**United Nations Environment Programme**

**UNEP**

**Division of Technology, Industry and Economics**

**Economics and Trade Branch**

---

# Environmental Impact Assessment

# Training Resource Manual

---

# Overhead transparency masters

*For enquiries, inputs and feedback on the use of this document please contact:*
The Economics & Trade Branch
Division of Technology, Industry and Economics
United Nations Environment Programme
11-13 chemin des Anémones
CH - 1219 Châtelaine
Geneva
Phone: +41 (22) 917 8298
Fax: +41 (22) 917 8076
email: etb@unep.ch
For manual updates and information on the Internet access the Australian EIA Network at :
http://www.environment.gov.au/net/eianet.html
Designed and typeset by Anne Charlton and Mary McCabe

Printed on 100% recycled paper

ISBN 92-807-2231-X

## Using the OHP masters

***OHP***

This booklet contains masters of overhead transparencies (OHPs) which are an integral part of the training modules in Section E of the UNEP EIA Training Resource Manual. They also provide good resource materials for later study and should be copied and distributed as part of the *Participant Handbooks*. Within the Manual the icon shown in the margin indicates that an overhead projection transparency is available and can be shown at this time to illustrate a point, or to sum up ideas introduced in the session.

You should plan to take three to five minutes to present each overhead – going any faster may outpace the participants' attention span. If time is limited choose those overheads which best summarise your presentation and where time taken to identify the main points will best reinforce learning.

Where an overhead projector is not available, the trainer can write up the materials on a blackboard, and distribute photocopied sets of the OHP masters to course participants. A summary of the overheads for each topic appears at the end of each session outline. This is to enable trainers to check the content of each overhead during the session preparation and to monitor the content during presentation.

It is strongly recommended that trainers adapt the overheads to reflect local concerns and conditions. For this purpose, an electronic copy of these masters can be downloaded from the Australian EIA Network at: http://www.environment.gov.au/net/eianet.html

PowerPoint presentations for each topic are available on disk and CD from the Manual distributors. Where additions and alterations are made to the overheads these can then be printed from *Note, Slide Sorter* or *Outline* views in PowerPoint. A free version of Microsoft PowerPoint viewer, which allows you to view and print the presentations but not to edit them, can be downloaded from:
http://office.microsoft.com/downloads/

# Topic 1

## Introduction and overview of EIA

# Aims and objectives of EIA

**EIA can:**

- **modify and improve design**
- **ensure efficient resource use**
- **enhance social aspects**
- **identify key impacts and measures for mitigating them**
- **inform decision-making and condition-setting**
- **avoid serious and irreversible damage to the environment**
- **protect human health and safety**

# Environmental impacts

- type and nature
- magnitude
- extent
- timing
- duration
- uncertainty
- reversibility
- significance

# Integration within EIA

**EIA process addresses the following environmental effects:**

- **biophysical and resource use**
- **social and cultural**
- **health and safety**
- **economic and fiscal**
- **landscape and visual**
- **indigenous peoples rights and traditional areas**

# US National Environmental Policy Act

**(proclaimed in 1970)**

**NEPA called for:**

- **consideration of environmental values in decision making**
- **use of a systematic, interdisciplinary approach**
- **a detailed statement on:**

**- the environmental impact of proposals**

**- any adverse effects which cannot be avoided**

**-alternatives to the proposed action**

- **making the statement available to the public**

**This process became known as Environmental Impact Assessment**

# Evolution of EIA

- **early 1970s – initial development**
- **1970s to 1980s – increasing scope**
- **mid to late 1980s – process strengthening and policy integration**
- **mid 1990s – towards sustainability (SEA, Biodiversity)**

# EIA– Three core values

- **integrity - the EIA process will conform to agreed standards**
- **utility - the EIA process will provide balanced, credible information for decision-making**
- **sustainability - the EIA process will result in environmental safeguards**

*Source: Sadler, 1996*

# EIA – guiding principles

**The EIA process should be:**

- **purposive – meeting its aims and objectives**
- **focused – concentrating on the effects that matter**
- **adaptive – responding to issues and realities**
- **participative – fully involving the public**
- **transparent – clear and easily understood**

*Source: Sadler, 1996; IAIA/IEMA 1999*

# EIA – guiding principles
## (continued)

- **rigorous – employing 'best practicable' methodology**
- **practical – establishing mitigation measures that work**
- **credible – carried out with objectivity and professionalism**
- **efficient – imposing least cost burden on proponents**

*Source: Sadler, 1996; IAIA/IEMA 1999*

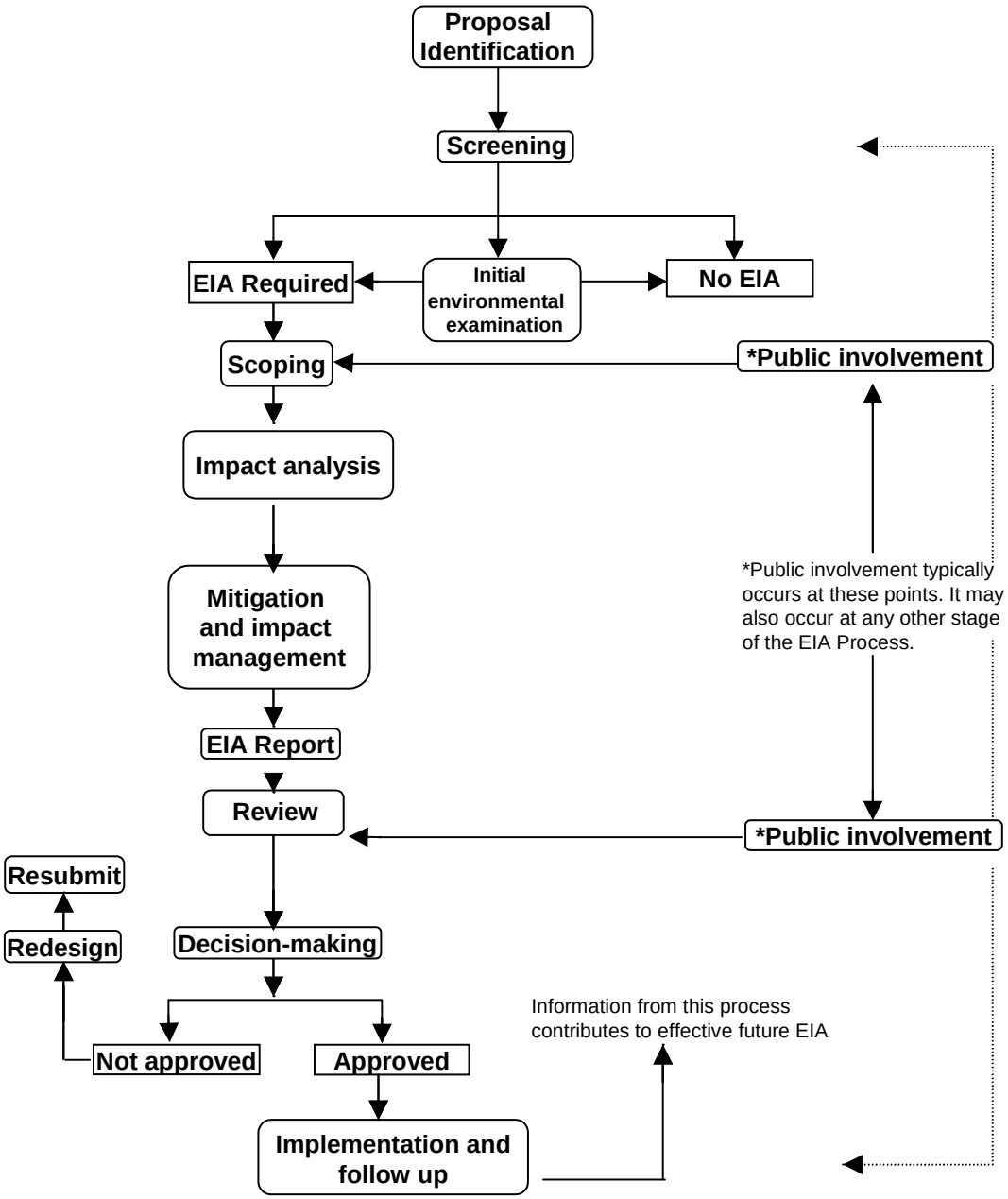
# Key operating principles of good EIA practice

**EIA should:**

- **be applied to all proposals with significant impacts**
- **begin early in the project cycle**
- **address relevant environmental, social and health impacts**
- **identify and take account of public views**
- **result in a statement of impacts and mitigation measures**
- **facilitate informed decision making and condition setting**

*Source: Sadler. 1996*

# Generalised EIA Process Flowchart



# The EIA process

**The EIA process comprises:**

- **screening - to decide if and at what level EIA should be applied**
- **scoping - to identify the important issues and prepare terms of reference**
- **impact analysis - to predict the effects of a proposal and evaluate their significance**
- **mitigation - to establish measures to prevent, reduce or compensate for impacts**

# The EIA process
**(continued)**

- **reporting - to prepare the information necessary for decision-making**
- **review - to check the quality of the EIA report**
- **decision-making - to approve or reject) the proposal and set conditions**
- **follow up - to monitor, manage and audit impacts of project implementation**
- **public involvement - to inform and consult with stakeholders**

# Benefits of EIA include:

- environmentally sound and sustainable design
- better compliance with standards
- savings in capital and operating costs
- reduced time and costs for approvals
- increased project acceptance
- better protection of the environment and human health

# Delays are caused during EIA when:

- the EIA is commenced too late in the project cycle
- the terms of reference are poorly drafted
- the EIA is not managed to a schedule
- the EIA report is inadequate and needs to be upgraded
- there is a lack of technical data

# Ensuring fairness in the EIA process

- register consultants' names and terms of reference
- name consultants and their expertise in the EIA report
- publish the terms of reference in the EIA report
- make EIA reports available to the public
- publish lists of screening and final decisions along with conditions for approval

# Topic 2

# Law, policy and institutional arrangements for EIA systems

# The EIA process

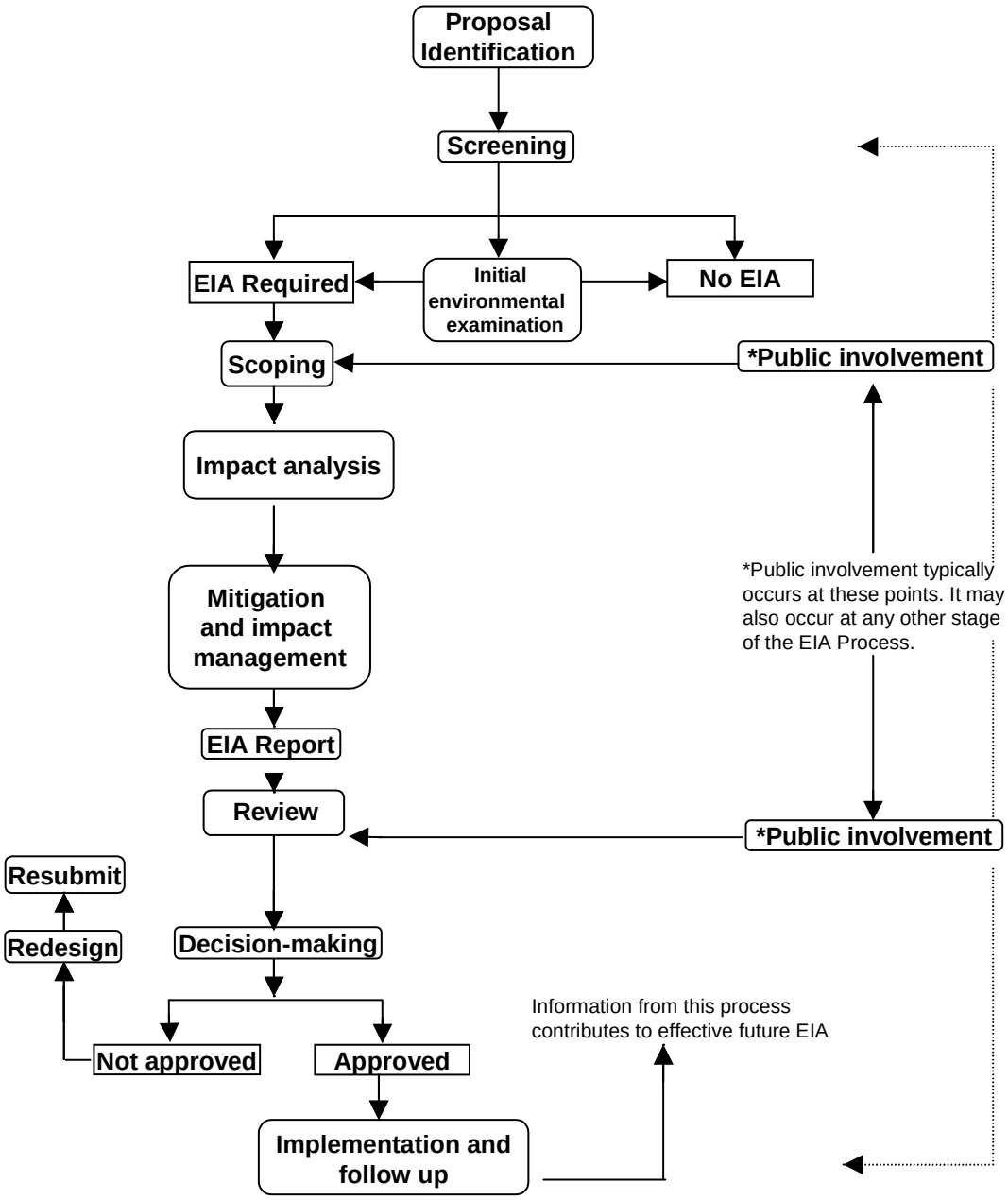
**The EIA process comprises:**

- **screening - to decide if and at what level EIA should be applied**
- **scoping - to identify the important issues and prepare terms of reference**
- **impact analysis - to predict the effects of a proposal and evaluate their significance**
- **mitigation - to establish measures to prevent, reduce or compensate for impacts**

# The EIA process
**(continued)**

- **reporting – to prepare the information necessary for decision-making**
- **review – to check the quality of the EIA report**
- **decision-making – to approve or reject) the proposal and set conditions**
- **follow up – to monitor, manage and audit impacts of project implementation**
- **public involvement – to inform and consult with stakeholders**

# Generalised EIA Process Flowchart



# Key EIA trends as identified by the Effectiveness Study

**EIA systems have moved towards:**

- **more systematic procedures for EIA implementation**
- **greater consideration of biophysical, social, risk, health and other impacts**
- **extended temporal and spatial frameworks**
- **provision for SEA of policy, plans and/or programmes**
- **incorporation of sustainability perspectives and principles**
- **linkage to other planning, regulatory and management regimes**

# Milestones and points of reference for EIA arrangements

- Rio Declaration on Environment and Development
- UN Conventions on Climate Change and Biological Diversity
- EIA procedures of development banks and donor agencies
- European Directive on EIA (and proposed Directive on SEA)

# Types and examples of EIA legal provision

- general environmental law (e.g. NEPA)
- comprehensive resource management and planning law (e.g. New Zealand RMA)
- enabling or framework EIA law (e.g. European Directive)
- comprehensive or prescriptive EIA law (e.g. CAEE)

# Legal and institutional cornerstones of an EIA system

- based on legislation
- clear statement of purpose and requirements
- mandatory compliance and enforcement
- application to proposals with potentially significant impacts
- prescribed process of steps and activities
- provision for public consultation
- linkage to decision- making

# Basic conditions supporting an EIA system:

- functional legal regime
- sound administration and flexible policy-making
- common understanding of the aims and potential benefits of the process
- political commitment
- institutional capacity
- adequate technical basis, data and information
- public involvement
- financial support

# Developing EIA procedures requires:

- government support
- establishing the basic conditions
- understanding the relationship to other decision-making processes
- consideration of the effectiveness of different EIA arrangements
- identification of the ways in which they can be implemented
- taking account of key trends and directions for EIA

# Steps to developing an EIA system

- establish goals
- review other EIA systems
- identify obligations under Treaties
- learn from the experience of others
- incorporate features to move towards sustainability
- identify procedures and standards
- develop trial guidelines
- produce legislation
- incorporate processes for monitoring and review

# EIA Systems—Local Rules of Thumb

# Topic 3

## Public involvement

# Purpose and objectives of public involvement

- informing stakeholders
- gaining their views, concerns and values
- taking account of public inputs in decision making
- influencing project design
- obtaining local knowledge
- increasing public confidence
- improving transparency and accountability in decision-making
- reducing conflict

# Levels of public involvement

- **information**
  - **one way flow from proponent to public**
- **consultation**
  - **two way exchange of information**
- **participation**
  - **interaction with the public**
- **negotiation**
  - **face to face discussion**

# Key stakeholders

- local people affected by a proposal
- proponent and project beneficiaries
- government agencies
- NGOs
- others, e.g. donors, the private sector, academics

# Principles of public involvement

**The process should be:**

- **inclusive – covers all stakeholders**
- **open and transparent – steps and activities are understood**
- **relevant – focused on the issues that matter**
- **fair – conducted impartially and without bias toward any stakeholder**
- **responsive – to stakeholder requirements and inputs**
- **credible – builds confidence and trust**

# Public involvement in key stages of the EIA process

- **screening**
  - **determining the need for, and level, of EIA**
- **scoping**
  - **identifying the key issues and alternatives**
- **impact analysis**
  - **identifying the significant impacts and mitigating measures**
- **review**
  - **commenting on/responding to the EIA report**
- **implementation and monitoring**
  - **checking EIA follow up**

# Developing a public involvement program typically involves:

- determining its scope
- identifying interested and affected public
- selecting appropriate techniques
- considering the relationship to decision-making
- providing feedback to stakeholders
- undertaking the analysis of stakeholder inputs
- keeping to budget and time lines
- confidentiality

# Factors affecting the effectiveness of public involvement

- poverty
- remote and rural settings
- illiteracy
- culture/local values
- language
- legal systems override traditional systems
- dominance of interest groups
- proponent confidentiality

# Principles for successful application of public involvement techniques

- provide the right information
- allow sufficient time to review and respond
- provide appropriate opportunities/means for stakeholder involvement
- respond issues and concerns raised
- feed back the results of public input
- choose venues and times of events to suit stakeholders

# Principles for minimising conflict

- involve all stakeholders
- establish communication channels
- describe the proposal and its objectives
- listen to the concerns and interests of affected people
- treat people fairly and impartially
- be empathetic and flexible
- mitigate impacts and compensate for loss and damage
- acknowledge concerns and provide feed-back

# Common reasons given for avoiding public involvement

- it's too early
- it will take too long and will cost too much
- it will stir up opposition
- we will only hear from the articulate
- we'll raise expectations
- people won't understand

# Topic 4

## Screening

# The purpose of screening

**The purpose of screening is to determine:**

- **whether or not a proposal requires an EIA**
- **what level of EIA is required**

# Outcomes of screening

- full or comprehensive EIA required
- more limited EIA required
- further study needed to determine EIA requirement
- no further requirement for EIA

# Screening and scoping compared

**Screening**

- **determines the requirement for EIA**
- **establishes the level of review necessary**

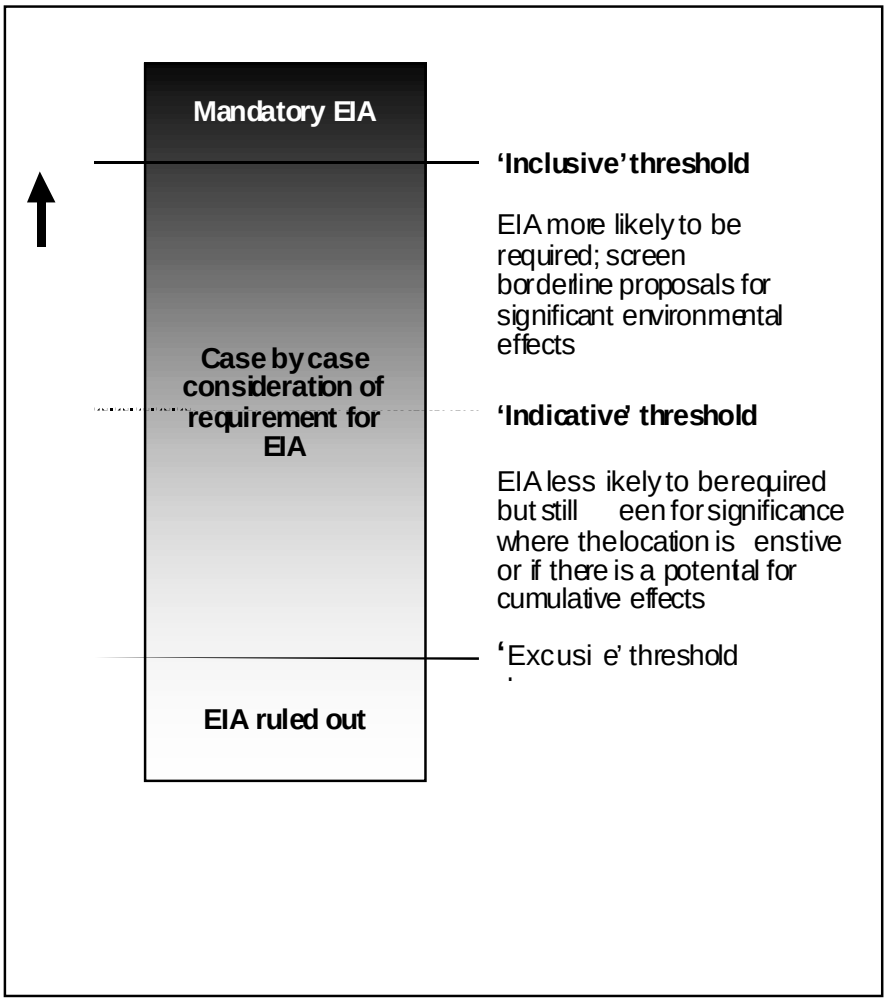
**Scoping**

- **identifies the key issues and impacts**
- **establishes the terms of reference**

# Screening methods

- legal/policy definition
- inclusion list of projects (with or without thresholds)
- exclusion list of projects
- criteria for case-by-case screening

# A framework for screening



# Extended screening methods

- initial environmental evaluation or examination (IEE)
- environmental overview
- class screening

# Typical proposals requiring a full EIA

- dams and reservoirs
- (re)settlement and urban development
- infrastructure (e.g. transport and sanitation)
- industrial facilities (e.g. manufacturing plants)
- energy and minerals extraction (e.g. oil & gas, coal)
- waste management and disposal of hazardous and toxic materials
- energy development (power stations, transmission lines, pipelines)

# Location and environmental criteria for case-by-case screening

**The following are important in determining significant effects:**

- **assimilative capacity of the natural environment**
- **environmental sensitivity, e.g. wetlands, coastal and mountain zones**
- **environmental standards and objectives**
- **adjacent to protected or designated areas**
- **within landscapes of special heritage value**
- **existing land use(s) and commitments**
- **abundance and quality of natural resources**

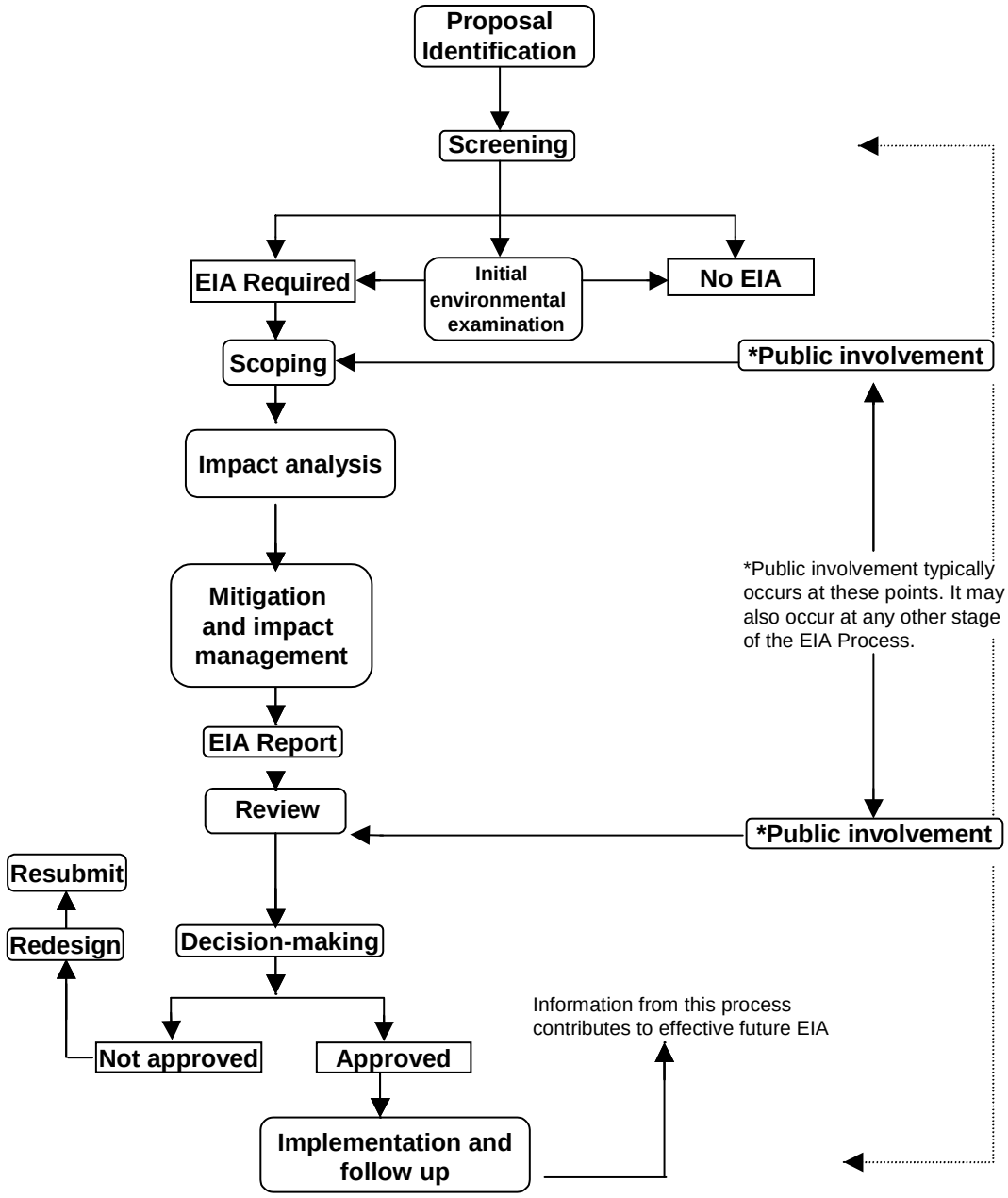
# Extended screening – information required by decision-makers

- description of the proposal
- conditions and characteristics of the environment
- applicable policy, planning and regulatory objectives
- identification of potential impacts
- degree of public concern and interest

# An Initial Environmental Examination (IEE)

- describes the proposal
- considers alternatives
- addresses the concerns of the community
- identifies potential environmental effects
- establishes mitigation measures
- includes monitoring and follow up (as necessary)

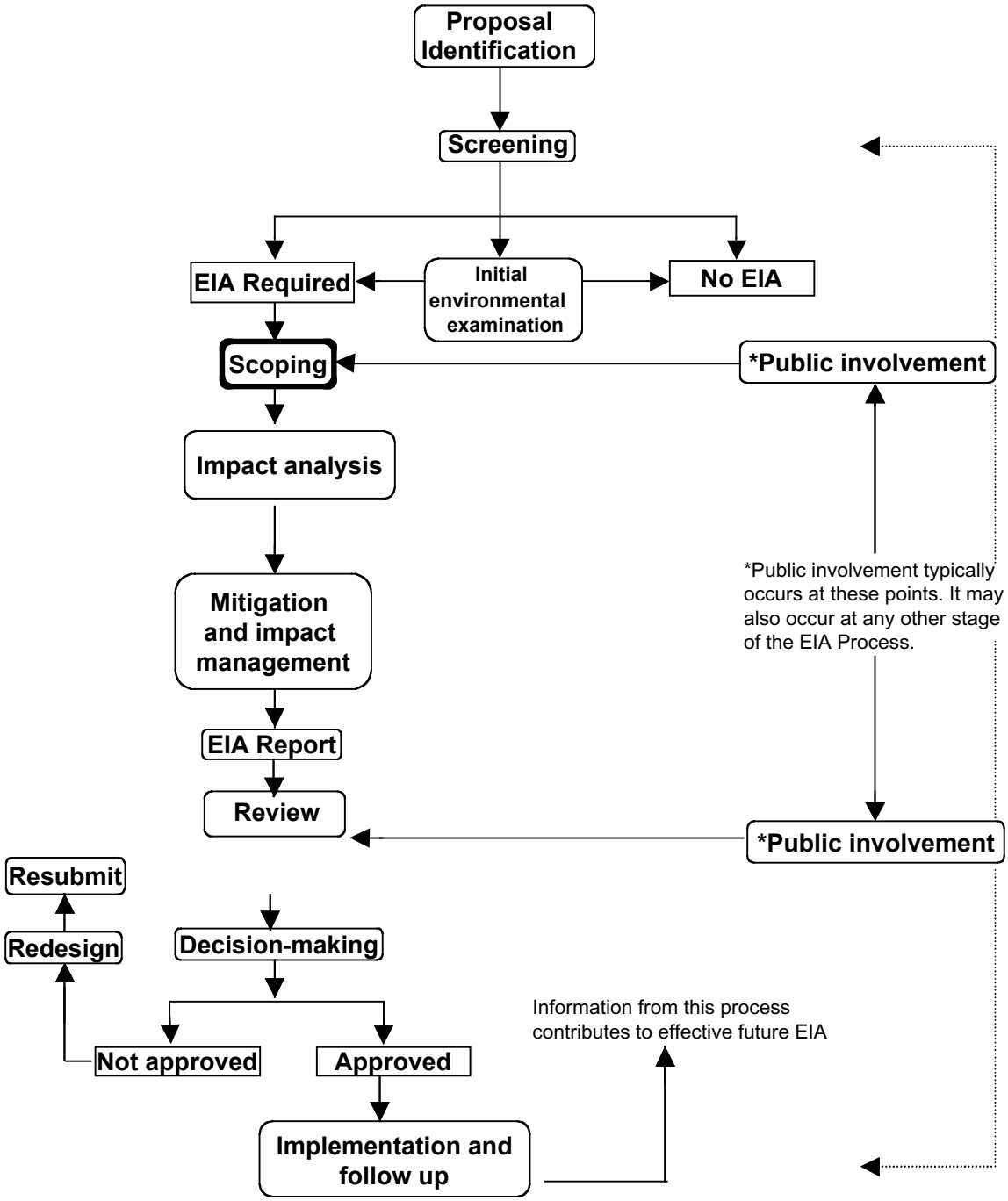
# Generalised EIA Process Flowchart



# Topic 5

# Scoping

# Scopingin the EIA process



# Scoping

- early step – begins once screening completed
- open, interactive process – involves the public
- lays the foundation of an EIA – by identifying

- boundaries of the EIA study
- the information necessary for decision-making
- key issues and significant impacts to be considered

# Key objectives of scoping

- inform and identify stakeholders
- find out their concerns
- consider feasible and practical alternatives
- identify the main issues and impacts to be studied
- define the boundaries of the EIA study
- agree on means of public involvement and methods of analysis

- establish the Terms of Reference

## Guiding principles for the conduct of scoping

- scoping is a process not an activity or event
- design the scoping process for each proposal
- start early, as soon as information permits
- prepare information package on what is expected
- specify the role of the public in decision-making
- approach should be systematic; implementation should be flexible.
- document the results to guide preparation of EIA

- respond to new information and issues as necessary

# The conduct of screening

- identify range of concerns
- evaluate them to determine key issues
- categorise the impacts that require study
- establish a strategy for addressing them

# Steps in the scoping process

- prepare an outline scope
- develop the outline through informal consultation
- make the outline available
- compile the range of concerns (long list)
- evaluate these to establish key issues (short list)
- organise these into impact categories (study list)
- amend the outline to incorporate the above information
- develop Terms of Reference
- monitor progress against them, revising as necessary

# Who should be involved in scoping?

- the proponent
- the competent authority
- the EIA administering body
- other responsible agencies
- EIA practitioners and experts
- key stakeholders (e.g. those affected by the proposal)
- the wider community

# Consideration of alternatives

- demand alternatives
- supply or input alternatives
- activity alternatives
- location alternatives
- process alternatives
- scheduling alternatives

# Outline Terms of Reference

- objectives and background to the proposal
- study area and boundaries
- alternatives to be examined
- opportunities for public involvement
- impacts and issues to be studied
- the approach to be taken
- requirements for mitigation and monitoring
- information and data to be included in the EIA report

- timetable and requirements for completion of the EIA process

# Topic 6

# Impact analysis

# The 'impact analysis' or detailed study phase of EIA involves:

- identifying the impacts more specifically
- predicting the characteristics of the main impacts
- evaluating the significance of the residual impact

# The term ‘environment’ includes

- human health and safety
- flora, fauna, ecosystems and biodiversity
- soil, water, air, climate and landscape
- use of land, natural resources and raw materials
- protected areas and sites of special significance
- heritage, recreation and amenity assets
- livelihood, lifestyle and well being of affected communities

# Impact identification methods

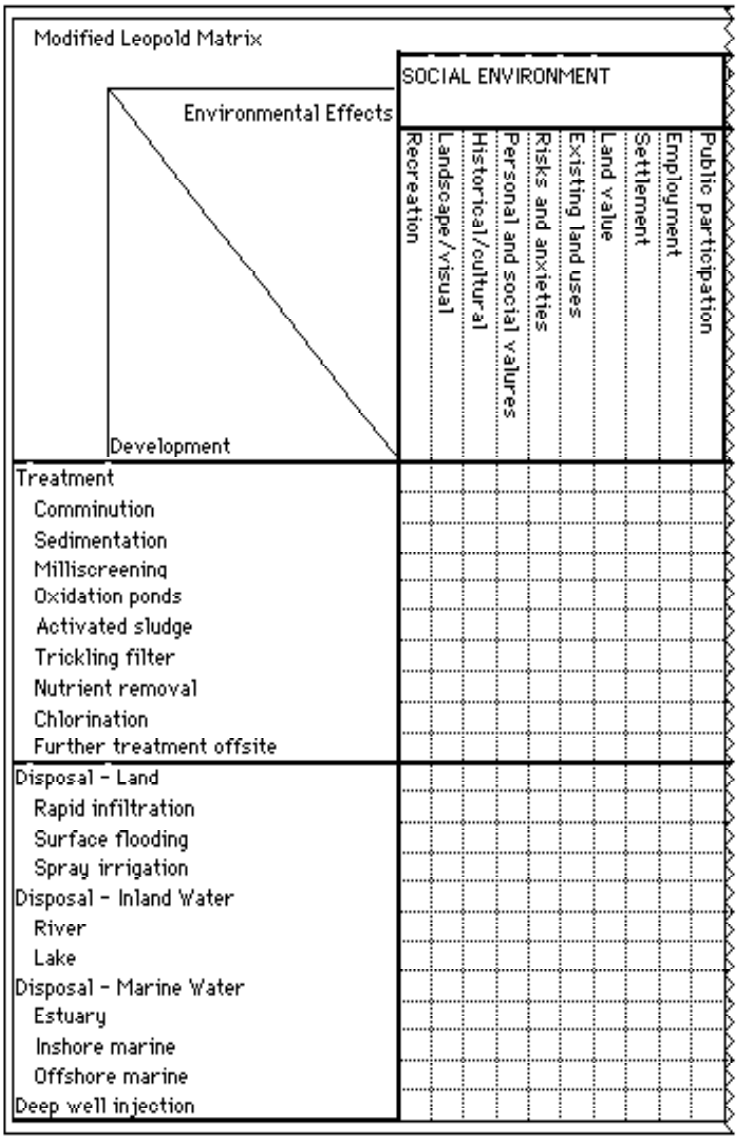
- checklists
- matrices
- networks
- overlays and geographical information systems (GIS)
- expert systems
- professional judgement

# Example of a checklist

**(For rural and urban water supply and sanitation projects)**

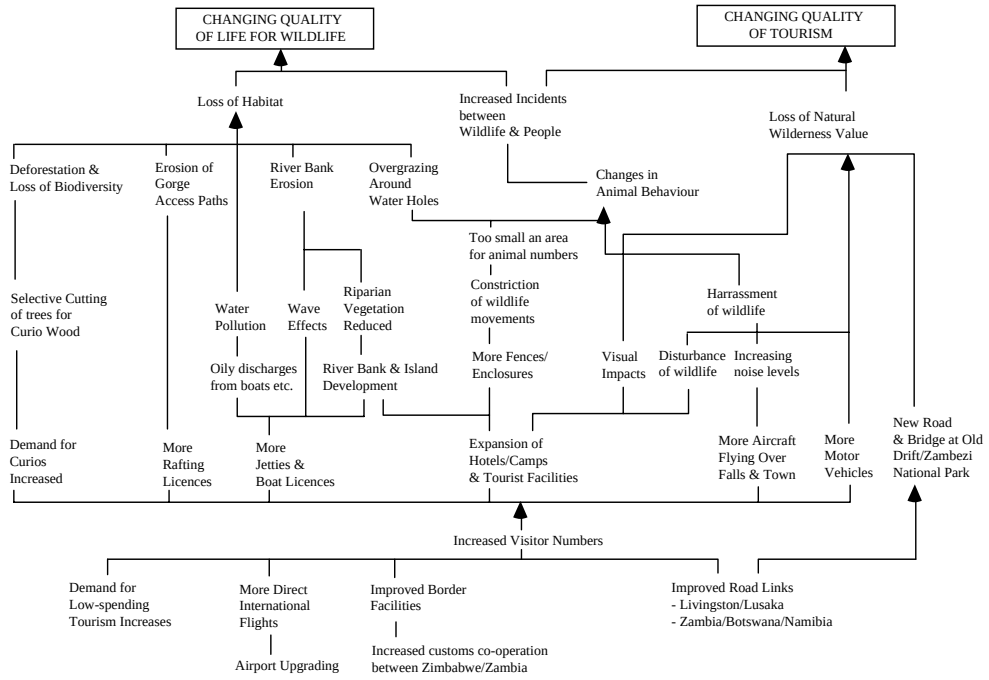
| Aspects of EIA | Checklist Questions<br>Will the project: | Yes | No | Additional Data needs |
|---|---|---|---|---|
| **Sources of Impacts** | 1. Require the acquisition or conversion of significant areas of land for reservoir/treatment works etc. (e.g. > 50 ha rural, > 5 ha urban)? | ☐ | ☐ | ☐ |
| | 2. Result in significant quantities of eroded material, effluent or solid wastes? | ☐ | ☐ | ☐ |
| | 3. Require significant accommodation or service amenities to support the workforce during construction (eg > 100 manual workers)? | ☐ | ☐ | ☐ |
| **Receptors of Impacts** | 4. Flood or otherwise affect areas which support conservation worthy terrestrial or aquatic ecosystems, flora or fauna (eg protected areas, wilderness areas, forest reserves, critical habitats, endangered species); or that contain sites of historical or cultural importance? | ☐ | ☐ | ☐ |
| | 5. Flood or otherwise affect areas which will affect the livelihoods of local people (eg require population resettlement; affect local industry, agriculture, livestock or fish stocks; reduce the availability of natural resource goods and services)? | ☐ | ☐ | ☐ |
| | 6. Involve siting sanitation treatment facilities close to human settlements (particularly where locations are susceptible to flooding)? | ☐ | ☐ | ☐ |
| | 7. Affect sources of water extraction? | ☐ | ☐ | ☐ |
| **Environmental Impacts** | 8. Cause a noticeable permanent or seasonal reduction in the volume of ground or surface water supply? | ☐ | ☐ | ☐ |
| | 9. Present a significant pollution risk through liquid or solid wastes to humans, sources of water extraction, conservation worthy aquatic ecosystems and species, or commercial fish stocks? | ☐ | ☐ | ☐ |
| | 10. Change the local hydrology of surface water-bodies (eg streams, rivers, lakes) such that conservation-worthy or commercially significant fish stocks are affected? | ☐ | ☐ | ☐ |
| | 11. Increase the risk of diseases in areas of high population density (eg onchocerciasis, filariasis, malaria, hepatitis, gastrointestinal diseases)? | ☐ | ☐ | ☐ |
| | 12. Induce secondary development, eg along access roads, or in the form of entrepreneurial services for construction and operational activities? | ☐ | ☐ | ☐ |
| **Mitigation Measures** | 13. Be likely to require mitigation measures that may result in the project being financially or socially unacceptable? | ☐ | ☐ | ☐ |
| **Comments** | | | | |
| | **I recommend that the programme be assigned to Category** ☐<br><br>Signature: Delegation.....Desk..... | | | |

# Example of a Leopold matrix



# Example of a network

(showing linkages leading to changes in quality of life, wildlife and tourism)




*Bisset*

# Choice of EIA method depends on:

- the type and size of the proposal
- the type of alternatives being considered
- the nature of the likely impacts
- the availability of impact identification methods
- the experience of the EIA team with their use
- the resources available - cost, information, time, personnel

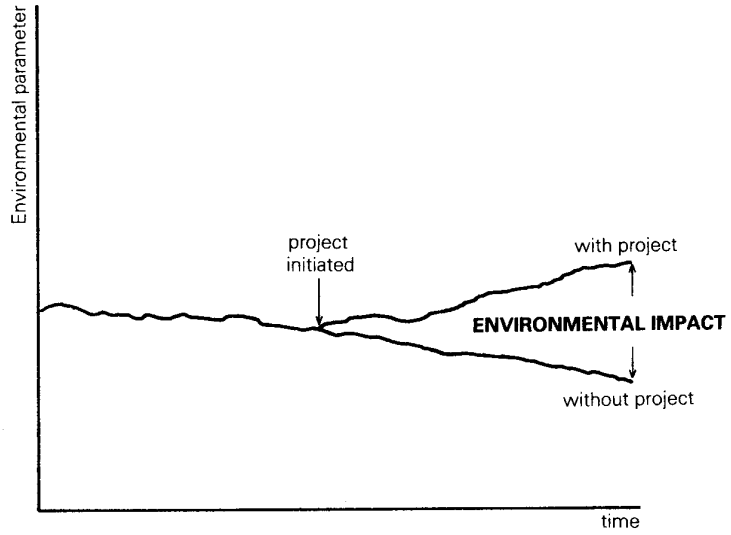
# Main advantages and disadvantages of impact identification methods

| | ADVANTAGES | DISADVANTAGES |
|---|---|---|
| **Checklists**<br>**–simple**<br>**–ranking and weighting** | o simple to understand and use<br>o good for site selection and priority setting | o do not distinguish between direct and indirect impacts<br>o do not link action and impact<br>o the process of incorporating values can be controversial |
| **Matrices** | o link action to impact<br>o good method for displaying EIA results | o difficult to distinguish direct and indirect impacts<br>o significant potential for double-counting of impacts |
| **Networks** | o link action to impact<br>o useful in simplified form for checking for second order impacts<br>o handles direct and indirect impacts | o can become very complex if used beyond simplified version |
| **Overlays** | o easy to understand<br>o good display method<br>o good siting tool | o address only direct impacts<br>o do not address impact duration or probability |
| **GIS and computer expert systems** | o excellent for impact identification and analysis<br>o good for 'experimenting' | o heavy reliance on knowledge and data<br>o often complex and expensive |

# Information required to establish baseline conditions

- current conditions
- current and expected trends
- effects of proposals already being implemented
- effects of other proposals yet to be implemented

# An environmental impact




*Wathern, 1988*

# Impact characteristics can vary in:

- nature (positive/negative, direct/indirect)
- magnitude (severe, moderate, low)
- extent/location (area/volume covered, distribution)
- timing (during construction, operation etc, immediate, delayed)
- duration (short term/long term, intermittent/continuous)
- reversibility/irreversibility
- likelihood (probability, uncertainty)
- significance (local, regional, global)

# Impact characteristic summary table

| IMPACT CHARACTERISTIC | IMPACT TYPE | | |
|---|---|---|---|
| | air quality | health | etc |
| nature | | | |
| magnitude | | | |
| extent/location | | | |
| timing | | | |
| duration | | | |
| reversibility | | | |
| likelihood (risk) | | | |
| significance | | | |

# Methods of impact prediction

- ‘best estimate’ professional judgement
- quantitative mathematical models
- experiments and physical models
- case studies as analogues or references

# Types of uncertainty in impact prediction

- **scientific uncertainty – limited understanding of the ecosystem or community affected**
- **data uncertainty – incomplete information or insufficient methodology**
- **policy uncertainty – unclear or disputed objectives or standards**

# Types of social impact

- **demographic – changes to population numbers, distribution**
- **cultural – changes to customs, traditions and values**
- **community – changes to cohesion, relationships etc.**
- **socio-psychological – changes to quality of life and well being**

# Health impacts

### Examples of health impacts by sector

| | Communic-able disease | Non communic-able disease | Nutrition | Injury | Psychosocial disorder and loss of well-being |
|---|---|---|---|---|---|
| **Mining** | Tuberculosis | Dust induced lung disease | | Crushing | Labour migration |
| **Agriculture** | Parasitic infections | Pesticide poisoning | Loss of subsistence | | |
| **Industry** | | Poisoning by pollutants | | Occupational injury | Disempower-ment |
| **Forestry** | | | Loss of food production | Occupational injury | |
| **Dams and irrigation schemes** | Water borne diseases | Poisoning by pollutants | Increased food production | Drowning | Involuntary displacement |
| **Transportation** | HIV/Aids | Heart disease | | Traffic injury | Noise and induced stress |
| **Energy** | | Indoor air pollution | | Electro-magnetic radiation | Community displacement |

*Source: Birley, 2000*

# Factors affecting economic impacts

- duration of construction and operation
- workforce requirements for each period
- skill requirements (local availability)
- earning
- raw material and other input purchases
- capital investment
- outputs
- the characteristics of the local economy

# Factors affecting fiscal impacts

- size of investment and workforce requirements
- capacity of existing service delivery and infrastructure systems
- local/regional tax or other revenue raising processes
- demographic changes arising from project requirements

# Examples of threshold tests for environmental acceptability

| Box 3: Examples of threshold tests for environmental acceptabilty | |
|---|---|
| Level of acceptability | Potential impact threshold |
| Unacceptable | Exceeds legal threshold, e.g. quality standard |
| Unacceptable | Increases level of risk to public health and safety above qualitative or quantitative criteria (e.g. in some jurisdictions an increased risk of death of 1 in million per year) |
| Unacceptable | Extinction of biological species, loss of genetic diversity, rare or endangered species, critical habitat |
| Normally unacceptable | Conflict with existing environmental policies, land-use plans |
| Normally unacceptable | Loss of populations of commercial biological species |
| Normally unacceptable | Large-scale loss of productive capacity of renewable resources |
| May be acceptable only with minimisation, mitigation, management | Avoidance of spread of biological disease, pests, feral animals, weeds |
| May be acceptable only with minimisation, mitigation, management | Taking of rare or endangered species |
| May be acceptable only with minimisation, mitigation, management | Some loss of threatened habitat |
| Normally acceptable | Some loss of populations and habitats of non-threatened species |
| Normally acceptable | Modification of landscape without downgrading special aesthetic values |
| Normally acceptable | Emissions demonstrably less than the carrying capacity of the receiving environment |
| Source: Sippe 1999 | |

# Key elements for assessing impact significance

- environmental standards
- level of public concern
- scientific and professional evidence concerning:
  - resource loss/ecological damage
  - negative social impacts
  - foreclosure of land and resource use options

# Guiding principles for determining impact significance:

- use established procedure or guidance
- adapt relevant criteria or comparable cases
- assign significance rationally and defensibly
- be consistent in the comparison of alternatives
- document the reasons for judgements

# Test for significance by asking three questions

- Are there residual environmental impacts?
- If yes, are these likely to be significant or not?
- If yes, are these significant effects likely to occur?

# Impact significance criteria

- environmental loss and deterioration
- social impacts resulting from environmental change
- non-conformity with environmental standards
- probability and acceptability of risk

# Ecological significance criteria

- reduction in species diversity
- habitat depletion or fragmentation
- threatened, rare and endangered species
- impairment of ecological functions e.g.

  - disruption of food chains;
  - decline in species population;
  - alterations in predator-prey relationships.

# Social significance criteria

- human health and safety
- decline in important resource
- loss of valued area
- displacement of people
- disruption of communities
- demands on services and infrastructure

# Environmental standards

- limits on effluent discharge concentrations
- clean air standards, water quality standards
- policy objectives and targets
- plans or policies that protect or limit use of natural resources

# Alternative approaches to determine significance

- apply technical criteria when changes are predictable
- use negotiation when significance is disputable

# Practical guidance

**Impacts are likely to be significant if they:**

- **are extensive over space or time**
- **are intensive in concentration or in relation to assimilative capacity**
- **exceed environmental standards or thresholds**
- **do not comply with environmental policies/ land use plans**
- **affect ecological sensitive areas and heritage resources**
- **affect community lifestyle, traditional land uses and values**

# Topic 7

# Mitigation and impact management

# The purpose of mitigation is to:

- find better ways of doing things
- enhance environmental and social benefits
- avoid, minimise or remedy adverse impacts
- ensure that residual impacts are within acceptable levels

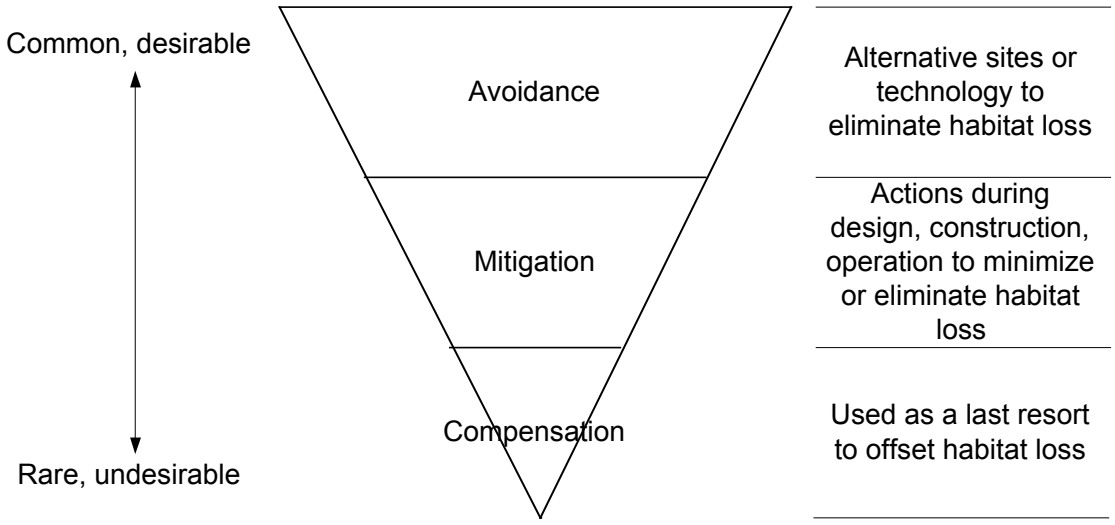
# The purpose of impact management is to:

- ensure mitigation measures are implemented
- establish systems and procedures for this purpose
- monitor the effectiveness of mitigation measures
- take action when unforeseen impacts occur

# Proponents have a responsibility to:

- avoid, minimise and remedy adverse impacts
- internalise the environmental and social costs of the proposal
- prepare plans for managing impacts
- repair or make restitution for environmental damages

# A framework for impact mitigation



# Principles of mitigation

- give preference to avoidance and prevention measures
- consider feasible alternatives to the proposal
- identify customised measures to minimise each major impact
- ensure they are appropriate and cost-effective
- use compensation as a last resort

# Impact avoidance can be achieved by:

- not undertaking certain projects or elements
- avoiding environmentally sensitive areas
- use of measures to prevent impacts from occurring:
  - site remediation bonds
  - resettlement plans
  - in kind measures and offsets

# Impact minimisation can be achieved by:

- scaling down or relocating the proposal
- redesigning elements of the project
- measures to manage the impacts

# Impact compensation can be achieved by:

- rehabilitation of resource or environmental components
- restoration of the site to its previous state
- replacement of the environmental values lost at another location

# Mitigation options

- develop alternatives that are better environmentally
- make changes in planning and design
- carry out impact monitoring and management
- compensate for
    - residual impacts
    - monetary payment
    - site remediation bonds
    - resettlement plans
    - in kind measures and offsets

# Environmental management plans should include:

- summary of impacts
- recommended mitigation measures
- statement of compliance with standards
- allocation of resources and responsibilities
- schedule of required actions
- surveillance, monitoring and auditing programmes
- contingency measures for greater than expected impacts
- State policy and standards

# Topic 8

## Reporting

# Different names for the same document

- **Environmental Impact Assessment Report (EIA report)**
- **Environmental Impact Statement (EIS)**
- **Environmental Statement (ES)**
- **Environmental Assessment Report (EA report)**
- **Environmental Effects Statement (EES)**
- **Local usage: enter local terminology**

# The EIA report is a statement that assists:

- the proponent to plan and design
- the responsible authority to decide
- the public to understand

# A successful EIA report will be:

- actionable – by the proponent
- decision-relevant – to the responsible authority
- user-friendly – for the public

# Main elements of an EA report

- executive summary
- need for and aims of the proposal
- description of proposal and alternatives
- description of affected environment and community
- public consultation and views
- main impacts and their mitigation
- evaluation of significant residual impacts
- environmental management plan

# Preparing an executive summary

- target to audience
- keep it short
- make it clear and consistent
- avoid jargon
- summarise key findings

# An executive summary should outline:

- the proposal and its setting
- terms of reference of the EIA
- results of public consultation
- alternatives considered
- major impacts and their significance
- mitigation and management measures
- any other critical matters.

# EIA Report — description of the proposal includes:

- main elements, phases and alternatives
- requirements for materials, water, energy, equipment
- operational processes and products
- summary of technical, economic and environmental features
- comparison of options (e.g. size, location, etc.)

# EIA Report - description of the affected environment includes:

- spatial and temporal boundaries
- baseline conditions – biophysical, land use, socio-economic
- key trends and anticipated conditions
- relationship to other policies, plans and proposals.

# EIA Report – results of public consultation includes:

- identification of interested and affected stakeholders
- method(s) used to inform and involve them
- analysis of views and concerns expressed
- how these were taken into account
- issues remaining to be resolved

# EIA Report - evaluating impacts for each alternative:

- prediction of each major impact
- proposed mitigation measures
- significance of the residual impact
- limitations, uncertainty and gaps in knowledge

# EIA Report - comparative evaluation of alternatives

- adverse and beneficial impacts
- effectiveness of mitigation measure
- distribution of benefits and costs
- opportunities for enhancement
- reasons for preferred alternative

# An Environmental Management Plan contains:

- proposed mitigation measures
- schedule for implementation
- surveillance and monitoring programmes
- impact management strategy
- reporting, audit and review procedure
- any institution and capacity building requirements

# Some common shortcomings of EIA reports

- objective of proposal described too narrowly
- description does not cover complete activity
- alternatives do not account for the environment
- key problems not described
- sensitive elements in environment overlooked
- relevant standards and legislation not described

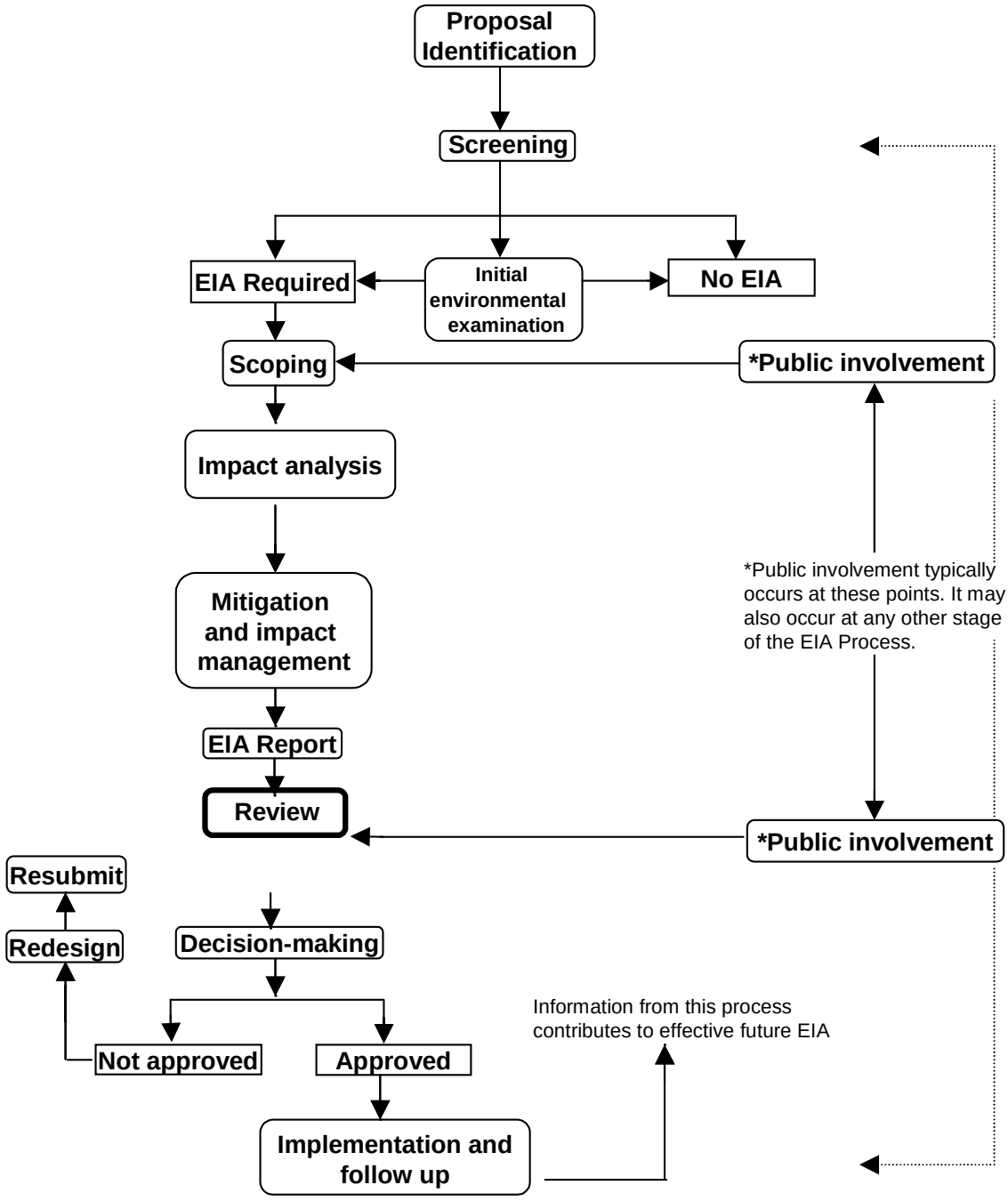
# Some common shortcomings of EIA reports (continued):

- best alternative not described (or insufficiently described)
- serious impacts not mentioned or not correctly described
- outdated or ineffective prediction models used
- impacts not compared with standards or targets
- appropriate mitigation measures not considered
- incorrect conclusions drawn

# Topic 9

## Review of EIA quality

# Reviewing in the EIA process



# Purpose and objectives of review

**The purpose of the review process is to establish if the information in an EIA report is sufficient for decision-making.**

**Key objectives are to:**

- **review the quality of the EIA report**
- **take account of public comment**
- **determine if the information is sufficient**
- **identify any deficiencies to be corrected.**

# EIA review – aspects for consideration:

- compliance with terms of reference
- information is correct and technically sound
- account taken of public comments
- complete and satisfactory statement of key findings
- information is clear and understandable
- information is sufficient for decision-making

# EIA review – types of procedure

- **Internal review:**

  **- low operating costs**

  **- can lack rigour and transparency**

  **- often no documentation of results.**

- **External review:**

  **- independent, expert check on EIA quality**

  **- more rigorous and transparent**

  **- report on sufficiency or deficiency**

# EIA review procedures

- environmental agency
- independent panel (or moderator)
- standing commission
- inter-agency committee
- planning authority

# EIA review – steps to good practice

- set the scale of the review
- select reviewer(s)
- use public input
- identify review criteria
- carry out the review
- determine remedial options
- publish the review report

# EIA review criteria

**The following can be used (in order of priority):**

- **Terms of Reference**
- **EIA reports of comparable proposals**
- **other guidance including:**
  - **EIA requirements, guidelines and criteria**
  - **principles of EIA good practice**
  - **knowledge of the project and typical impacts**

# Carrying out the EIA review

**A four-step approach can be followed:**

- **Step 1: identify the deficiencies**
- **Step 2: focus on critical shortcomings**
- **Step 3: recommend remedial measures**
- **Step 4: advise on implications for decision-making**

**(the last step does not apply in all systems)**

# EIA review methods

- general checklists
- project specific checklists
- review packages
- expert and accredited reviewers
- public hearings
- effectiveness review frameworks

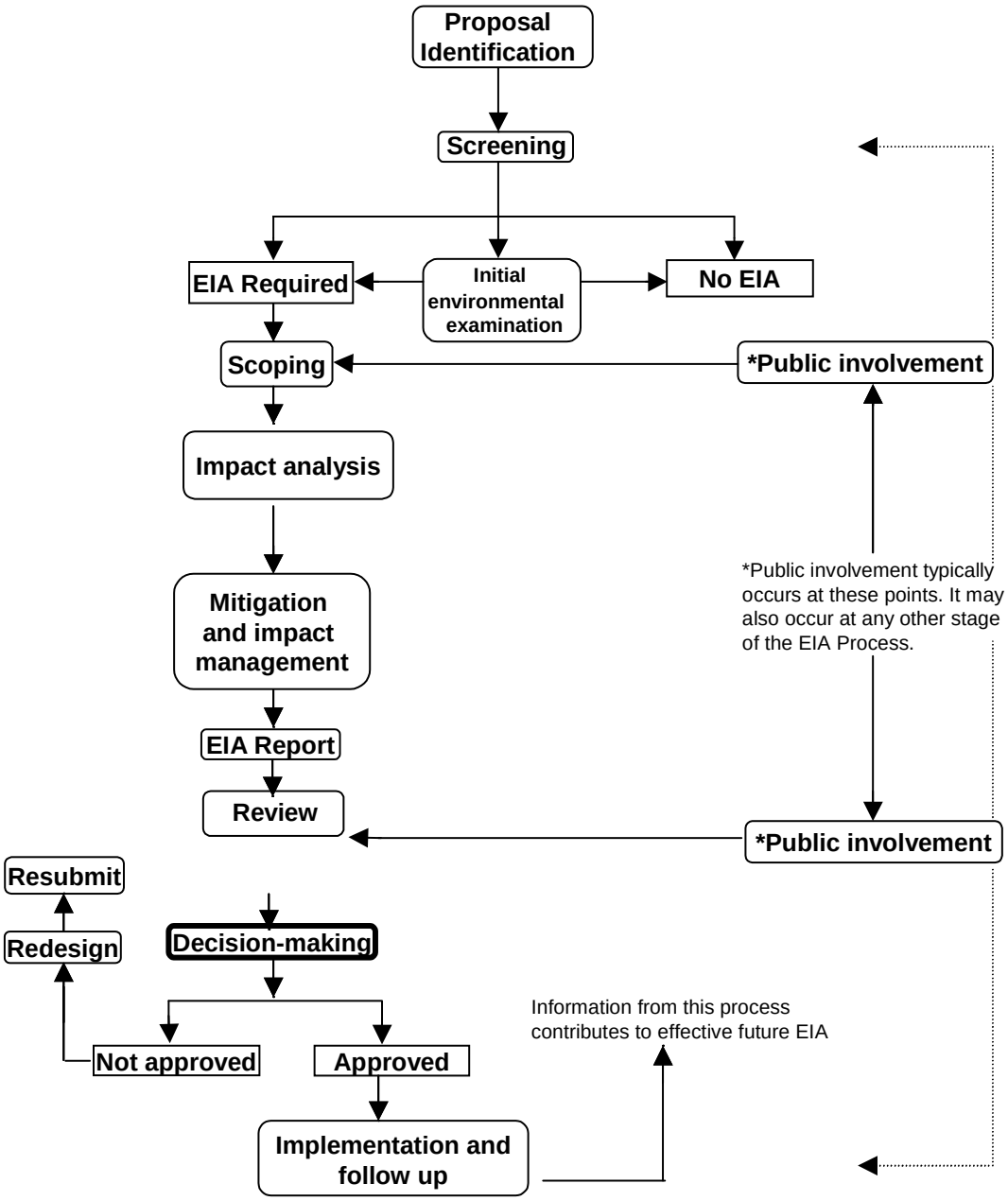
# A rating scale for EIA review

| Rating | Explanation |
|---|---|
| A | generally well performed, no important tasks left incomplete |
| B | generally satisfactory and complete, only minor omissions and inadequacies |
| C | just satisfactory despite omissions and/or inadequacies |
| D | parts well attempted but must, on the whole be considered just unsatisfactory because of omissions and/or inadequacies |
| E | unsatisfactory, significant omissions or inadequacies |
| F | very unsatisfactory, important task(s) poorly done or not attempted |
| N/A | not applicable, the review topic is not applicable in the context of the project |

# Topic 10

## Decision-making

# Decision-making in the EIA process



# EIA is a process to:

- gather information necessary for decision-making
- inform approval and condition setting
- help determine if a proposal is acceptable

# Decision-making is a process of:

- political choice between alternative directions
- weighing the benefits and costs
- negotiation, bargaining and trade-offs
- balancing economic, social and environmental factors

# Decision-makers need to understand:

- EIA aims and concepts
- EIA legislation, procedure and guidelines
- the effectiveness of EIA practice
- the limitations on EIA information
- how EIA process and practice measure up internationally
- issues of public consultation and third party challenges

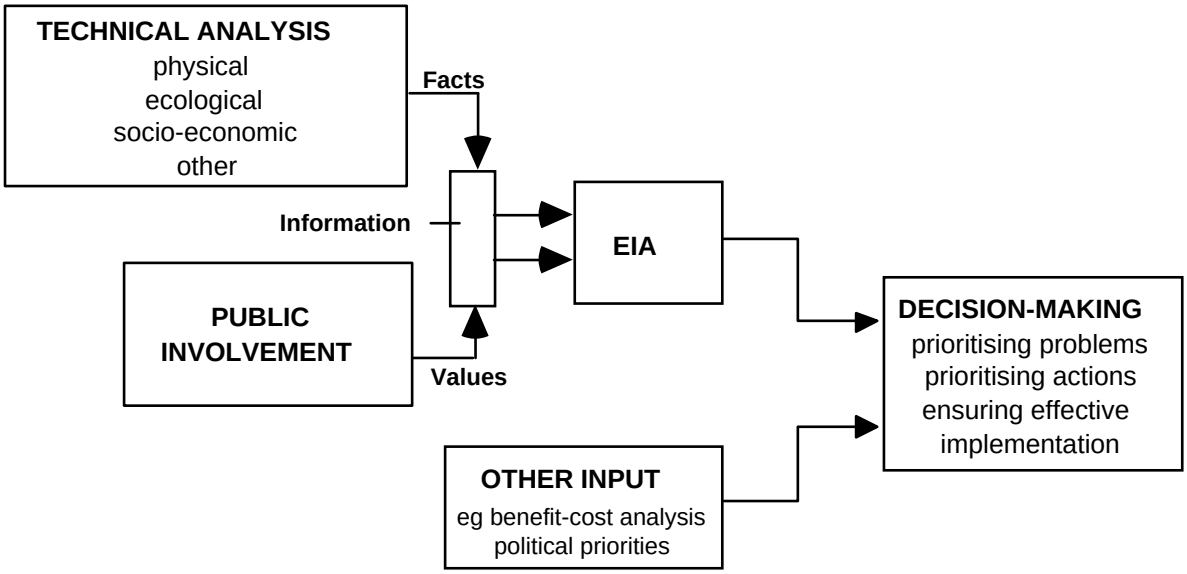
# Decision-makers should be encouraged to:

- implement sustainability mandates and commitments
- broaden their perspectives on the environment
- critically review information and advice
- better communicate information and decisions
- apply the precautionary principle
- improve the process of making trade-offs
- adopt more open and participatory approaches
- use strategic tools including SEA and environmental accounting

# Decision-making is a continuing process, comprising:

- interim decisions made at each stage of EIA
- final approval of a proposal
- enforcement of conditions attached to approvals

# EIA as part of the decision-making process



# Information for decision-makers should include:

- background of the proposal
- policy context
- alternatives considered
- public inputs and balance of opinion
- significant impacts
- proposed mitigation and monitoring
- extent that the proposal conforms to sustainability principles

# EIA responsibilities imposed on decision makers

- meet no further requirements
- take account of information in the EIA report
- provide reasons for the decision
- act in accordance with recommendations of a review body

# Outcomes from EIA decision-making

- proposal approved
- proposal approved with conditions
- proposal on hold pending further study
- proposal returned for revision and resubmission
- proposal rejected

# Checks and balances on decision-making

- no decision taken until EIA report considered
- findings help determine approval and condition setting
- public comment taken into account
- approvals can be refused or withheld
- conditions can be imposed/ modifications demanded
- written reasons for the decision
- right of appeal against the decision

# Means of implementing the decision include:

- establishing performance conditions
- incorporating them into legal contracts
- requiring preparation of environmental management plans
- incorporating ISO 14001 standards
- overseeing and monitoring compliance with conditions

# Topic 11

## Implementation and follow up

# Aims of EIA implementation and follow up are to:

- carry out conditions of approval
- ensure they work effectively
- verify impacts are as predicted or permitted
- take action to manage unforeseen changes
- optimise environmental benefits
- improve EIA practice in the future

# Key components of EIA implementation and follow up

- surveillance and supervision
- effects or impact monitoring
- compliance monitoring
- environmental auditing
- evaluation of EIA effectiveness and performance
- post-project analysis

# Tool box for environmental management and performance review

- **Internalising the environment in policy and planning – use SEA, technology assessment, comparative risk assessment**

- **Planning and designing environmentally sound projects – use EIA, SIA, risk assessment, environmental benefit cost assessment**

- **Environmental management of the impacts of an operating facility or business enterprise – use EMS (ISO 14000 series), total quality environmental management (TQEM), industrial codes of practice**

# Tool box for environmental management and performance review
**(continued)**

- **Eco-design of processes and products – use environmental design, life cycle assessment, cleaner production**

- **Monitoring, audit, and evaluation of performance – use effects and compliance monitoring, site, energy, waste, health and safety audits, bench marking, performance review, environmental auditing**

# Guiding principles of EIA implementation and follow up

- carry out conditions of approval
- undertake routine surveillance and inspection
- other activities should be commensurate with significance
- monitoring and auditing should be undertaken when:
  - potential impacts are potentially significant
  - mitigation measures are untried/ outcomes uncertain
  - new aspects of EIA introduced

# Aspects to consider in design of EIA implementation and follow up

- What is required?
  - identify the scope and components
- Who will carry out the activities?
  - specify roles and responsibilities
- How will these be implemented?
  - allocate resources, define procedures and arrangements

# Monitoring is used to:

- establish baseline conditions
- measure actual impacts and trends
- verify they comply with agreed conditions
- facilitate impact management
- determine the accuracy of impact prediction
- review the effectiveness of mitigation measures

# Monitoring requirements in the EIA/EMP

- impacts to be monitored
- objectives and data requirements
- arrangements for conduct of monitoring
- use of the information collected
- response to unanticipated impacts
- measures for public reporting and involvement

# For scientifically credible monitoring:

- use methods of a relevant discipline
- establish impact and reference sites
- result in time series data which can be analysed by:
  - assembling the data in tabular or graphic format
  - testing for variations that are statistically valid
  - determining rates and directions of change

# Steps to develop an effective monitoring programme

- define the scope and objectives (for each impact)
- identify the boundaries and select sites
- choose the key indicators
- determine the level of accuracy required in the data
- consider how the data will be analysed
- establish a data and reporting system
- specify thresholds of impact acceptability
- set requirements for action on exceedences

# Actions to address excessive impacts or unanticipated changes

- stop or modify the causal activity
- impose penalties if legal standards are breached
- add or scale up mitigation measures (if feasible)

# EIA audits are used to:

- identify impacts and results
- verify that conditions of approval are being met
- test the accuracy of impact predictions
- check the effectiveness of mitigation measures
- improve compliance and performance

# EMS audits include:

- site audits
- compliance audits
- sector & issue audits, e.g.
- waste
- energy
- health and safety
- supply chains

# Difficulties commonly experienced in EIA audits

- limited baseline information
- qualitative and non auditable predictions
- changes to project design and mitigation
- long lead times for some types of impact

# Topic 12

## EIA project management

# Attributes of a good EIA Project Manager

- good communicator
- technical competency
- problem-solver
- team leader
- flexibility and willingness to learn
- able to negotiate
- planning and budgeting proficiency

# Core tasks of EIA project management

- understand the issues
- define tasks and work programmes
- set timelines for delivery
- estimate and manage the budget
- establish an organisational structure
- put together the EIA team
- establish and maintain work standards
- manage information flow
- prepare the EIA report

# Key characteristics of an interdisciplinary EIA team

- complementary perspectives and expertise
- interact together
- undertake an integrated approach
- common understanding of key impacts
- prepare a synthesis report

# Factors influencing selection of EIA team

- finances available
- range of impacts to be studied
- expertise and experience
- local knowledge
- ability to work with others

# Attributes of interdisciplinary team members

- interpersonal skills
- creativity
- adaptability
- communication skills
- organisational aptitude
- listening skills
- sense of humour
- patience

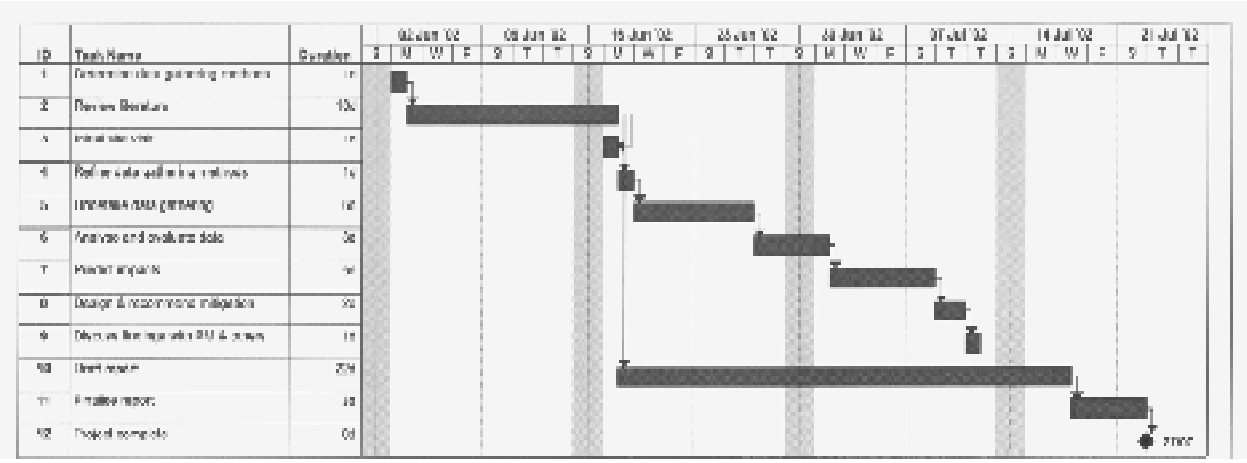
# Steps in EIA project scheduling

- identify key events
- break down project into stages
- estimate timing of stages
- identify resources required
- estimate cash flow

# A calendar bar or Gantt chart sets out:

- activities to be performed
- timelines for completion
- events that begin and end each activity
- links between the activities
- the critical path

# Example of project schedule bar chart



# Items in an EIA budget include:

- labour costs
- overheads
- travel expenses
- capital expenditures
- communication and report production costs

# Sample of part of budget preparation

| Expertise required | Rate of pay ($ per hour) (a) | Estimated duration of work (hours) (b) | Overhead multiplier (c) | Total (a)x(b)x(c) $ |
|---|---|---|---|---|
| **Noise impact**<br>1. Investigation<br>senior<br>junior | <br><br>60<br>15 | <br><br>5<br>20 | <br><br>2.5<br>2.5 | <br><br>750<br>750 |
| 2. Analytical<br>senior<br>junior | <br>60<br>15 | <br>6<br>40 | <br>2.5<br>2.5 | <br>900<br>1500 |
| 3. Reporting<br>senior<br>junior | | | | |
| **Social impact**<br>1. Investigation<br>Principal<br>Senior<br>Junior | | | | |
| 2. Analytical | | | | |
| 3. Reporting | | | | |

*Source: Bingham (1994)*

# Topic 13

## Social impact assessment

# Aims and objectives of SIA are to:

- analyse how proposals affect people
- identify and mitigate adverse impacts
- enhance benefits
- help manage social change

# Scope of SIA

- SIA conducted under EIA legislation and procedure
- scope of SIA differs with jurisdictional arrangements
- initially limited to environmentally-related changes
- larger range of social impacts now considered
- comprehensive SIA often a separate process
- focuses on social issues of sustainable development, poverty alleviation and justice

# Causes of social impacts

- demographic change, e.g. population size and composition
- economic change, e.g. employment and income
- environmental change, e.g. air and water quality
- institutional change, e.g. law and administration

# Types of social impact

- **lifestyle – behaviour and relationships**
- **cultural – customs, values and religious beliefs**
- **community – infrastructure, services and networks**
- **amenity/ quality of life – sense of security, livability and futurity**
- **health – mental and physical well being**

# SIA benefits can include:

- reduced impact on people
- enhanced benefits for those affected
- avoiding delays and obstruction
- lowering costs by timely actions
- better community and stakeholder relationships
- improved future proposals

# Steps in the SIA process

- public involvement plan
- identification of alternatives
- profiling of baseline conditions
- scoping of key issues
- projection of estimated effects
- prediction and evaluation of responses to impacts

# Steps in the SIA process

**(continued)**

- **estimate indirect and cumulative impacts**
- **recommend changes to alternatives**
- **develop and implement a mitigation plan**
- **develop and implement a monitoring programme**

# Principles of SIA good practice

- involve the diverse public
- analyse impact equity
- focus the assessment
- identify methods and assumptions and define significance
- provide feedback on social impacts to project planners

# Principles of SIA good practice

**(continued)**

- **use experienced SIA practitioners**
- **establish monitoring and mitigation programmes**
- **identify data sources**
- **plan for gaps in data**

# Sources of SIA information

- data on the proposal
- experience with similar actions
- census and vital statistics
- secondary documents
- survey and field research

# Methods commonly used for predicting social impacts include:

- trend extrapolations
- population multipliers
- use of expert knowledge
- scenario building
- comparative studies

# Basis of good practice in prediction of social impacts

- understanding those affected and their likely responses
- comparisons with experience in similar cases
- use of appropriate expertise and knowledge base

# Good practice in analysing impact equity

- predict adverse impacts
- specify for each group
- explain reasons for variations
- highlight impacts on vulnerable groups
- guard against representational bias

# Good practice in impact mitigation and management

- identify mitigation measures for each impact
- customise them to the different groups affected
- give priority to avoiding social impacts
- then minimise them as far as practicable
- use compensation as a last resort
- ensure impacts are not borne disproportionately by one group

# Good practice in impact mitigation and management

**(continued)**

- **no one should be worse off than before**
- **treat relocation/resettlement as a special case**
- **livelihoods of those displaced should be improved**
- **enhance benefits for local people through job training and development packages**

# Topic 14

# Strategic Environmental Assessment

# What is SEA?

- systematic, transparent process
- instrument for decision-making
- addresses environmental effects of strategic proposals
- includes policy, plans and programme decisions
- undertaken when alternatives are still open
- applies EIA aims and principles
- flexible, diversified process

# Why is SEA important?

- EIA of projects insufficient by itself
- effects of strategic decisions not assessed
- SEA rounds out coverage to this level
- enables better identification of sources of environmental impacts
- responds to sustainable development agenda

## Key aims and objectives of SEA are to:

- facilitate informed decision-making
- contribute to environmentally sound and sustainable development
- identify and address cumulative effects
- supplement and reinforce project-level EIA by:

  - clarification of scope and context
  - reducing the time and effort for review

# Wider potential policy and institutional benefits of SEA include:

- mainstreaming the environment
- incorporating sustainability principles into policy-making
- meeting international obligations
- ‘sustainability assurance’ of development proposals
- environmental accountability in sector-specific agencies
- greater transparency and openness in decision-making

# SEA trends and developments

- limited development and implementation until 1990
- formalisation and diversification in 1990s
- increasing number of countries establish SEA
- response to sustainability agenda
- entering expansion and consolidation phase
- pending international & supra-national arrangements
- more developing countries expected to take up SEA

# Indicative list of areas subject to SEA

- sector-specific policy, plans and programmes
- spatial and land use plans
- regional development programmes
- natural resource management strategies
- legislative and regulatory bills
- investment and lending activities
- international aid and development assistance

# Guiding principles for SEA process design and implementation

- ***fit-for-purpose*** **–**
  **customise to decision-making**

- ***objectives-led*** **–**
  **identify environmental goals and priorities**

- ***sustainability-driven*** **–**
  **ensure proposal promotes sustainable development**

- ***comprehensive scope*** **–**
  **cover policies, plans and programmes**

- ***decision-relevant*** **–**
  **focus on issues that matter**

# Guiding principles for SEA process design and implementation

**(continued)**

- ***integrated*** **–**
  **include social, health effects**

- ***transparent*** **–**
  **clear, easy to understand requirements**

- ***participative*** **–**
  **provide for public information and involvement**

- ***accountable*** **–**
  **implement fairly, impartially & professionally**

- ***cost-effective*** **–**
  **meet objectives within time and budget limits**

# Institutional conditions that enable SEA good practice

- clear legal or policy mandate
- explicit scope of application
- requirements for compliance
- guidance on procedure and process
- provision for administrative oversight
- quality control mechanisms

# Some success factors in SEA practice

- promote SEA as a bonus not a burden
- encourage creativity and innovation
- tailor the approach to the needs of decision makers
- provide start-up help
- build a knowledge base from case experience
- learn by doing when applying methods and procedures

# Operational rules of thumb for applying SEA guiding principles

- **begin as early as practicable**
- **the purpose is to inform decisions not produce a study**
- **provide the right information at the right time**
- **focus on comparison of major alternatives**

# Operational rules of thumb for applying SEA guiding principles

**(continued)**

- carry out an appropriate level and type of analysis
- use the simplest procedures and methods consistent with the task
- try to gain environmental benefits as well avoid adverse impacts
- review and document the outcomes of the SEA process

# Institutional arrangements for SEA

- type of provision for SEA differs
- formalised in both law and policy
- vary in scope, role and relationship to decision-making
- limited development at policy level
- non-statutory, flexible, informal procedure
- greater development at plan/ programme level
- SEA systems diversified compared to EIA

# Different types of SEA systems

- **EIA-based –**
  **part of EIA law or separate procedure**
- **environmental appraisal –**
  **comparable, less formalised process**
- **dual-track –**
  **separate processes operated**
- **integrated policy and planning –**
  **SEA part of policy and plan-making**
- **sustainability appraisal –**
  **integrated assessment and review**

# Main forms of SEA

- **policy SEA – applies to highest level proposals**
- **sector plan and programme SEA – applies to proposals for specific sector**
- **spatial plan and regional SEA – applies to land use proposals for particular region**

# Policy SEA

- critical lever to influence development
- SEA difficult to apply at policy level
- often political and bureaucratic resistance
- policy-making itself not straightforward
- SEA needs to be adapted to process
- few countries make provision for policy SEA
- early adoption of non-statutory, minimum procedure
- policy SEA is legislated in some countries

# Sector plan and programme SEA

- most developed form of SEA
- will be extended by European Directive
- sector EA applied to World Bank financed programmes
- carried out by borrowing countries
- use and scope of application increasing
- mainly applied to establish framework for EIA of sub-projects
- potential lies in evaluation of major alternatives
- other approaches also relevant to developing countries

# Spatial plan and regional SEA

- long established form of SEA, e.g. in USA
- applies to land use plans for designated areas
- spatial planning is a systematic, transparent process
- easily integrated with SEA
- regional EA (REA) promoted by World Bank

# Spatial plan and regional SEA
**(continued)**

- use limited compared to sector EA
- applies to group of sub-projects for a geographic area
- provides framework for analysing cumulative effects
- other approaches also relevant to developing countries

# Carrying out a strategic environmental impact assessment (SEIA)

- ***screening*** **–**
  **Whether and what level of review is needed?**

- ***scoping*** **–**
  **What are the key issues and alternatives?**

- ***identification & comparison of alternatives*** **–**
  **What are the implications & trade-offs?**

- ***inform & involve the public*** **–**
  **What are the views & concerns?**

# Carrying out a strategic environmental impact assessment (SEIA)
**(continued)**

- ***analyse and evaluate the impacts*** **– What are the main effects, how can they be mitigated?**

- ***review the quality of the information*** **– Is it clear and sufficient for this purpose?**

- ***document the findings*** **– What information is needed for decision-making?**

- ***carry out follow up*** **– Are agreed measures being implemented?**

# Carrying out a strategic environmental appraisal

- ***list the objectives of the proposal*** **– What does it aim to achieve?**

- ***describe the alternatives*** **– What are options can achieve the objectives?**

- ***identify environmental impacts, issues and implications*** **– What are the effects, how can they be mitigated?**

# Carrying out a strategic environmental appraisal (continued)

- ***assess their significance*** **– How important are they?**
- ***quantify costs and benefits*** **– How can this be done?**
- ***value costs and benefits*** **– Which method(s) can be used?**
- ***state the preferred option*** **– What are the reasons?**

# Some examples of methods and their usage in SEA

| Step | Examples of Methods |
|---|---|
| Baseline Study | • SOE reports and similar documents<br>• Environmental stock/setting<br>• 'Points of reference' |
| Screening/Scoping | • Formal/informal checklists<br>• Survey, case comparison<br>• Effects networks<br>• Public or expert consultation |
| Formulating Options | • Environmental policy, standards, strategies<br>• Prior commitments/ precedents<br>• Regional/local plans<br>• Public values and preferences |

# Some examples of methods and their usage in SEA

**(continued)**

| Step | Examples of Methods |
|---|---|
| Impact Analysis | • Scenario development<br>• Risk assessment<br>• Environmental indicators and criteria<br>• Policy impact matrix<br>• Predictive and simulation models<br>• GIS, capacity/habitat analysis<br>• Benefit/cost analysis and other economic valuation techniques<br>• Multi-criteria analysis |
| Documentation for Decision Making | • Cross-impact matrices<br>• Consistency analysis<br>• Sensitivity analysis<br>• Decision 'trees' |

# Using SEA to test for sustainability assurance

| Stage of SEA | Sustainability Test | Key Questions |
|---|---|---|
| Screening | Direction toward requirements | Is the proposal consistent with sustainability policies?<br>What are the environmental implications in this regard? |
| Scoping | Distance to target | How does the proposal measure up against key indicators?<br>What are the significant environmental issues in this regard? |
| Significance | Determination of significance | What are the environmental impacts of the proposal?<br>How significant are they with reference to sustainability policies and criteria? |

*Source: Sadler, 1999.*

# Topic 15

## Future directions

# Using EIA to move towards sustainability

- EIA is a foundation tool
- EIA is a tried and tested process
- EIA is a legal requirement in many countries
- EIA is an integrative tool already
- EIA is well positioned for the next steps
- EIA is suited to capacity building

# Using SEA to move toward sustainability

- SEA adds value to foundation tool
- SEA complements and extends EIA
- SEA being adopted by more countries
- SEA addresses major alternatives
- SEA is step toward comprehensive options assessment

# Current realities

- EIA basics need strengthening in many developing countries
- SEA still used primarily by developed countries
- EIA and SEA yet to realise their full potential
- limited consideration of global, large scale changes
- current practice provides minimal level of 'sustainability assurance'

# Emerging challenges

- new challenges imposed by globalisation
- environmental impacts becoming larger, more complex
- increasingly difficult to predict and mitigate
- shift toward adaptive and integrative assessment
- emphasis on precautionary rather than predictive approach
- use of best estimate science to identify safe margins
- backed by monitoring, auditing and other checks

# Considering future directions step by step

- **Step 1: What ideally should happen?**

  **Identify needed changes from national sustainability agenda**

- **Step 2: What realistically is likely to happen?**

  **Consider development aims and trends that apply locally**

- **Step 3: What probably could happen with capacity building?**

  **Reach conclusions based on strategies in place or pending**

# Key trends and imperatives for sustainable development

- ***impacts*** **–**
  **rate and scale of global change unparalleled**

- ***drivers*** **–**
  **population growth, increasing consumption and technology**

- ***response*** **–**
  **linkages must be assessed systematically and holistically**

- ***sustainability*** **–**
  **reconciling environmental, economic and social aims**

# Two main directions for EIA and SEA

- 'upstream' toward sustainability appraisal
  - integrating EIA and SEA with other impact assessment tools
- 'downstream' toward environmental management
  - combining assessment, accounting and auditing tools

# Aspects and issues of sustainability appraisal

- full cost analysis of development proposals
- equated with integrated impact assessment
- identifies economic, environmental, and social effects
- incorporates sustainability aims, principles, criteria
- clarifies trade-offs and facilitates balanced decision-making

# Aspects and issues of sustainability appraisal (continued)

- triple bottom line must be met at minimum level
- new approach to decision-making needed
- examples of applications include:
  - sustainability assessment of trade framework for environmental assurance and assessment
  - core values and criteria for decision-making

# Aspects and issues of integrated environmental management (IEM)

- focus on environmental impacts of all development actions
- particular attention given to business and industrial operations
- EMS certified to ISO 140001 cover larger enterprises
- many activities and enterprises not subject to control

# Aspects and issues of integrated environmental management (IEM)

**(continued)**

- **lack of IEM framework and tools**
- **building blocks of IEM system include:**
  - **environmental accounting to cost depletion and damage**
  - **environmental assessment to provide sustainability assurance**
  - **environmental auditing to verify compliance and performance**

# Interim measures to improve EIA and SEA practice

- move toward integrated approach step by step
- getting there will take time
- progress will vary from country to country
- use TNA to identify priority requirements
- identify improvements that can be made now
- identify improvements that could be made in near term
- identify improvements that could achieve sustainability appraisal over medium term