, trainings conducted, number of para-professionals emerging, proportion of members utilising newly acquired skills
Transport means e.g. placement of bicycles, motorbikes	Evidence of increased use, diversification of income generating activities, easy access to markets, availability of affordable spare parts,	Ratio of supply versus demand, number of income generating activities, magnitude of surplus income, number of new production/ repair units, no of technological ingredients
Infrastructure improvements, e.g. clearing of paths, spot improvements	Level of utilisation and access to social amenities, quality of social services e.g. water, attention given to neglected areas	Shorter time/ distances to get to services, proportion of those using services
Non transport solutions e.g. provision of market access, mobile phones, etc	Access to markets, level of information	Number of units in use,
Fostering networks and linkages	Nature of linkages vertical and horizontal, evidence of joint plans, regularity of meetings, evidence of exchange visits	Proportion of new groups in contact with neighbours, proportion of group members actively involved in community institutions and projects