Module 1:

Policies and Strategies

Rural transport safety strategy

Session 1.4

Part 1

Presentation 1.4a

The World Bank
TRL
DFID Department for International Development
SSATP
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The Training Modules

This Module

Module1. Policies and Strategies

Module 2. Planning, Design, Appraisal and Implementation

Module 3. Management and Financing

Module 4. Rural Mobility

Module 5. Social and Environmental Issues

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Module 1. Policies and Strategies

Introduction Session: Overview of Modules & Rural Transport Issues

Session 1.1 Village Level Transport

Session 1.2 Socio-economic Impact of Rural Transport Interventions

Session 1.3 Rural Transport Policy Development Process

This session

Session 1.4 Rural Transport Safety Strategy

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1. Introduction

Learning Objectives

This session enables participants to:

- Discuss the issues of road safety in developing countries
- Demonstrate a thorough understanding of the issues related to an effective safety improvement strategy
- Make recommendations for improvements in rural road safety

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Session Structure

- Road safety statistics
- Addressing road safety issues

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2. Road Safety Statistics

Some statistics on road crashes

- Less Motorised Countries - LMC (Africa, Asia, Central & Eastern Europe, Latin America, Middle East
  - account for 86% of global fatalities
- Global road deaths
  - in 1999 = 750,000 - 880,000
- 60% deaths occur on busy inter-urban roads
- Estimated 50% of road injuries are reported
  - injuries: Fatalities = 100:1 HMC (Europe, USA)
  - injuries: Fatalities = 20-30:1 LMC

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The cost of crashing ….

Humanitarian

Economic

US$ 518 billion world wide annually

US$ **65 billion** in developing/ transitional countries

US$ **453 billion** in highly motorised countries

1 – 3% GNP

0.3% Vietnam – 5% Malawi & Kwa Zulu South Africa

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A detailed appraisal of national crash costs is needed ...

- Best use of investment
- Appropriate safety improvements

Approaches used to cost crashes:

Human Capital

used mainly in

Developing countries

Willingness to Pay

used mainly in

Developed countries

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Indicators

- **Number of injury crashes**/ million vehicle kilometres/ annum
  - used mainly by HMC (Highly Motorised Countries)
- **Fatality Rate** = reported fatalities per 10,000 motor vehicles
  - used by LMC (Less Motorised Countries)
  - also used by TRL
- **Fatality Risk** = the number of reported fatalities per 100,000 population
  - health sector to prioritise diseases & other causes of death

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Current distribution of global deaths and licensed vehicles

	Global percentage of		
Region	**Road fatalities**	**Vehicles**	**Population**
Highly motorised countries (HMC)	14	60	15
Asia/Pacific	44	16	54
Central/Eastern Europe	12	6	7
Latin America/Caribbean	13	14	8
Africa	11	4	11
Middle East/North Africa	6	2	4
Total	100	100	100

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Analysis: a comparison of regions

- Fatality Rates
  - 1 – 5 in HMC
  - 100+ in Ethiopia, Tanzania, Lesotho
- Fatality Risk
  - highest in Malaysia, Korea, Latvia, Saudi Arabia, Columbia
- In last 10 years number deaths fell by 10% in Europe & USA
- 1987-95 the number of deaths rose in
  - Asia by 39%
  - Africa by 26% (excl. South Africa)
  - Latin America/Caribbean by 100%

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Which road users are being killed?

- Pedestrians
  - HMC = 15-20%
  - Hong Kong = 70%
  - Korea = 50%
  - China, Malaysia, Thailand = 10-15%
  - Africa = significant
  - Middle East = 30%
- Motorcyclists
  - Singapore, Taiwan, Malaysia = 50%

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Which road users are being killed?

- ‘Vulnerable Road Users’
  - pedestrians, non-motorised transports, motorcycles
  - Hong Kong, Singapore, Taiwan, Malaysia = 80-89%
- Women
  - more involved in non-fatal than fatal crashes

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Road Safety

Group Activity

In what ways may road safety issues be addressed?

Group 1: Organisational requirements

Group 2: The role of engineering

Group 3: The role of education

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3. Addressing Road Safety Issues

Organisational requirements

The role of engineering & planning

Road safety education

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Organisational Requirements

- Strengthen institutions responsible for road safety
  - increase their capability for multi-sectoral action
- Multi-disciplinary planning & implementation of road safety improvements

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Organisational Requirements

- Setting of targets
  - well-established management strategy
  - effective when applied to crash reductions in HMC
- Disaggregate national target
  - specific, realistic targets for implementing bodies
  - adequate funding directly related to those targets
- Annual road safety plan
  - current crash reduction targets
    - …. and how they are to be achieved

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Road safety organisations should operate on a full-time basis and be capable of:

- Diagnosing the road crash problem
- Drawing up an integrated plan of action
  - including the setting up of goals and objectives
- Co-ordinating the work of all organisations involved
- Procuring funds and resources
- Producing design guides

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Road safety organisations should operate on a full-time basis and be capable of:

- Designing and implementing improvements
- Monitoring implementation and evaluating measures
- Feeding back information from the evaluations and amending the action plan as necessary

35% of African countries reported active national road safety organisations.

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Road Crash Databases

- Diagnosis of the road crash problem is vital
- Source of data = police road crash reports
- Early 1970's only 15% of LMC had adequate crash report forms & none had computer analysis facilities
- Microcomputer Accident Analysis Package (MAAP)
  - developed by TRL
  - to improve crash investigation & research capability
  - used in over 50 countries
- MAAP =
  - a police report booklet/ form with a recommended structure
  - software programmes for data entry & analysis
- Individual highway authorities analyse their own data
  - identify hazardous locations, the nature of the problems
  - choose appropriate countermeasures
  - assess their effectiveness

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The role of engineering & planning

- Human error
  - is the chief cause of most road crashes

Credit: TRL Limited

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The role of engineering & planning

- Improvements in engineering & planning can
  - affect road-user behaviour
  - reduce the frequency of errors
  - improve road safety
- Crash prevention
  - good standards of design & planning of new road schemes and related development
- Crash reduction
  - remedial measures in the existing rural road network

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Crash Prevention

- Little research into relationships between highway design standards and crash rates
- Adoption of standards by many LMC from HMC without evaluating the consequences
- Different traffic mix & road usage
  - especially in the rural context, in LMC compared to HMC

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Crash Prevention

This called for a radically different approach to the geometric design of highways, especially for low-volume roads.

The most significant factors in road crashes =

- junctions per kilometre
- horizontal and vertical curvature

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Crash Reduction

- Low-cost improvement schemes at hazardous locations
  - are recommended where resources are limited
  - e.g. for UK schemes First Year Rates of Return 65 to 950%
- Slow adoption of engineering approaches to road safety by LMC is a problem
  - roads often built or upgraded with little consideration given to road safety
  - black spots are still being created

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Crash Reduction

- TRL's road safety guide for planners and engineers:

  'Towards Safer Roads in Developing Countries'

  - designed to be a first point of reference on road safety issues, drawing on best practices around the world

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Vehicle Safety

Problems

- Safety design of vehicles
  - is inadequate
    - particularly when vehicles are locally manufactured or assembled
- Vehicle condition
  - more of a problem when it is difficult to obtain spare parts
- Overloading
  - of goods and passenger vehicles contributes to high crash severity and casualty rates

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Papua New Guinea

- passengers transported in open pick-ups
- 45% road crash casualties come from pick-ups
- especially in rural areas where there is a high demand for transport services
- but low supply of vehicles proliferates the overloading of passenger vehicles
- …. which substantially increases the crash risk on feeder roads

Increasing vehicle safety

- Legislative controls
  - on the overloading of passenger-carrying vehicles
  - safety belts, helmets for motor cycles
- Design improvements of passenger vehicles

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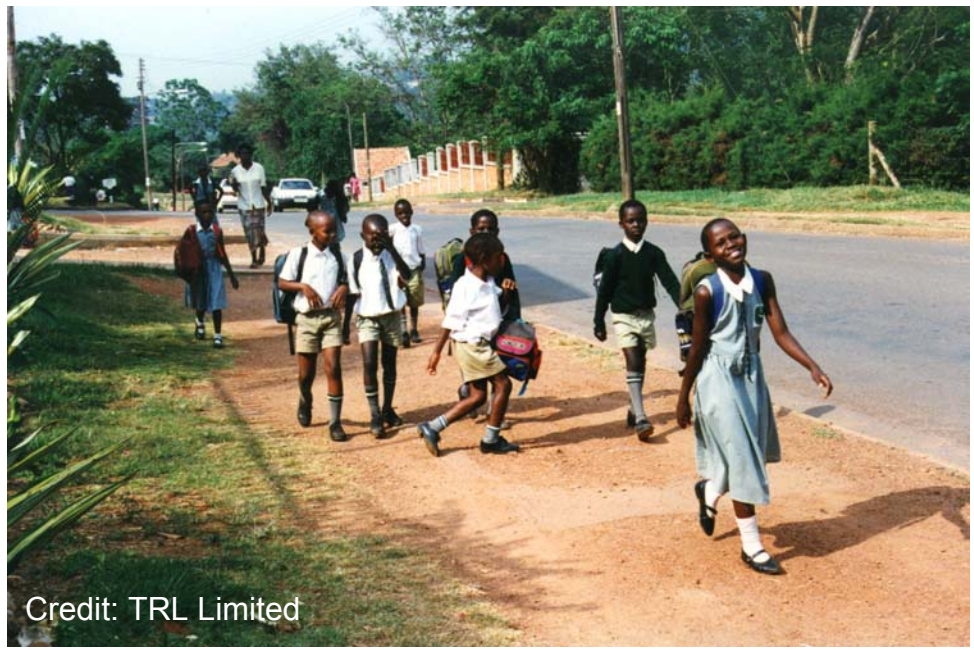
Road Safety Education

- Child pedestrian crash problem is more serious in LMC than in HMC
- Problem exacerbated in areas of low school attendance



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Road Safety Education

- Education, through community programmes, is needed in addition to the school system
- Road safety education programmes should be graded and developmental
- Teachers need guidelines on what & how to teach
- Some countries have produced syllabus documents and teacher guides
- But! the transferability of developed country solutions to developing countries is less certain
  - more research is needed

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Driver Training and Testing

The problems

- Poor driver behaviour & knowledge
  - due partly to inadequacies in driver training and testing
- Professional driver instruction tends to be limited
  - driving instructors are not properly tested or monitored
  - there are no driving or instruction manuals
- Driving test standards & requirements inadequate

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Addressing driver behaviour & knowledge

- Produce driver guides
  - a driving guide for truck drivers was produced by TRL & United Nations Economic Commission for Africa (ECA)
  - truck drivers have a greater involvement in crashes in LMC than in HMC - inadequate training plays some part in this
- Raise driving standards
  - by improving driver training and testing

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Addressing driver behaviour & knowledge

- Improve the licensing, training, testing and monitoring of instructors
  - to ensure that these standards are taught
- Driving tests should demand a high standard of driving
  - especially for the practical 'on the road' assessment
- Encourage learners to purchase more lessons from professional instructors through more difficult tests

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Enforcement

- In HMC - a conspicuous police presence led to improvements in driver behaviour
- But in LMC - police less well-trained, equipped or mobile

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Enforcement

Pakistan

- The introduction of highway patrols on inter-city roads led to a 6% reduction in crashes
- Improvements in traffic policing have considerable potential for
  - improving driver behaviour & reducing crashes
    - provided the police are able to enforce movement violations
- Advertise changes in police operations to ensure maximum effect on road-user behaviour
- Appropriate publicity campaign
  - including drink driving
  - awareness of pedestrians, children, cyclists etc.

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Concluding remarks

- Road crashes in LMC are a serious problem
  - in terms of fatality rates
  - higher than those in industrialised countries
- An important cause of death and injury
- A waste of scarce financial (& other) resources
  - typically cost at least 1% of a country's Gross National Product per annum

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Concluding Remarks

- Crash information systems MAAP
- Institutional focus for road safety
- Vehicle standards
- Behaviour: awareness & training

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