Economics of Sustainable Management

7. Environmental Impact Assesment

Tento projekt je spolufinancován Evropským sociálním fondem a Státním rozpočtem ČR InoBio – CZ.1.07/2.2.00/28.0018

Environmental Impact Assesment (EIA)

1. History
2. Philosophy
3. Legislation
4. Procedure - 9 steps
5. Case examples

Definition

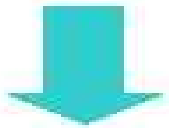
- a planning and management tool for sustainable development that seeks to identify the type, magnitude and probability of environmental and social changes likely to occur as direct or indirect result of a project or policy and to design the possible mitigation procedure (Vanclay and Bronstein, 1995; Harvey, 1998; Momtaz et al., 1998; Thomas, 1998).

- a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse (CBD)

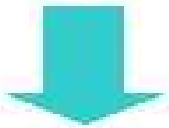
- *"an assessment of impacts of a planned activity on the environment" (United Nations)*

- *„EIA is the systematic process of identifying the future consequences of a current or proposed action" (IAIA)*

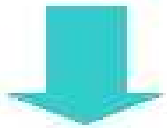
All of these definitions share the basic concepts of:



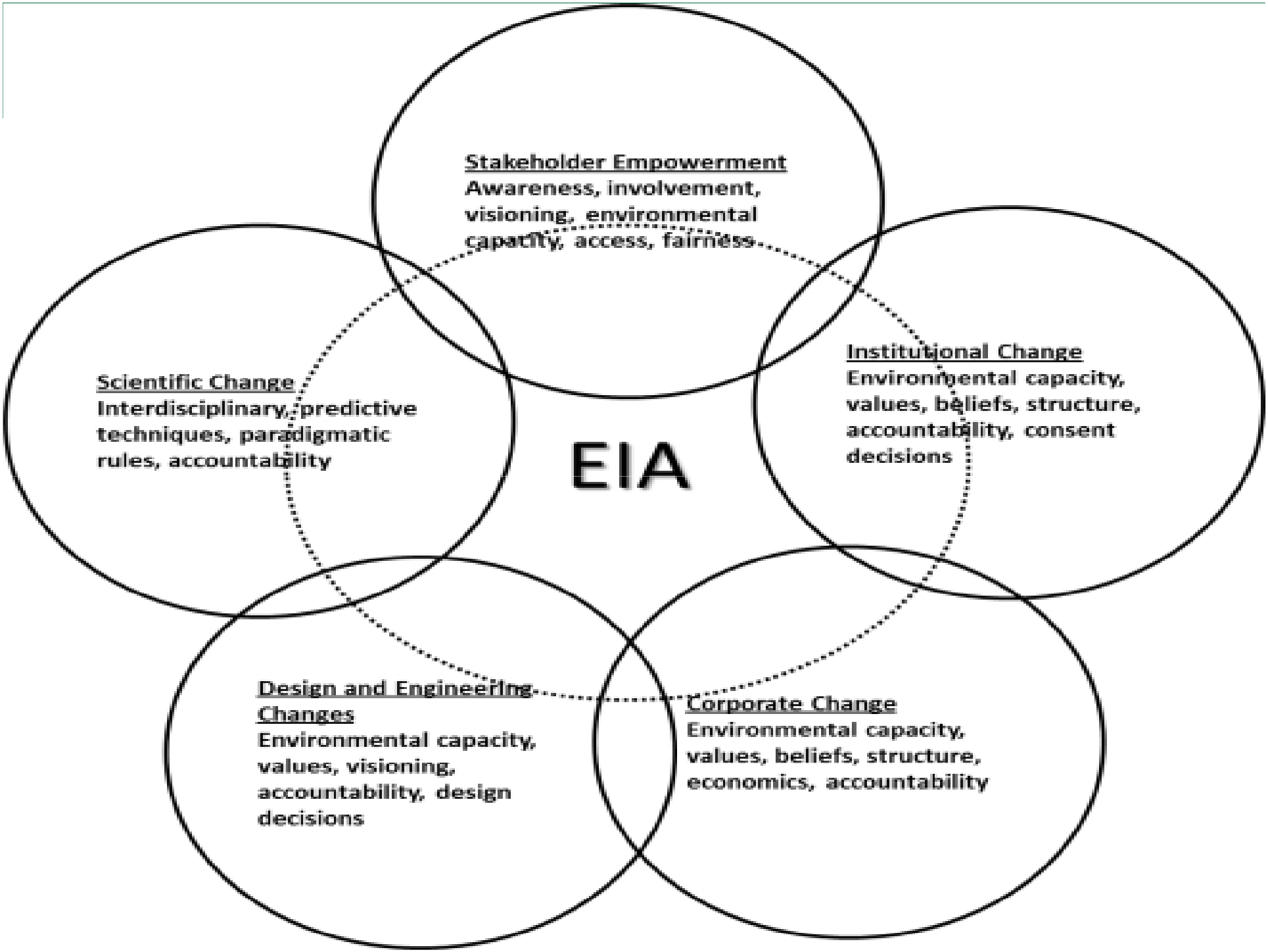
1. EIA as a process



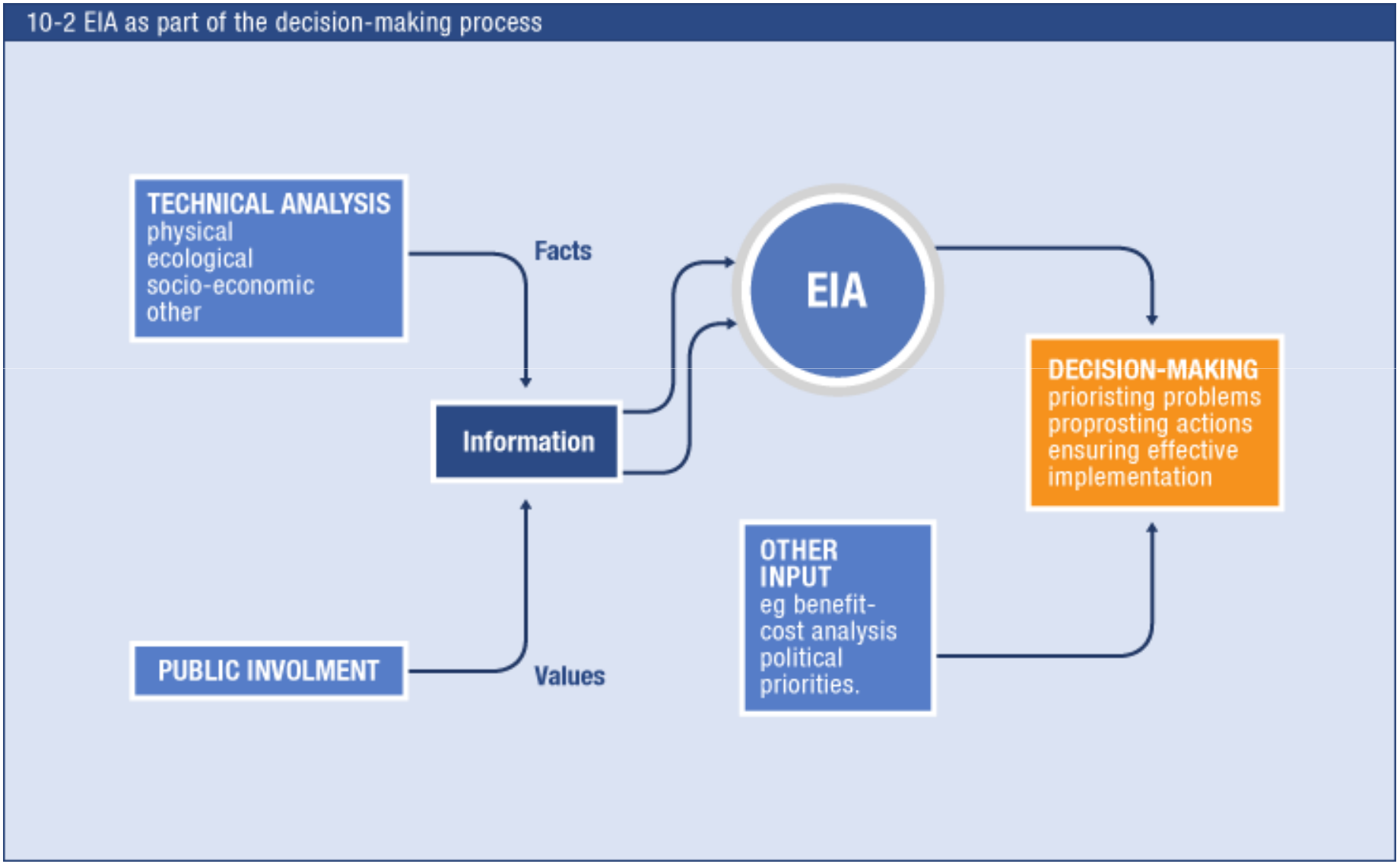
2. EIA as a part of project planning



3. EIA as a proactive way of addressing environmental concerns


Stakeholder Empowerment
Awareness, involvement, visioning, environmental capacity, access, fairness
Scientific Change
Interdisciplinary, predictive techniques, paradigmatic rules, accountability
EIA
Institutional Change
Environmental capacity, values, beliefs, structure, accountability, consent decisions
Design and Engineering Changes
Environmental capacity, values, visioning, accountability, design decisions
Corporate Change
Environmental capacity, values, beliefs, structure, economics, accountability

10-2 EIA as part of the decision-making process



Aims of EIA

"To LOOK before you LEAP!"

- provide information for decision-making on the environmental consequences of proposed actions; and
- promote environmentally sound and sustainable development through the identification of appropriate enhancement and mitigation measures.

- EIA is now a required process in more than 100 nations
- the International Association for Impact Assessment (IAIA) is a global network with 2,700 members from more than 80 countries.

Aims

- **to provide decision-makers with analysis of the total environment**
so that decisions can be made based on as nearly complete and balanced information as possible;

- **to assess and present intangible/unquantifiable effects**
that are not adequately addressed by cost/benefit analysis and other technical reports;

- **to provide information to the public**
on a proposal;

- **to formalise the consideration of alternatives to a proposal**
being considered, in order that the least environmentally harmful means of achieving the given objective can be chosen;

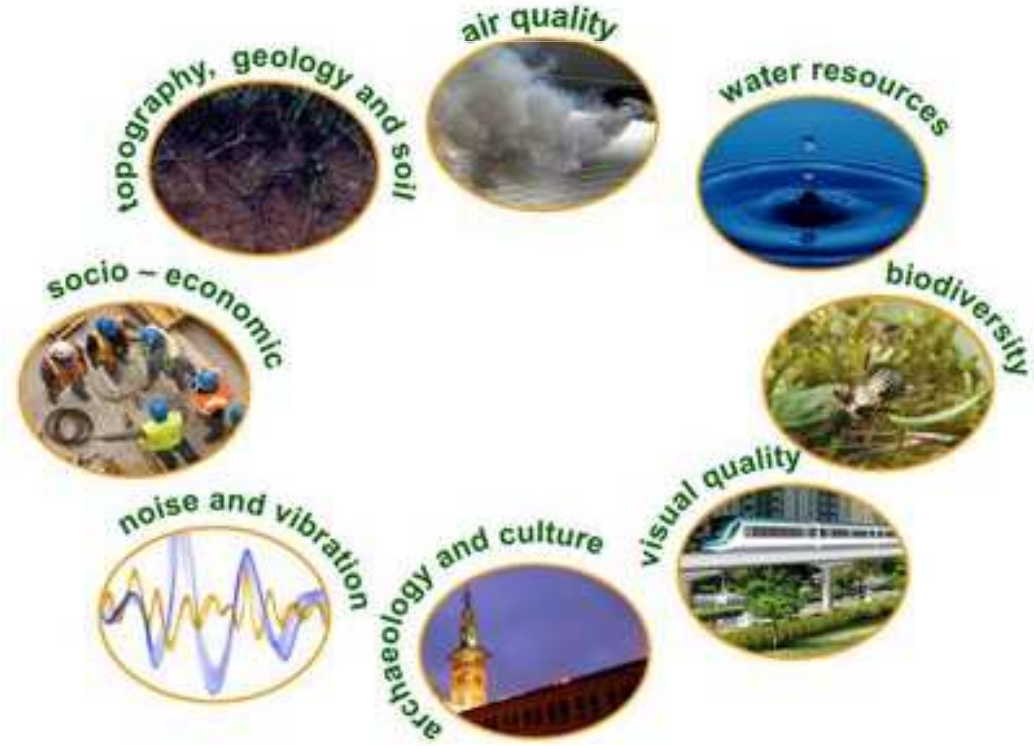
- **to improve the design of new developments and safeguard the environment**
through the application of mitigation and avoidance measures

Reasons for Using EIA

- a result of the failure of traditional project appraisal techniques to account for environmental impacts

- projects in the past were designed and constructed in isolation from any consideration of their impacts on the environment, resulting in:

- higher costs,
- failure of projects,
- significant environmental change,and
- negative social effects



History of EIA

- The National Environmental Policy Act 1969 of USA is the legislative basis for EIA. The policy was the result of wide spread recognition in the 1960s that some major environmental problems were created by the government's projects (power stations, dams and reservoirs, industrial complexes).
- The legislation made mandatory to assess the environmental consequences of all projects by federal agencies.
- In 1990s, many developed and some developing countries designed their EIA legislation. e.g. New Zealand (1991), Canada (1995), Australia (1999), Vietnam (1993), Uganda (1994), Ecuador (1997).
- Today, EIA is firmly established in planning process in many of these countries.

Belgium	1985	Netherlands	1986
Denmark	1989	Portugal	1990
Germany	1990	Spain	1986
France	1976	UK	1990
Greece	1990		
Ireland	1990	Czech Republic	
Italy	1988		

European implementaion:

Council of the EU Communities, Directive of 27 June 1985 on the Assesment of the Effects of Certain Public and Private Prijects on the Environmenta (85/337)ECC), Official Journal of the EU Communities, No. L 175/40

limmediate aim of EIA

The immediate aim of EIA is to inform the process of decision-making by identifying the potentially significant environmental effects and risks of development proposals.

Objectives related to this aim are to:

- improve the environmental design of the proposal;
- ensure that resources are used appropriately and efficiently;
- identify appropriate measures for mitigating the potential impacts of the proposal; and
- facilitate informed decision making, including setting the environmental terms and conditions for implementing the proposal.

Ultimate (long term) aim of EIA

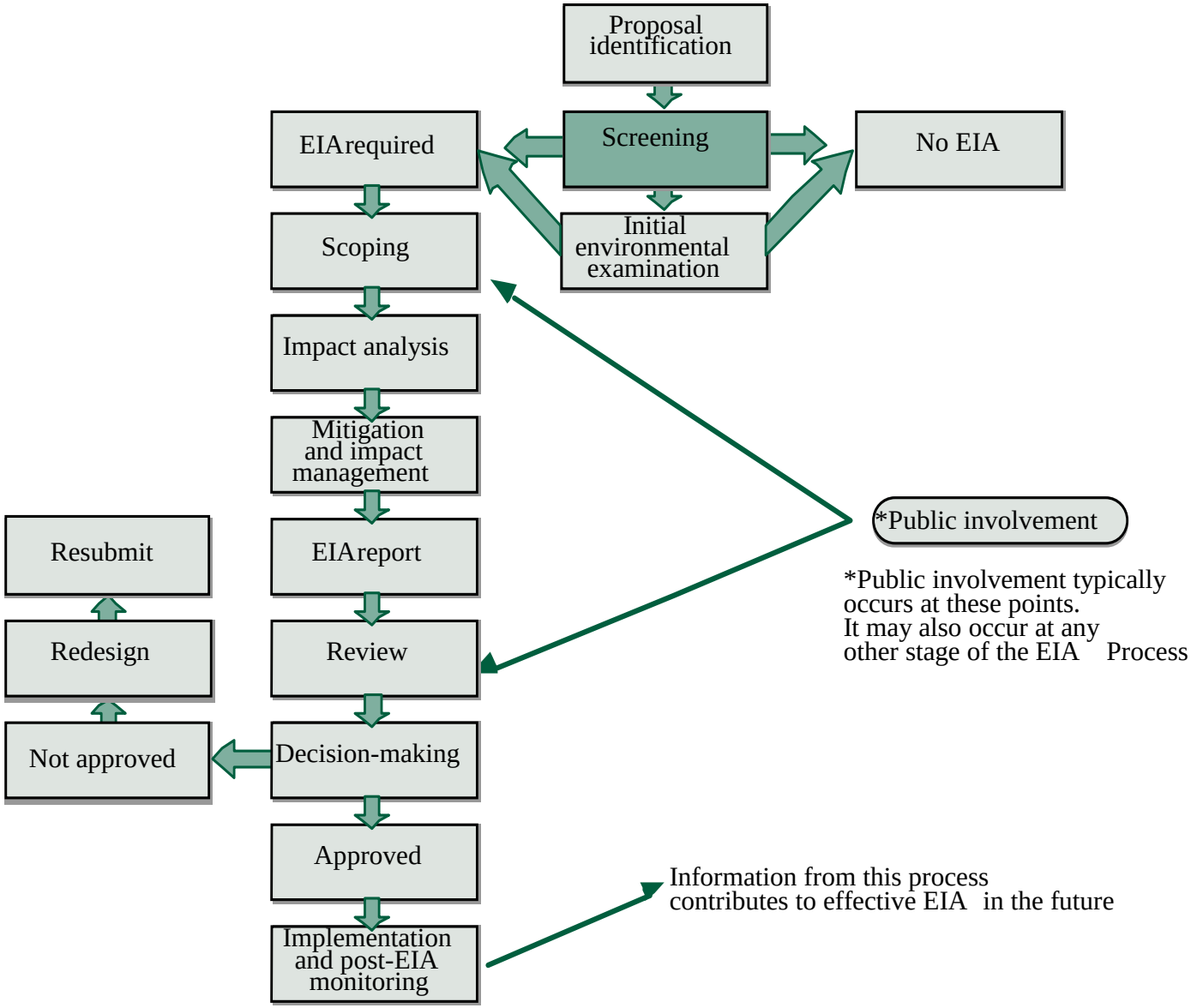
The ultimate (long term) aim of EIA is to promote sustainable development by ensuring that development proposals do not undermine critical resource and ecological functions or the well being, lifestyle and livelihood of the communities and peoples who depend on them.

Objectives related to this aim are to:

- protect human health and safety;
- avoid irreversible changes and serious damage to the environment;
- safeguard valued resources, natural areas and ecosystem components; and
- enhance the social aspects of the proposal.

Regions	Major Environmental Issues
Africa	The continent has the world's poorest and most resource dependent population. It carries the highest health burden due to severe environmental problems. These include desertification and soil degradation, declining food security, and increasing water scarcity.
Asia and Pacific	Rapid economic growth, urbanization and industrialization have helped in poverty alleviation but also increased pressure on land and water resources, widespread environmental degradation and high pollution levels. Mega- cities are a particular focus of environmental and health concerns.
Eastern Europe and Central Asia	Despite progress with economic restructuring and environmental clean up, there is a legacy of industrial pollution and contaminated land during communist era. In many areas, emissions of particulates, SO2, lead, heavy metals and toxic chemicals continue to expose the residents to health risks, and, in the Balkans, war and regional conflict have exacted a heavy environmental and social toll.
Latin America and the Caribbean	Approximately three-quarters of the population live in urban areas. Many cities are poor, overcrowded, polluted and lack basic infrastructure. The major environmental issue is the destruction of tropical forests and consequent loss of biodiversity, which is especially serious in the Amazon basin.

How to develop?



1. step - Screening

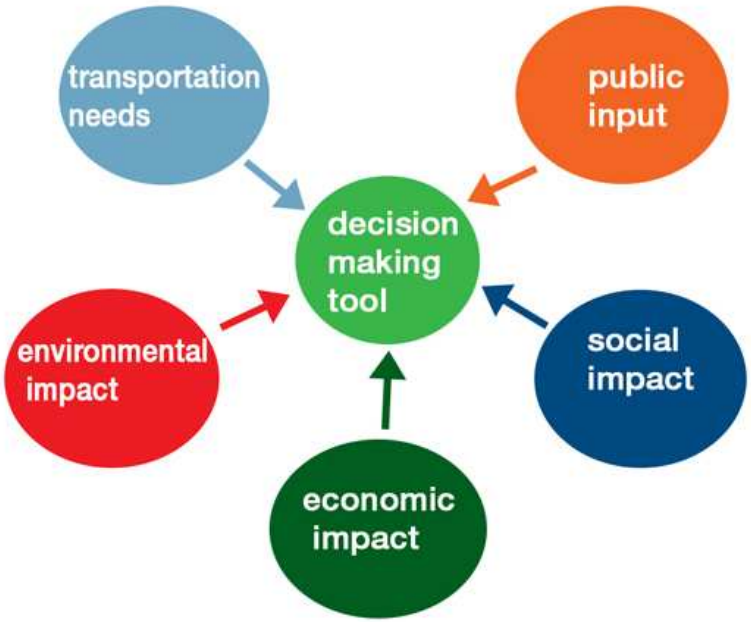
- to determine which projects or developments require a full or partial impact assessment study

This step determines:

- whether or not EIA is required for a particular project
- what level of EIA is required

Screening Outcomes:

- Full or comprehensive EIA required
- Limited EIA required
- No EIA required

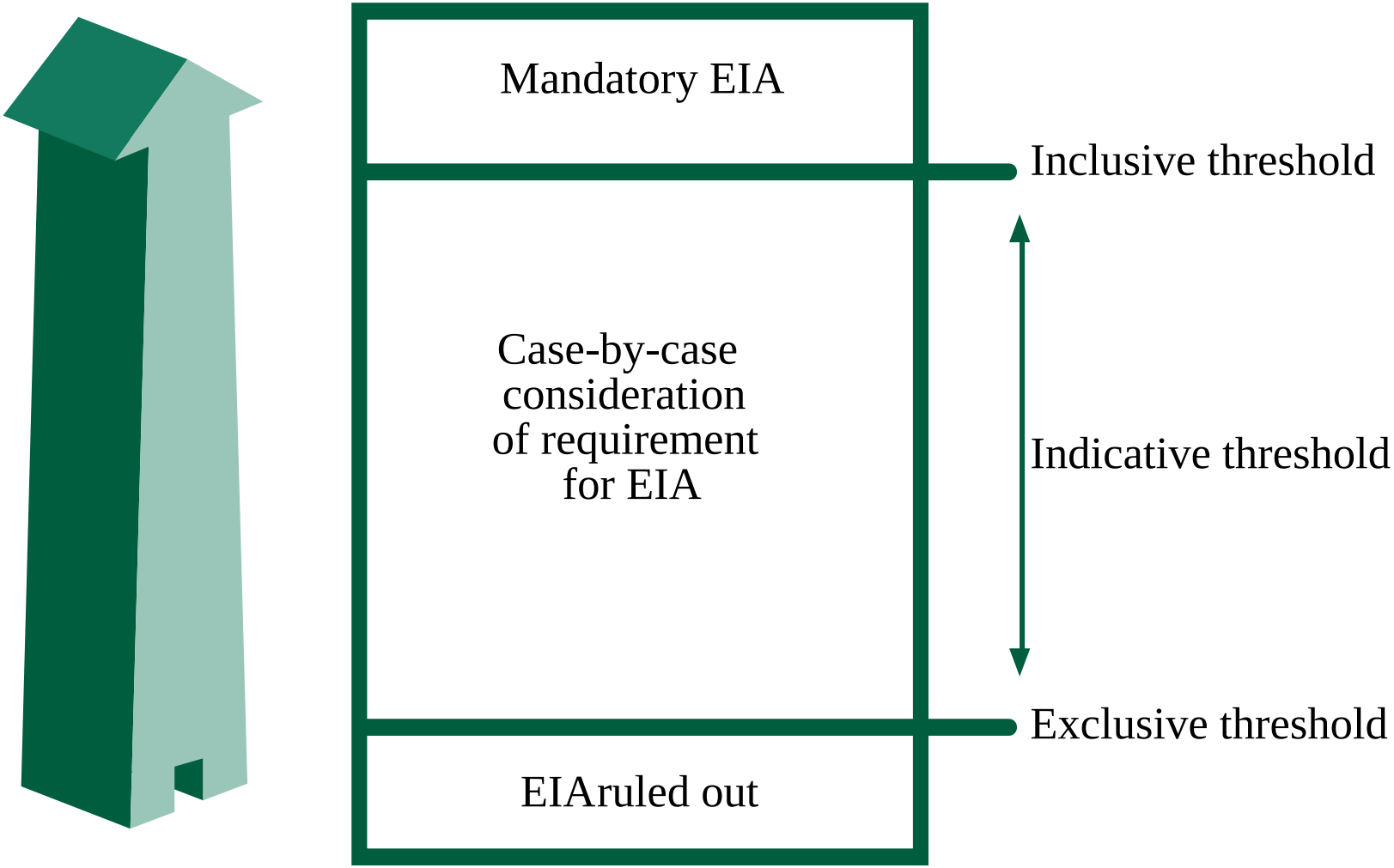


Tools

- **Project lists:**
  - Inclusive – listed projects must undergo EIA
  - Exclusive – listed projects exempted from EIA

- **Case-by-case examinations:**
  - determine whether projects may have significant environmental effect
  - if so, project should undergo EIA

- **Combination of above**


Mandatory EIA
Inclusive threshold
Case-by-case consideration of requirement for EIA
Indicative threshold
Exclusive threshold
EIAruled out

2. Step - **Scoping**

- to identify which potential impacts are relevant to assess (based on legislative requirements, international conventions, expert knowledge and public involvement)

- to identify alternative solutions that avoid, mitigate or compensate adverse impacts on biodiversity (including the option of not proceeding with the development, finding alternative designs or sites which avoid the impacts, incorporating safeguards in the design of the project, or providing compensation for adverse impacts), and finally to derive terms of reference for the impact assessment;

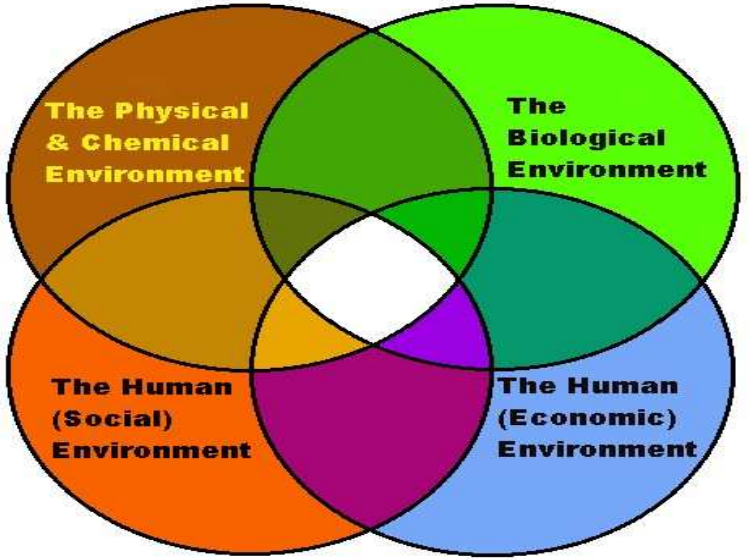
- begins once screening is completed as the most important step in EIA
- establishes the content and scope of an EIA report

Types of scoping

Closed scoping: wherein the content and scope of an EIA Report is pre-determined by law and modified through closed consultations between a developer and the competent authority

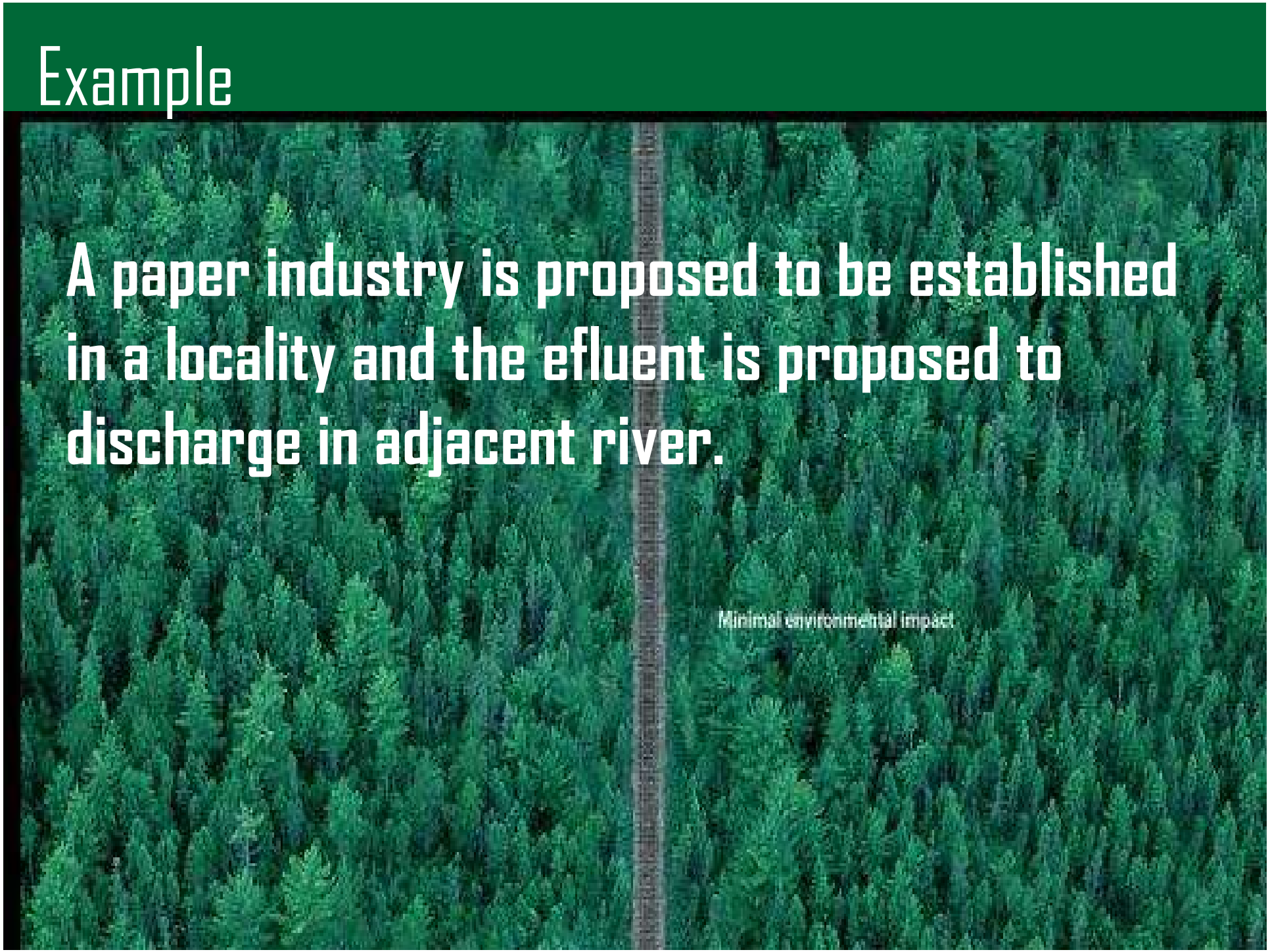
Open or Public scoping: a transparent process based on public consultations

Actors: EIA consultant, supervisory authority for EIA, agencies, affected public and interested public



THE 4 FACETS OF THE ENVIRONMENT

Example


A paper industry is proposed to be established in a locality and the efluent is proposed to discharge in adjacent river.
Minimal environmental impact

- ETP will be installed to bring the discharge down to premissible limit
- There are few other industries already established discharging efluent to the river at allowable limit
- People bath in river water and drink after treatment
- Significant number of people depend on fishing for occupation

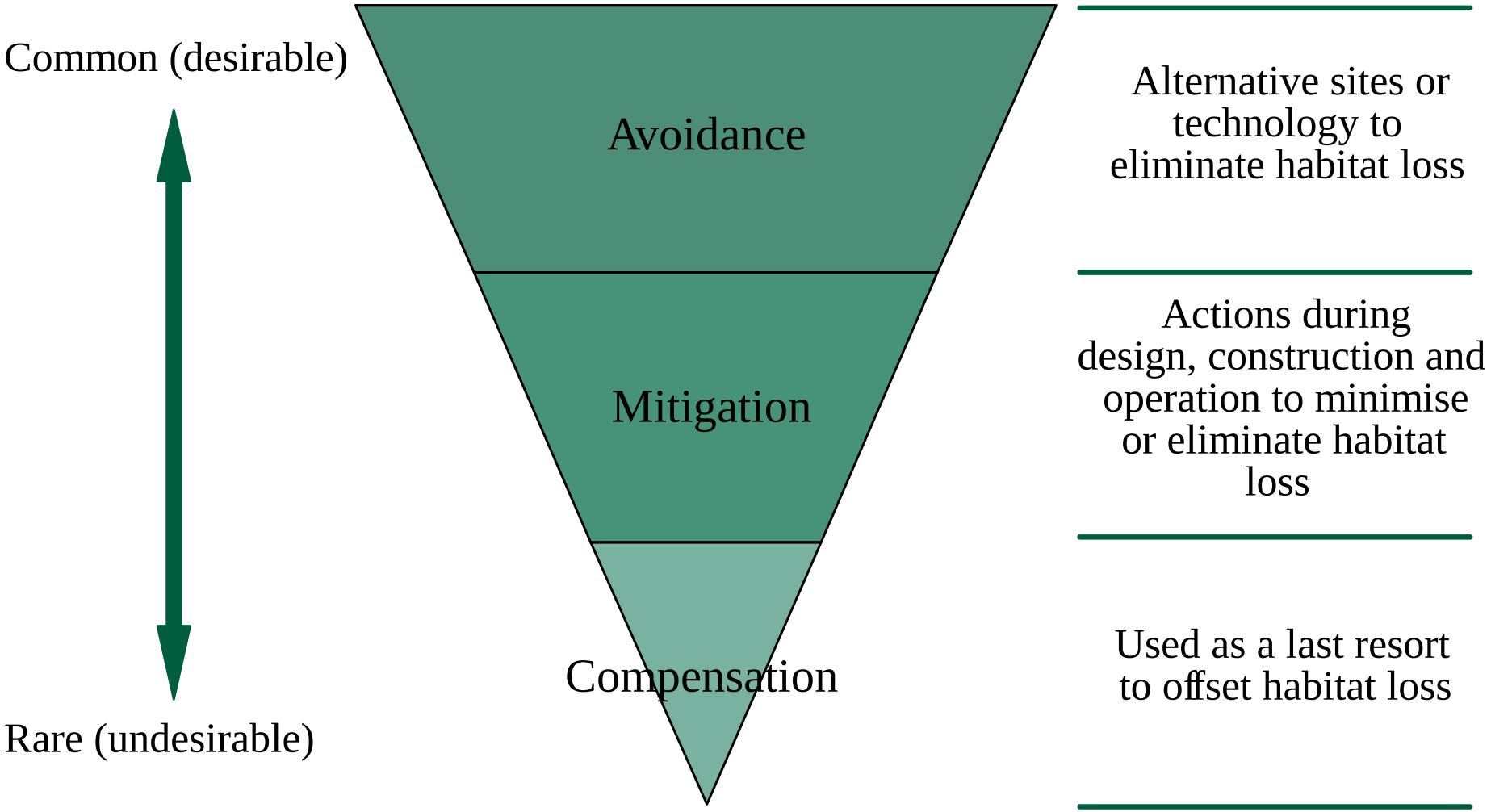
3. Step - **Impact analysis**

- **Tools:** checklists, matrices, networks, overlays and geographical information systems (GIS), expert systems, professional judgement

→ **Type**	biophysical, social, health or economic
→ **Nature**	direct or indirect, cumulative, etc.
→ **Magnitude or severity**	high, moderate, low
→ **Extent**	local, regional, trans-boundary or global
→ **Timing**	immediate/long term
→ **Duration**	temporary/permanent
→ **Uncertainty**	low likelihood/high probability
→ **Reversibility**	reversible/irreversible
→ **Significance***	unimportant/important

4. step - **Impact Mitigation**

- to avoid, minimise or remedy adverse impacts
- to ensure that residual impacts are within acceptable levels
- to enhance environmental and social benefits


Common (desirable)
Rare (undesirable)
Avoidance
Mitigation
Compensation
Alternative sites or technology to eliminate habitat loss
Actions during design, construction and operation to minimise or eliminate habitat loss
Used as a last resort to offset habitat loss

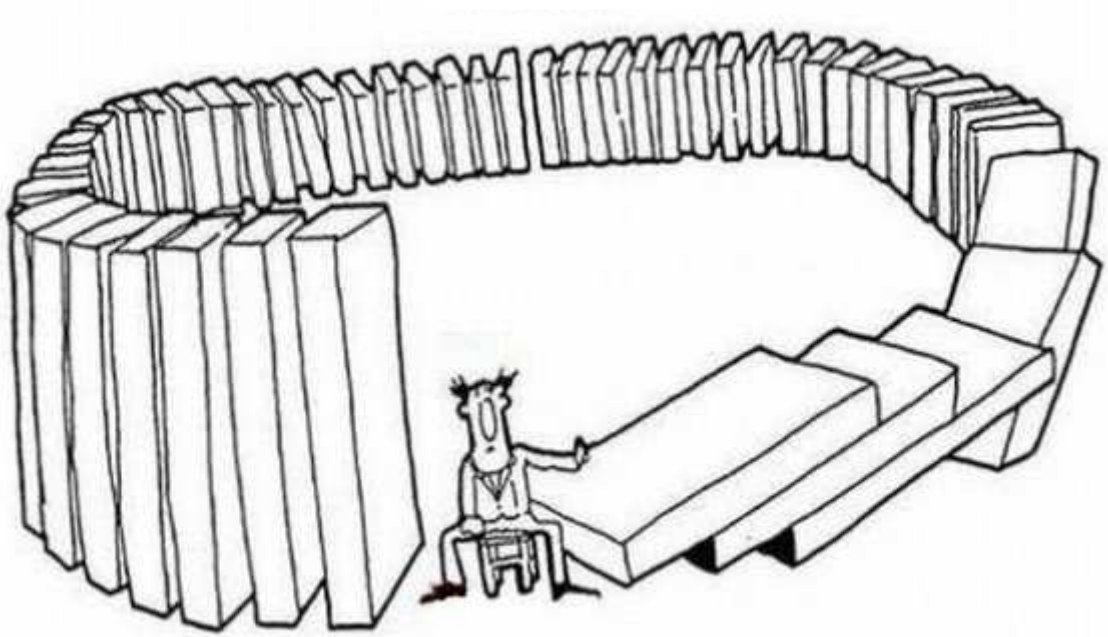
5. step - **Reporting**

Different name of EIA reports : Environmental Impact Assessment Report (EIA Report) / Environmental Impact Statement (EIS) / Environmental Statement (ES) / Environmental Assessment Report (EA Report) / Environmental Effects Statement (EES)

Contents of the Report - description of the project, an outline , the aspects of the environment , measures to prevent, a non-technical summary, an indication of any difficulties

6. step - **Review**

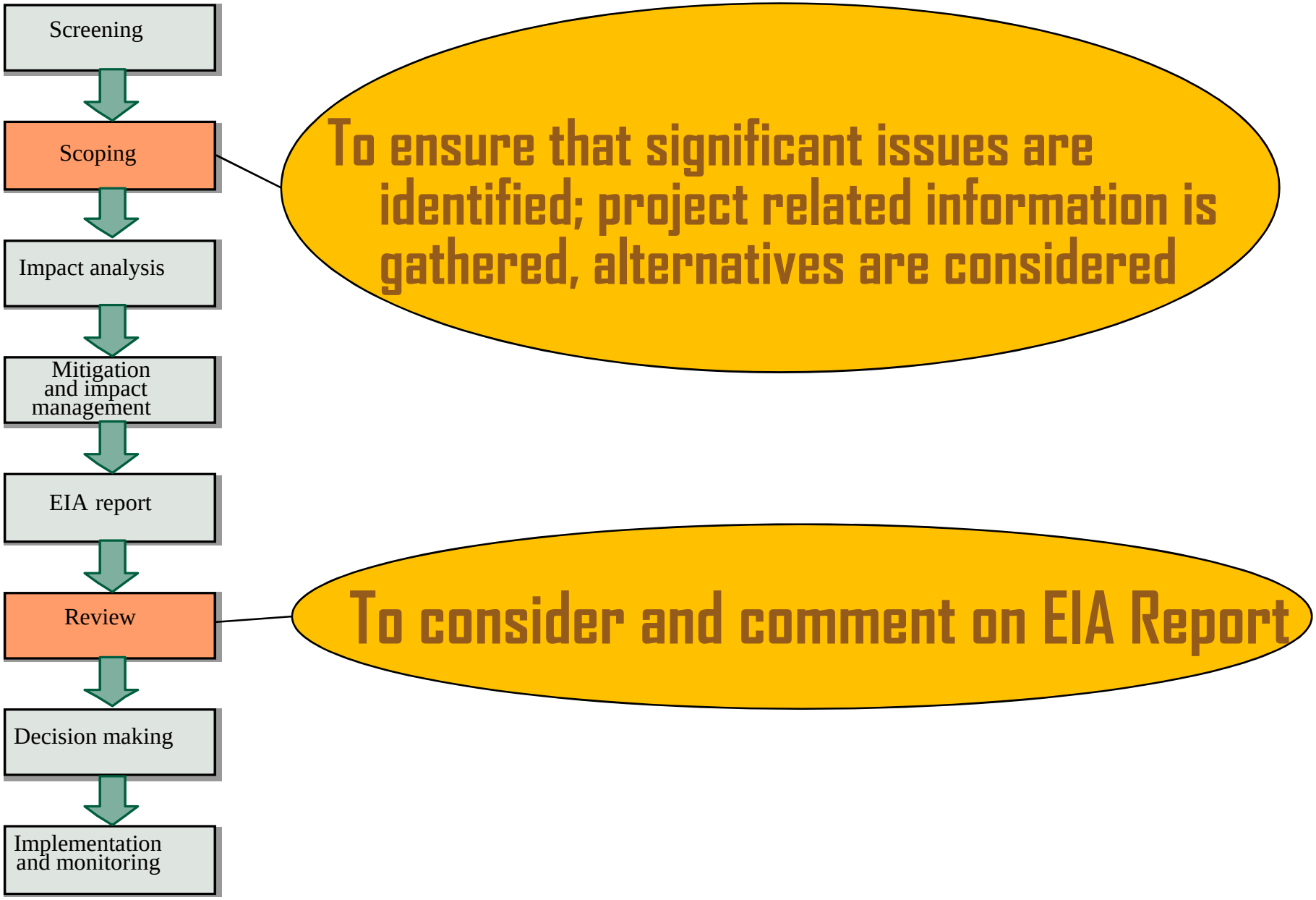
- Review the quality of the EIA report.
- Take public comments into account.
- Determine if the information is sufficient.
- Identify any deficiencies to be corrected.



7. step - **Monitoring**

- Ensure the implementation of conditions attached to a decision.
- Verify that impacts are as predicted or permitted.
- Confirm that mitigation measures are working as expected.
- Take action to manage any unforeseen changes.

Public Involvement in the EIA Steps



Environmental Impact Assesment (EIA)

The Sydney Harbour Tunnel example online
http://www.herinst.org/envcrisis/tunnel/transcript.html

Air Quality Issues
http://www.ess.co.at/AIR-EIA/cases.html

Journal: **Environmental Impact Assessment Review**

Environmental Impact Assessment Review

Volume 40, Pages 1-88 (April 2013)
Ecosystem services in EIA and SEA

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Edited by Davide Geneletti

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Highlights

► Critical examination of the conception and application of ecosystem services within environmental assessment ► Ident environmental assessment's challenges from the literature ► Exploration of ecosystem services in environmental assess

...to know...

What is EIA? (aims and objectives)

Draw the entire EIA process and describe the steps

How the concern of public is taken account in EIA?

Thank you.