

University of Karbalaa

College of Applied Medical Sciences

Department of Environmental Health

Environmental Impact and Site Assessment:

Fourth Year

Environmental Health Department

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Environmental Impact and Site Assessment:

This course consists of two parts:

1. Environmental Site Assessment (ESA):

This Part, addresses the principles of environmental and occupational hazards risk assessment which involves identification, evaluation, and estimation of the levels of risks involved in a clean or potentially contaminated site, their comparison against standards, and determination of an acceptable level of risk.

2. Environmental Impact Assessment: (EIA)

This part presents an overview of the purpose, principles and process of Environmental Impact Assessment i.e. the impact of the proposal or project on the environment and human.



Environmental Impact Assessment (EIA) is a systemic process of evaluating or identifying 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.

EIA is based on the following principles:

- Transparency
- Certainty
- Participation
- Practicability
- Flexibility
- Cost-effectiveness
- Credibility
- Accountability (responsibility)

The impact assessment is made based on the inventory results and involves assessing the environmental consequences of the physical flows of inputs and outputs for the product system. For example, what are the environmental consequence of extracting a specific natural resource or emitting a specific substance to air or water?

According to ISO14040 the impact assessment is divided into the following mandatory and optional elements:

First: Mandatory elements:

- Selection of impact categories, category indicators and characterization models, i.e. determine which types of environmental impacts to include and how they should be quantified through category indicators and characterization models.

- Classification – Assignment of inventory results to the selected impact categories, i.e. the individual inputs and outputs in the inventory is classified according to type of environmental impact.
- Characterization – Calculation of category indicator results, i.e. the result from the inventory is converted into the result for the selected category indicators.

Second: Optional elements:

- Normalization – Calculate the magnitude of category indicator results relative to reference information, e.g. the result for a new product is compared with the result for a reference product or with other reference information such as global or regional averages.
- Grouping – The impact categories are sorted and grouped according to e.g. geographic relevance, company priorities or ranking etc. to facilitate interpretation of results
- Weighting – Indicator results for different impact categories are converted to a common unit by using factors based on value-choices, i.e. the consequences for the different environmental impacts are prioritised and weighted against each other.
- Data quality analysis, i.e. assess the quality of the results from the impact assessment by identifying significant contributors and major uncertainty and sensitivity.

Mandatory elements in impact assessment

Selection of impact categories, category indicators and characterization models

This step of the impact assessment is in practice made by selecting which impact assessment method to use. This is since available impact assessment methods include a predefined selection and set-

up of impact categories, category indicators and characterization models. Therefore one should evaluate the method to make sure that the choices made in the method meets the needs of the study.

Impact categories: are types or classes of environmental impacts, for example, Global Warming, Ozone Depletion, Photo oxidant Formation, Acidification and Nitrification (or Eutrophication). Depending on the impact assessment method, these categories can for example be referred to as safeguard subjects or areas of protection

There are a number of important aspects to consider when deciding which impact categories to use:

1. Completeness: aims that the impact categories should cover as much as possible of interest for the study according to the goal and scope. In other words, the study should cover both major environmental problem as well as those of specific interest.
2. Independence: the impacts categories used should be independent to avoid double counting.
3. Practicality: the choice of categories must be practically feasible and should not include too many different categories.
4. Possibility to integrate: there should be the possibility of connecting result parameters to choose impact categories and characterization methods.
5. Environmental relevance: the chosen indicators have to be environmentally relevant to the impact categories and safeguard subjects.
6. Scientific method: the characterization methods should be based on scientific knowledge.

The **Impact categories** are connected to **category indicators** which measures the environmental impact from the connected category.

Classification and characterization – Classifying and calculating environmental impact

In the classification, the input and output flows from the inventory are classified and grouped according to type of environmental impact, i.e. the impact categories.

What is environmental assessment?

Environmental assessment is a process to predict environmental effects of proposed initiatives before they are carried out.

Goals of an environmental assessment:

- identifies potential adverse environmental effects;
- proposes measures to mitigate adverse environmental effects;
- predicts whether there will be significant adverse environmental effects, after mitigation measures are implemented; and
- includes a follow-up program to verify the accuracy of the environmental assessment and the effectiveness of the mitigation measures.

What is the purpose (achievements) of an environmental assessment?

An environmental assessment is a planning and decision-making tool. The objectives of an environmental assessment are to:

- Minimize or avoid adverse environmental effects before they occur; and
- Incorporate environmental factors into decision making.

When should an environmental assessment be undertaken?

An environmental assessment should be conducted as early as possible in the planning stage of a designated project in order for the proponent (proposal maker) to be able to consider the analysis in the

proposed plans, including incorporation of mitigation measures to address adverse environmental effects.

What are the benefits of environmental assessment?

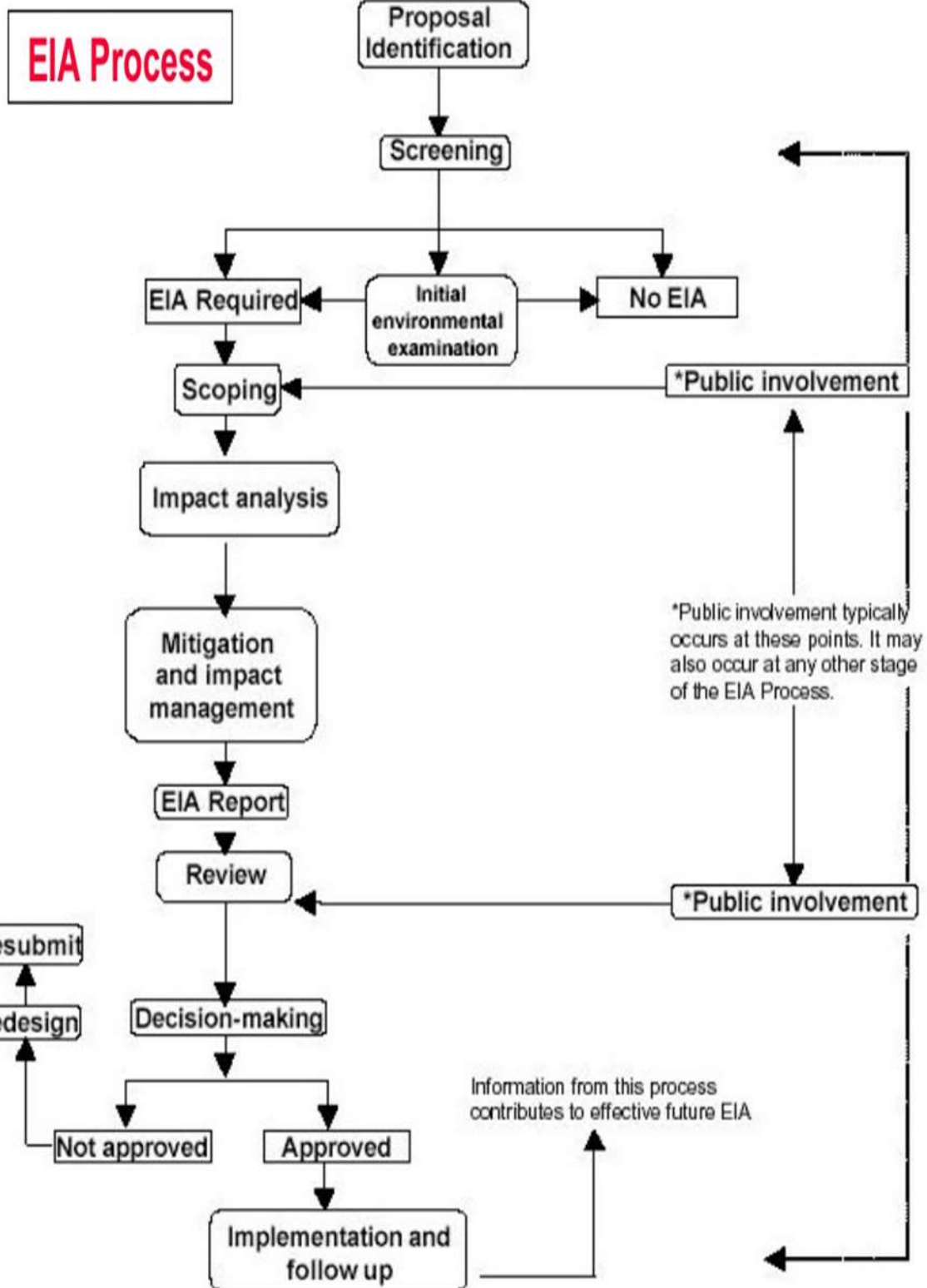
By considering environmental effects and mitigation measures early in the project planning cycle, environmental assessment can support better decision making and result in many benefits, such as:

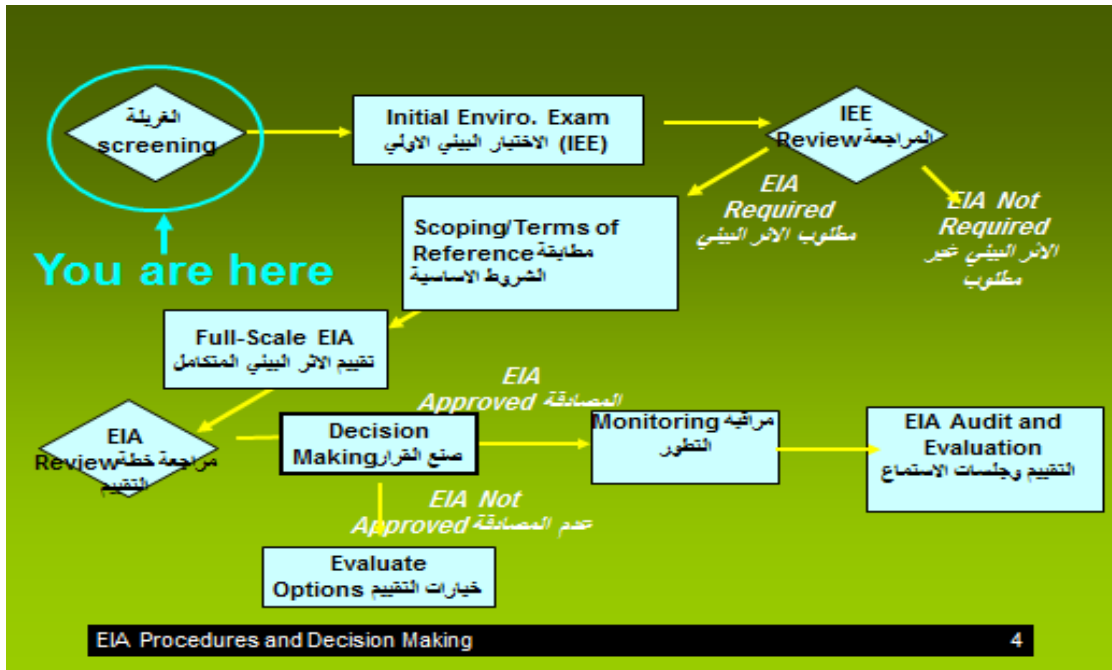
- avoidance or minimization of adverse environmental effects;
- opportunities for public participation and Aboriginal consultation;
- increased protection of human health;
- reduced project costs and delays;
- reduced risks of environmental harm or disasters;
- increased government accountability and harmonization;
- lessened probability of transboundary environmental effects; and
- informed decisions that contribute to responsible development of natural resources.

What are the major steps of Environmental Impact Assessment?

Basically the following are the major steps of EIA:

- Screening
- Initial Environmental Examination (IEE)
- Scoping
- Full-Scale Assessment
- EIA Review and Decision Making
- Monitoring and Follow-Up





The fundamental components of an EIA can be described briefly in the following stages:

1. **Screening** is process used to determine whether a proposed projects or developments require a full or partial environmental impact assessment (EIA) study; what level of environmental review is necessary.

Purposes:

- ➔ Identify those projects or activities that may cause potential significant impacts
- ➔ Identify special conditions/analyses that may be required by international funding bodies
- ➔ Categorize the project as one where:
 - » Full-Scale EIA required
 - » Some further environmental analysis required
 - » No further environmental analysis required

Typical Proposals Requiring Full-Scale EIA

- ➔ Infrastructure projects
- ➔ Large-scale industrial activities
- ➔ Resource extractive industries and activities
- ➔ Waste management and disposal
- ➔ Substantial changes in farming or fishing practices

Screening Techniques:

- ➔ Assessor or decision-maker discretion
- ➔ Project lists with thresholds and triggers
- ➔ Exclusion project lists
- ➔ Preliminary or initial EIAs
- ➔ Combination of these techniques

Screening Criteria:

Screening criteria typically considered in the following:

- ➔ Project type, location, size (e.g., capital investment, number of people affected, project capacity, areal extent)
- ➔ Receiving environment characteristics
- ➔ Strength of community opinion
- ➔ Confidence in prediction of impacts

Project Location:

Requirements for screening:

- ➔ The screening checklist should include a section on site location characteristics, including, at a minimum, the four categories of environmentally critical areas:
 - » National Parks
 - » Indigenous people's area
 - » Tourist area
 - » Ecologically sensitive area
- ➔ Site selection defines the location of the study area and the specific environmental resource base to be examined
- ➔ Often the single most important factor contributing to a project's potential negative impacts
- ➔ Regional development plans should be used as guides to select project locations where environmental conditions will be minimally impacted

World Bank Screening Categories for all projects:

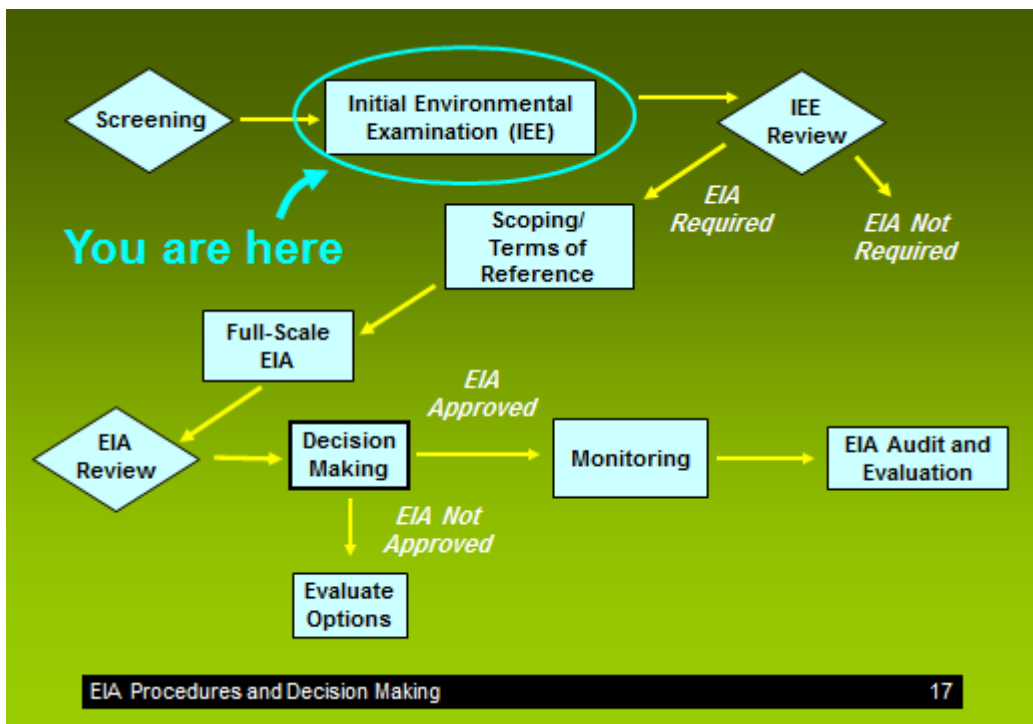
- Category A: An Environmental Impact Assessment (EIA) is typically required.
- Category B: An Initial Environmental Examination (IEE) is usually sufficient.
- Category C: Typically no environmental review is required

- Category D: Environmental review is required but may be incorporated in feasibility (possible to conduct) study

After category A with full screening, category B requires only

2. Initial Environmental Examination (IEE):

This process is intended as a low-cost environmental evaluation that makes use of information already available



Purpose of IEE:

- ➔ Describes the proposed project or activity and examines alternatives
- ➔ Identifies and addresses community concerns to extent possible
- ➔ Identifies and assesses potential environmental effects

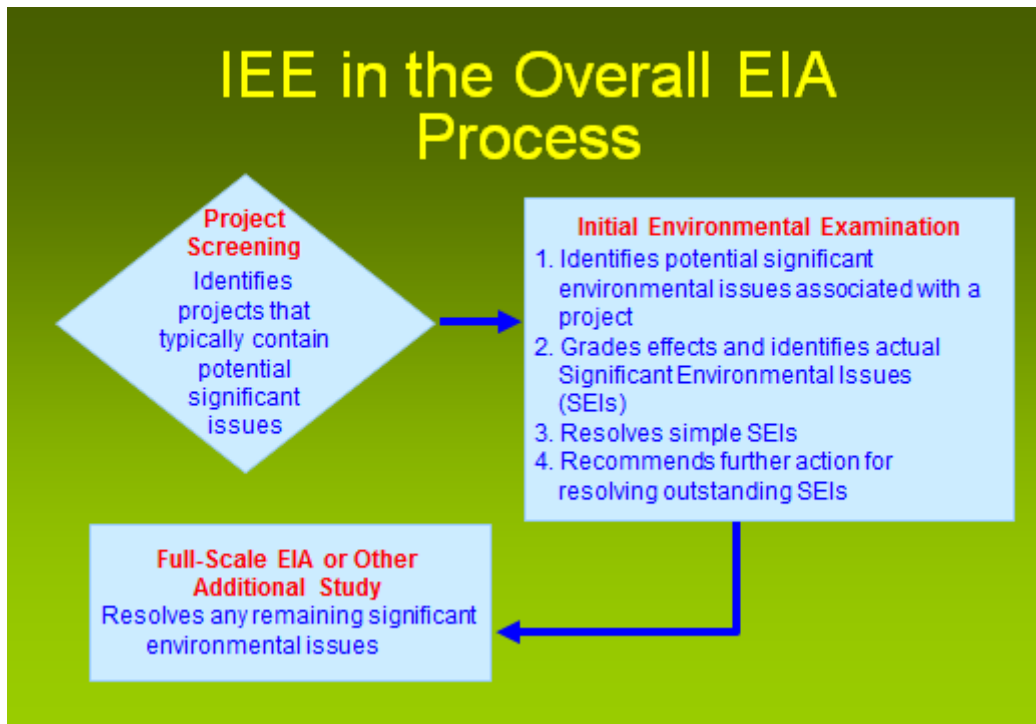
➔ Directs future action

Objectives of IEE:

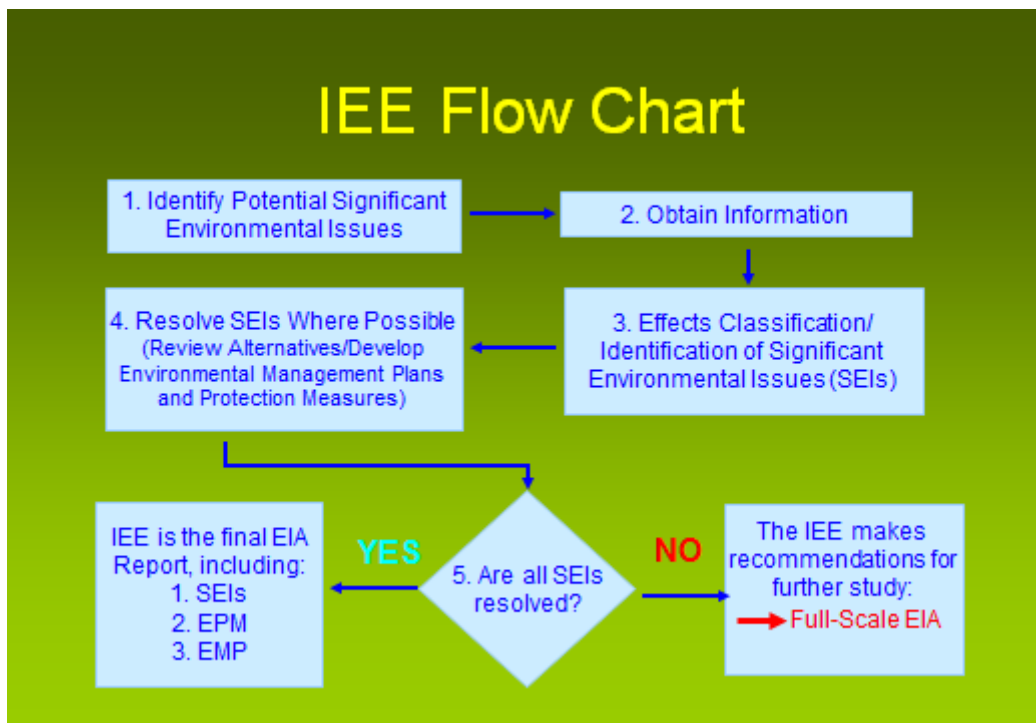
- ➔ Identify all potential environmental concerns relating to a proposed project or activity
- ➔ Identify all environmental problem in the project's area.
- ➔ Resolve simple Significant Environmental issues (SEIs)
- ➔ Develop the focus for follow-up studies based on unresolved SEIs

Possible IEE Outcomes (consequences):

1. No requirement for further environmental study; proposal not anticipated to have significant impact
2. Limited environmental study needed; environmental impacts are known and can be easily mitigated
3. Full-scale EIA required; impacts unknown or likely to be significant



Initial Environmental Examination (IEE) Flow Chart:



Identification of Potential Significant Env. Issues (SEI):

1. Identify valued environmental/ecosystem components (VECs)

- » Professional judgement/past experience
- » Legislative requirements
- » Stakeholder and community values

2. Identify the potential for impacts to each VEC

3. Identify potential for cumulative impacts (i.e. to the site as a whole and to the region).

Commonly Considered VECs:

- ➔ Natural physical resources (e.g., surface and groundwater, air, climate, soil)
- ➔ Natural biological resources (e.g., forests, wetlands, river and lake ecology)
- ➔ Economic development resources (e.g., agriculture, industry, infrastructure, tourism)
- ➔ Quality of life (e.g., public health, socio-economic, cultural, aesthetics)
- ➔ National commitments (e.g., endangered species protection)

Methods for Identifying Potential Impacts to VECs

→ Matrices

Sectoral (e.g. energy sector, Housing sector, ..etc

Project type (e.g. services, investment, ...etc

→ Checklists (arranged according the priorities)

→ Professional expertise and experience with similar project types

→ Combination of techniques

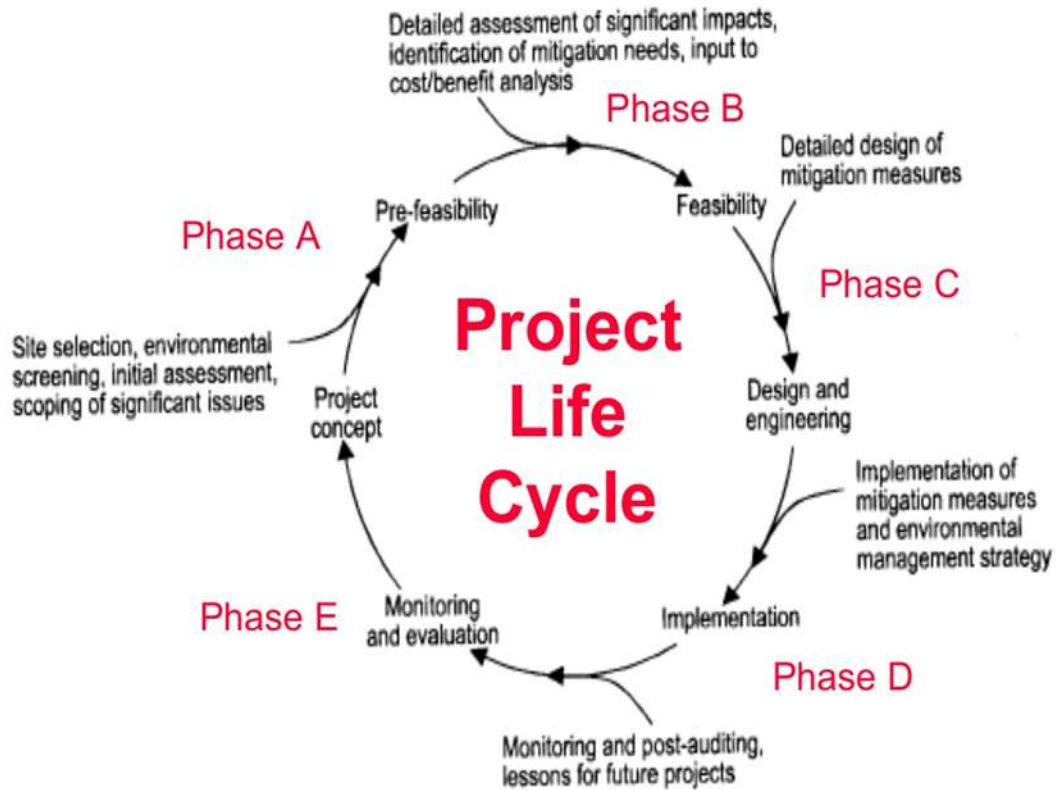
How to proceed to a full scale project? (Add this title and the following No. 1 item in this page)

1. During the screening and after IEE completed, it becomes obvious based on screening criteria that there is a potential need for a full scale environmental impact assessment.
2. 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;

3. Assessment and evaluation of impacts and development of alternatives, to predict and identify the likely environmental impacts of a proposed project or development, including the detailed elaboration of alternatives;
4. Reporting the Environmental Impact Statement (EIS) or EIA report, including an environmental management plan (EMP), and a non-technical summary for the general audience.
5. Review of the Environmental Impact Statement (EIS), based on the terms of reference (scoping) and public (including authority) participation.
6. Decision-making on whether to approve the project or not, and under what conditions; and
7. Monitoring, compliance, enforcement and environmental auditing. Monitor whether the predicted impacts and proposed mitigation measures occur as defined in the EMP. Verify the compliance of proponent with the EMP, to ensure that unpredicted impacts or failed mitigation measures are identified and addressed in a timely fashion.

Pre-feasibility: early steps to determine if the project can be done

Feasibility: possibility to be executed and completed



Strategic Environmental Assessment (SEA):

Sadler and Verheem (1996) define Strategic Environmental Assessment (SEA) as the formalized, systematic and comprehensive process of identifying and evaluating the environmental consequences of proposed policies, plans or programs to ensure that they are fully included and appropriately addressed at the earliest possible stage of decision-making for economic and social considerations.

Since this early definition the field of SEA has rapidly developed and expanded, and the number of definitions of SEA has multiplied accordingly. **SEA**, by its nature, covers a **wider range** of activities or a wider area and often over a longer time span than the environmental impact assessment of projects.

SEA might be applied to an entire sector (such as a national policy on energy for example) or to a geographical area (for example, in the context of a regional development scheme). SEA does not replace or reduce the need for project-level EIA (although in some cases it can), but it can help to streamline and focus the incorporation of environmental concerns (including biodiversity) into the decision-making process, often making project-level EIA a more effective process.

SEA is commonly described as being **proactive** and 'sustainability driven', whilst EIA is often described as being largely **reactive**.

Summary of Initial Env. Exam. (IEE) Report Contents

1. Description of the Project
2. Description of the Environment
3. Screening of Potential Environmental Issues and Rationale for their Significance Grading
4. Environmental Protection Measures
5. Environmental Monitoring and Institutional Requirements
6. Recommendations for Additional Studies
7. Conclusions

3. Scoping: (ranges of application)

- ➔ As a project definition: Project scope is the part of project planning that involves determining and documenting a list of:
 - Specific project goals,
 - Deliverables,
 - Tasks and
 - Deadlines.
- ➔ This step seeks to identify, at an early stage, the key, significant environmental issues from among a host of possible impacts of a project and all the available alternatives. (Add new)
- ➔ It can be also a process of interaction between government agencies and project proponents (proposal makers)
- ➔ Identifies:
 - » space and temporal boundaries for the EIA
 - » important issues and concern
 - » information necessary for decision making

» significant effects and factors to be considered

➔ Establishes Terms of Reference for full-scale EIA

Importance of Scoping:

➔ Serves to facilitate efficient EIA by identifying appropriate areas for consideration (e.g, key issues, concerns, alternatives)

➔ Reduces likelihood of deficiencies in EIA (e.g., ensures that important issues are not overlooked)

➔ Prevents unnecessary expenditures and time delays from oversights or unnecessary areas of study

➔ Under scoping, identifying terms of Reference Contents.

Background information section should include:

- Project Description (i.e., type, magnitude, location, alternatives and constraints)
- Environmental Setting (i.e., delineation of study area,
- listing of environmental resources and sensitive or special value areas)
- Background Reports (e.g., aspects of the environmental setting, previous projects with relevant impacts or resources)

4. Full scale EIA:

After screening, IEE and scoping, the full scale project needs to verify Specific EIA requirements typically include:

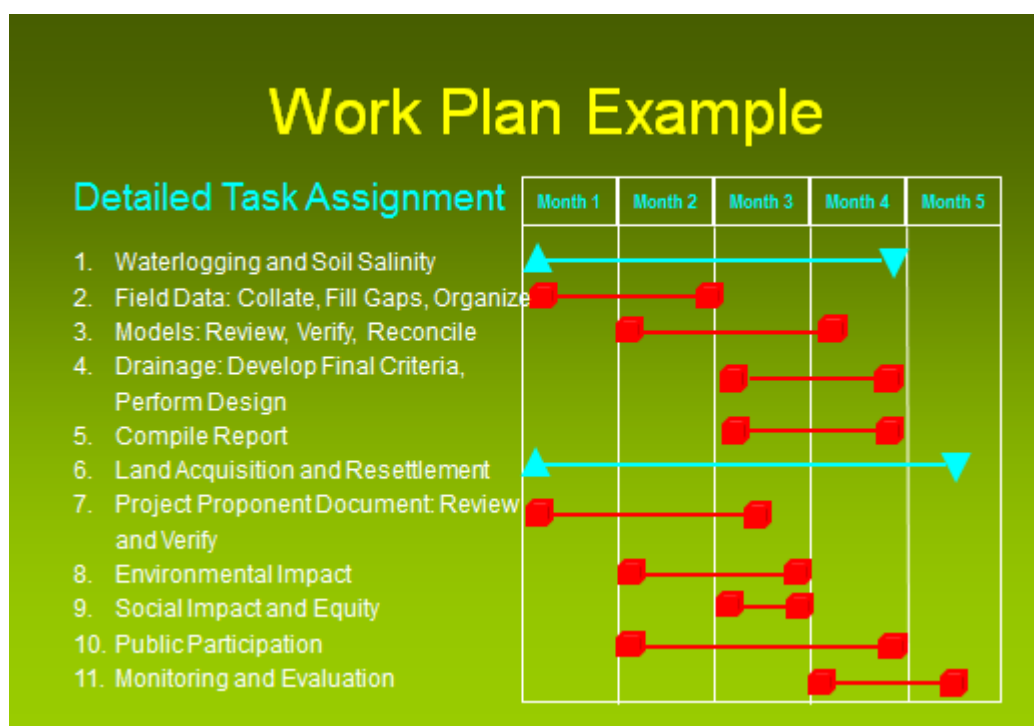
➔ EIA objectives

➔ Institutional context (i.e., legal and policy requirements)

➔ Significant issues of concern (SEIs)

➔ Required information and data,
methodologies for impact assessment

➔ Process for incorporating public input



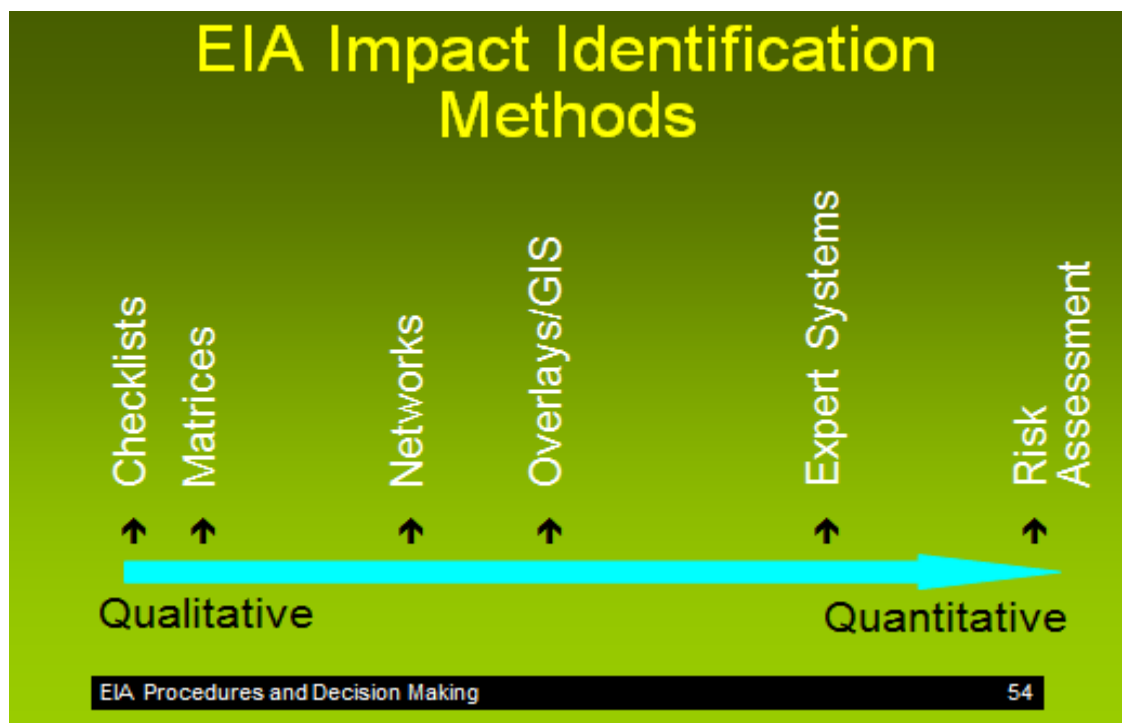
Work Plan Example

Detailed Task Assignment	Periods in Months
1. Waterlogging and Soil Salinity	Month 1 – Month 3
2. Field Data: Fill Gaps, Organize	Month 1- Month 2
3. Models: Review, Verify	Month 1- Mont 2
4. Drainage: Final Criteria,PerformDesign	Month 3- Month 4
5. Compile Report	Month 3- Month 4
6. Land Acquisition and Resettlement	Month 1 – Month 5
7. Project Document: Review & Verify	Month 1- Month 3
8. Environmental Impact	Month 2- Month 4
9. Social Impact and Equity	Month 3

- | | |
|-------------------------------|------------------|
| 10. Public Participation | Month 2- Month 4 |
| 11. Monitoring and Evaluation | Month 4- Month 5 |

5. Full-Scale EIA Overview

- ➔ Input = Outstanding significant environmental issues (SEIs) from Initial Environmental Examination (IEE)
- ➔ Assessment phase:
 - » Qualitative/quantitative analysis of SEI
 - » SEI impact significance
- ➔ Mitigation development phase:
 - » Select appropriate mitigation measures
 - » Residual impact significance



EIA Impact Identification Methods

A. Qualitative:

- Checklists
- Matrices
- Networks
- Overlays/GIS

B. Quantitative:

- Expert Systems
- Risk Assessment

Selection of Appropriate Methods

- Type and size of proposal
- Type of alternatives being assessed
- Nature of likely impacts
- Experience using EIA methods
- Resources available
- Nature of public involvement
- Procedural/administrative requirements

Checklists

Advantages:

- Simple to understand and use
- Good for site selection and priority setting

Disadvantages:

- Do not distinguish between direct and indirect impacts
- Do not link action and impact

- ➔ Qualitative

Matrices

Advantages:

- ➔ Link action to impact
- ➔ Good method for displaying EIA results

Disadvantages:

- ➔ Difficult to distinguish direct and indirect impacts
- ➔ Significant potential for double-counting of impacts
- ➔ Qualitative

Networks

Advantages

- ➔ Link action to impact
- ➔ Useful in simplified form in checking for second order impacts
- ➔ Handles direct and indirect impacts

Disadvantages:

- ➔ Can become overly complex if used beyond simplified version
- ➔ Qualitative

Overlays

Advantages:

- ➔ Easy to understand and use
- ➔ Good display method
- ➔ Good for site selection setting

Disadvantages:

- ➔ Address only direct impacts
- ➔ Do not address impact duration or probability

Expert Systems

Advantages

- ➔ Excellent for impact identification and analysis
- ➔ Good for experimenting
- ➔ Semi-quantitative to quantitative

Disadvantages

- ➔ Heavy reliance on knowledge and data
- ➔ Often complex and expensive

Risk Assessment:

An estimate of the likelihood of adverse effects that may result from exposure to certain health hazards, like pollutants in the environment

Impact Significance Determination

Is the result from interaction of Impact Characteristics (e.g., spatial extent) and Impact Importance (e.g., value).

Characteristics Affecting Impact Significance

- ➔ Nature of impact (e.g., positive, negative, synergistic)
- ➔ Extent and magnitude
- ➔ Timing (i.e., construction, operation, closure)
- ➔ Duration (i.e., short, chronic, intermittent)
- ➔ Reversibility/irreversibility
- ➔ Likelihood (i.e., probability, uncertainty)

Some Criteria for Significance

- ➔ Importance: the value that is attached to the affected environmental component
- ➔ Extent of disturbance: the area expected to be impacted
- ➔ Duration and frequency of disturbance
- ➔ Reversibility
- ➔ Risk: probability of an unplanned incident caused by the project

Assessing Significance

- ➔ Considerable expert judgement and technical knowledge are often required to fully understand the nature and extent of environmental impacts
- ➔ Categories of significance include:
 - » no impact
 - » significant impact
 - » insignificant impact
 - » unknown impact
 - » mitigated impact

Guidelines for Assessing Significance

- ➔ Use rational and objective methods
- ➔ Provide consistency for comparison of project alternatives
- ➔ Document values and beliefs used in making judgement decisions
- ➔ Apply impact significance criteria, e.g.,
 - » Ecological importance/sustainability criteria
 - » Social importance
 - » Environmental standards

Ecological Importance:

- ➔ Effect on plant and animal habitat
- ➔ Rare and endangered species
- ➔ Ecosystem resilience, sensitivity, biodiversity and carrying capacity
- ➔ Population viability
- ➔ Community viability

Social Importance:

- ➔ Effects on human health and safety
- ➔ Potential loss of managed resources (e.g., fish, farmland, water)
- ➔ Recreation or aesthetic value
- ➔ Demands on public resources
- ➔ Demands on transportation or other infrastructure
- ➔ Demographic effects

Environmental Standards:

- ➔ Permit-based limits on effluent discharge concentrations
- ➔ Clean air standards, water quality standards
- ➔ Plans or policies that protect or limit use of natural resources

Impact Mitigation:

As a goal of EIA in an environmental project is to clean a contaminated site means mitigation.

- Evaluate Environmental Impacts
- Review Applicable Standards
- Design Environmental Protection Measures

Mitigation Development:

- ➔ Develop Alternative Environmental Protection Measures
 - Evaluate Implementation Costs
 - Assess Environmental Effectiveness
- ➔ Select Final Environmental Protection Measures

Environmental Management Plan (EMP)

- ➔ Mitigation measures chosen are documented as part of the EMP which specifies how they are to be carried out:
 - » State policy and standards
 - » Designate responsibility
 - » Provide schedule for tasks
 - » Allocate responsibility for tasks
 - » Include system for progress reporting
 - » Include system for monitoring/auditing
 - » Develop a contingency plan

EIA Reporting

Variations in titles but all the same content:

- ➔ Environmental Impact Assessment report (EIA report)
- ➔ Environmental Impact Statement (EIS)
- ➔ Environmental Assessment report (EA report)
- ➔ Environmental Effects Statement (EES)
- ➔ Local usage; often shortened to just EIA

Importance of Effective Reporting

- ➔ Assists the project proponent to plan (e.g., changes to the project design or scheduling recommended as mitigation measures)
- ➔ Assists decision makers in deciding whether to approve or reject proposal, and if approved with what conditions
- ➔ Helps the public to understand core issues of concern

EIA Report Contents

- ➔ Executive summary
- ➔ Objectives of the proposal
- ➔ Description of proposal and alternatives
- ➔ Relationship to current land use policies
- ➔ Description of expected conditions
- ➔ Evaluation of impacts for each alternative
- ➔ Mitigation and monitoring plans
- ➔ Appendices

Executive Summary

- ➔ Definition: A well written stand-alone document which contains the information necessary for the reader to understand the critical environmental issues and how the issues are to be addressed and resolved
- ➔ Audience: targeted at decision makers and international funding bodies

- ➔ Special Requirements: international funding bodies often require executive summaries to be submitted in English

What the executive summary MUST contain:

- ➔ a summary of impacts for each SEI
- ➔ background information including base maps
- ➔ offsetting, enhancement, and mitigation measures for minimizing negative impacts
- ➔ recommendations and conclusions
- ➔ summary of the environmental management plan

Project Information:

- ➔ Status of project
- ➔ Planning, design and implementation strategies
- ➔ Requirements for materials, water, energy, equipment
- ➔ Planned processes and products
- ➔ Visual aids (e.g., maps)
- ➔ Options (e.g., siting, layout)
- ➔ Summary of technical, economic and environmental features

Evaluating Impacts for Each Alternative

- ➔ Assessment of impacts
- ➔ Data and predictive methods used
- ➔ Uncertainty and gaps in knowledge
- ➔ Compliance with standards

- ➔ Criteria used to assess significance
- ➔ Proposed impact avoidance or mitigation measures

Environmental Management and Monitoring Plans

- ➔ Describe proposed mitigation measures
- ➔ Contain schedule for implementation
- ➔ Assign responsibility for implementation
- ➔ Detail a monitoring program
- ➔ Detail proposed reporting and review procedures

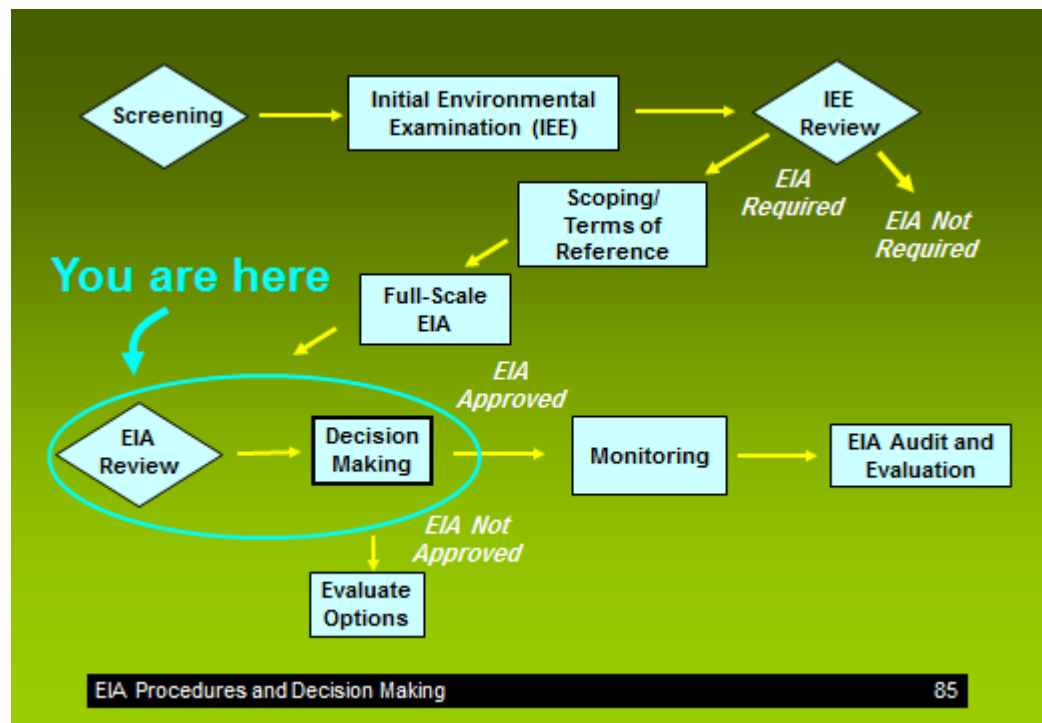
Appendices

- ➔ Technical information
- ➔ Glossary and Acronyms
- ➔ Public involvement summary
- ➔ Information sources/references
- ➔ Details of study team
- ➔ Terms of Reference

Common Reporting Shortcomings (Deficiencies):

- ➔ Objective of activity described too narrowly
- ➔ Incomplete description of activity
- ➔ Alternatives do not account for the environment
- ➔ Key problems not described
- ➔ Sensitive environment aspects overlooked
- ➔ Standards and legislation are not described or alternatives do not comply with them

- ➔ Some mitigating measures not considered
- ➔ Best alternative not described or described insufficiently
- ➔ Serious impacts are not mentioned or not correctly described
- ➔ Outdated or ineffective prediction models used
- ➔ Impacts are not compared with standards or targets
- ➔ Incorrect conclusions drawn



EIA Review

Determines whether the EIA report is an adequate assessment of environmental concerns and is of sufficient relevance and quality for decision making

EIA Review Objectives

- Determine whether EIA report provides an adequate assessment
- Collects range of stakeholder opinion regarding the acceptability of the EIA report and of the proposed project or activity based on the EIA findings
- Ensures EIA compliance with established procedures (e.g., Terms of Reference, existing plans and policies)

Critical Areas of Review

- Compliance with the Terms of Reference
- Examination of alternatives, environmental setting, impact analysis, mitigation, and impact management and monitoring
- Sufficiency and accuracy of information
- Use of scientifically-defensible analytical techniques
- Conduct of the EIA; completeness and comprehensiveness of the assessment process
- Sufficiency of information provided for decision-making purposes

Review Methods

- General statistics
- Project specific checklists
- *Ad hoc* processes (Comparison with other methods)
- Expert opinion by accredited reviewers
- Public review

➔ Panels of inquiry, independent commissions

➔ Legal approaches

Review Step-by-Step

➔ Set the intensity of the review (e.g., scale and depth)

➔ Select review methods and identify review criteria; make sure to include public input

➔ Select reviewers

➔ Conduct the review

➔ Determine remedial options

➔ Publish review report

Decision Making

➔ EIA is an ongoing process of review, negotiation and incremental decision making

➔ Ultimately, an administrative or political decision is made whether to proceed or not to proceed with a proposed project or activity

➔ Function of the EIA report is to provide objective assessment of issues to inform and facilitate the decision-making process

Requirements for Decision Makers

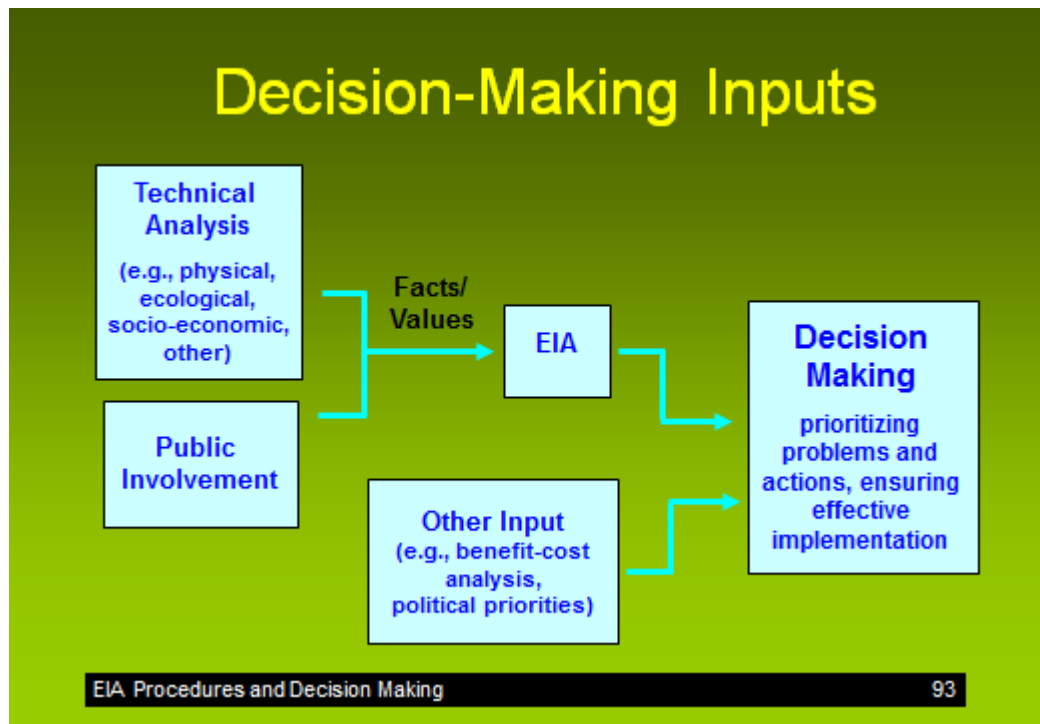
Decision makers need an understanding of:

➔ Principles and practices of sustainable development

➔ EIA aims, concepts and processes

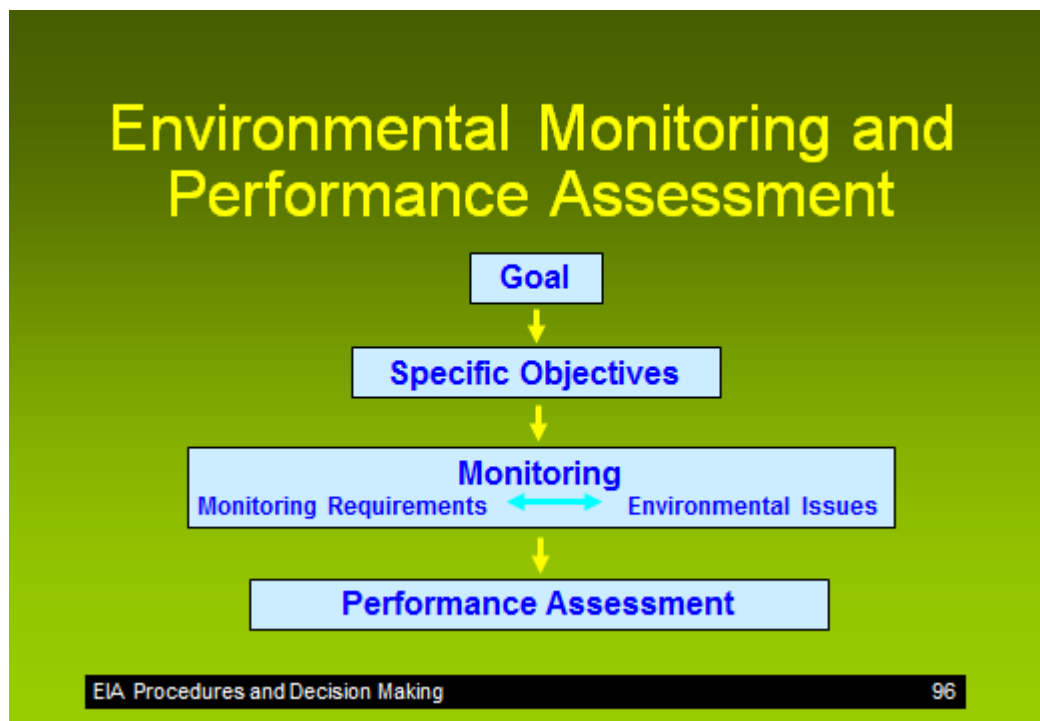
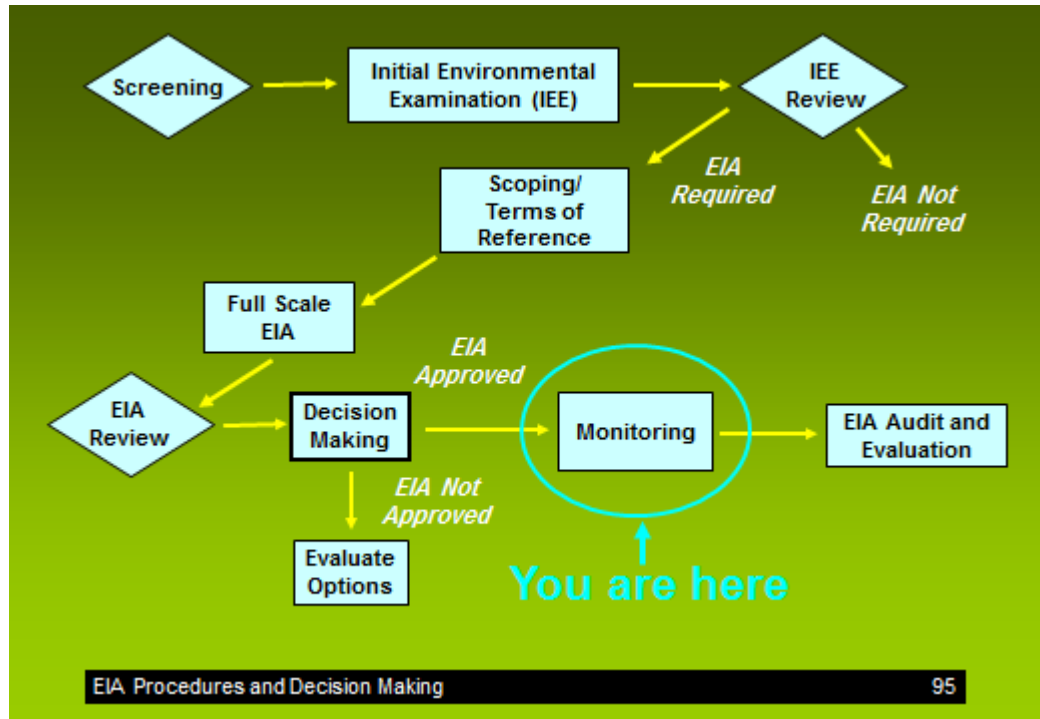
➔ EIA guidelines, policy, law and conventions

- ➔ EIA implementation within the decision-making agency or organization
- ➔ Public involvement processes



Possible Decision Outcomes

- ➔ Approval
- ➔ Approval with conditions
- ➔ Approval subject to ongoing investigation
- ➔ Further investigation required
- ➔ Request for a supplementary, or new, EIA report
- ➔ Rejection



Monitoring and Performance Assessment Goal

Demonstrate to governments and the public that the project or activity complies with the environmental quality objectives determined through the EIA process and achieves good environmental performance

Specific Objectives

- ➔ Detect short- and long-term trends
- ➔ Recognize environmental changes and analyze causes
- ➔ Measure impacts and compare with predicted impacts
- ➔ Assess effectiveness of mitigation measures
- ➔ Improve the monitoring system
- ➔ Improve practices and procedures for environmental assessment

Performance Assessment

From monitoring program:

- ➔ identify trends, causes and impacts
- ➔ assess performance and compliance

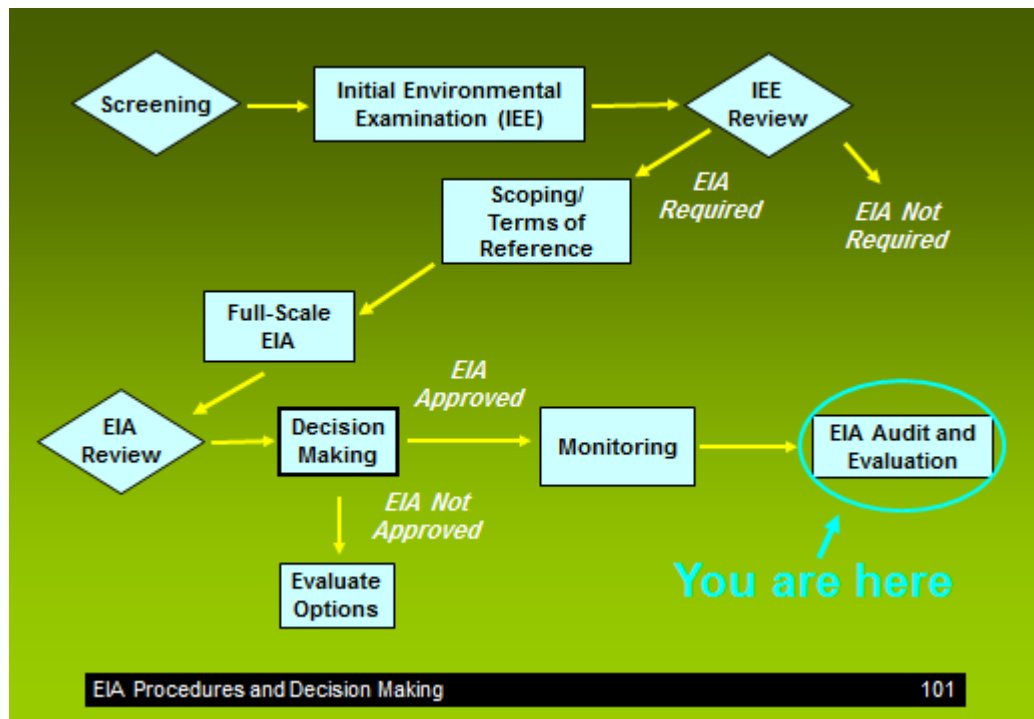
From the assessment:

- ➔ modify practices and procedures for environmental protection
- ➔ modify monitoring program

Post-EIA Monitoring Report

Post-EIA Monitoring Report

PROJECT PHASE	MONITORING ACTIVITY
FINAL DESIGN STAGE	A. INCORPORATION OF EPMs IN THE FINAL PROJECT DESIGN B. INCORPORATION OF EPMs INTO CONSTRUCTION CONTRACTS C. COMPLETION OF OPERATIONS MANUAL
CONSTRUCTION STAGE	A. ENVIRONMENT CONSTRUCTION SUPERVISOR B. SCHEDULED REPORTS FROM SUPERVISOR C. ENVIRONMENTAL PROTECTION AGENCY SPOT CHECKS ENVIRONMENTAL SUPERVISOR PERFORMANCE
PROJECT ACCEPTANCE	THE THREE PARTIES : ENVIRONMENTAL CONSTRUCTION SUPERVISOR, PROJECT PROPONENT AND ENVIRONMENTAL PROTECTION AGENCY; SIGN A STATEMENT THAT THE PROJECT MEETS EIA REQUIREMENTS
OPERATIONS STAGE	A. PERFORMANCE MONITORING B. PERFORMANCE REPORTING C. FOLLOW-UP ACTION, IF REQUIRED



EIA Audit

EIA audits are a management tool to:

- ➔ Determine impacts
- ➔ Check that conditions arising from EIA are being met
- ➔ Test accuracy of EIA predictions
- ➔ Identify areas where EIA could have been improved
- ➔ Compile lessons learned for future EIAs

Concluding Thoughts

Important points to remember are:

- ➔ EIA is a process which should have influence at many stages and over a considerable period of time; it is not an activity aimed at producing a single set of results for use at one specific decision-making stage
- ➔ The EIA process should be interactive and adaptive; scoping and assessment should continually evolve throughout the entire process as more information becomes known (i.e., circular process)

Additional points to remember are:

- ➔ The EIA process needs to be inclusive and transparent
- ➔ The process should not be seen as an administrative task; EIA is a powerful management tool to be used to make informed and justifiable decisions
- ➔ Follow-up to review development results is essential to continually improve and strengthen the EIA process