

# **Session 1.2: Notes**

## **Personal Mobility, Trip Purpose and the Transport Burden**

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3. Thuchi-Nkubu case study

### **Learning Objective**

The session covers both travel within the village and longer distance travel, this includes the transport burden taking place within the village together with longer distance travel frequency, journey purpose and modal composition. Case study material from Mekete district in Tanzania and Meru district in Kenya is presented.

# 1. Village Transport

(Source: TRL, 2001)

A broader view of user travel demand characteristics started to emerge simultaneously in the 1970s from a number of sources, including a specially commissioned study of small farm transport needs and constraints in Kenya, financed by the World Bank (World Bank, 1977).

The study in Kenya served to highlight that the rural travel demands of most small farmers are much different to what is commonly supposed. It showed that most transport needs could be characterised as the movement of small loads (10-150 kg units) over relatively short distances (1-25 km). For transport related directly with the farming activity, the range of loads was likely to be the same, but the typical distances were shorter (1-13 km). Rarely were motorised transport services available, affordable or even necessary for such demands.

The findings from this early unstructured research stimulated the ILO to commission a further series of studies in Asia and Africa. These combined with other informal studies formed the core of the book *Rural Transport in Developing Countries* (Barwell et al, 1985). The ten case studies presented covered three broad aspects:

- (i) micro-level surveys of the transport patterns of rural farming communities in Malaysia, India, Nigeria, and Kenya;
- (ii) brief investigations of seven local-level transport modes in the Philippines, the Republic of Korea, and Western Samoa; and
- (iii) broader evaluations of transport policy and planning, and their implications for the rural communities in Bangladesh, Kenya and Tanzania.

These studies did not have a common research framework or methodology. The feature which linked them was their examination of transport conditions and problems from the perspective of rural people rather than the modern transport system. The studies thus paid explicit attention to transport activities, which took place remote from the motorable road system and borrowing from the generic study in Kenya, characterised movements as on- or off-farm (World Bank 1977). They attempted to define the nature of small farmer and household transport needs and the physical and other constraints within which these had to be satisfied. The style of questioning was relatively loose and did not try to quantify the totality of household movement demands in a precise way, nor did it give prominence to questions of transport access by income group and gender. The research focus was more

on physical mobility than the factors governing people's use of resources and the reach of services.

The studies reported in *Rural Transport in Developing Countries* led to a number of robust conclusions, especially when combined with the findings of a six-country case study -India, Indonesia, the Philippines, Sierra Leone, Sri Lanka, Tunisia on rural transport services published the previous year by the World Bank (Carapetis et al, 1984). These conclusions can be summarised as follows:

- Correlation between the type and quality of infrastructure and the type and quality of transport services. Where all-weather roads exist motor vehicles frequently provide services. These are not normally available on dry season roads except at premiums of 200 to 400% above those on all-weather routes. Non-motorised vehicles sometimes fill the gap in services on dry season roads but at high unit costs.
- Limited extent of the effective road system and the poor prospects for its extension. A significant proportion - in some cases the large majority - of the population is not accessible under all-weather conditions. At the time of the surveys it was concluded that this situation could only be expected to improve very slowly, but in many of the poorer countries economic prospects have worsened since then.
- Significant numbers of people are effectively disenfranchised of any form of transport facility. Among those of the population who do have physical access to all-weather roads there is a significant proportion unable to afford those services that are provided.
- Real nature of local level travel. Household travel is dominated by subsistence tasks, which gives a local community orientation to most trips. The prime transport requirement is for the movement of frequent, small loads over short distances. Social and welfare needs are the main motivation for longer-distance travel for which road transport might be appropriate. Few households possess any form of vehicular transport and walking, cycling and movement by animal dominate.
- Existence of simple but effective means of transport. Both on and off the road system a wide variety of unconventional and simple vehicles are used, although this is more so in Asia than Africa. Important aspects of these vehicles are their relatively low cost and modest infrastructure needs.
- Negative effects of the lack of credit. Whilst small farmer credit is a generally recognised aspect of development policy, in practice simple means of transport and their complementary repair and production facilities are frequently omitted. Where loan schemes are available the

poor are precluded because of the level of collateral demanded by local credit institutions, high interest rates and down payments, or combinations of these reasons.

- Lack of perception of local level transport problems by policy makers. Many of the real transport problems faced by the rural population remain unperceived and neglected by policy makers and planners. Existing policy analysis and planning procedures have evolved to deal with the more visible parts of the economy such as exports, imports, industry, and their major investment and infrastructure requirements. The procedures and criteria by which investment programmes are determined tend to ignore the non-users of transport services and the local level movement needs of rural people. These are only likely to be addressed if the starting point of the analysis is a local-level perspective.

## **2. Out of Village Transport**

(Source: Lema, 2007)

The Makete Integrated Rural Transport Project (MIRTP) was implemented in Makete District under the Makete District Council from 1985 to 1996. The main objective of MIRTP was to reduce time and effort spent by the households in Makete District in accessing essential goods and services. This was to be achieved through implementation of multi-dimensional interventions comprising access infrastructure, appropriate transport means and non-transport interventions.

The term "Makete Approach" stands for the novel approach to rural transport (RT) and development that was implemented in Makete District through the Makete Integrated Rural Transport Project (MIRTP) from 1985 to 1996. MIRTP was the first pioneering initiative of its kind in Sub-Saharan Africa (SSA) to improve rural accessibility situation in a country through a comprehensive system approach looking beyond roads and motorised transport. The main objective of MIRTP was to reduce time and effort spent by households of Makete District in accessing essential goods and services. It provided a wealth of information on RT characteristics in Tanzania, which were later on found to be prevailing in other countries in the region.

It has thus been a cornerstone to most other rural travel and transport (RTT) initiatives in SSA, including the Village Travel and Transport Programme (VTTP) in Tanzania and the RT programmes in Malawi and Zimbabwe. Today, MIRTP can be said to have had a formative influence on transport sector policies and institutions in many SSA countries. RT policies and programmes being implemented in many countries are strongly influenced by the principles and approaches first piloted in MIRTP.

The main activity in 1986-87 was the "village level transport survey" in Makete. This was a comprehensive socio-economic survey disaggregated by women, men and children. Its aim was to define travel demand and patterns of rural households and the level of access to basic socio-economic facilities. The survey was necessary to provide the data needed to define priorities for improvement in relation to access needs, and also to identify the most cost-effective, sustainable interventions to improve the transport system. The study provided new information and insight into the nature of the movement demands of rural households, which had not previously been subjected to detailed investigation.

The key findings are summarised below:

1. Transport activities occupied about 2500 hours per household and involved moving a load of about 23 tonnes per annum;
2. 95% of all rural travel and transportation was done by footing and head-loading, and only 5% was by motorised transport;
3. 80% of all trips were done within the village, and only 20% were external trips;
4. 80% of all travel was spent on transportation of water and firewood, and to the grinding mills; while 20% accounted for other activities like travel to the markets, farms and health centres;
5. 85% of all transportation was done by women, and 15% by men and children;
6. An average household of 5 persons spent 7 hours every day on transport related activities.

The key factors determining design and choice of interventions under MIRTTP were: the appropriateness to address community travel and transport problem in the locality, affordability, community participation and contribution of local resources, and sustainability. At the field level, MIRTTP focussed on three inter-related interventions:

1. Transport infrastructure interventions: Those with a direct bearing on the transport needs of rural households. These included improvement of feeder and village roads, tracks, footpaths and bridges (including footbridges). Some of these, for example the district and regional roads were done through paid labour. Village roads were done on self-help basis with communities contributing unskilled labour and locally available materials. A spot improvement approach was applied on the existing district and feeder roads in order to optimise resources to allow access to wider population. In all cases, appropriate technical support was provided by the project, and labour-based technology was used for implementation.
2. Transport services and the means of transport: Involved promotion of appropriate Intermediate Means of Transport (IMTs), in this case wheelbarrows and donkeys. MIRTTP resources were used for technical advise and setting up supply channels. Also, improvement of financial

management of the existed district bus and village truck services and putting the district mechanical workshop into proper functioning to enable it provide efficient maintenance and repair services.

Interventions to the district mechanical workshop, bus and village truck services were the least successful of all MIRTTP components evaluated in 1992. This is despite the fact that training was done at district and community level and the district equipped with appropriate equipment (tractors, trailers, compactor, water bowser, and tippers rehabilitated). These interventions were not pursued beyond Phase III of the project.

3. Non-transport interventions: These were aimed at locating basic services and facilities in a way that reduces aggregate household travel distances. Though the village level survey revealed that trips to fetch water and firewood were the most time consuming of all household activities<sup>21</sup>, the project did not make direct interventions to reduce the burden, which is solely shouldered by women. This was a policy decision to limit the project to its focus on transport interventions. Consequently, MDC and communities undertook separate interventions at a low scale outside the MIRTTP framework, but with support from SDC.

The only non-transport intervention undertaken by the project was the improvement of motorised grinding mills operations and the introduction of hand-grinding mills.

The project helped to initiate a process of policy and institutional reforms aimed at embedding a combination of bottom-up and top-down approaches in rural access and mobility planning. The Integrated Rural Accessibility Planning (IRAP) concept and tool has its origin in MIRTTP.

### **3. Case Study of Thuchi-Nkubu, Kenya**

(Source: Airey and Cundill, 1998)

In May 1985, a new 54 km bitumenised road was opened to traffic between Thuchi river and Nkubu town on the eastern slopes of Mount Kenya. It replaced 84 km of winding earth road and completed an all-weather road link between the district capitals of Embu and Meru. As well as providing an important route for through traffic, the new road gave improved access to a fertile coffee and tea growing area. As part of the economic evaluation of the new Thuchi-Nkubu road, TRL carried out a detailed study of rural travel behaviour.

In particular, data is presented on household income levels, the incidence and purpose of household trips, travel costs and the elasticity of the demand for travel. The household travel study relied on a panel survey methodology in which 300 households in twelve village areas were randomly selected for

interview in 1983. This baseline survey collected household socio-economic data and compiled a record of household travel over a four week recall period. The two subsequent surveys in 1986 and 1989 collected similar information from 291 and 283 households respectively within the original sample.

The key findings are as follows:

1. The relative and absolute importance of agricultural incomes were influenced by widely different commodity production and sales experiences quite unrelated to the effect of the new road.
2. Earnings from non-agricultural activities have been influenced by both the drought in 1986 as well as the improvement in road accessibility.
3. The matatu<sup>1</sup> continued to provide the main means of motorised travel after road construction. Only 17 motor vehicles were owned by the households surveyed in 1983, though this increased to 32 in both 1986 and 1989, with new acquisitions coming mainly from households living away from the road. Many of these vehicles were used as a means of generating extra income and their influence on household travel was not that significant. In contrast, ownership of bicycles saw the reverse trend, with households living along the new road owning more bicycles and using them more intensively than other more distant households.
4. The amount of travel, following the opening of the new road, increased substantially in the short-term, but less so over the longer-term. The travel rate (average journeys per household per month) rose between 1983 and 1986 by 125%. By 1989 the average was 25% lower than in 1986, but still up 68% on the 1983 journey levels.
5. Changes in the cost of travel are an important reason for these variations in journey rates. Between 1983 and 1986 average journey length fell by 20% while passenger fares per km (expressed in constant price terms) also fell by 20%. However, these travel cost savings seem to have been lost by 1989 when journey rates fell. By 1989 fare levels had risen again to almost the 1983 levels. The rise in fares may have been due to wet weather during the 1989 survey, deterioration of the unsealed roads in the study area, and a reduction in competition between the public transport operators.
6. These changes did not seem to have a large effect on the nature and pattern of household travel over time. Between 1983 and 1989 the majority of trips continued to be on matatus and for one of four main purposes, namely work, shopping, social and health activities. Analysis of journey destinations also showed only small changes, with most journeys terminating at urban centres.
7. A strong positive relationship was found between household income and the frequency of work and shopping journeys. In contrast different income groups appeared to have similar levels of social travel. Initially in

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<sup>1</sup> Matatus are motorised pick-up trucks, minibuses and 4 wheel drive vehicles, carrying from 5 to 25 passengers. They are operated by licensed and unlicensed operators and offer transport to fare paying passengers and their goods.

1983 health journeys were only weakly correlated with income, however in later years a stronger relationship was found.

8. Passenger fare levels on earth and gravel roads in the dry season were found to be about 60% higher than fares on bitumen roads. During the wet season these fares rose, on average, by a further 39%. Fares on bitumen roads were largely unchanged between wet and dry seasons.
9. Analysis of household annual travel expenditure, expressed as a percentage of household income, also remained relatively constant. Male household members continued to dominate the use of this budget in the sense of travelling more often and further than females. Similarly, males still dominated most journey purposes except for journeys to health facilities and journeys to the local markets to buy and sell foodstuffs.
10. Regression analysis on each of the three data sets showed a link between journey rates on the one hand and fares and household income on the other. The results suggest that the elasticity of demand for journeys with respect to travel cost was around -0.6 and with respect to household income was an average +0.3. In other words, a 1% reduction in fares would lead to a 0.6% increase in journeys undertaken. Conversely, a 1% increase in household income would lead to a 0.3% increase in journeys made by household members.

Travel frequency was found to be strongly related to cash income. Men made more journeys and travelled further than women. Women tended to make more journeys for health and trading.

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