

# Session 3.1 Transport Operations

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## PATTERNS OF TRANSPORT OPERATIONS IN DIFFERENT LOCATIONS

In this session we describe and compare different patterns of operations in different countries. Looking at issues that affect transport costs, operational efficiency and quality of service to the customer.

## Needs of transport in rural areas

- Transport to meet subsistence needs**
  - Water
  - Food
  - Fuel
  
- Transport for economic purposes**
  - Agricultural activities
  - Trading
  - Employment
  
- Transport for development of human capital**
  - Education
  - Health Services
  
- Transport for social and other purposes**

## Dominant characteristics of rural transport

- Trips to meet subsistence needs and agricultural activities including marketing are predominantly on foot
- Bicycle and motorised vehicles are appropriate for longer distances
- However, even for longer distances some trips are made on foot due to irregular public motorised transport
- This places a heavy burden on rural households in terms of time and effort
- In Sub-Saharan Africa, a high proportion of this burden is carried out by women

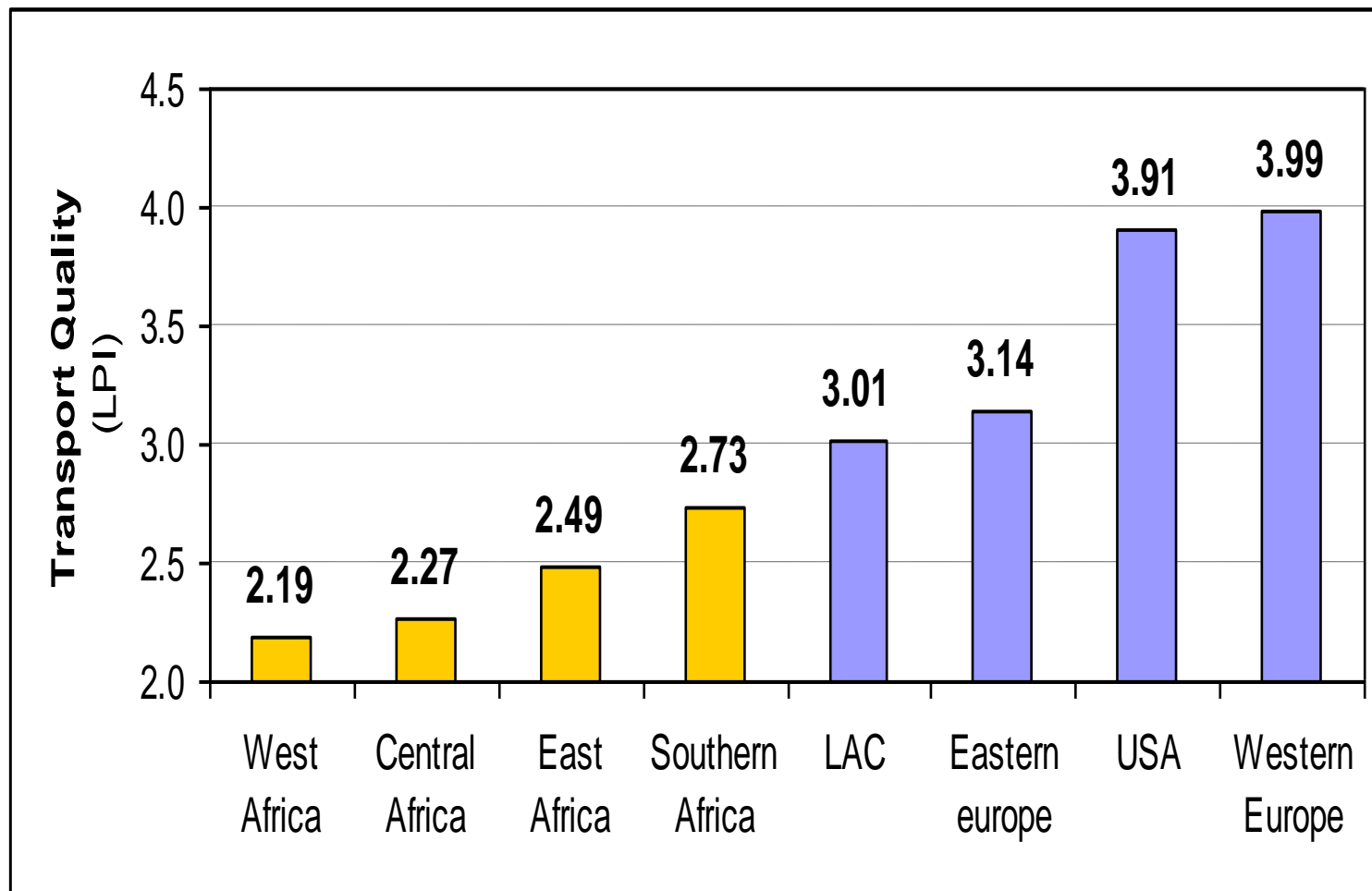
- The predominant means of transport in rural areas particularly for internal trips is walking, carrying loads on heads, backs or shoulders.
- Conventional motorised transport is available in rural areas, however constrained by low incomes and limited infrastructure.
- People living on main routes may be able to access motorised transport, however, intermittently throughout the day. This is not the case for remote locations.
- Intermediate means of transport e.g. bicycles, motorcycles, donkeys etc are used, however these factors: affordability (initial and operating costs), Topography and infrastructure influence the type of IMT to be considered.
- Transport services are important for external trips (longer distance trips)

## LOGISTICS PERFORMANCE INDEX : LPI

The LPI is a set of indicators that measure perceptions of the logistics environment of 155 countries on several logistics dimensions. The survey uses an anonymous, web-based questionnaire and assess several logistics dimensions:

- International transportation costs;
- Domestic transportation costs;
- Timeliness of shipments;
- Traceability of shipments;
- Transport and IT infrastructure;
- Customs and other border procedures; and
- Logistics competence.

## TRANSPORT QUALITY IS LOW IN AFRICA : LPI



October 2007

## A Comparison of Transport Operations in Cameroon

The Mayor of Ngoundere District in Northern Cameroon decided to address the issue of poor transport services and high tariffs. Substantial results followed.

A comparison was made by surveys between Ngoundere and two other Districts in the South Cameroon



## Characteristics of Transport in Southern Cameroon

- Transport operations are organised by syndicates
- The syndicate determines fares and routes
- The drivers wait in line and only leave when they are full
- The syndicate negotiates with the mayor for access and fees for the terminal
- The vehicles tend to be small (taxis), overloaded and in poor condition

## Modified and overloaded taxi



## Will this provide a good service?



## Transport Characteristics in Northern Cameroon

- There are a number of travel agencies operating in competition with each other
- The mayor has granted licenses for these travel agencies to operate out of individual terminals in the town
- The operations are professional and regular
- The vehicles are clean, well maintained and large 30 seaters

## Kwatal Travel Agency



## Bus serving a rural community

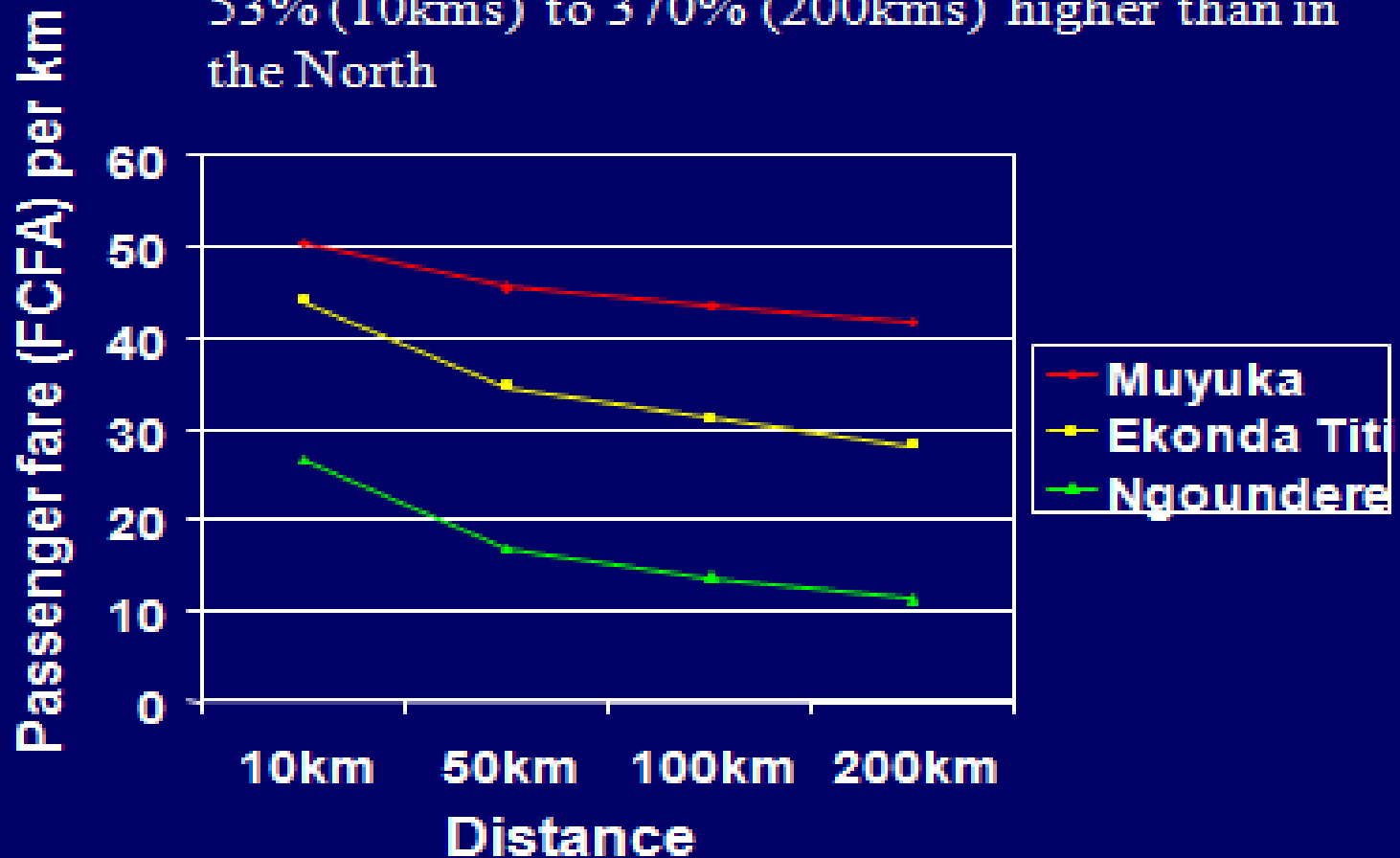


## Impact of these differences on the customer

- In the North passenger fares dropped by 50% in 2 years as competition increased
- In the North customers had a safer and more comfortable ride
- Greater service frequency to rural areas
- Customer/user becomes the focus
- The price of transport is dramatically lower in the North than the South

## Comparison of Passenger Fares in Cameroon

In the South passenger fares were between 53% (10kms) to 370% (200kms) higher than in the North



## Cameroon Study Policy Implications

- Support of a more competitive environment can have a large pay off.
- In these cases infrastructure was not an issue - if anything the quality of infrastructure was worse in the North.
- When transport is provided as it is in the North it is possible to start thinking about introducing subsidy on remote and economically unviable routes.

## Travel characteristics in Blantyre and Mzuzu – MALAWI

	Blantyre	Mzuzu
Average distance to work by foot	12km	4km
Average distance to work by public transport	15km	6km
Average distance to work by private car	18km	6km
Percentage of people traveling to places of work by foot	30%	70%
Percentage of people traveling to places of work by bus and minibus	50%	15%
Percentage of people traveling to work by taxi	1%	3%
Percentage of people traveling to work by private car and motorcycle	8%	2%
Percentage of people travelling to work by bicycle	1%	10%

**Source: Blantyre & Mzuzu City Assemblies, 2004**

- Of late there have been an influx of informal bicycle taxis especially in rural trading centres and some cities in Malawi. Mzuzu City bicycle taxis referred to “Sacramento” is well organised.
- In 2009, 37% of trips to key services in Mzuzu were made by public bicycle transport (Longwe, 2009: Unpublished dissertation)
- Bicycle taxis is growing very fast as it is seen as an alternative to walking especially for longer distances. Moreover, in comparison to motorised public transport, bicycle taxis are more attractive due to low cost (in 2009, in Mzuzu, cost of bicycle taxis was half the price of minibus for the same distance (Longwe, 2009: Unpublished dissertation).
- Negative incidences associated with bicycle taxis are robbery and harassment of passengers especially women
- But little evidence of motorcycles being used as taxis as in a regular boda-boda type operation,
- Little evidence of bicycle operators associations as in a regular minibus operation although they operate in well organised way.
- A bicycle trailer programme (ambulance), for pregnant women in Northern and Southern Malawi had positively contributed in the timely deliveries, nevertheless it is not widely used (too expensive, some cultural issues, not technically robust).

## The Malawi Rural Transport Program

- The Malawi Rural Travel and Transport Program (MRTTP) was established in 1999 to address issues in the transport sub-sector in a coherent manner. The goal of the MRTTP was to contribute to poverty reduction through the improvement of accessibility to socio-economic goods, services and facilities by rural communities
- The Malawi rural transport bus programs were not successful due to low demand and high vehicle operation costs (poor rural road infrastructure increase vehicle maintenance costs).
- Many bus operators opt for urban centers or along trunk roads (linking the cities). Minibuses are the means of transport between cities and districts.
- Informal pick ups and open trucks are the means of transport for Malawi's rural remote areas. However, the prices are not regulated and usually very high
- The current rural transport policies does not reflect the actual needs and transport pattern of the rural population in Malawi

## Organisation of Transport operations in Malawi

### ➤ ASSOCIATIONS

- Minibus Owners Association of Malawi
- Road Transport Operators Association
- Public Transport Users Association??
- Bicycle Operators Association??

## BODA BODA OPERATIONS IN EAST AFRICA

- Bicycle and motor cycle taxis are a significant mode of rural transport in East Africa.
- Exact numbers are not known however, in 2001 it was estimated that in Uganda there were about 200,000 bicycle boda boda and about 70,000 motorcycle boda boda. The total now will be much more.
- Cycle boda boda developed in the 1960's border area of Kenya and Uganda. While motorcycle taxis have been common in Asia for many years.
- Most operations will be in and around large cities however they also have an important role in rural areas.
- Because they are more expensive, and less comfortable, than bus transport they are used for specific journeys when buses are not available or where they cannot easily travel.

- In rural areas boda boda complement bus services. The boda boda station in rural towns will often be next to the bus station.
- People will transfer to or from the bus to the boda boda for the first or last leg of their journey. Cycles are used in flat terrain, generally for short distances, while motorcycles will be used in both flat and hilly terrain. Both forms of transport are hired to carry small loads.
- In Uganda (2001) short distance (1 km) trips were estimated to be US\$0.17 for bicycles and US\$ 0.28 by motorcycle. While longer distance motor cycle trips were between US\$ 0.07 and US\$ 0.16 per km. In contrast bus fares were US\$0.017 and US\$0.034 for paved and unpaved routes. So boda boda fares were found to be 2 to 7 times as expensive as buses.
- Recently in Tanzania rural motor cycles have been found to be US\$0.17 to US\$0.34 per km while bus fares are US \$0.035 and US\$ 0.047 per km. i.e 4 to 10 times as expensive.

- In Uganda most Boda Boda operators belong to an association and pay an annual entry fee. The association represents them in cases of harassment by security personnel, traces members in cases of theft, or their relatives if there is an accident, and through their 'stage committees' enforce discipline and hygiene through fines, suspension of membership and the right to operate, and other sanctions.
- The AFCAP study of Boda Boda operations in Tanzania has found that new motor cycle operations has really improved the lives of old people – because of the door to door nature of the transport.
- However there are major concerns by old people about high speeds, safety, high costs, unavailable helmets, and the discomfort of being wedged between the driver and another passenger.

# AFCAP USE OF IMTS IN SRI LANKA



## Background

- Country is densely populated : 21 m people, 65,610 sq km and 108,000 km of roads, GDP 5,620 ppp
  - third of roads are paved
  - network per inhabitant - larger than any other South Asian country and twice average of East Asia
- Problems
  - maintenance and congestion on major routes
  - Issues with availability of services in some areas
- Transport at the rural level
  - dominated by the bicycle for personal travel and marketing functions
  - ox carts, and 2 and 4 wheel tractors transport the bulk of agricultural produce

## DIFFERENT MODES OF TRANSPORT



Four villages studied:

- Marked differences in the pattern of IMTs used depended on the nature of access, available bus services, and income levels.
- Where there was a good paved road a regular bus service was provided and good use made of motorised power tillers
- Where road access was very poor people cycled or walked
- Very poor areas had little access to more expensive IMTs such as motorcycles

- In Sri Lanka:
  - all motorised modes are imported
  - non-motorised modes are constructed locally

Bicycle

Hand cart

Motorcycle

Power tiller &  
trailer

Ox carts

Tractor &  
trailer

- Most **widely used** vehicle in rural Sri Lanka
- Primarily used by **men**
  - acceptance of women riding bicycles has started
  - many of the household tasks conducted by women head-loading water and firewood
- Travel **uses**
  - to external sources of income
  - to markets to buy or sell produce
  - personal reasons
  - to health or educational facilities
  - to and from fields during the crop production season

## Hand cart

- **Hilly** areas
- Transport firewood, **agricultural produce** etc.
- **Locally manufactured**
  - wooden box mounted on 2 axles with 4 small wooden wheels
- Only be found on **paved roads**
  - inappropriate for use on rough roads because of the primitive nature of the wheels
- The carts **vary in size**
  - require 1 to 4 people to push them.

- Similar functions as the bicycle
  - next step up as a vehicle for personal mobility
- 210,000 motorcycles sold 2011
- Motorcycle uses
  - wealthier people for their own mobility
  - commercial
    - marketing, milk, dried fish, village shop supplies and other high value perishable commodities
- Ideal for use on rough rural roads
  - except wet months (3 months/year) due to muddy roads.

- First introduced into Sri Lanka in **1956**
  - 11,000 units imported up until 1975
  - currently 2,000+ imported/year
- Rapidly becoming the **most important** multi-purpose agricultural and transport vehicle
- **Ideal** for small field sizes and short distances
- **Uses** - ploughing, threshing, pumping water, and the transport of harvest, firewood, produce to market, for marketing and passenger movement
- **Multi-purpose**
  - utilised all the year round
  - good alternative income source to farming

- **Oldest** form of animal draught power in Sri Lanka.
- **Uses**
  - ploughing: wet zone areas - soil is too wet and deep to be able to support a power tiller
  - transport of firewood, paddy, agricultural produce
  - transport of very delicate perishable goods e.g. eggs, bananas
- **Used less** intensively now
  - increased used of power tillers
  - only required at times of peak activity
  - more labour intensive than alternatives
  - require scarce animal feed
- 1½ million Buffalo and 1 million bullocks are an important source of **draught power**

- Initially imported into Sri Lanka to increase **agricultural production**
- Tractors entered into **co-operative pools**
  - but due to poor management and lack of spares they were under utilised and became inoperative
- Tractors
  - a competitive alternative to lorries for road haulage
  - dominated the market, particularly for short haul movements
  - But due to small field sizes less suited to agriculture than power tillers
- Total number of tractors in operation estimated 16,000 - 38,000

## Factors Affecting Provision of Rural Transport Services

### Infrastructure

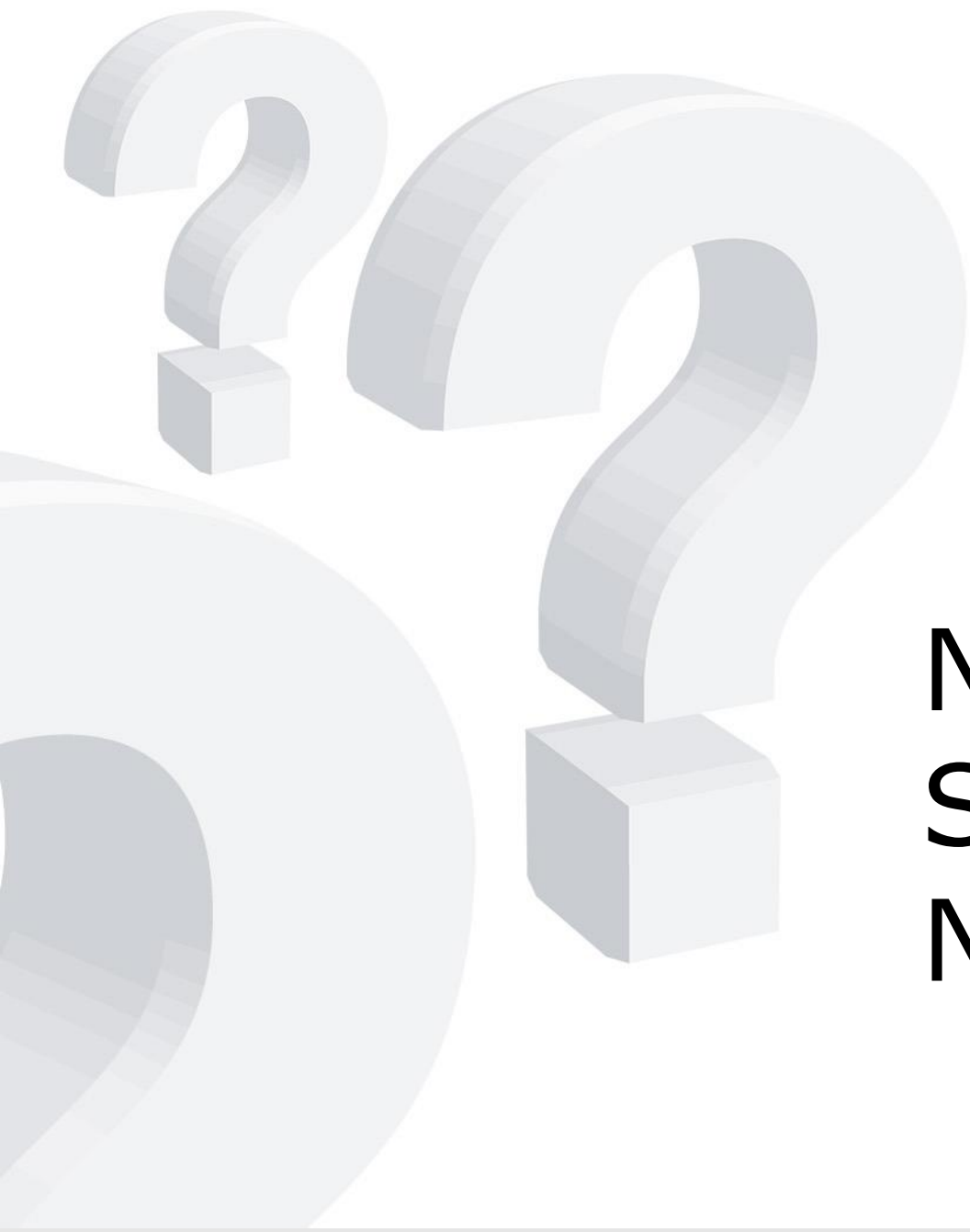
- Rural feeder road network in Sri Lanka is generally good
  - most rural communities have good access to these roads
- Resettlement programmes
  - remote face problems - lack of maintenance and poor design of roads
  - seasonal inaccessibility - bus services and traders stop

## Credit

- **Many sources** of credit available
  - but for the poorest - very expensive or unavailable
- **Commercial banks** - reasonable rates of interest
  - large percentage of the **richer farmers** use bank loans to buy agricultural machinery
  - **4.5%** of farmers have access to formal short term credit
  - small-scale farmers are unable to get loans because they require collateral
- **Informal sources**
  - traders and village money lenders
  - **rates very high** - 12% per month
  - provide an invaluable source of credit

## Vehicle Back Up Services

- **Repair facilities**
  - available in larger villages (Malagala) - motorised and non-motorised vehicles
  - other villages in their nearest service centres 10-15kms away
- **Spare parts**
  - easily available and often manufactured within the country
  - but spare part suppliers were increasing the price of spares very rapidly



Now look at  
Session 3.1  
Notes!