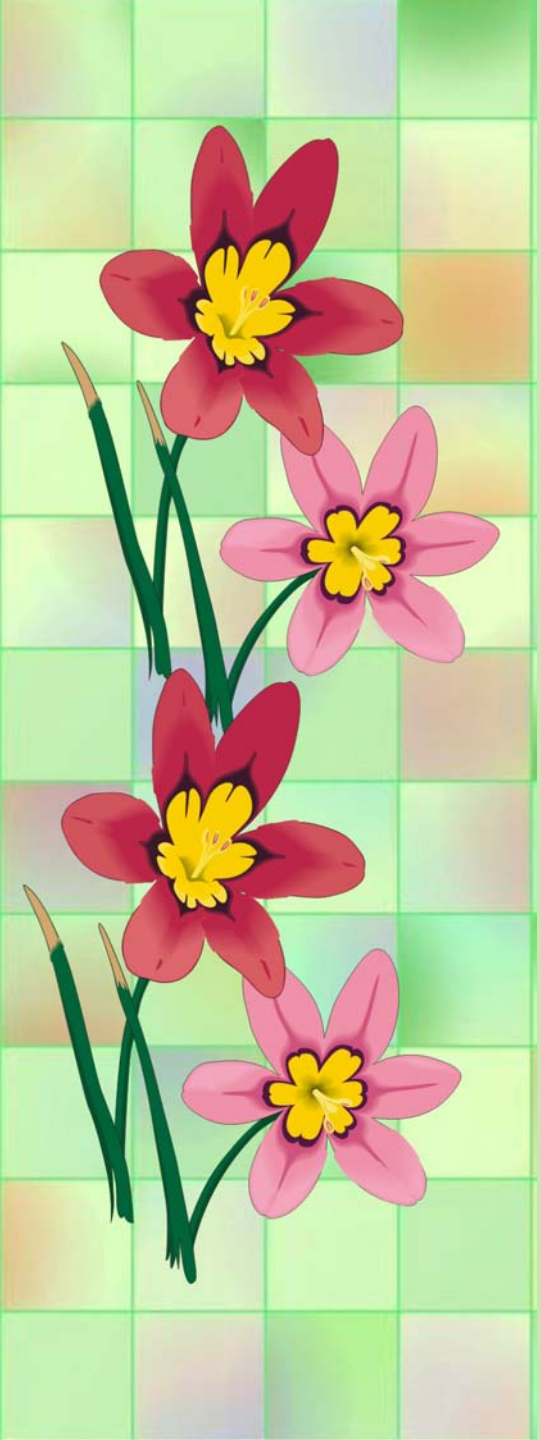

Framework for biodiversity inclusive impact assessment

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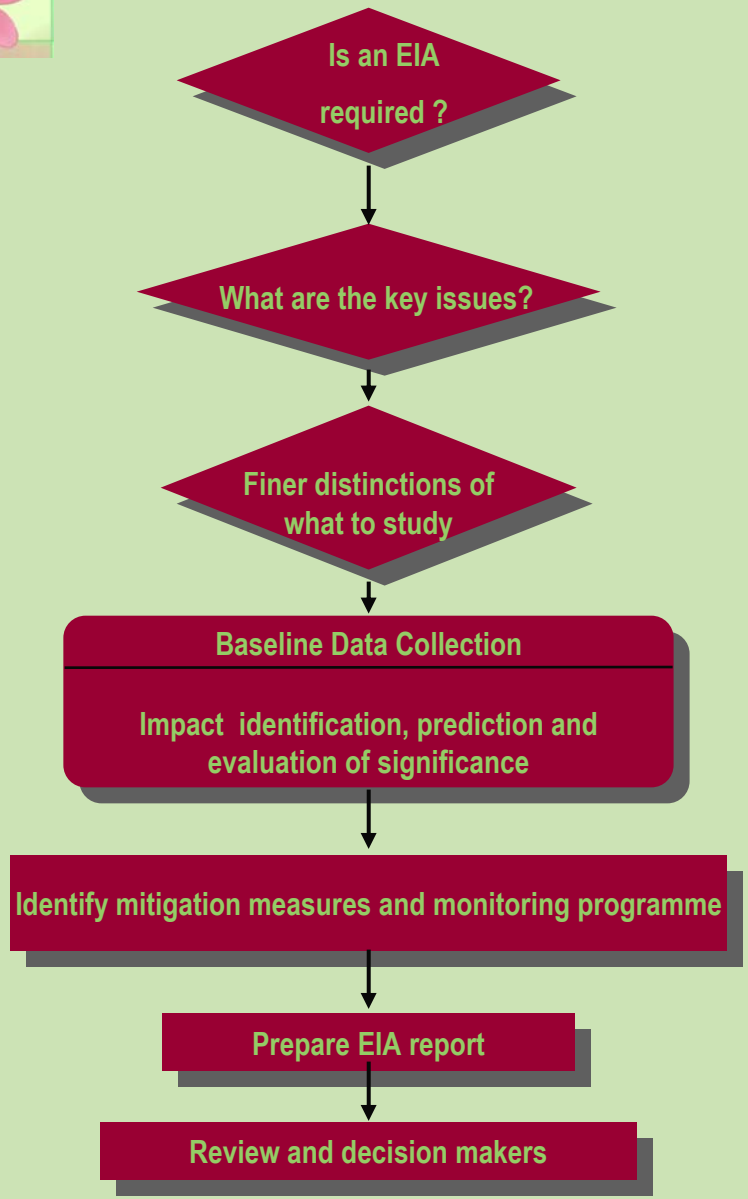
Why conduct biodiversity- inclusive assessment?

- Biodiversity is a ‘life insurance policy for life itself’. It’s conservation is critical in this time of fast-paced global change (World Summit on Sustainable Development, 2002)
- Biodiversity issues are consciously underplayed in EIA to prevent these issues become barriers to development.
- Biodiversity- inclusive impact assessment provide a means to identify drivers of negative changes on biodiversity and ecosystem functions that affect human well being
- It is a widely recognised ‘mainstreaming tool’ with a potential to improve the integration of biodiversity considerations in planning of developments in all key economic activities.

Promotes positive planning for biodiversity- How?

- Minimum impact on biodiversity
- No net loss of genetic variability and species diversity
- No irreversible damage to ecosystem characteristics and functions
- No effect on sustainable use of biological resources
- Maintenance of natural processes and adequate areas of landscape/habitats for wild organism
- Identification of threats of endangerment
- Address cumulative effects on biodiversity
- Better mitigation planning for biodiversity conservation

Generic EIA framework



Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

Retooling the framework for mainstreaming biodiversity

- Screening
- Scoping
- Focusing
- Assessment
- Evaluation
- Mitigation
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- Review and Monitoring

Is an EIA needed from biodiversity standpoint?

The screening mechanism seeks to identify those projects with potentially significant adverse effects on biodiversity components and ecosystem services.

The outcome of the screening process is the development of a screening criteria and a screening decision.

Screening criteria for biodiversity

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Legal requirements for biodiversity conservation
- location of project in biogeographically important zones and conservation areas (e.g. Protected Areas, World Heritage Sites)
- location of project in areas known to be habitats for threatened species, or in other ecologically sensitive areas
- biodiversity values including valued ecosystem components and services of the project site
- review of activities in entire project cycle for determining drivers of change of biodiversity

(e.g. harvest or removal of species; habitat diversion, fragmentation and isolation; external inputs such (emissions, effluents, chemicals, radiation, thermal or noise), introduction of alien, invasive or genetically modified organisms,).

Screening decisions:

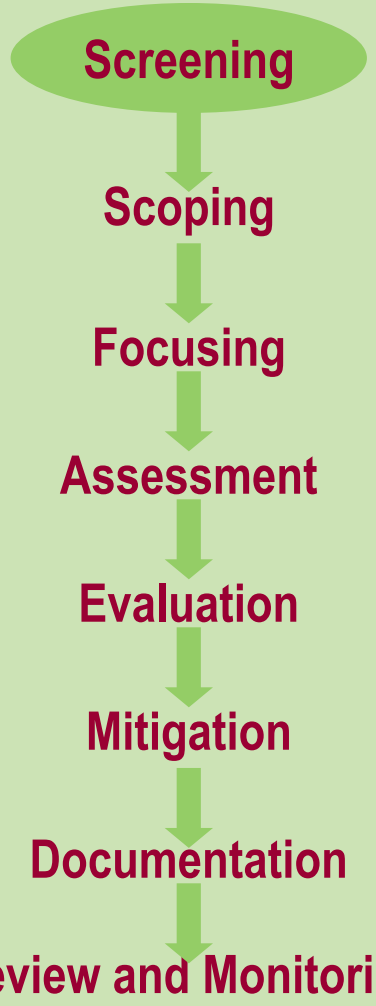
- EIA required (with levels of assessment).
- EIA not required (with justification)

Category 1 – project not expected to result in any significant adverse impact on biodiversity resources

Category 2 – projects which likely to cause significant adverse impacts unless appropriate mitigation taken

Category 3 – projects likely to cause a range of significant adverse impacts with unknown magnitude demanding a detailed study

Screening requirements:



- Information about the proposal and its potential impacts
- Level of confidence in impacts
- Characteristics of the biological environment, current levels of threats and endangerment of species
- Decision-making framework
- Degree of public interest

" importance criteria" for including biodiversity in impact assessment

Potential impacts on PAs and area supporting protected species

Areas under important biodiversity

Areas that provide important biodiversity services *(e.g. shelter, resources, wetlands, breeding grounds, flood storage areas and ground water re-charge areas*)

Use of biodiversity screening maps

Guidance for framing screening questions

Level of diversity	Conservation of biodiversity	Sustainable use of biodiversity
Genetic diversity	*Would the intended activity result in extinction of a population of a localised endemic species of scientific, ecological, or cultural value?*	*Does the intended activity cause a local loss of varieties/cultivars/breeds of cultivated /domesticated plants and animals, and what are the economic and livelihood impacts?*
Species diversity	*Would the intended activity cause a direct or indirect loss of a population of a species or pose threat?*	*Would the intended activity affect sustainable use of a population of a species and economic and livelihood impacts?*
Ecosystem diversity	*Would the intended activity lead, to loss of (an) ecosystem(s), or impair ecosystem services that create challenges for conservation*	*Does the intended activity affect the status of biodiversity and sustainable utilization by increasing destruction or exploitation of resources that benefits society and its well being*

Source: Treweek (2001) Slootweg (2006)

EIAs can not be encyclopedic

Scoping stage defines key biodiversity issues which should be included in Impact Assessment and determines the scope, depth and terms of reference

Scoping is not currently mandatory under the provisions of EIA legislation in some countries

Scoping outputs

- Understanding of the proposal and those activities which might affect biodiversity as well as local people who depend upon biodiversity.
- Preliminary understanding of stakeholder requirements.
- Scope of work or Terms of Reference to include important biodiversity impacts.
- Identification of alternative solutions that avoid, mitigate or compensate adverse impacts on biodiversity.
- Appropriate expertise identified and a suitably qualified team assembled.
- Ensure that the EIA will result in an Environmental Impact Statement for the decision maker to evaluate the project for ecological and economic sustainability.

Who should be involved in scoping ?

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Relevant federal and state ministries (Mining, Industry, Transport, Health & Welfare, Water Resource, Forest & Environment, Finance etc.)
- Private and public sector organizations representing developers.
- Planning commissions.
- Local government bodies.
- NGOs and community interest groups.
- Local people.
- Gender issues should be considered.
- Team of specialists including an economist for identifying linkages between development goals and targets and distribution of benefits to society without compromising the biodiversity values.
- Financial institutions.

For biodiversity inclusive EIA, scoping should involve biodiversity experts and people dependent on biodiversity resources in the project site and good source of traditional knowledge

A more pragmatic approach involves development of country guidance and translating the scoping outputs into ToRs.

Scoping criteria for biodiversity

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Impact on an established protected area
- Impact on resources important for the biodiversity conservation
- Impact on attempts to protect ecosystems or promote the recovery of threatened species
- Release of living modified organisms
- Introduce alien species which threaten ecosystems
- Impact on the knowledge, innovations, and practices of indigenous and local communities
- Impact on attempts to conserve components of biodiversity in an ex situ context
- Impact on measures being taken for the recovery and rehabilitation of threatened species

'Counting everything' approach is not pragmatic

Refining and defining scope of work is necessary

Key attributes -

- Biogeographic units
- Landscape units or 'eco-regions'
- Habitats of protected species
- Special site (feeding, breeding or nesting sites)
- Migratory routes or stop over sites

Criteria for selecting species as VECs

- Charismatic and emblematic species
- Economic importance
- Protected status
- Rarity
- Endangerment/conservation status
- Susceptibility and/or responsiveness to defined impacts (indicators)
- Umbrella species
- Important ecological role (e.g. position in food chain, keystone species)
- Availability of consistent survey methods
- Expediency/tractability for survey

(Source: Treweek, 1999)

Valued ecosystem processes

- **Nutrient cycles** (can effect system productivity and species composition)
- **Energy flow** (affects ability of systems to 'support' component species)
- **Productivity** (affects ecosystem function and species composition)
- **Eutrophication** (a form of increased productivity with implications for species composition)
- **Succession** (knowledge of patterns of succession is important for predicting community change over time)
- **Colonization** (can be a key in maintaining populations)
- **Dispersal** (key factor in maintaining populations and is also important with respect to ability to recover following impact)
- **Competition** (altered competition has implications for species composition and patterns of succession)
- **Assimilative capacity** (can affect ability of a system to absorb or recover from pollution)
- **Population processes** (breeding, migration)

(Source: Treweek, 1999)

Assessment involves:

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Developing a ‘baseline’ against which future impacts can be assessed and alternatives reviewed.
- Prediction of impacts affecting those important features and resources, which meet or exceed a defined threshold value, with reference to ecological processes and functions as appropriate.
- Review of the project, design, objectives for intended economic benefits without compromising on ecological sustainability and equitable sharing of resources for future security and well being of local communities

Although, many EIAs fail to consider alternatives, alternatives are really at the ‘heart’ of the EIA. Many EIA professionals consider them as essential ‘raw material’ of good EIA.

Good practices for biodiversity inclusive assessment should encourage:

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Focus on VEC, likely to be stressed by proposed development
- Use of select indicators and parameters that are measurable and standardized
- Appropriateness of scale
- Recognize of natural variability that is understood
- Value addition to existing data series
- Diagnostic and not as a descriptive tool

The evaluation stage aims to:

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Identify all impacts that by their magnitude, duration or intensity alter important biodiversity functions, characteristics or ecosystem services.
- Assess sensitivity of the ecological features to provide a benchmark against which changes can be evaluated to determine the vulnerability of species or ecosystem characteristics and functions.
- Determine the overall significance of the anticipated impacts of the proposed projects including the economic costs and benefits.
- Recommend impacts that essentially need to be managed through impact reduction measures.

Impacts can vary in nature, magnitude, extent, timing, duration and reversibility

Broad categories of ecological impacts

Direct impacts

- **Habitat loss or destruction** (e.g.vegetation clearing)
- **Altered abiotic /site factors** (e.g. soil removal and compaction)
- **Mortality of individuals** (e.g. through collision)
- **Loss of individuals through emigration** (e.g. following loss of habitat)
- **Habitat fragmentation** (e.g. barrier effect of road and pipeline)
- **Disturbance** (physiological and behavioural)

Contd. ...

Indirect impacts

- Mortality of individuals due to better access
- Reduced population (due to reduced habitat, size and quality)
- Altered population dynamics (due to altered resource availability)
- Increased competition (due to shrinking resources)
- Altered species composition and habitat changes (due to fragmentation)
- Reduced gene flow (due to restricted migration)
- Habitat isolation
- Reduced breeding success
- Altered prey-predator relationships

Contd. ...

Cumulative impacts (time-and space-crowded effect)

- Habitat 'nibbling' (progressive loss and fragmentation throughout an area)
- Reduced habitat diversity, e.g. at the landscape level (associated with reduced biological diversity at other levels in organizational hierarchy)
- Habitat fragmentation over time, resulting in progressive isolation and reduced gene flow
- Reduced genetic diversity can result in loss of resilience to environmental change and increased risk of extinction
- Irreversible loss of biological diversity (e.g. through destruction of unique population units)

Contd. ...

Evaluation stage should provide answers to biodiversity related concerns

- What impact will the project have on the genetic composition of each species?
- Do major systemic or population changes appear to be taking place?
- How will the proposal affect ecosystem processes? Is this proposal likely to make the ecosystem more vulnerable or susceptible to change?
- Does the proposal set a precedent for conversion to a more intensive level of use of the area?
- Is the biological resource in question at the limit of its range?
- Does the species demonstrate adaptability.
- What level of confidence or uncertainty can be assigned to interpretations of the effects?

Prediction of impacts: Building arguments for decision making

Project Characteristics

- Location and size
- Schedule of construction and operation
- Potential sources of impact
- Nature of emissions
- Receiving environment for emissions
- Extent, magnitude and duration of disturbance
- Alternatives for site and design
- Past, current and future proposals
- Associated developments

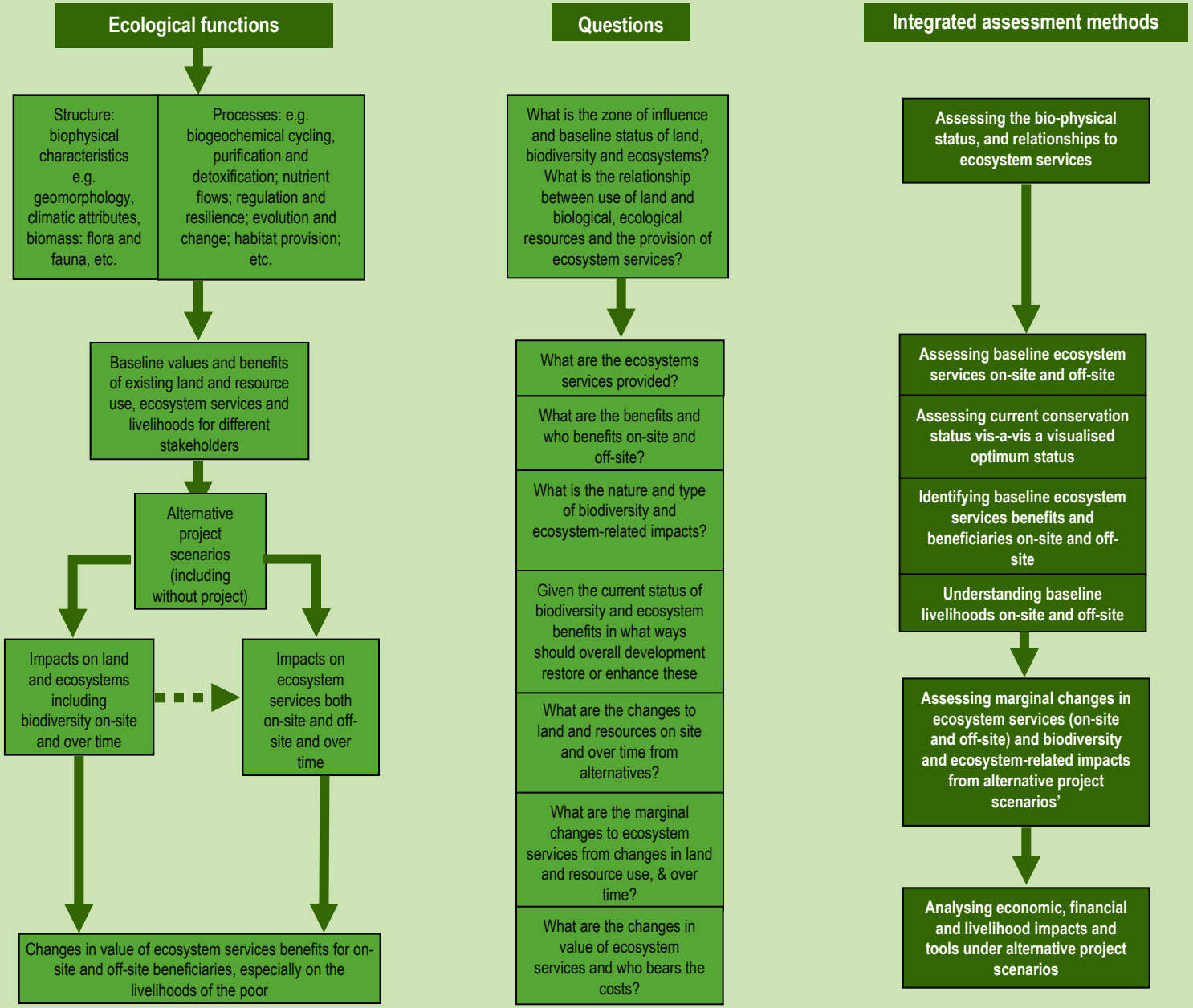
Characteristics of Ecosystem Components

- Naturalness and integrity
- Habitat quality
- Population viability
- Rarity
- Endangerment
- Extinction risk
- Genetic diversity
- Alteration in home ranges
- Resilience
- Fragility
- Stability
- Conservation significance
- Uniqueness

Impact evaluation

(*Prediction of ecological outcomes relative to baseline taking into account the the range and magnitude of the impacts*)

Framework for integrated ecosystem-economic-livelihood impact assessment



Problem solving stage that helps in:

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

- Enhancing beneficial effects and lower costs for biodiversity conservation as an outcome of development where possible
- Developing measures to avoid, reduce, remedy or compensate significant adverse impacts of development proposals on biodiversity and well-being of the community/communities affected.
- Creating opportunities to benefit biodiversity and human well-being.
- Enhancing the project benefits

Impacts remaining after mitigation are known as residual impacts

Documentation of the results

Different names for EIA document

- Environmental Impact Assessment report (EIA report)
- Environmental Impact Statement (EIS)
- Environmental Assessment report (EA report)
- Environmental Review
- Environmental Effects Statement (EES)
- Local usage:

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

The purpose of an EIA report is not to reach a decision but to present the consequences of the proposed project for:

- The proponent- to plan, design and implement the proposal
- The decision maker -to grant or reject project authorisation
- The public to -understand the proposal and its impact on community

EIA is a part of the development control process and not research!

Basic elements of a good EIA report

Screening

Scoping

Focusing

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Review and Monitoring

Transparent – participatory and unbiased

Complete and balanced – aids in informed decision can be made

Reliable – meets professional and disciplinary standards

Significance – focussed, brief, avoid trifles

Thoroughness – coverage of all issues in appropriate details

Defensible – risks and impact qualified

Actionable – applicable to achieve environmentally sound planning and design;

Decision-relevant – organises and presents the information relevant for project authorisation

User-friendly – communicates the technical issues to all parties in a clear and comprehensible way.

(Source: Sadler 1996, UNEP 2002)

Recommended structure of an EA report

Screening

Scoping

Focusing

Assessment

Evaluation

Mitigation

Documentation

Review and Monitoring

Executive summary

Main report

Policy, legal and administrative framework.
Introduction.
Analysis of alternatives.
Project description.
Assessment.
Impacts evaluation.
Mitigation.
Environmental management plan & monitoring protocol

Annexes

Terms of Reference.
A glossary of technical terms and units, acronyms.
List of the team who prepared the EIA.
Records of public meetings and consultations.
Copies of various permissions (e.g. diversion for forest, Row).
Tables and maps.
Technical information too detailed for the main text.

EIA is an on-going process of review, negotiation and incremental decision-making, culminating in the essentially political action of making a final decision about whether or not the proposal is to proceed and under what conditions.

Review is the formal step in the EIA process to ensure that the EIA is consistent with accepted standards of good practice for credible decision-making purposes.

The outputs of a good review and monitoring:

- Integration of biodiversity sufficiently and appropriately in environmental planning and implementation of effective mitigation
- Balanced decision-making based on results of good biodiversity assessment
- Assessment of the utility or futility of steps and control procedures to prevent or minimize the likely impacts

Steps in reviewing an EIA report

- Set the scale of the review
- Select reviewer(s)
- Identify review criteria
- Use public input
- Conduct review
- Determine remedial options
- Prepare the review report

Challenges in integrating biodiversity in EIA

- National, political and strategic importance of most projects often override consideration of impacts on biodiversity
- Lack of regional biodiversity data and resource status.
- Lack of clearly defined ToRs
- Failure to address cumulative impacts of development
- Short time lines
- Inconsistent and insufficient mechanisms for generating EIA in absence of good practice guidance
- Lack of adequate budgets for EIA
- Capacity constraints and inadequate policy support

Thank you…