

# Rural Transport Training Materials

## Module 2:

### Planning, Design, Appraisal and Implementation

### Labour-Based Works Methodology Experiences from ILO

#### Session 2.4

#### Part 1

Presentation 2.4a



# The Training Modules

Module 1. Policies and Strategies

This Module

Module 2. Planning, Design, Appraisal and Implementation

Module 3. Management and Financing

Module 4. Rural Mobility

Module 5. Social and Environmental Issues

# Module 2. Planning, Design, Appraisal and Implementation

Session 2.1 Participatory rural planning process

Session 2.2 Design of rural transport infrastructure

Session 2.3 Rural road economic appraisal methodology

This session

Session 2.4 Labour-based works methodology

Session 2.5 Small scale contractor development

Session 2.6 Community Participation in Rural Transport Infrastructure

Session 2.7 Participatory Survey Techniques for Rural Transport

# 1. Introduction

## Learning Objectives

**This session enables participants to:**

- ③ Define the meaning of labour-based technology
- ③ Explore the economic, employment and social benefits of labour-intensive investments in transport
- ③ Consider the issues necessary for the creation of an enabling environment for labour-based road works

# Session Overview

- ③ Definitions of labour-based technology
- ③ Economic, employment and social benefits of labour-intensive investments in transport
- ③ An enabling environment

## 2. Definitions of labour-based technology

Labour-based technology is:

- ① The use and management of locally available human and material resources
  - for the construction and maintenance of infrastructure
- ② Flexible and optimal use of labour as the predominant resource
  - while ensuring cost effectiveness and quality
  - using the *appropriate mix* of labour & equipment
    - ... e.g. for long distance hauling, compaction, or high quality surfacing works that are difficult for labourers.

# Optimum vs. maximum use of labour

## Optimal

© Efficient

© To maintain sustainability of labour-based approaches

- ensure programmes do not degenerate into 'make-work' approaches where cost-effectiveness and quality aspects are ignored

## Maximisation

© Possibly inefficient use of labour

© Occur in projects where income generation and job creation are the principal objectives

- e.g. disaster relief or food for work, which are temporary and where quality and productivity are generally low

# The case for labour-based methods



## Group Activity

*What are the benefits (micro and macro) of labour-based methods as part of the strategy to improve rural transport infrastructure?*



# The role of labour-based methods as part of the strategy to improve rural transport infrastructure:

some of the benefits .....

Inject cash into the local economy

Generate rural employment in a cost-effective manner

Reduce damage to the environment

Produce gravel roads of equal quality to those produced using equipment-based methods

Save on foreign exchange

Facilitate access to markets and social services

Contribute to the alleviation of poverty

Transfer knowledge about road works to the local community - useful for maintenance

Increase incomes

### 3. Economic, employment and social benefits of labour-intensive investments in transport

- A. Policy issues and poverty
- B. Strategic importance of the infrastructure and construction sector
- C. Macro-economic potential of the labour-based approach
- D. Sectoral and multi-sectoral infrastructure investments
- E. Road Sector
- F. 'AGETIPE' approaches
- G. Contractual procedures for employment and social objectives

# A. Policy issues and poverty

- © The main purpose of programmes ILO has been associated with in Africa & Asia:
  - to *influence investment policies* so as to maximise their impact on employment generation and to alleviate poverty

# Two approaches have been used to accelerate economic development and reduce poverty:

## 1. Absolute priority to economic growth

- benefits expected to trickle down to the entire population
  - ... but too optimistic - not been confirmed by the facts

## 2. A social component added to the economic policy

- 'social safety nets'
- special programmes to alleviate poverty e.g. 'special' public works or employment creation schemes
  - ... but often viewed by governments as short-term, temporary job creation and income distribution measures, largely disconnected from mainstream economic policy
- For the ILO, these are not sufficient

# In ILO's view ...

- ③ Employment programmes need to be linked more *explicitly* to economic growth
- ③ For longer-term employment generation, poverty alleviation and more equitable income distribution:
  - *cost-effective investments for the poor, not compensation!*
    - ... placed in the perspective of longer-term economic growth
    - ... leading to the development of the local productive capacity
- ③ **Investment policies should:**
  - have employment creation and social objectives
  - measures to ensure cost effectiveness, quality results and local capacity building in public and private sectors

## B. Strategic importance of the infrastructure and construction sector: ILO's view

- 1) The **lack/ degradation** of productive, social and access infrastructure retards economic development
- 2) Role of **infrastructure** in the economy of developing countries – it accounts for:
  - **3% – 8%** gross domestic product
  - 50% + of domestic Gross Fixed Capital Formation
  - up to **70%** public investment expenditure
  - **40%** of loans from financial development agencies
  - donors generally finance **50%** of infrastructure investments & **80% – 90%** in the Sahelian countries or Madagascar

## B. Strategic importance of the infrastructure and construction sector: ILO's view

- 3) The variations in **labour requirements** for available technological options are particularly important in this sector

# For example in the road sector ....

<b>Unpaved roads Construction</b>	<b>Equipment- based option</b>	<b>Labour-based option</b>
	<b>(% of total cost)</b>	
cost of equipment	80 - 82 %	30- 40 %
cost of labour	10 - 12 %	50- 60 %



# Pilot and large-scale programmes: Ghana, Lesotho, Madagascar, Rwanda, Zimbabwe, Cambodia, Laos, Thailand

## The labour-based option:

- is 10% - 30% less costly than the more equipment-intensive option
- it reduces foreign exchange requirements by 50% - 60%
- creates, for the same amount of investment, 2 to 4 times more employment
  - especially for unskilled and semi-skilled labour

## Ghana Contracting Development Programme:

- 320% more employment
- 10% less costly in financial terms
- reduced foreign currency needs by 50%
- comparable in terms of quality standards

## But there are limitations ...

Labour-based methods are not a panacea! –  
cannot be applied to major infrastructure  
projects such as paved highways

or

where technical standards require sophisticated  
heavy equipment

# Key questions ...

- ③ Is an employment-intensive growth strategy really feasible?
- ③ Can employment-intensive works schemes be cost-effective and competitive in terms of quality and rate of production?
- ③ What would be the potential impact on the economy, particularly with regard to employment creation and poverty alleviation?

# C. Macro-economic potential of the labour-based approach

Based on working hypotheses – potential impact:

- © **Ghana:** if 20% of public investment and 10% of private investment in infrastructure would be executed with labour-based methods =
  - investment budget of \$US100 million per year
  - create 50,000 direct and 75,000 indirect jobs
    - **more** than those created by conventional construction methods
    - compare to the country's employment creation objective of 50,000 jobs per year, for the **whole economy**

## Another hypothetical example ...

🌀 **Senegal:** assume the labour-intensity in the infrastructure and construction sector only increased from currently 15% to 25% of total costs:

- would increase the annual wage bill by 6.5 billion FCFA (13 million US\$)
- equivalent to 11,000 direct & 15,000 indirect jobs
  - compare to the government's job creation objective: 20,000 per year for the whole economy

# More examples ....

- ◎ **Madagascar:** indirect jobs could amount to 2 times the directly created jobs
- ◎ **Rwanda:** labour-based investments in rural roads increase national returns by a factor of 2.8
  - the same investment implemented with equipment-intensive methods has a multiplier effect of only 1.2
    - mainly because of the transfer of a large proportion of expenditure abroad

## Important points ...

High employment creation does not result from additional investments ...

but from different choices of technology made in the framework of **existing investment** budgets.

The introduction of labour-based methods into current mainstream investment policy creates employment and reduces poverty in a **structural** and **sustainable** manner.

# D. Sectoral & multi-sectoral infrastructure investments

## Sectoral investments

### ⊙ *Government controlled and supply-driven*

- initiated & managed by the specific **sectoral line** ministries
- have a **national or regional dimension** - reflected in the size of the budgets from public expenditure or financial assistance from donors
- **training** small contractors, clients, local consultants
- creation of an **enabling environment** for private-sector execution and decentralised contract management
- recently a shift from government execution of sectoral programs to **private-sector execution**



# Local-level multi-sectoral investments

## © *Demand-driven*

- **multi-sectoral** area-based programmes involve local communities and local government
- e.g. small irrigation schemes, land development, minor dams, water-supply schemes, afforestation, environmental protection works, schools and health centres
- promote **participation**
- reflect needs at the **village or community level**
- local populations expect financial or technical **support at the nearest level of public administration**

# Example

## South Africa

- © Community-based Public Works Programme re-oriented the community project designs
  - from *single projects* to a *cluster approach*
    - infrastructure investments are grouped and directly productive
    - improved access, marketing, social cohesion, human capital, environmental infrastructure
      - i.e. a community vegetable garden and poultry project linked to improved market facilities with improved access and parking together with a community hall, school building, and erosion control works
    - community benefits = opportunity to earn additional income, improve livelihoods, employment

# E. Road Sector

Current focus of the Employment investment Programme (EIP) of the ILO:

1. Development of domestic small-scale contractors able to execute labour-based works
2. Establishment of administrative and financial procedures enabling contractors to compete for and execute public works contracts

## Recent initiatives:

- appropriate systems and procedures for labour-based road contract award and management
- guidelines and training for the establishment of domestic public and private sector capacities
- good quality tools and equipment and the promotion of the local manufacture of such implements
- discussion between the line ministries on fair labour standards and conditions of work

## Example from Lesotho: comparison of labour-based and equipment-based methods

<b>Lesotho</b>	Labour-based	Equipment-based	difference
Financial cost/km US\$ *	50,950	80,990	37% cheaper
Labour component	44% (22,418)	6% (4,859)	78% more
Reduction factor for labour component costs	2.6/5	2.6/5	
Economic costs/km*	40,190	78,660	49% cheaper

\*1995 costs

# Experiences from Laos

- ◎ 40% to 50% of the direct costs of road improvements paid in wages to **unskilled** workers
- ◎ Each improvement of 2-3 km. of road = **cash** injection into the village of US\$ 10,000 - 15,000
- ◎ **Employment** generated = 1,740 workdays per km
- ◎ Yearly **income** to the village of US\$ 100 – 150/year for routine maintenance activities
- ◎ **Women** represented 20% to 40% of the workforce
- ◎ **Light tools** and equipment were manufactured at local workshops - adding to the income remaining in the locality
- ◎ **Direct cost** per km of road = US\$ 9,500 - 10,000 in the first construction season
- ◎ In the second season - costs reduced by 20% to 30% partly due to increased workforce **productivity**

# Road sector: equipment ownership and utilisation

## Sub-Saharan Africa

- ◎ Main pieces of equipment used on labour-based sites are tractors, trailers, water bowsers, and pedestrian or towed rollers
- ◎ Agricultural tractors are an obvious choice as the basic unit for the equipment
  - a locally distributed make and model: spare parts and servicing should be more reliable than for large specialised equipment
  - the mixture of construction work and agricultural work should provide the contractor with a sufficiently high utilisation rate for the tractor

## Exceptions to this general rule!

- ◎ 7 ton trucks are more effective if gravel haulage distances exceed 10 kms

## South East Asia

- © Scrap trucks are **recycled** by local enterprise to produce a slow moving but reliable means of transport for as little as US\$ 4,000 – 6,000
- © The engines are **replaced** by commonly available engines, and chassis and bodywork adapted to suit the future use of the truck
- © Result = a very **cheap** truck with a 3 to 7 ton payload capacity, which has successfully been used by labour-based projects

# *Utilisation* is a key factor for all equipment ...

- ◎ Cost of **owning** equipment vs the **hire** rates
- ◎ Factors that have a significant effect on real equipment costs =
  - ownership costs
  - foreign currency component
  - exchange rate fluctuations
  - inflation
  - cost and availability of finance
  - economic life of the piece of equipment
  - utilisation rate
  - market considerations

It is not usually economical for contractors to own plant unless they can ensure *at least 75 - 80% utilisation* based on the contractor's normal working hours.



# Road sector: flexibility of the labour-based approach

## © Funding is limited

- need for innovation of techniques & methods of road improvements

Build roads to a  
high standard and  
reduce  
maintenance

VS

Build roads to a  
lower standard with a  
lower level of service and  
only basic maintenance

# Much debate on the use of spot improvements

... rather than full rehabilitation from start to finish

## Spot improvements:

- local, labour-based contractors are ideally placed:
  - low costs to establish on-site compared with bringing heavy equipment to rural areas

◎ The Roads 2000 programme in **Kenya** uses spot improvements to bring roads up to a maintainable condition, then put them under routine maintenance

## ◎ Several questions:

- What level of service is expected on these roads?
- Will the only partial improvement of the road affect the image of labour-based works when compared with fully rehabilitated roads?
- What are the longer-term effects on maintenance?

# F. 'AGETIPE' approaches

- ◎ The World Bank - establishing multi-sectoral public works and employment projects executed by non-government Agencies

For example: 'Agence d'Exécution des Travaux d'intérêt Public pour l'Emploi (AGETIPE)' in **Senegal**

- ◎ Main objective = create employment through infrastructure works
  - sub-contracted to the private sector

## Issue of concern

- ◎ Need to promote training, capacity building and sustainable employment
  - sub-regional support programmes to provide technical assistance, training and advisory services, are being established

# G. Contractual procedures for employment and social objectives

- ③ The operational system being set up by ILO's Employment-intensive Programme (executed by private sector) is based on:
  - capacity building in the private and public sectors
  - a 'strategic' use of the tendering and contract system

# The tendering system

1. Targeted towards social objectives e.g. employment creation, local participation and sub-contracting/training of small local entrepreneurs
2. Contract system and documentation adjusted by introducing labour-based technology in contract specifications
3. Specific clauses on conditions of work in the contract documents
  - minimum wage
  - minimum age
  - non-discrimination (affirmative action in favour of women)
  - workers' compensation for work accidents
  - safety and health
  - conditions of work for casual labour

4. A training programme in labour-based techniques for small & medium enterprises
  - successful ones are pre-selected and allowed to tender.
5. Training given to client agency staff and consulting engineers to enable them to fulfil their (new) functions
  - setting up of a transparent and efficient tendering system
  - preparation, supervision and payment of contracts
  - implementation of contractual procedures

# Contractual procedures for social aims



## Group Activity

*What are the advantages to various actors of a contractual system that is targeted towards social objectives?*

# Advantages:

## Contractual procedures for employment and social objectives

### Employers

- ⊙ Access to public markets
- ⊙ Effective payment system
- ⊙ Transparent bidding process (elimination of favouritism and corruption)
- ⊙ Cost of social improvements covered in the bid

### Workers

- ⊙ Jobs (3-5 times more from labour-based than on equipment-based approaches, with same level of investment)
- ⊙ Working conditions improved
- ⊙ Minimum requirement for female labour (usually 30%)



# Governments and donors

- ◎ More value for their money
- ◎ Improved balance of payments (World Bank, governments)
- ◎ Employment and poverty objectives
- ◎ Increased incomes and standards of living
- ◎ Strengthened construction sector
- ◎ Domestic market development, inter-sectoral linkages
- ◎ Local governance

# Labour Ministry and social partners (employers and workers' organisations)

- © Concrete basis to collaborate with influential technical line ministries
- © Policy tool to introduce social policy objectives into economic (investment) policy
- © Social dialogue

# 4. An enabling environment

- ③ **Decentralised** organisational framework to
  - ensure local participation (local communities/ contractors/ NGOs) in funding, planning and implementation of routine and periodic maintenance
  
- ③ **Institutional** and **capacity** building
  - international & local consultants and contractors need to know how to design and implement different technology options
  - government agencies need to be able to monitor and control different technological approaches

# Enabling environment continued ....

- ③ Analysis of the **best practices** and lessons
- ③ **Policy** advice and decisions on
  - technology choice
  - enabling labour-based road contractors to effectively compete within an open market economy
- ③ Expand the knowledge of **alternative** technological approaches
  - collaboration with universities and learning institutions

# Enabling environment continued ....

## © The challenge for governments:

- facilitate **real market-driven growth** and competition for the contracting industry
- **autonomous contractors** - a viable option to government-driven 'contracting'?
- **contractor associations** as serious partners in development
  - take on responsibilities in developing structured training and mentorship programmes and be fully professional self-funding operators

‘We know that employment is the first step towards escaping from poverty.’

- Juan Somavia, Director General of the ILO