

# Rural Transport Training Materials

## Module 4:

## Rural Mobility

# Agricultural marketing and access to transport services

## Session 4.3

## Part 1

Presentation 4.3a



# The Training Modules

Module 1. Policies and Strategies

Module 2. Planning, Design, Appraisal and Implementation

Module 3. Management and Financing

This Module

**Module 4. Rural Mobility**

Module 5. Social and Environmental Issues

# Module 4. Rural Mobility

Session 4.1 Rural Mobility: Overview of the Issues

Session 4.2 Promoting the use of intermediate means of transport  
– vehicle choice, potential barriers and criteria for success

This session

Session 4.3 Agricultural marketing and access to transport services

Session 4.4 Matching demand with supply in rural transport

# 1. Introduction

## Learning Objectives

This session enables participants to:

- ③ Describe the links between agricultural marketing systems and transport services
- ③ Explain how transport costs affect marketing and income to farmers
- ③ Analyse the role of IMTs in improving access to markets and marketing systems

# Session Overview

- ③ Agricultural marketing
- ③ Transport costs
- ③ Impact of transport costs
- ③ Markets and marketing
- ③ Potential of IMTs for marketing

## 2. Agricultural marketing

- ◎ Strongly influenced by **transport services**
- ◎ Transport and marketing systems in many developing countries
  - monopolistic
  - low volume
  - high cost
- ◎ Economies of scale
  - transport
  - marketing operations

An efficient transport system is critical for efficient agricultural marketing

## ⊙ **Expensive** transport services

- low farm gate prices
- seasonally impassable roads

## ⊙ **Slow and infrequent** transport services with **poor storage** - losses

- crops deteriorate quickly e.g. milk, fresh vegetables, tea
- rough roads - losses from bruising e.g. bananas, mangoes

## ⊙ **Agriculture is best served by: -**

- consistent high urban & international demand
- efficient, high volume, transport & marketing system
  - ... where transport & marketing unit costs are low

## ⊙ Agricultural yields will **not** be increased if produce cannot be taken to market

# 3. Transport costs

## ◎ Transport operating costs

- higher on **rough** roads
- reflected in passenger **fares** and **freight tariffs**

## ◎ Zambia

- 24 km on good quality gravel road and costs 62.5 kwacha per passenger km.
- 74 km on poor quality earth road and costs 113 kwacha per km.

## ◎ Ghana and Zimbabwe

- transport charges **2 to 2½ times more expensive** than Pakistan, Sri Lanka, Thailand
  - comparable journeys to 30 km
  - tractors, power tillers pickups, trucks



© **Tanzania** 50 km distance & increase in road roughness of 50%

- increases truck charges by 16%
- increases pickup charges by 2x
- increase in fares by 60% in wet season on poor quality roads

© **Long distance** freight transport costs & charges

- higher in Africa than Asia
- 1986 - 1988 long distance freight transport tariffs in Francophone Africa were over 5x higher than in Pakistan
- Tanzania 3x higher than in Indonesia

## © Large differences in

- **costs** between different countries for the same type of transport
  - particularly between Africa and Asia
- between rural **short haul** transport
  - pickups or small rigid trucks
- **long distance** inter-urban transport
  - heavy tractor and semi-trailer

## © Cameroon, Mali, Côte d'Ivoire

- short distance local transport (10 km) **6x higher** than long distance transport (50 km)

# 4. Impact of transport costs

- ③ Proportion of **transport charges** of final market price depends on:
  - commodity type
  - efficiency of the transport and marketing sectors
  - travel distance
- ③ **Ghana: variation** in wholesale transport costs
  - 3.5 - 5% of final market price for maize, yam and plantain with mean distances 120 km - 200 km
  - 11% for maize (420 km) and 25% for tomatoes (360 km)

## © Marketing margins and transport costs

- subtract from the final market price
  - including the high cost of head loading produce to the village or roadside

© **African** farmers received **30-50%** of final market prices compared to **70-85%** received by **Asian** farmers

- most of the difference is **transport costs**

# Agricultural supply price elasticities ...

⊙ ... used to estimate the effect of reduced transport marketing costs on agricultural productivity

- 0 - 1.5

## ⊙ **Assume**

- transport costs of moving goods to urban market are 30% of farm gate prices
- agricultural prices are set at the urban market
- reduction of transport costs by 20% & passed to the farmer
  - then **farm gate prices increase by 6%**

⊙ If agricultural supply elasticity is +1

- agricultural output would rise by 6%

◎ **Road investment** reduces transport costs

◎ **But** ... there is little impact if **no change** in transport mode

- upgrading 5 km of feeder road from earth to gravel standard only increase farm gate prices by 0.1%
- new motor vehicle access 5km closer to a village (or farm) - when the alternative was headloading by hired labour
  - increased farm gate prices by 100x as much

**Competitive transport and food marketing** is required to ensure the benefits from reduced transport costs are passed on to farmers and to final consumers

## © Where **food prices** are not government controlled

- wide variation of food prices between different regional markets in Africa
- not easily explained by transport costs

## © **Other factors**

- small volumes, poor price information, commodity perishability
- differences in storage and retailing costs
- monopolistic marketing system
- individual farmers often have little choice whom they will trade with
- indebtedness force farmers to sell at peak harvest time when prices are low
- inadequate supply of vehicles at harvest time

# 5. Markets and Marketing

- ◎ Goods and people are amalgamated
  - concentrating the demand for transport
- ◎ If populations are dispersed - markets dispersed
  - long average distances - people less likely to make the trip
  - IMTs may not be viable
- ◎ Farmers get the best price if they sell it directly to final consumers at rural or urban markets



- ◎ Farmers bringing their own produce to market
  - limits the power of the marketing **cartels**
  - but - **little support** by the authorities for this type of 'unofficial' trading
  - farmers are frequently **harassed** as they sell
  
- ◎ If farmers rely on travelling wholesalers, traders, parastatals, large private marketing companies
  - reduces their **bargaining power**
  - **reduces demand** for transport services and the supply of vehicles

# Access to marketing and storage

© Case studies in Ghana, Thailand, Zimbabwe, Sri Lanka and Pakistan

© Vehicle choice determined by:

## 1. Ease of access to storage facilities

- if the storage facility is close farmer may buy a non-motorised vehicle
- farmer will only demand a more advanced vehicle if it increases farm gate prices

## 2. Goods are amalgamated

- density of demand for vehicle services increases
- determining vehicle choice
- larger the demand - more efficient and cost effective vehicle is justified
- unitary costs of transport are reduced

## ⊙ If **distribution costs** are low

- increase farm gate prices
- give farmers the incentive to increase production

## ⊙ **Markets and storage facilities**

- closer to villages in Asia than in the African
  - farmers were more able to sell their produce at Asian markets

## ⊙ **Ghana**

- multitude of middlemen
- storage facilities
  - farmers not able to sell produce at reasonable prices

# Characteristics of market and storage accessibility in the five survey sites

	Thailand	Sri Lanka	Ghana	Zimbabwe	Pakistan
Typical Dist. to nearest markets or storage	1-25 km's	5-10 km's	> 20 km's	10-100 km's	5-20 km's
Market access to farmers	Good.	Good.	Poor - market women have all marketing contacts.	Good - but must sell to the GMB or CMB.	Good.
Farmer ability to transport own produce	Good - except in hill country.	Good - but sometimes crop too small to justify.	Farmers have very little mobility.	Within 20km's it is good, but poor beyond this distance.	Good - will travel hundreds of kilometres.
Reliance on traders	Very little - except in hill country.	The poorer/smaller farmers are reliant on them.	Almost complete reliance.	Technically illegal but less accessible villages rely on them.	Very little.

# 6. Potential of IMTs for marketing

**IMTs can significantly improve access to markets**

## **If markets are within walking distance**

- some villages transport products by walking instead of selling it to traders with trucks
- traders pay less than farmers receive at market
- footpath improvement
  - reduced travel times
  - increased transport loads
  - diminished accidents
  - stronger market integration
  - reduced rural isolation

**But ...** headloading & walking are restricted by

- weight carried
- distance to market
  - if more than half-day walk is involved



## IMTs:

- ◎ increase carrying capacity
- ◎ increase speed
- ◎ reduce transport costs
- ◎ provide economic opportunities
  - *e.g. farmers could grow more or heavier crops*
- ◎ enable farmers to sell their produce when
  - *road conditions are bad, motor vehicles rare, producer prices high*

# Share of 1987-88 harvest in Tanzania stranded

Region	Crop Type (% stranded)
Northeast Highlands	cotton (24%), coffee (38%), cardamon (13%)
Coastal Belt	food crops (13%), cash crops (35%)
Central and Western	cotton (89%), maize (13%), paddy (22%)
Southern Highlands	all crops purchased by Union (27%), paddy (80%)
Lake Victoria	cotton (50- 60%)

# If markets are too far to walk

## © IMTs

- enable farmers to reach distant markets
- 3 - 4 hours of walking (one way 10 - 15 km) = threshold for access to markets
- pack animal - 20 km in hilly areas
- a bicycle - 30 km in flat terrain
- single-axle tractor with trailer - 50 km
- make new markets accessible
- demand for new products
- inputs cheaper



# If markets are beyond the reach of IMT

## ⊙ Motor vehicles essential

- 1988 only 9 motor vehicles/ 1000 inhabitants were registered in sub Sahara Africa
- has probably not increased due to economic crisis and foreign exchange shortages
- most vehicles used in big cities

## ⊙ In rural SSA

- static or declining transport fleet
  - favours the sellers of transport services
  - ... not the buyers
- quasi-monopolistic rural transport market
  - enables operators to charge excessive fares
  - directly reduces farmers' income

# IMTs and Marketing



## Group Exercise

- A. *What is the relationship between crop production and transport costs?*
- B. *What role can IMTs play in improving the marketing of agricultural produce?*

## Transport costs for evacuation of the annual yield of 1 Hectare

Transport cost \$/ha						
	Yield kg/ha	Walking	Animal cart	Cycle trailer	Hand cart	Ox cart
Cocoa	900	7	3	2	2	1
Rice	1500	12	5	3	3	2
Maize	1900	15	6	4	3	2
Cocoyam	7000	54	22	16	12	7
Yams	8000	62	25	18	14	8
Plantain	9000	69	28	20	16	9
Oil palm	10000	77	31	23	18	10
Cassava	10000	77	31	23	18	10

*Assumption: distance field to collection point = 5 km*

# IMT's can reduce transport costs

- ③ The most important economic criterion for the modal choice is **transport costs**
- ③ Cropping patterns influenced significantly by
  - agro-ecological factors
  - transport costs
- ③ Heavy crops
  - cultivated around the farmstead and collection points
- ③ High-value crops like cocoa
  - grown further away from the road network
  - new fields are not taken under cultivation if collection points are far and transport costs high
- ③ Ox carts in Zambia
  - extend the agricultural area to 20 km around markets and depots

# Overall role of IMTs in agricultural marketing

## Walking

- dominant mode of on-farm transport
- can restrict increase in agricultural production

## IMTs

- improve the efficiency of on-farm agricultural transports by
  - reducing transport costs and time

# Effects of IMTs on agricultural production

- ◎ Cultivation of bigger areas
- ◎ Utilization of more fertile, but remote, soils
- ◎ Production of heavier crops
- ◎ Increased utilization of fertilizer and manure
- ◎ Reduced pest damage
- ◎ Reduce spoilage at crop harvest time
- ◎ Reduce transport time, partly used for income generation
- ◎ Reduced effort and drudgery of human portering
- ◎ Spill-over effects if animals used for ploughing and transport

# Concluding remarks

- ◎ If markets are within **walking distance**
  - **headloading** is important
  - ... transport efficiency can be increased by
    - improvement of footpaths
    - use of **IMTs**
  
- ◎ If markets more than  $\frac{1}{2}$  **day** non-motorised travel
  - a **multimodal transport** = cost-effective solution
    - **trucks**: long distance, fully loaded, on good roads
    - **IMTs**: short distances, small loads, on bad roads