STRATEGIC ENVIRONMENTAL ASSESSMENT METHODOLOGY AND TECHNIQUES

MEKONG RIVER COMMISSION
MRC
FOR SUSTAINABLE DEVELOPMENT

Lesson Learning Goals

At the end of this lesson you should be able to:

- Describe strategic environmental assessment (SEA) techniques which could be applied in assessing policies, plans or programs (PPP)
- List available indicators to assess potential environmental impacts of PPP
- Give examples of PPP alternatives and mitigation measures
- Identify potential technical barriers to applying SEA in riparian MRB countries

SEA Methodology

- Methodologies are not as well-developed as for project-level EIA → comparative studies are needed on the use of various techniques
- No one standardized method (i.e., depends on specific use of SEA - upper level policy development → local land use planning)

SEA Techniques

Includes:

- Techniques used for project-level EIA
- Techniques typically used for policy analysis/plan evaluation (e.g., scenario building and analysis)
- No one single technique can be used to fulfill all the steps in a SEA

General Steps

1. Baseline Study
2. Screening/Scoping
3. Establish Environmental Indicators
4. Identify Options
5. Impact Analysis
6. Monitoring and Follow-Up

Baseline Study

Identify the current state of the environment:

- Identify issues and concerns
- Establish a benchmark to evaluate impacts (i.e., the difference in the status of the environment with and without the project or activity)

Screening

- Simple procedure to initiate SEA or exempt proposals from further consideration
- Techniques: category lists, case-by-case evaluation, combination

Scoping

- Probably the most crucial step in ensuring that the SEA is feasible and useful
- Identify key environmental issues that will influence decision making and how they will be appraised

Scoping (Cont'd)

- Considerably more complex than for project-level EIA:
  - because policy, plan or programs (PPP) involve multiple activities, they are likely to have greater and more diverse impacts over a larger area
  - be subject to more legislation and policies
  - open to wider range of alternatives

Scoping Techniques

- Checklists
- Survey, case comparison
- Effects networks
- Public or expert consultation

Establish Environmental Indicators

Indicators are used to:

- measure and describe baseline environmental conditions (e.g., State of the Environment reporting)
- predict impacts
- compare alternatives
- monitor implementation of PPP

Identify Options

Comparing alternatives enables decision makers to determine which PPP is the best option:

- ➔ achieves objectives at the lowest cost or greatest benefit
- ➔ achieves the best balance between contradictory objectives

Identify Options (Cont'd)

Options can include:

- ‘do nothing’ or ‘continue with present trends’ option
- different locations
- different types of development which address the same objective (e.g., energy by gas, coal, wind)
- different forms of management
- demand reduction

Techniques for Identifying Options

- Environmental policy, standards, strategies
- Previous commitment precedents
- Regional/local plans
- Public values and preferences

Impact Prediction

- Determine the type and magnitude of impacts that a PPP is likely to have on the baseline environment
- The impact on final effects is often not addressed
- SEA impact analysis focuses on causal factors affecting the environment rather than their environmental effects (e.g., focus on energy consumption rather than CO_2 emissions)

Impact Prediction (Cont'd)

- Often it is most effective to evaluate PPP against each other - focus on relative costs and benefits rather than absolutes which are often difficult to quantify

Types of Impacts

Impacts of PPPs can be:

- large or small, affecting an international, national, regional or local area
- positive or negative
- short-term or long-term, reversible or irreversible

Types of Impacts (Cont'd)

Impacts of PPPs can be:

- ➔ direct, indirect or cumulative
- ➔ likely or unlikely to occur
- ➔ easy or difficult to mitigate

Impact Analysis Techniques

- Literature Review
  - State of Environment
  - Case Comparison
- Analytical Techniques
  - Scenario development
  - Modeling and mapping
  - Risk assessment
  - Policy impact matrix
  - Indicators and criteria
  - Benefit-cost analysis
- Expert Judgement
  - Delphi surveys
  - Workshops
- Consultative Tools
  - Interviews
  - Selective consultation
  - Policy dialogue

Impact Evaluation

Evaluating impacts involves determining the significance of identified impacts

Determining Significance

Based on:

- Regulations and guidelines
- PPP objectives
- Sustainability criteria (e.g., carrying capacity)
- Equity
- Public opinion

Addressing Uncertainty

- Impact analysis can involve high levels of uncertainty
- Techniques used to reduce and communicate the uncertainty include:
  - clarifying and reporting all assumptions
  - stating predictions in ranges versus precise numbers
  - basing predictions on different scenarios
  - using worst-cased scenarios based on the precautionary principle
  - incorporate contingency plans
  - incorporate sensitivity analysis

Mitigation

- The aim of the SEA process is to minimize negative impacts to the point where they are no longer significant
- Mitigation measures attempt to avoid, reduce, repair or compensate for impacts

Mitigation (Cont'd)

- Mitigations at the PPP level are typically more strategic, proactive and more varied than those at the project level
- Mitigation measures may include:
  - planning to avoid sensitive areas
  - placing constraints or establishing frameworks for lower-tier assessments
  - establishing new protected areas
  - creating guidelines for PPP implementation
- Once mitigation measures have been proposed, the potential impacts should be re-evaluated

Monitoring and Follow-Up

Objectives:

- Test whether the PPP is achieving its objectives and benchmarks
- Identify any negative impacts which require remediation
- Ensure that mitigation measures are implemented
- Provide feedback to assist future impact predictions

Concluding Thoughts

Important points to remember are:

- SEA techniques are not as well developed or refined as for project-level EIA or CEA
- Available project-level EIA and CEA techniques often need to be 'mixed and matched' in conducting a SEA; no single standardized method exists
- Impact prediction in SEA is very challenging; generally best just to compare alternative PPP in assessing their relative environmental effects