



Module 4: Rural Mobility

Promoting the use of IMTS: Sri Lanka

Session: 4.2

Part 2 – Case Study

Presentation: 4.2a

1. Introduction

Learning Objectives

By the end of the session participants will be able to:

- ③ Assess the current use of IMTs in Sri Lanka
- ③ Critique the factors affecting the provision IMTs in a given context
- ③ Analyse the lessons learnt from the Sri Lanka experience and how these may be applied to other countries

Session Overview

- ④ Overview of transport in Sri Lanka
- ④ Case study areas
- ④ Vehicle use and economic aspects
- ④ Factors affecting provision on rural transport services

2. Transport in Sri Lanka

◎ 94,800 kilometres of road

- third are paved
- network per inhabitant - larger than any other South Asian country
- 2x the average in East Asia

◎ Problems

- maintenance and congestion on major routes
- freight & passenger services are deregulated and competitive

◎ 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

3. Case study areas

Malagala village

- ⊙ Accessible along a **single track paved road**
 - 5 km from Parduka the main service centre
- ⊙ Bulk of production is for **subsistence**
 - excess bought by traders to sell in Parduka
 - small amounts of cash crops would make individual trips to market unprofitable
- ⊙ **Goods transport** in the village is used for
 - building materials
 - firewood
 - small amount of agricultural produce

⊙ Regular **bus** service

- provides travel for most activities outside of the immediate vicinity of the village

⊙ **Bicycles** predominate - used for

- personal transport - to get to alternative sources of income
- satisfies nearly all peoples needs - travel to markets, friends and relations, employment, grinding mills, fields and for the harvest from the rubber plantations

© Richer people use **motorcycles** for similar tasks as bicycles

© **Power tiller**

- agricultural preparation
- village level transport including the transport of fertiliser, harvest, firewood, building materials and to local markets

Madiyawa village

- ◎ Nearest service centre to is Maho
 - 10km from the village along an earth road
 - impassable during the rainy season
- ◎ **Lack of a bus service** leaves the villagers feeling very isolated
 - unable to visit anyone outside the village
 - restricted in the work they can accept because of their limited travelling range
 - **result** ... the more dynamic members of the community leave altogether
- ◎ Most common form of transport is by **bicycle or foot**

◎ **Bicycle** - predominant transport mode

◎ **Role of the bicycle**

- more **important** in this village because of the lack of a bus service

◎ **Power tiller** becoming increasingly important

◎ **Ox carts** services are falling

◎ **Motorcycles** are used by

- traders (dried fish is a popular product)
- shop keepers
- richer people for personal travel
- motorcycle owners are often asked to transport the sick to hospital

Oxen

- agricultural preparation
 - but their use for transport is nearly finished due to competition from the power tiller

Tractors

- mainly for transport
 - ... because the paddy fields are so wet that they cannot hold the weight of a tractor

The Aluwathugirigama GSN area: consists of 4 villages - Melagal Gammadda, Deniya Gammadda, Mada Gammadda, Peterkanda Colony

- ◎ **Lack** of easily cultivable land
- ◎ Physical infrastructure is **inadequate** - roads, tracks and paths
- ◎ Travel within the villages - almost entirely by **footpaths**
 - unsuitable for anything other than humans
- ◎ **Rainy season** it becomes difficult even for them
 - roads or permanent paths are washed away by heavy rains
 - ... can turn roads into rivers in a matter of minutes

⦿ As a result of the poor village level infrastructure **vehicle ownership is very low**

- goods are transported to the roadside 2 km away by **headloading**

⦿ **Traders rarely operate** in this area because of the difficulties of getting into the village

⦿ Village level **scheme**

- to build appropriate roads to the village using local contractors
- but the **suitability of the road design** for heavy rains was unclear

Venivallara

☉ Government sponsored **resettlement scheme**

- landless people have been allotted two acre plots to develop as agricultural land

☉ Supposed to be connected to a maintained **road network** and irrigation system - but is not complete

☉ **Results**

- only an earth road - difficult to pass during the rainy season
- small traders have to cease trading during rainy season
- bus service - which stops three km away during the dry season - suspends stops altogether during the rains

☉ Intensified the role of the **power tiller**

- passenger transport to nearest service centre
- large agricultural plots increased their viability

☉ **Bicycles and motorcycles**

- personal transport and trading

☉ Demand for **ox carts** is falling

- but some people prefer ox carts to transport of bananas - less damage

Use of IMTs in Sri Lanka



Case Study Activity

- A. What key issues need to be examined when promoting the use of IMTs in the villages?*
- B. What are the advantages and disadvantages of different types of IMT for each village?*
- C. Which IMTs would you recommend for the villages, and why?*

4. Vehicle use & economic aspects

🌀 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

Bicycle

☉ Most **widely used** vehicle in rural Sri Lanka

- 446,000 in use

☉ 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

③ **Hilly areas**

③ Transport firewood, **agricultural produce** etc.

③ **Locally manufactured**

- wooden box mounted on 2 axles with 4 small wooden wheels

③ Only be found on **paved roads**

- inappropriate for use on rough roads because of the primitive nature of the wheels

③ The carts **vary in size**

- require 1 to 4 people to push them.

Motorcycle

③ Similar functions as the bicycle

- next step up as a vehicle for personal mobility

③ 325,000 motorcycles in operation

③ Motorcycle uses

- wealthier people for their own mobility
- commercial
 - marketing, milk, dried fish, village shop supplies and other high value perishable commodities

③ Ideal for use on rough rural roads

- except wet months (3 months/year) due to muddy roads.

Power tiller & trailer

- ◎ 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.

Ox carts

◎ **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 power tillers
- only required at times of peak activity

◎ 1½ million Buffalo and 1 million bullocks are an important source of **draught power**

Tractor & trailer

- ③ Initially imported into Sri Lanka to increase **agricultural production**
- ③ 1952 over 400 tractors were imported from UK and Australia
 - tripled the countries fleet of tractors
- ③ Tractors entered into **co-operative pools**
 - but due to poor management and lack of spares they were under utilised and became inoperative
- ③ Tractors
 - a competitive alternative to lorries for road haulage
 - dominated the market, particularly for short haul movements
- ③ Total number of tractors in operation estimated 16,000 - 38,000

Vehicle operating costs

🌀 Ox cart

- cheapest vehicle up to about **8km** and load of **500 tonnes**

🌀 Bicycle

- cheapest at very small levels of demand - **10 tonnes**
- only at household level and for very small business

🌀 **Competition** between power tillers and draught animal power

- perform the same tasks but draught animal power is more labour intensive
- decline in the use of draught animal power

🌀 **Power tillers** have better productivity

- agriculture more intensive
- costs of animal power have risen due to reduction in area to keep animals on, & feed and labour costs have also risen
- demand for agricultural and transport services increased

③ **Power tiller** cheapest option up to 1000 tonnes at 10km or at 40km with a load of 500 tonnes

- then tractor is more cost effective

③ Tractor affected by **competition** from power tillers

- fields are too small to make tractors practical
- power tiller more suited to small, often water-logged fields

③ **Tractor**

- transport produce
- road works for the haulage of materials

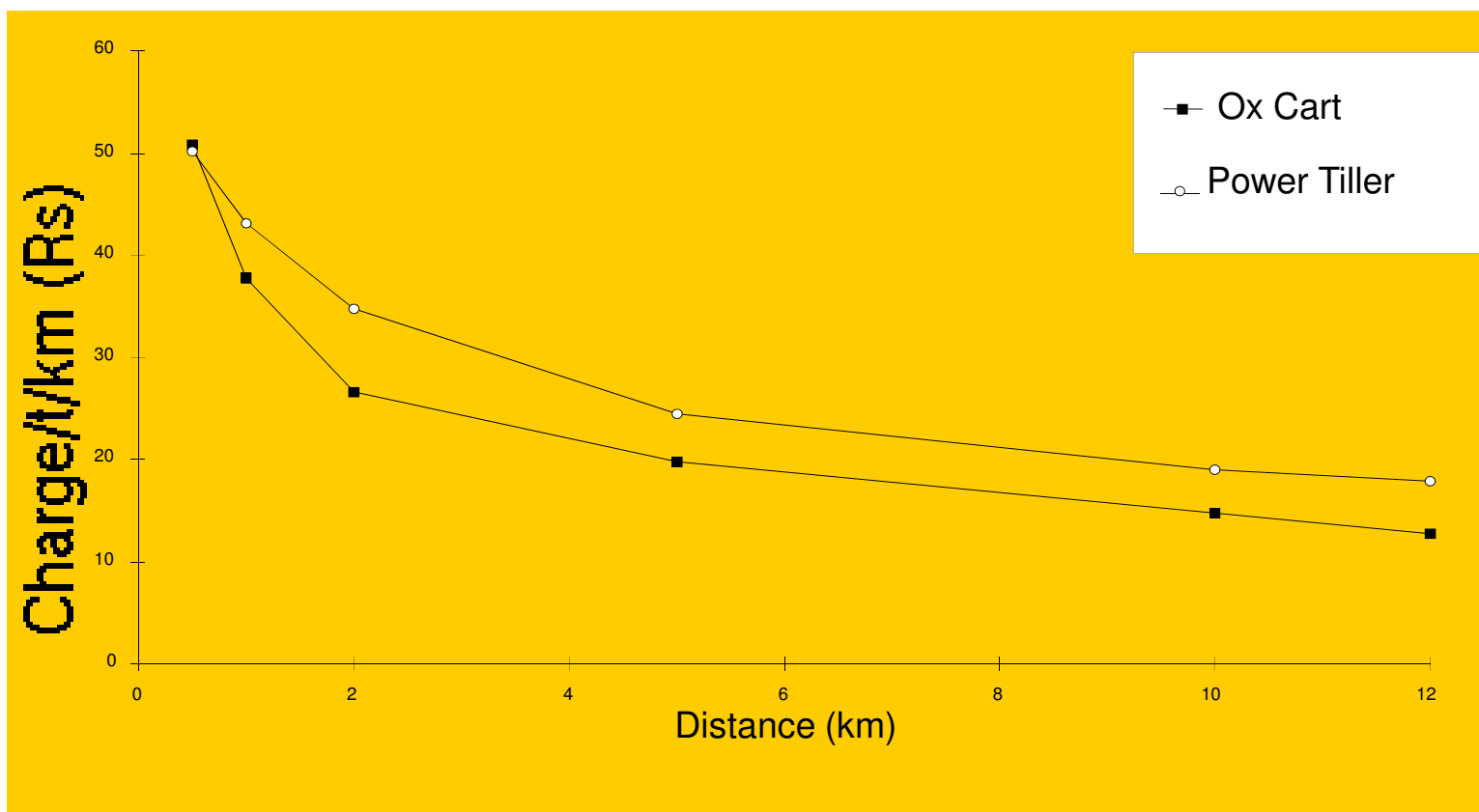
Vehicle operating costs for a density of demand of **500 tonnes & various distances**

Distance (km)	5	10	20	30	40	50
Power Tiller	21.1	13.0	9.4	8.2	7.6	7.3
Tractor	42.1	22.1	12.2	8.9	7.2	6.2
Ox Cart	16.1	15.0	14.5	14.3	14.2	14.1
Motorcycle	103.9	71.7	55.6	50.2	47.5	45.9
Bicycle	58.6	54.5	53.2	52.5	51.8	51.3

Vehicle operating costs for a trip distance of **10 km** and **various levels of demand**

Demand (tonnes)	50	100	200	500	750	1000
Power Tiller	60.8	37.9	20.5	13.0	13.0	13.0
Tractor	190.1	96.8	50.1	22.1	15.9	12.8
Ox Cart	22.0	17.2	15.0	15.0	15.0	15.0
Motorcycle	74.8	71.7	71.7	71.7	71.7	71.7
Bicycle	54.5	54.5	54.5	54.5	54.5	54.5

Transport charges in Sri Lanka



5. 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