



## **Module 5: Social and Environmental Issues**

# **Environmental impact assessment and management**

**Session: 5.4**

**Part 1**

**Presentation: 5.4a**

# The Training Modules

Module 1. Policies and Strategies

Module 2. Planning, Design, Appraisal and Implementation

Module 3. Management and Financing

Module 4. Rural Mobility

This Module

Module 5. Social and Environmental Issues

# Module 5: Social and Environmental Issues

Session 5.1 Social benefits of rural transport

Session 5.2 Women and rural transport in Africa and Asia

Session 5.3 Transport and sustainable rural livelihoods

This session

Session 5.4 Environmental impact assessment and management

Session 5.5 Concepts of rural transport surveys

Session 5.6 Role play on rural transport

# 1. Introduction

## Learning Objectives

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

- ③ Explain how environmental impact assessments (EIAs) are carried out
- ③ Describe on the environmental impacts associated with rural transport
- ③ Analyse how EIAs are applied to the planning and management of RTI

# Session Overview

- © Background
- © Mainstreaming EIAs
- © The EIA process
- © Environmental appraisal checklists
- © Environmental impact of rural transport development
- © Conclusions

## 2. Background

### © What is an Environmental impact assessment (EIA)?

- systematic examination of likely **environmental consequences** of proposed projects
- integral part of **consent process** of projects

### © What is the goal of an EIA?

- to achieve better development interventions through protecting the environment (human, physical, biotic)

# 3. Mainstreaming EIAs

- ③ Industrial nations use EIAs for all major projects
- ③ Multilateral and bilateral donors require EIAs for projects they support
- ③ Local concerns, Earth Summits and donor pressure have led developing countries to...
  - establish Environmental Protection Agencies
  - increasingly use EIAs

## 4. The EIA process

### Fundamental tasks during EIA project cycle

- ③ Identify and collate appropriate information
- ③ Forecast environmental changes resulting from proposed project compare to situation without proposal
- ③ Change must be assessed and communicated to the decision makers



# EIA activities

1. Screening and scoping

2. Impact identification

3. Impact prediction

4. Mitigation and enhancement

# EIA activities cont...

5. Reporting

6. Environmental management plan (EMP)

7. Environmental audit / evaluation

## 1. Screening and scoping

# Screening

- ③ Review of project proposal to decide what sort of appraisal is needed
- ③ Screening can lead to...
  - **Environmental appraisal** ('low-level' investigation focusing on individual issues)
  - **EIA** ('high-level', multidisciplinary, comprehensive and detailed investigation)
  - **Environmental audit** (Similar to EIA, but for existing projects)

## ③ Screening → Environmental Screening Summary Note (**ESSN**)

- brief project description
- environmental issues apparent at screening
- significance of environmental impacts, risks and/or benefits and likely mitigation measures required
- environmental investigation proposed (e.g. Environmental Appraisal, EIA, or Environmental Audit)
- other issues
- actions to be taken (and by whom)

# Scoping

🌀 Begins early in project cycle

- to influence project design
- to provide platform for dialogue between environmental constraints and opportunities



Credit: TRL Limited

## 🎯 Scoping objectives...

- enhance proposal's environmental benefits
- ensure compliance with relevant legislation, multilateral agreements & international best practice
- consider alternatives to proposal
- identify any significant adverse environmental effects and identify actions
- provide for public consultation and input
- define data assembly needs and field survey activities
- determine predictive techniques and environmental objectives to be employed
- provide timetable

## 2. Impact identification

### 🎯 Asks

- What are environmental and community resources near project?
- What is future state of these resources with and without proposed project?

### 🎯 Looks at

- construction phase
- operation phase
- decommissioning phase

### 🎯 Requires public participation

# 3. Impact prediction

- ③ Examines project design to
  - minimise adverse impacts
  - maximise beneficial impacts
- ③ Forecasts
  - magnitude
  - affected feature/ resource/ population
  - action causing the effect
  - timescale and duration of the effect
  - level of uncertainty in the forecast
  - proposed mitigation/enhancement measures
  - significance



## ③ Records effects in terms of

- short term
- long term
- direct
- indirect
- synergistic
- cumulative
- increase or reduce with time

## 4. Mitigation and enhancement

- © Environmental mitigation less costly when fundamental to project design (*not* as an add-on)
  - e.g. type of bridging strategy
  - e.g. time of year for earth moving

## 5. Reporting

- ◎ Report findings to decision makers and public in an understandable manner
- ◎ Environmental Impact Statement (EIS)
  - environmental objectives and policy context
  - existing environmental situation
  - description of project
  - assessment of effects of project
  - environmental action plan or management plan
  - summary of effects and recommendations

## 6. Environmental management plan (EMP)

- ③ Sets out actions for monitoring and evaluation during implementation or construction and operation
- ③ EMP includes
  - mitigation measures to minimise adverse impacts
  - measures to enhance environmental benefits
  - identified risks and uncertainties
  - institutional support required for effective monitoring
  - monitoring and auditing programme details
  - applicable environmental legislation and standards
  - resources, funds, contractual and management arrangements

# 7. Environmental Audit/Evaluation

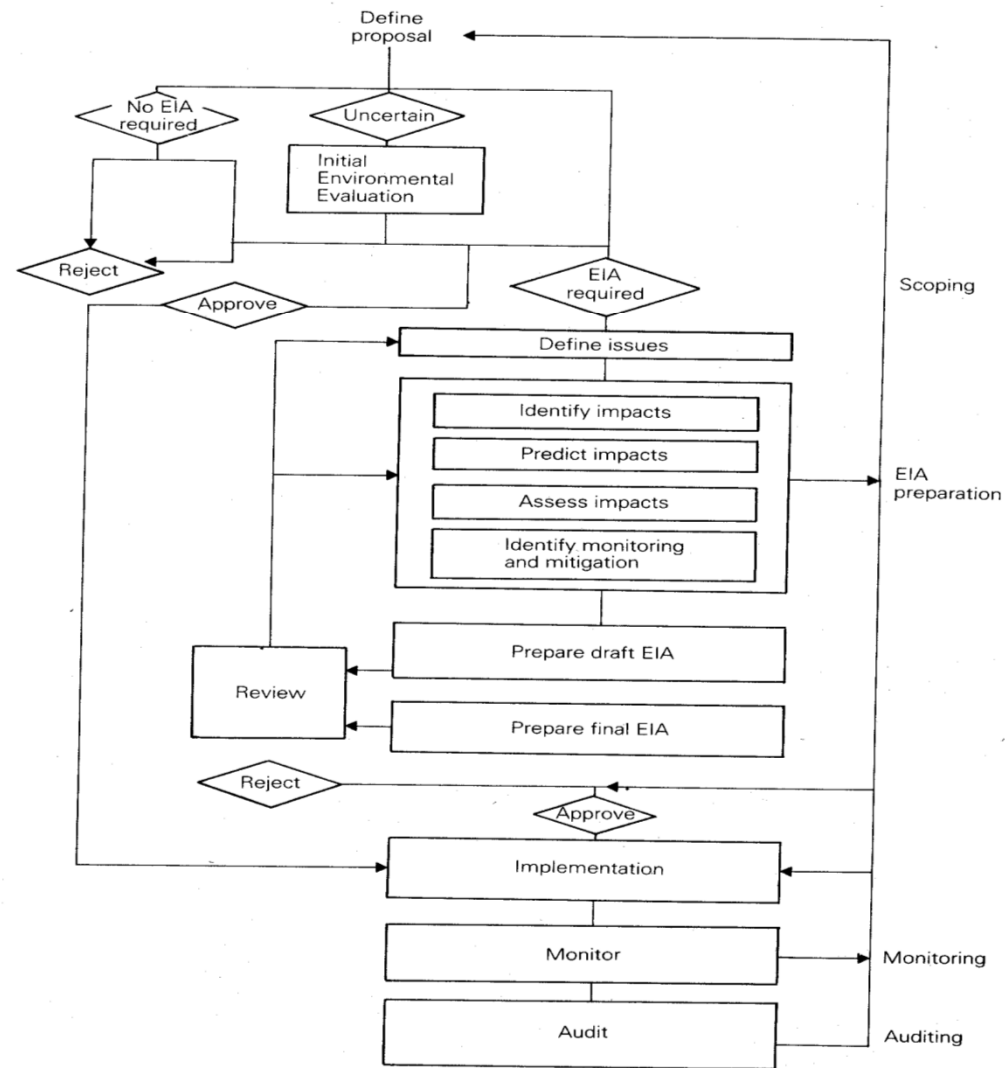
## Asks:

- Is completed project operating at appropriate environmental standard?
- How does project comply with/ deviate from accepted norm?
- Can practice be improved?

# Overall... EIA project cycle activities (DfID 1997)

<i>Stage of Project Cycle</i>	<i>Environmental Appraisal Activity</i>	<i>Output</i>
<i>Project Development</i>		
<i>Identification</i>	<i>Preliminary review of base documentation</i>	
<i>Preparation (Project Concept Note)</i>	<i>Screening</i>	<i>Environmental Screening Summary Note (ESSN)</i>
<i>Design and appraisal</i>	<i>Environmental appraisal/ EIA/</i>	<i>Design Mitigation Measures</i>
<i>Approval</i>	<i>Environmental Annex of project Memorandum</i>	<i>Environmental Monitoring Plan (EMP)</i>
<i>Project Implementation</i>		
<i>Initiation/monitoring</i>	<i>Activate EMP</i>	<i>Monitoring Reports</i>
<i>Operation/monitoring</i>	<i>Environmental monitoring</i>	<i>Review Reports</i>
<i>Evaluation</i>	<i>Environmental Evaluation/Audit</i>	<i>Evaluation Reports</i>

# Main components of EIAs (DfID 1997)



## 5. Environmental appraisal checklists

### Screening Checklist (from DfID 1997)

#### 🌀 Environmental Features

- areas containing rare or endangered species
- national parks, nature reserves, etc.
- habitats providing important resources for vulnerable groups
- moist or dry tropical and sub-tropical forest

#### 🌀 Development Features

- important policy changes likely to affect environment
- major changes in land tenure or use
- substantial changes in water use
- large infrastructure projects



# Screening checklist cont...

## **Potential adverse and beneficial effects**

- livelihoods
- culture
- land management
- water quality and quantity
- local air quality
- global impacts
- conservation

# Screening checklist cont...

## **Impact characterisation**

- impact beneficial, benign or harmful?
- scale and intensity of impact?
- effects irreversible?
- effects due to construction and/or operations?
- effects likely to be politically or socially controversial?
- different effects on different members of society?
- timescales of impact?

# Checklist for policy approvers and decision makers (from DfID 1997)

## **Project setting**

- underlying causes of environmental damage considered?
- underlying causes better addressed by other means?

## **Impact identification**

- any effect on environmentally sensitive or important areas?
- environmental and social risks evaluated?
- indirect effects been addressed?

## **Mitigation measures**

- mitigation measures are proposed?
- measures to be taken to enhance environmental benefits?
- consultation with concerned stakeholders?

# Checklist for policy approvers and decision makers cont...

## Procedures

- appropriate guidelines followed?
- beneficial and adverse environmental effects integrated into economic analysis?
- appropriate authorities consulted?

## Implementation

- do local institutions need strengthening in order to effect the environmental measures?
- who will monitor the environmental impact?
- have environmental measures been costed, and funds allocated?

## Environmental impacts of rural roads



### Group Discussion

- A. *What are the direct environmental impacts associated with rural road projects?*
- B. *What are the indirect environmental impacts associated with rural road projects?*

## 6. Environmental impact of rural transport development

### © Direct impacts

- encroachment into precious ecological resources
- encroachment into historical/cultural areas
- impairment of fisheries, aquatic ecology and other beneficial water uses, due to changes in surface hydrology
- erosion and silt runoff from exposed areas
- dust nuisances

## ⦿ Erosion

⦿ ... Usually the most significant environmental impact of rural roads

## ⦿ Mitigated through

- appropriate drainage channels and culverts
- quickly establishing vegetation on exposed slopes
- use of labour rather than machines in construction and maintenance

## ☉ Positive environmental effects

- e.g. all-weather road in Mongolia reduced 'off-road' vehicle travel and hence environmental damage

## ☉ Indirect environmental impacts

- difficult to predict
- often long term
- e.g. environmental effects of opening up tropical forests in Brazil and Africa to farmers, ranchers, and logging companies



# Conclusion

- © EIA now integral part of project cycle
- © Evaluations an on-going, not a one-off process
- © EIA resources required for project life-span, not just for initial phase