

A photograph of a traditional dugout canoe on a river. The canoe is long and narrow, with a person standing at the front and several others seated or standing inside. The water is calm, and the background shows a hazy sky and distant land. The text is overlaid in the center of the image.

OVERVIEW OF ENVIRONMENTAL IMPACT ASSESSMENT AS A TOOL FOR DECISION MAKING



What is EIA?

- A process which attempts to **identify** and **predict** the impacts of proposals, policies, programs, projects and operational procedures on the biophysical environment and on human health and well-being
- It also interprets and **communicates** information about those impacts and investigates and proposes **means for their management**
- A **planning and decision-making tool** to protect the natural environment and, thereby, protect human societies

Why do EIA?

- Promotes better planning and leads to more responsible decision making; ensures that renewable and non-renewable resources are used wisely
- Evaluates the rationale behind proposed projects and activities; are there **alternatives to** a proposed project or activity?
- Assists in pursuing sustainable development by evaluating **alternatives means of** undertaking proposed projects and activities

Why do EIA? (Cont'd)

- Assessment outputs facilitate **informed decision making**; anticipated environmental impacts can be weighed against economic benefits and other social gains in deciding whether to approve or reject proposals
- Helps to identify and understand environmental impacts early in the project cycle; predicted impacts can be **mitigated** before they occur
- Provides opportunity for input from interested parties; increases likelihood of **public acceptance**

Sustainable Development

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

(Brundtland Commission)

Evolution of EIA

Pre-1970s: Introduction of some pollution control regulations

Early 1970s: Initial EIA development, focus on the biophysical environment (e.g., air, water, flora, fauna, climate)

1970: US NEPA called for:

- » Environmental review of all government actions
- » Public input into project formulation
- » Informed decision making
- » This process became known as EIA

Evolution of EIA (Cont'd)

1970s to 1980s: Expanded scope for EIA beyond just biophysical to include integrated assessment of social, health, and economic issues

Mid to late 1980s: Cumulative effects increasingly examined in support of policy and planning

Mid 1990s: Towards sustainability (e.g., strategic environmental assessment, biodiversity)

EIA Requirements in Cambodia

- EIA administered under the Law on Environmental Protection and Natural Resource Management, 1996
- Sub-decree on EIA Process promulgated in 1999 defines project types and size thresholds subject to EIA
- Additional EIA regulations are needed, but the National Environmental Action Plan is a positive step forward

EIA Requirements in Lao PDR

- No EIA enabling legislation currently exists
- Several draft EIA process documents have been prepared
- National Environmental Action Plan, adopted in 1993, serves as a framework policy document for environmental protection
- Current EIA process is informal and *ad hoc*

EIA Requirements in Thailand

- EIA administered under the Enhancement and Conservation provisions of the National Environmental Quality Act (NEQA), 1992
- 29 project types require an EIA (e.g., dams and reservoirs, major industrial developments)
- The NEQA distinguishes between private and public sector projects
- Primary EIA focus is pollution control, not natural resources protection and management

EIA Requirements in Vietnam

- EIA administered under the Law on Environmental Protection, 1994
- A number of additional regulations further govern EIA and give considerable power to the EIA process
- Project screening thresholds include:
 - » project size (i.e., small-scale or medium-to-large scale)
 - » project type (e.g., mining, aquaculture, fertilizer plants, oil exploration and drilling)

Types of EIA

Project-level EIA: narrow-perspective; examine potential environmental impacts of a single project or activity

Cumulative effects assessment (CEA): broadens assessment to examine potential impacts of multiple projects from the viewpoint of valued environmental components (VECs)

Strategic environmental assessment (SEA): widest focus involving systematic evaluation of potential impacts of policies, plans and programs (PPP)

EIA Core Values

Sustainability: The EIA process will provide necessary environmental safeguards

Integrity: The EIA process will conform with established standards; underlying science is credible and decisions are justified

Utility: The EIA process will provide balanced, accurate information for decision making

EIA Guiding Principles

- Participation:** Appropriate and timely access by all interested parties
- Transparency:** All decisions should be open and accessible
- Certainty:** Process and timing agreed in advance and followed by all
- Accountability:** Decision makers and project proponents are responsible for their actions

EIA Guiding Principles (Cont'd)

- Credibility:** Assessments are professional and objective
- Cost-effectiveness:** Environmental protection is achieved at the least cost
- Flexibility:** Process is adaptive and responsive
- Practicality:** Information and outputs are usable in decision making and planning

EIA Operational Principles

EIA should be applied to:

- all development projects and activities likely to cause significant adverse impacts or potential cumulative effects

EIA should be undertaken:

- throughout the project cycle, beginning as early as possible
- in accordance with established procedures
- to provide meaningful public consultation

EIA Operational Principles (Cont'd)

EIA should provide the basis for:

- environmentally-sound decision making in which terms and conditions are clearly specified and enforced
- the development of projects and activities that meet environmental standards and management objectives
- an appropriate follow-up process with requirements for monitoring, management, audits, and evaluation

EIA Operational Principles (Cont'd)

EIA should address:

- all related and relevant factors, including social and health risks and impacts
- cumulative and long-term, large-scale effects
- design, siting and technological alternatives
- sustainability considerations including resource productivity, assimilative capacity and biological diversity

EIA Operational Principles (Cont'd)

EIA should result in:

- accurate information on the nature, likely magnitude and significance of potential effects, risks and consequences of proposals and alternatives
- a relevant report for decision making; including qualifications on conclusions reached and prediction of confidence limits
- ongoing problem solving and conflict resolution throughout the process

Integration of EIA into the Decision-Making Process

- Timing:** EIA conducted early in the project cycle
- Disclosure:** EIA results disclosed to all interested parties
- Weight:** EIA results are considered by decision makers
- Revisions:** Plans revised to include feasible mitigation measures or a less damaging alternative

Integration of EIA into the Decision-Making Process (Cont'd)

Mitigation: Agreed-upon mitigation measures are implemented and monitored for effectiveness

Monitoring: Post-project, follow-up monitoring of impacts conducted and results acted upon

Characteristics of Effective EIAs

Completeness:

- » all significant impacts considered
- » all relevant alternatives examined

Accuracy:

- » appropriate forecasting procedures
- » appropriate evaluation procedures

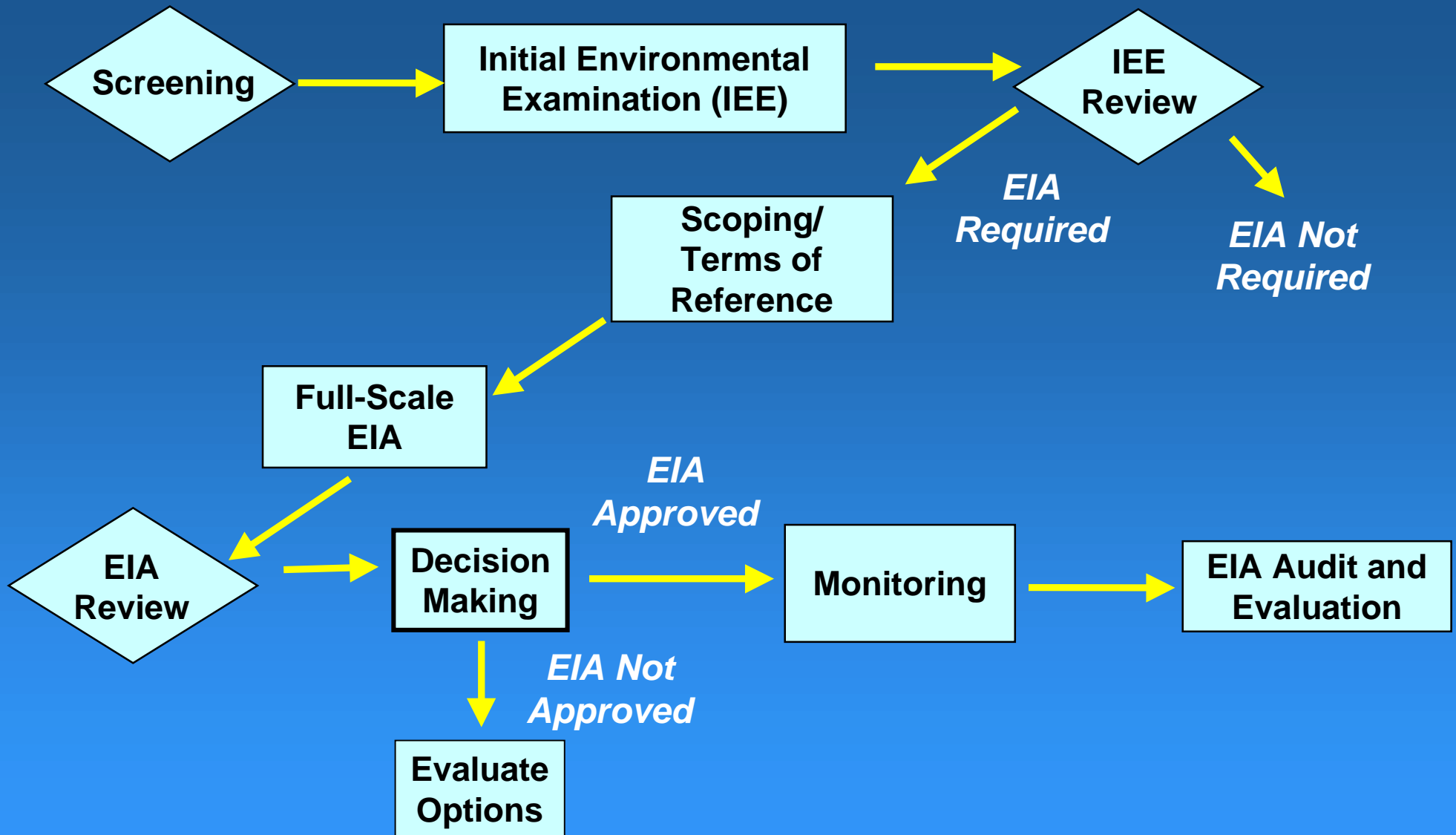
Clarity:

- » all interested parties can comprehend issues

The Environmental Impact Assessment Process

Major steps in the EIA process are:

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



Screening

- It would be time consuming and a waste of resources for all proposed projects and activities to undergo EIA
- Not all development projects require an EIA, as some projects may not pose an environmental threat
- Screening is the process used to determine whether a proposed project or activity requires an EIA and, if so, what level of environmental review is necessary

Screening Objectives

- 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

Example Project Screening Criteria from Thailand

Type of Project	Threshold Scale	Location
<p>1. Infrastructure</p> <ul style="list-style-type: none"> • Commercial Airport • Mass Transit System • Hotel or Resort 	<p>All All > 80 Rooms</p>	<p>- - 4 Critical Areas</p>
<p>2. Agriculture and Natural Resources</p> <ul style="list-style-type: none"> • Dam or Reservoir • Irrigation 	<p>>100 million cu. m. > 15 sq. km.</p>	

Example Project Screening Criteria from Thailand (Cont'd)

Type of Project	Threshold Scale	Location
<p>3. Industrial and Power</p> <ul style="list-style-type: none"> • Petrochemical Industry • Oil Refinery • Chlor-Alkaline Industry • Natural Gas Separation • Iron/Steel • Cement Industry • Smelting • Pulp Industry • Industrial Estates • Thermal Power Plants • Mining 	<p>> 100 tons/day (raw material) All All 100 tons/day (output) 100 tons/day, batch All > 50 tons/day > 50 tons/day All > 10 megawatts All</p>	

Asian Development Bank (ADB) Screening Categories

All Projects

Category A

Projects that
typically require an
EIA study

Examples:

- Forest Industries
- Water Impoundment
- Industries

Category B

Projects that
typically require
only an IEE

Examples:

- Renewable Energy
- Aquaculture
- Tourism Development
- Infrastructure
Rehabilitation

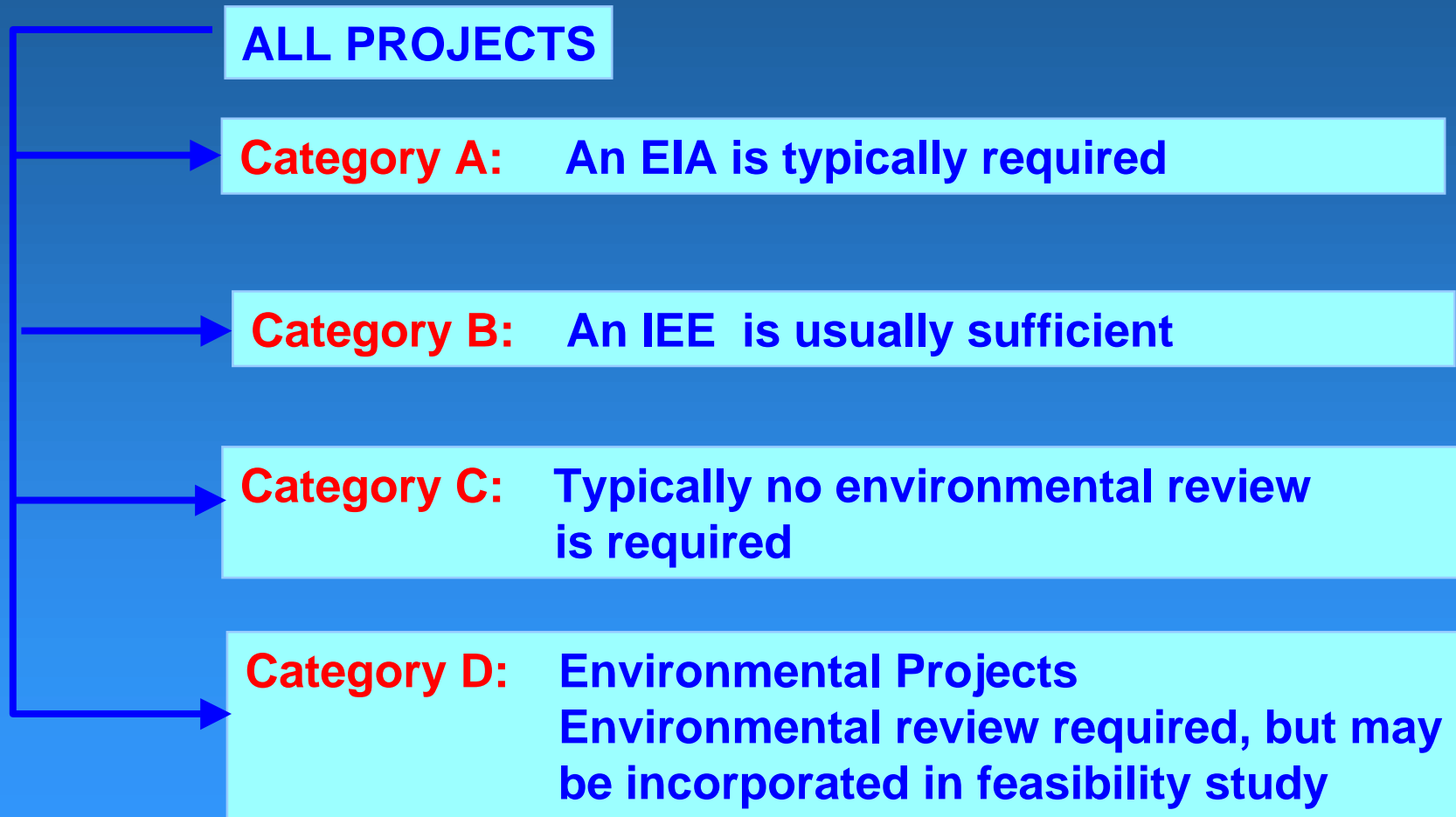
Category C

Projects that
typically do not
require an IEE

Examples:

- Forestry Research &
Extension
- Rural Health Services
- Marine Sciences
Education

World Bank Screening Categories



Initial Environmental Examination

Initial environmental examination (IEE) is intended as a low-cost environmental evaluation that makes use of information already available

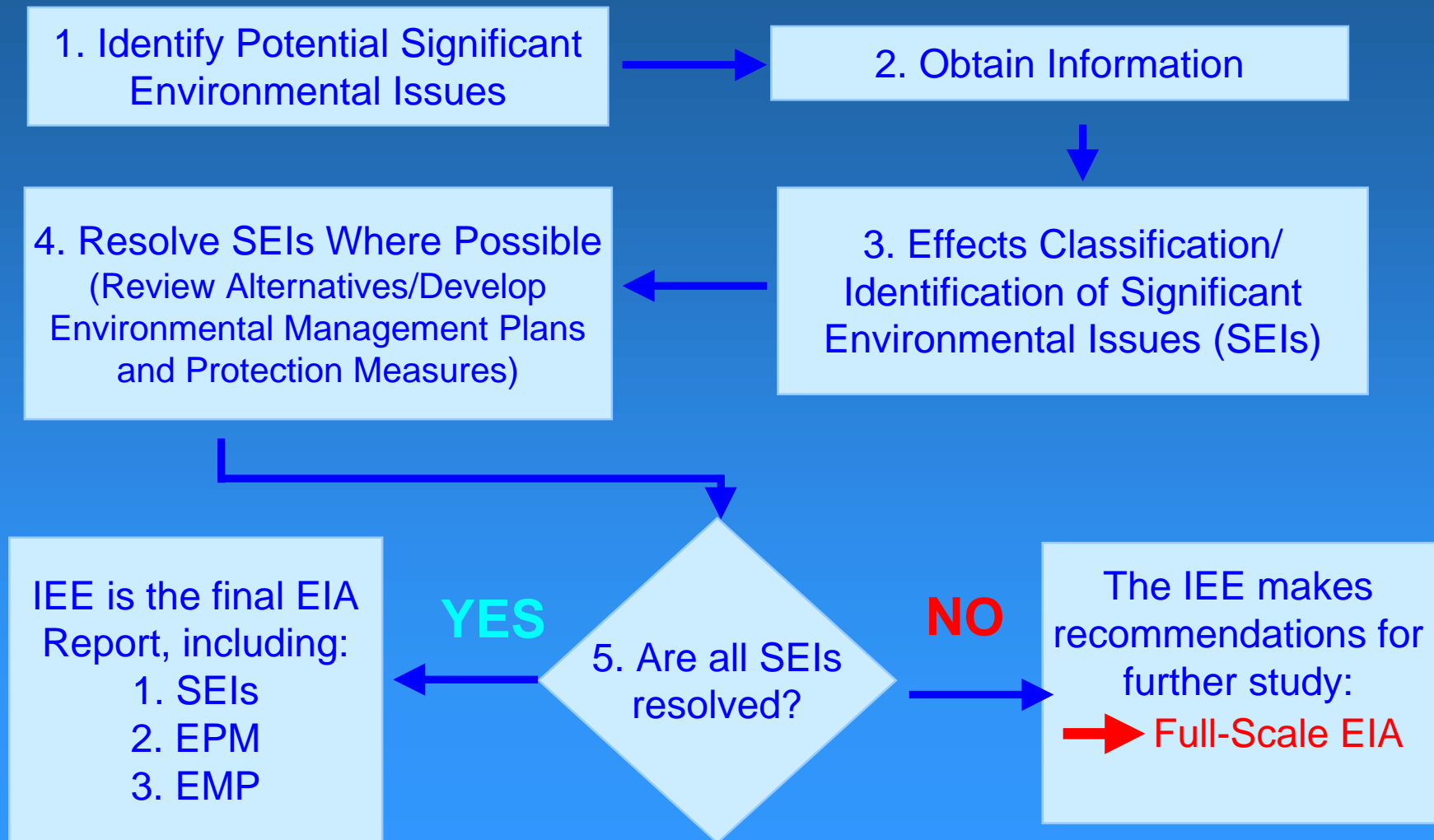
Objectives of IEE

- Identify all potential environmental concerns relating to a proposed project or activity
- Identify all significant environmental issues (SEIs)
- Resolve simple SEIs
- Develop the focus for follow-up studies based on unresolved SEIs

Possible IEE Outcomes

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

IEE Flow Chart



Strategies for Resolving SEIs Within the IEE

- Re-evaluate regional plans (e.g., to address cumulative impacts with other planned projects)
- Review project options (i.e., alternatives and modifications)
- Evaluate site mitigation strategies; including compensation strategies
- Likely will use a combination of strategies

Examples of Project Alternatives

- No-build alternative
- Demand alternatives (e.g., using existing energy capacity more efficiently rather than building more capacity)
- Activity alternatives (e.g., providing public transport rather than increasing road capacity)
- Location alternatives


Scoping

- A process of interaction between government agencies and project proponents
- Identifies:
 - » spatial 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

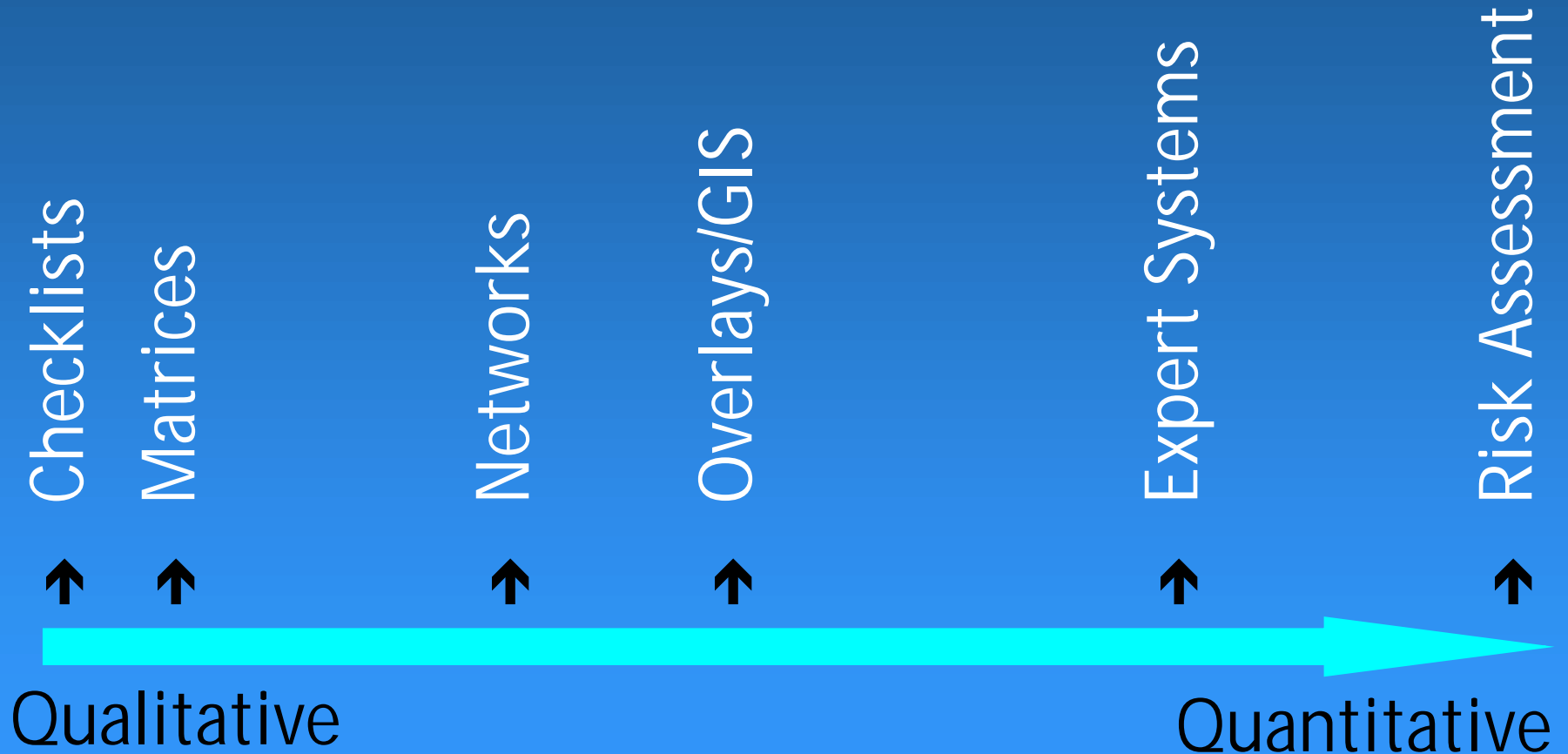
Importance of Scoping

- 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

Full-Scale EIA

- Input = Outstanding SEIs from 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



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

Impact Significance Determination



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)

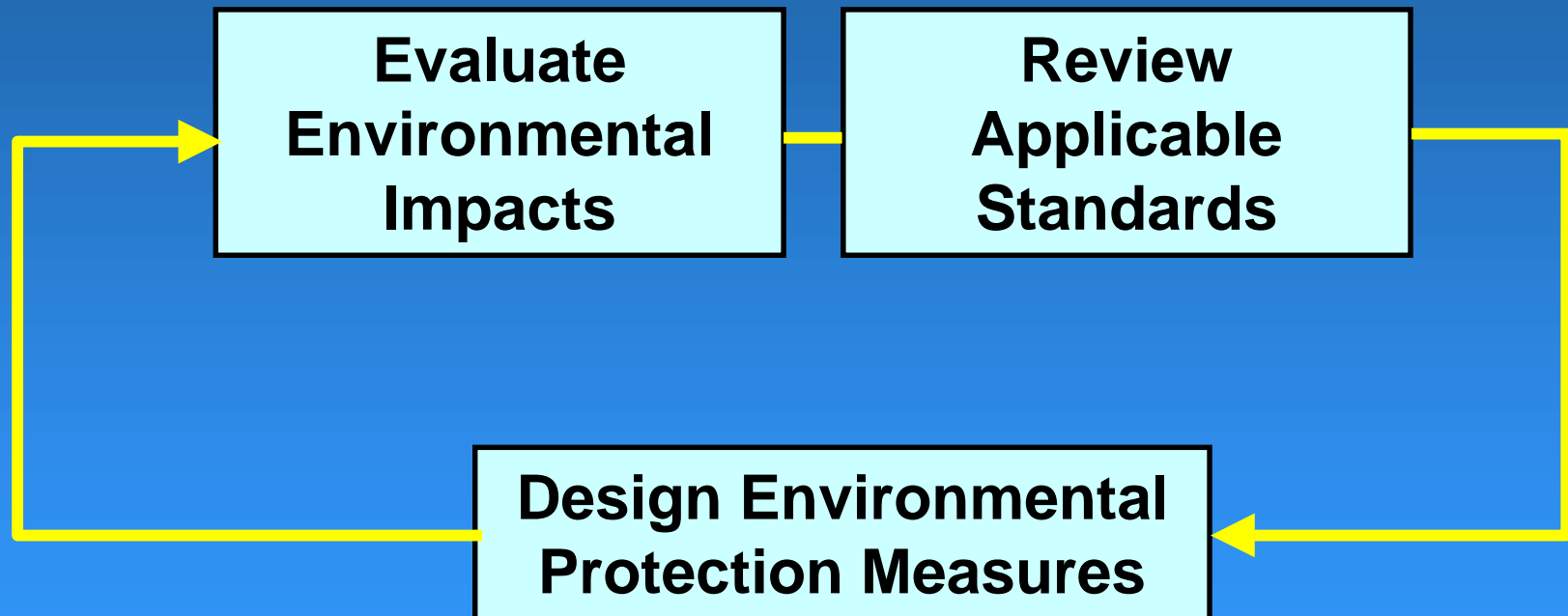
Some Criteria for Significance

- **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

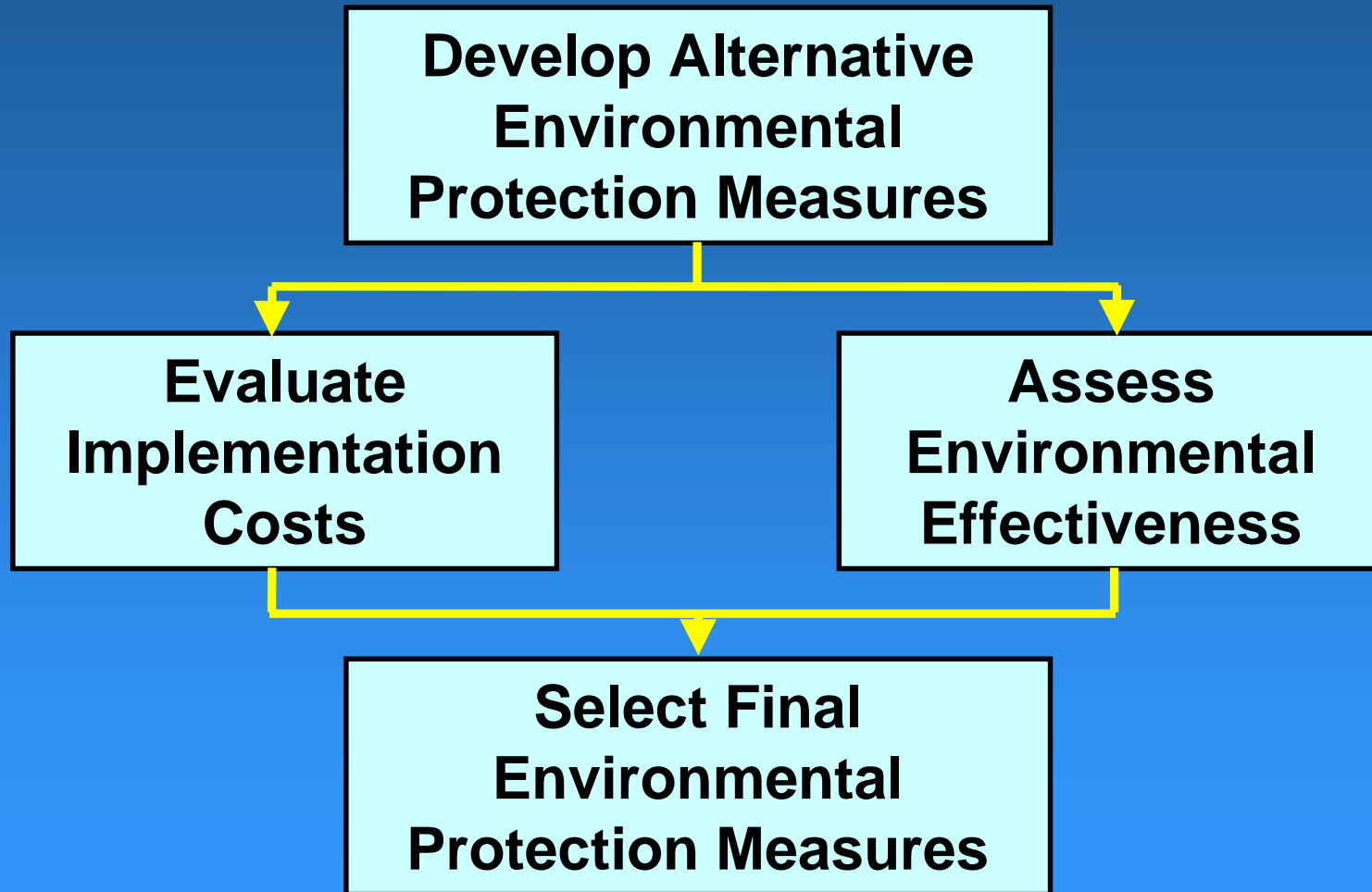
Assessing Significance

- 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

Impact Mitigation



Mitigation Development



Mitigation Options

- Alternative ways of meeting society's need for the project
- Changes in project planning and design
- Improving monitoring and management
- Monetary compensation
- Replacing, relocating, rehabilitating

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

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

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

Executive Summary (Cont'd)

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

Common Reporting Shortcomings

- Object 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

Common Reporting Shortcomings (Cont'd)

- 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

Decision Making

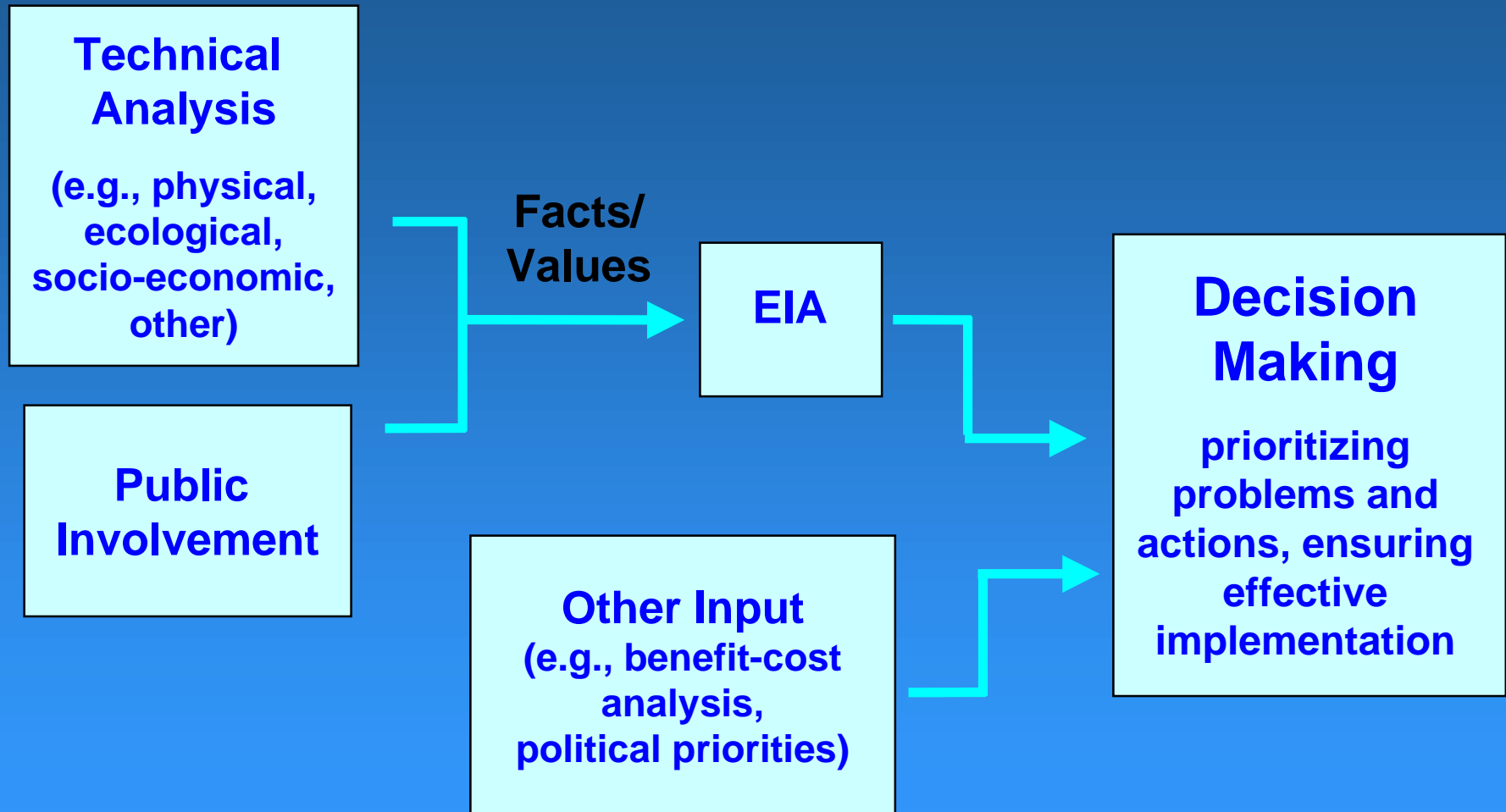
- EIA is an ongoing process of review, negotiation and incremental decision making
- Ultimately, an administrative or political decision is made whether to proceed or not to proceed with a proposed project or activity
- Function of the EIA report is to provide objective assessment of issues to inform 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

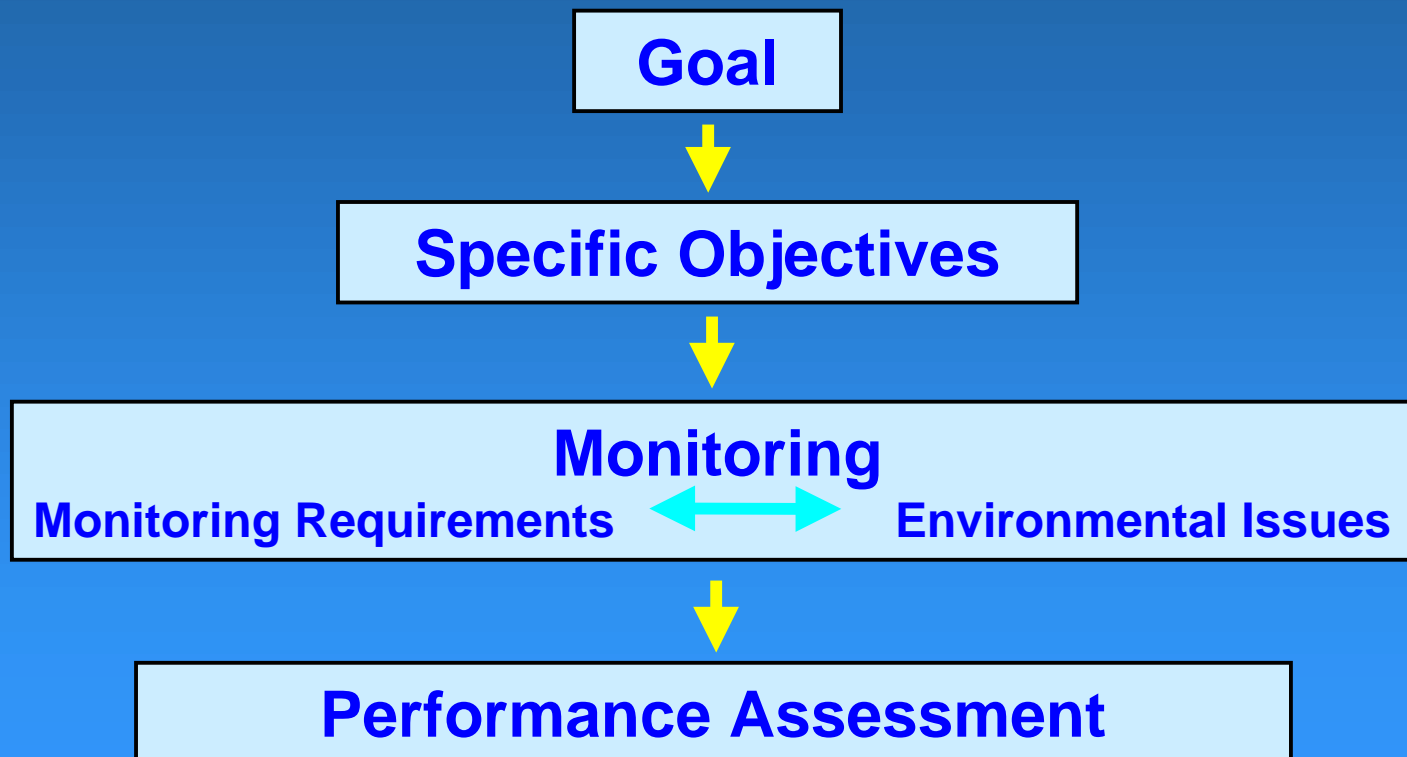
Decision-Making Inputs



Possible Decision Outcomes

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

Environmental Monitoring and Performance Assessment



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

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

Getting it Wrong

Examples of badly executed EIA include:

- Terms of reference are poorly drafted; potentially serious issues are not assessed and adverse environmental impacts occur
- Delays in project approval and cost increases occur when EIA is commenced too late in the project cycle (i.e., must back-track to retrofit equipment or re-design project)
- EIA report is incomplete or not scientifically-defensible resulting either in project rejection or extended delays to address deficiencies

Concluding Thoughts

Important points to remember are:

- EIA is a structured process to anticipate, analyse and disclose environmental consequences associated with proposed projects or activities
- EIA seeks to ensure that potential problems are foreseen and addressed such that project benefits can be achieved without causing serious environmental degradation
- Done correctly, EIA can be a powerful environmental management tool