PRACTICAL TOOLS FOR INTEGRATED RESOURCE AND ENVIRONMENTAL MANAGEMENT

MEKONG RIVER COMMISSION

MRC

FOR SUSTAINABLE DEVELOPMENT

Lesson Learning Goals

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

➔ Itemize tools commonly applied in integrated resource and environmental management (IREM)

➔ Describe types of policy instruments

➔ Identify necessary conditions for effective environmental impact assessment

➔ Provide an example of how environmental management systems might be applied in the Mekong River Basin (MRB)

Lesson Learning Goals (Cont'd)

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

➔ Describe the intent and guiding principles of state of the environment reporting

➔ Discuss, using examples, applications of environmental sensitive area management in the MRB

The Tool Box

Practical tools commonly applied in IREM are:

➔ Environmental Planning and Policy

➔ Environmental Impact Assessment (EIA)

➔ Environmental Management Systems (EMS)

➔ State of the Environment (SoE) Reporting

➔ Environmentally Sensitive Area (ESA) Management

Environmental Planning and Policy

➔ Allows governments to guide development activities in order to maximize social and economic benefits while avoiding or minimizing undesirable impacts

➔ Land use planning policy dictates where developments such as urban, industrial, rural, and natural resource use can occur, and establishes development guidelines

➔ Local zoning ordinances can be written to limit or exclude certain types of development near water bodies or ecologically sensitive areas

Policy Instruments

Four main categories:

➜ Regulation

➜ Voluntary

➜ Government expenditure

➜ Financial incentives

Two target populations:

➜ General public

➜ Individual firms or industries

Regulations

➔ Include laws, licenses, permits and standards

➔ Make up the largest number of environmental protection measures

➔ Example: water quality standards are regulations that limit the type and amount of pollutants that can be discharged into a receiving water body or in a waste effluent stream

» The standards should be designed to complement environmental management objectives

Voluntary Actions

➔ Actions taken by individuals, groups or industries to protect the environment, without being forced by law or persuaded by financial incentives

➔ Example: voluntary recycling, voluntary clean-up of an urban neighborhood, 'green' consumerism

➔ The voluntary adoption of an EMS such as ISO 14001 is one of the most significant environmental protection options available to industry

Government Expenditure

➔ The use of public money in the form of subsidies or grants provided by government to households and industry sectors

➔ Example: tax allowances provided to industry as incentives to reduce pollution or provision of grants to fund research into more effective pollution controls

Financial Incentives

➔ These are designed to discourage environmentally damaging activities by making them more expensive

➔ Example: increasing taxes on industrial polluters - 'polluter pays principle'

Institutional Arrangements

➔ Functional institutional framework is crucial to implementation of plans and policies

➔ Integrated management necessitates a strong context for implementation

➔ Institutional characteristics necessary for successfully implementing IREM are:

  » legitimacy

  » inclusiveness

  » coordination/collaboration

Legitimacy

➔ Likely the most important factor

➔ Requires combination of political support for and commitment by management agencies

➔ Contingent on strong leadership (e.g., capacity to make difficult trade-offs)

➔ Must align management practices with principles of IREM (e.g., adopting long-term horizons)

➔ Community support is fundamental

Inclusiveness

➔ Adopting holistic perspective requires interdisciplinary management approach

➔ Should consider both science and social science aspects (e.g., community development) in determining appropriate management strategies

➔ Must establish linkages between and among government agencies, academia, and industry

➔ Solicit community and stakeholder involvement

Coordination and Collaboration

Management agencies should strive to:

➔ Communicate in establishing a shared problem definition

➔ Collaborate in formulating mutual policy and management strategies

➔ Coordinate in implementation and follow-up

➔ Inadequate communication, and institutional inertia and distrust are root causes of ineffective coordination and collaboration

Environmental Impact Assessment

"A process which attempts to identify and predict the impacts of legislative 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."

(CEARC, 1988)

EIA as a Management Tool

➔ Like economic analysis and engineering feasibility studies, EIA is an important management tool for guiding decisions

➔ EIA provides information regarding potential adverse environmental impacts and available mitigation measures; armed with this knowledge managers and decision makers can determine how best to proceed.

➔ EIA is equally important as a tool for guiding planning initiatives and other policy development

EIA Cornerstones

➔ Apply to all types of development activities (e.g., projects, plans, policies or programs)

➔ Consideration of changes over various time spans and spatial scales

➔ Consideration of social and cultural viewpoints in addition to scientific opinions

➔ Identify and communicate potential impacts to interested parties and encourage thoughtful discussion and problem solving

Characteristics of Effective EIA

➔ **Complete:** all significant impacts considered and all relevant alternatives examined

➔ **Accurate:** appropriate forecasting and evaluation procedures

➔ **Clear:** all interested parties can comprehend issues

➔ **Cost-effective:** time and content requirements are reasonable

➔ **Timely:** provide useful information to decision makers at the right time

EIA Management Considerations

➔ How is the need for EIA determined?

➔ How are terms of reference determined?

➔ Who prepares EIA?

➔ When is EIA conducted?

➔ Who evaluates an EIA report?

➔ Is post-implementation monitoring required?

➔ How can the public effectively participate?

EIA and Decision Making

➜ Timing: EIA conducted early in project cycle

➜ Disclosure: transparency, access to information

➜ Weight: results guide decision making process

➜ Revisions: project design revised to include feasible mitigation measures or less damaging alternatives, as appropriate

➜ Mitigation: agreed-upon mitigation measures are implemented

➜ Monitoring: follow-up monitoring undertaken and acted upon

What are Environmental Management Systems?

➔ EMS is the part of an organization's management structure which addresses the immediate and long-term impact of activities, products, services and processes on the environment

➔ An effective EMS is essential to an organization's ability to anticipate and meet growing environmental performance expectations and to ensure ongoing compliance with national and international requirements

Environmental Management Systems

EMS provides an organizational framework to:

➔ Establish an appropriate environmental policy, including a commitment to the prevention of pollution

➔ Develop management and employee commitment to environmental protection, with clear assignment of accountability and responsibility

Environmental Management Systems (Cont'd)

➔ Establish a system of operational control to ensure high levels of system performance

➔ Establish a disciplined management process for achieving targeted performance levels

➔ Evaluate environmental performance against the policy, objectives and targets, and seek improvement where appropriate

Elements of the EMS Framework

➔ Clearly defined policy

➔ Assignment of roles, responsibilities and resources

➔ Objectives and targets based on environmental significance and legal requirements

➔ Action plans and programs to meet objectives

➔ Efficient documentation and information system

➔ Procedures for monitoring and evaluating program implementation

ISO 14001

➔ The International Organization for Standardization has developed this EMS standard to offer a structured means for organizations to set environmental goals and assess their progress towards those goals

➔ Compliance with the ISO 14001 standard is becoming increasingly valued in the international marketplace

➔ Demonstrates voluntary commitment by organizations (e.g., industry) to improving their environmental performance

State of the Environment Reporting

➔ Provides a comprehensive and holistic assessment of status and trends in environmental conditions

➔ Informs interested parties as to whether environment conditions have improved, remained stable, or deteriorated over a defined time period

➔ Guides policy development (e.g., reveals priority areas, indicates level of effort required, identifies data gaps)

Fundamental Questions

➔ What is happening in the environment?

➔ Why is it happening?

➔ Why is it significant?

➔ What are we doing about it?

➔ What environmental trends are occurring?

SoE Guiding Principles

➔ User-friendly, concise and understandable

➔ Strive to harmonize reporting components with neighbouring countries

➔ Assumptions and uncertainties should be clear

➔ Involve the public

Components of SoE Reporting

SoE reporting is a circular 6-step process:

1. Identification of issues and concerns

2. Definition of indicators

3. Assembly of available information

4. Evaluation of results (i.e., determine benchmarks and targets)

5. Reporting and presentation of findings

6. Monitoring to address important data gaps and conduct future assessments

Measuring the State of the Environment
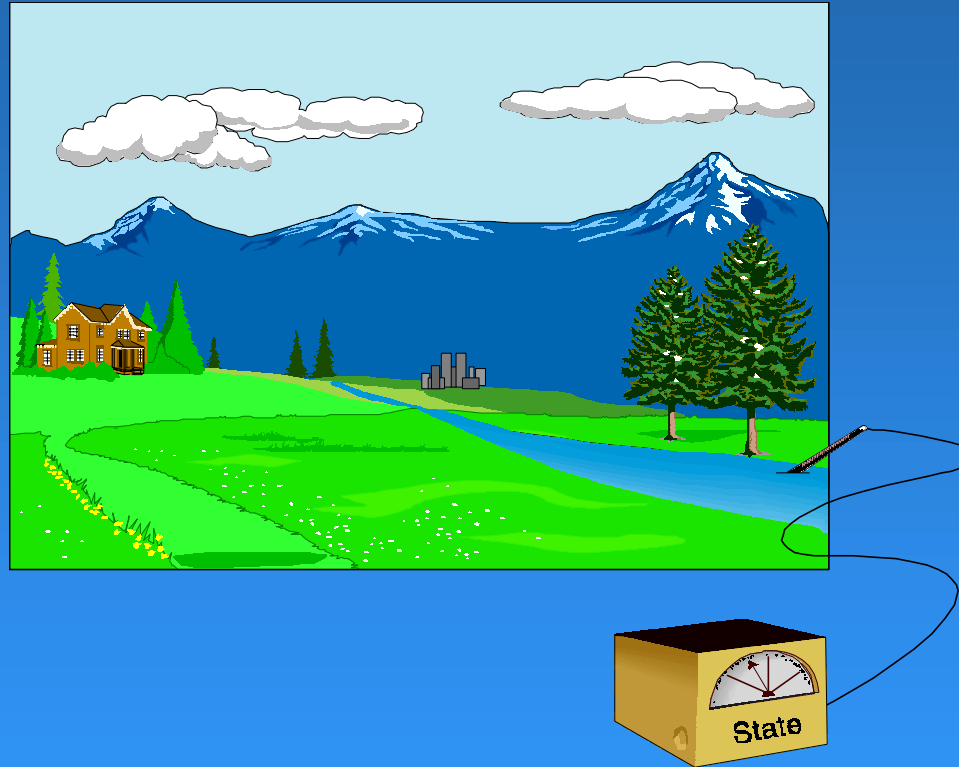
There is often no quick and easy way to assess status and trends.

Characteristics of Good Indicators

➔ Relevant and representative

➔ Scientifically credible

➔ Responsive to change

➔ Quantifiable (e.g., below or above a target)

➔ Data collection is cost effective

➔ Easy to communicate and understand

➔ Comparable with other regions and/or countries

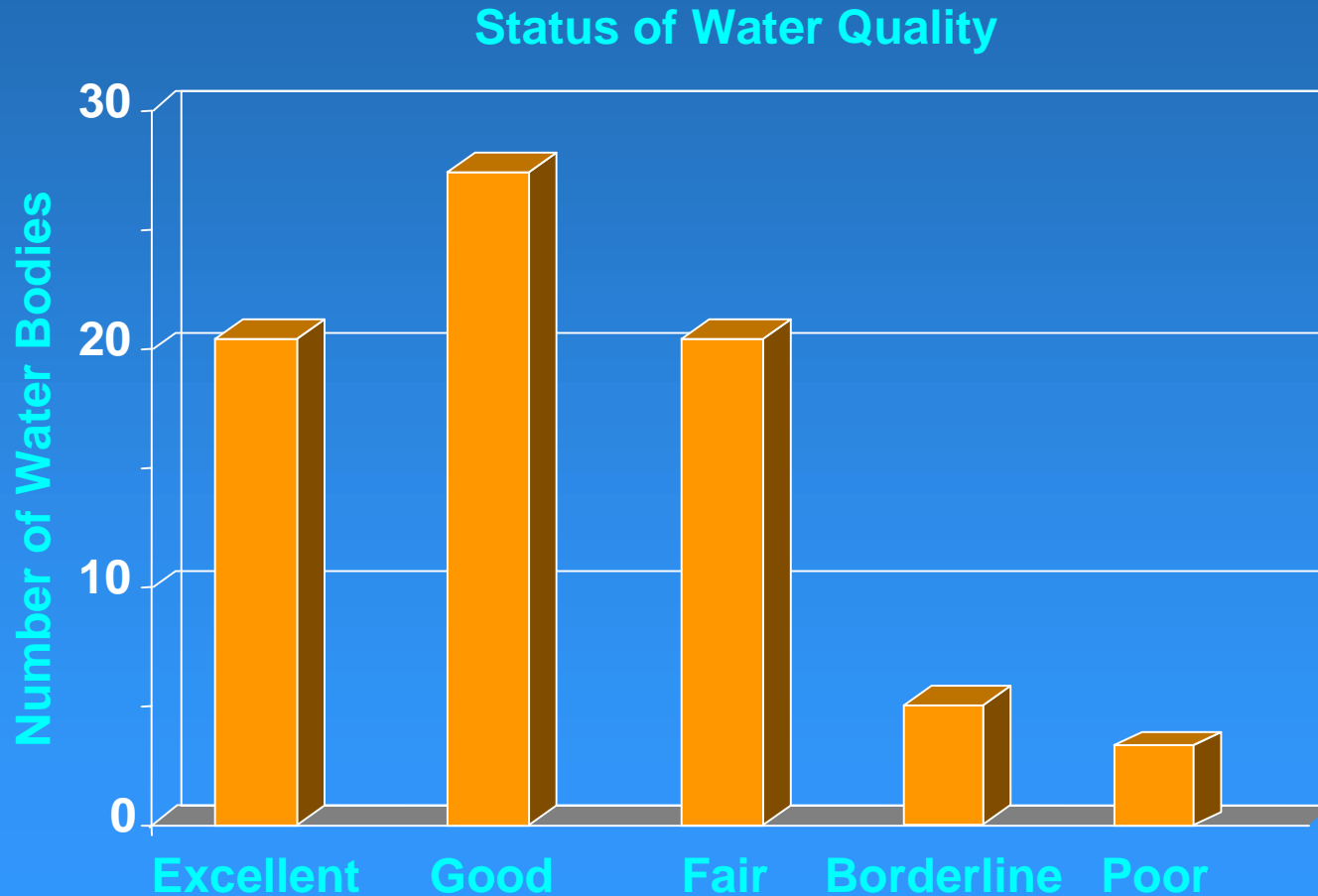# Examples of SoE Indicators

Wildlife Population

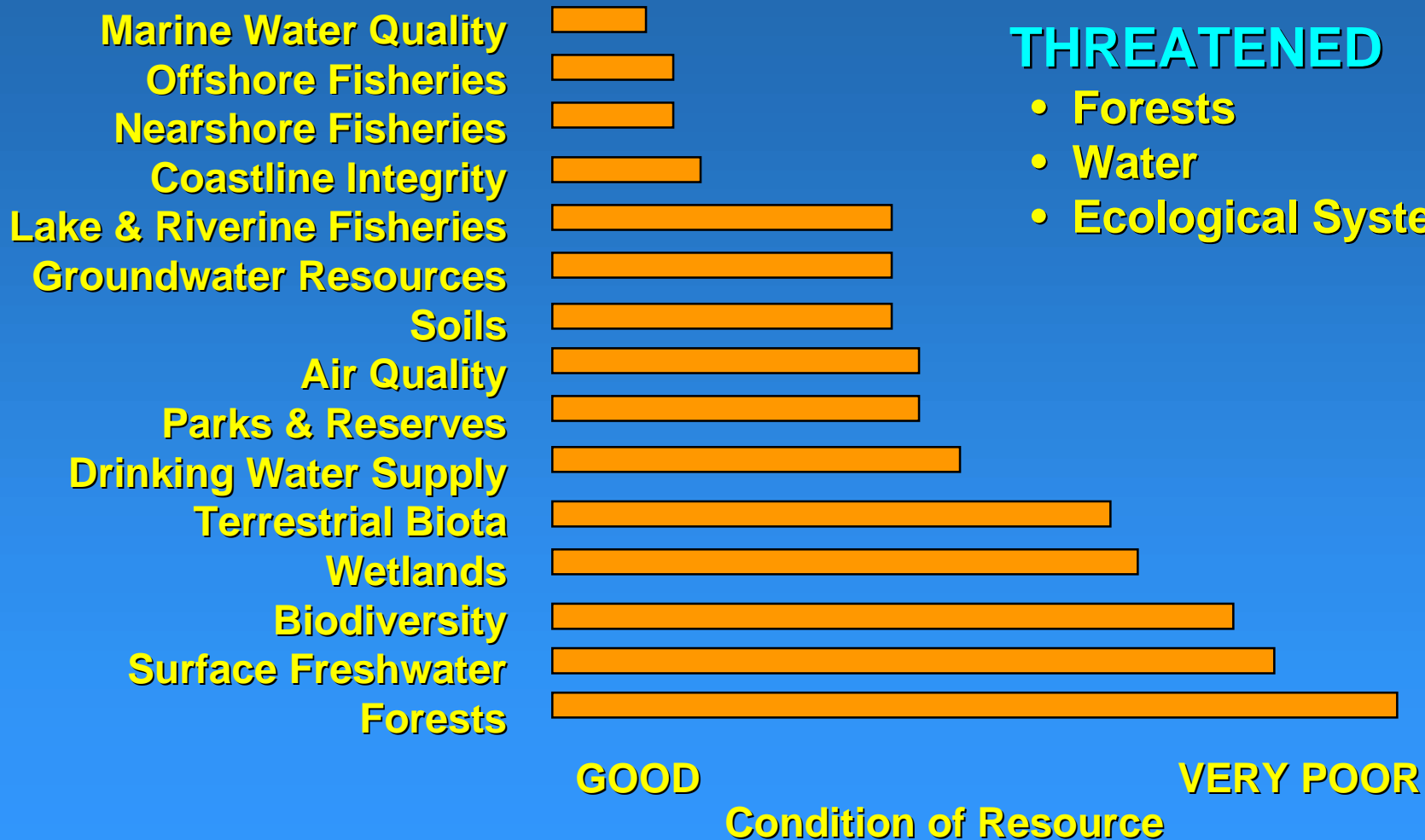**Protected Areas**

Fish

Water Quality

Greenhouse Gases

Example of SoE Reporting

Status of Water Quality

Example SoE Report for the MRB

Marine Water Quality
Offshore Fisheries
Nearshore Fisheries
Coastline Integrity
Lake & Riverine Fisheries
Groundwater Resources
Soils
Air Quality
Parks & Reserves
Drinking Water Supply
Terrestrial Biota
Wetlands
Biodiversity
Surface Freshwater
Forests

GOOD — VERY POOR

Condition of Resource

THREATENED
- Forests
- Water
- Ecological Systems

SoE Challenges

➔ Determining areas of importance (i.e., issues of concern)

➔ Establishing benchmarks

➔ Determining significance of change

➔ Lack of understanding (e.g., ecological processes, interactions of ecosystems and socio-economic dimensions)

➔ Limited data

What is Environmental Sensitive Area Management?

➔ ESA is a management tool that is used to protect specified areas through land or water use designations (i.e., provides a mechanism for protection)

➔ Process by which managers can identify and prioritize areas for conservation and protection

➔ Involves management of an area that warrants special attention to preserve and maintain its ecological structure and function

ESA Identification Criteria

- Size
- Diversity
- Vital Ecological Function
- High Quality Communities
- Rarity

- Fragility/High Sensitivity
- Representative
- Aesthetics
- Intrinsic Appeal
- Scientific Research

ABC Method

ABIOTIC	BIOTIC	CULTURAL
• Landform • Dranage nework • Soil type • Floodplain mapping • Erosion susceptibility • Earthquake susceptibility • Aquifer areas	• Vegetation cover • Fish habitat • Wildlife habitat • Bird and other wildlife distribution • Rare and endangered species • Biotic communities	• Archaeological sites • Historic sites • Land zoning • Scenic areas • Recreation

ESA Management Process

1. Establish long-term management goals
2. Conduct background research (e.g., community values, alternative methodologies)
3. Define management objectives
4. Define guiding principles (e.g., incorporate public involvement)
5. Determine selection criteria
6. Conduct inventory analysis

ESA Management Process (Cont'd)

7. Select ESAs for each component (abiotic, biotic, cultural) and for each category

8. Develop and apply framework for ranking ESAs (e.g., importance of criteria, number of criteria satisfied)

9. Develop summary ESA classification for each identified area

10. Develop management recommendations for each ESA

ESA Management Process (Cont'd)

11. Designate ESA (i.e., land use designation as a means for protection) or identify alternative mechanisms to manage each ESA

12. Monitor responses (ecological and socio-economic) to management action

13. Re-assess and adapt action, if necessary

Application of IREM Tools in Lower Mekong Basin

	EIA	EMS	ESA
Cambodia	Yes	Not Yet	Yes
Lao PDR	Evolving	Not Yet	Yes
Thailand	Yes	Yes	Yes
Vietnam	Yes	Yes	Yes

Concluding Thoughts

Important points to remember are:

➔ Effective environmental management demands forward-thinking planning and policy

➔ Institutional reforms may be necessary to provide the context under which integrated management approaches are to be applied

➔ Practical tools such as EIA, EMS and ESA have been under-utilized to date by government and industry in meeting environmental performance requirements