

POLICY INSTRUMENTS FOR ENVIRONMENTAL PROTECTION

Previous lessons have reviewed the elements required for effective integrated resource management, and of the barriers that can hinder implementation of integrated resource and environmental management (IREM). Now, it is time to think about the types of policies available to governments that can help them meet their resource and environmental management goals.

The purpose of environmental policy is to set direction for the use, development and protection of the natural and physical environment. Environmental policies are essential strategies to manage the use of resources and apply preventive and mitigation measures for issues such as water pollution, air pollution, and waste management. An environmental policy is a guiding principle, or set of principles, by which a country or government determines its aims and objectives. Policies are usually accompanied by guidelines, which state clearly how the policy objectives should be achieved.

All Mekong River Basin (MRB) riparian countries have been formulating policies for environmental protection. The Basin's governments have several policy options. These are targeted at the general public and individual industries and include: regulations, voluntary initiatives, government expenditures, and economic

instruments and financial incentives. A brief description of each policy option is provided in the following sections.

REGULATIONS

Regulations include laws, licenses, permits and standards. By far, regulations are the most common type of environmental protection measure. Think of regulations as a tool for the implementation of a particular law, and the law as the legal basis for a government's policy.

For example, Vietnam's Law on Environmental Protection explicitly states that "waste water, refuse containing toxic substances, pathogenic agents, inflammable or explosive substances, non-degradable wastes, must be properly treated before discharge". Regulations have been passed that include standards, which

limit the type and amount of pollutants that can be discharged into receiving waters.

Water quality standards should be designed to complement the environmental management objectives of a government or environmental protection agency. Management objectives may include:

- Protection goals for level of biological organization (i.e., population, species, community, ecosystem)
- Critical endpoints – for species and populations, these might be mortality, growth, or reproduction



- Level of protection – accepted probability of protecting a given percentage of biota
- Predictive capability – this could be standards that can predict serious impacts or serve as early-warning mechanisms.

The methodology that a government develops or adapts for water quality standards formulation is dependent upon such factors as: water management objectives and philosophies, data availability, resources available (e.g., time, money and technical expertise) and the country's regulatory framework. Several general options are available to environmental managers in the MRB:

- Directly adopt the water quality standards of other regions or nations
- Develop a specific standards formulation method and formulate standards
- Adopt an existing standards formulation method, in whole or in part, and formulate standards for individual substances.

Setting standards also entails having some government monitoring agency oversee polluters' activity, with the power to impose a penalty, such as a fine or legal action. If the monitoring agency has no real enforcement power, social conscience is the only incentive the polluter has to comply with the standards.

Pollution control permits are also a very common environmental protection measure, and can be effective for regulating both air and

water pollution. Two types of permit systems are common:

1. Ambient permit system – This system works on the basis of permits defined according to emissions exposure to specified receptors. Quality standards may vary according to the environmental receptor, so there is no need for each receptor to have the same ambient quality standard. Let's return to the example of water quality standards to clarify this permit system. Governments can choose to set different pollutant discharge standards depending on the 'quality' of the receiving water body. If the receiving water is a local water supply or is known to be valuable fish habitat, the protection standard might be very strict (i.e., acceptable pollutant concentrations are low). However, if the receiving water body is not considered particularly valuable to humans or as habitat, the protection standard might not be as strict (i.e., acceptable pollutant concentrations are higher).
2. Emissions permit system – This system is much simpler, as it is emissions-based across a much wider area than the ambient permit system. It simply issues permits on the basis of source emissions and ignores what effects these emissions have on environmental receptors such as fish. Within a given area, a total annual pollutant load might be set. Provided this annual standard is not exceeded, concern for individual receptors is not high.

VOLUNTARY

Individuals and industries may act on their own to protect the environment, without being forced by law. Examples include voluntary recycling at the

household level and beyond, and clean-up of 'community dump' sites, or areas other than landfills where people have traditionally dumped their trash.

Perhaps one of the most significant voluntary mechanisms available to industry is the adoption of an environmental management system (EMS). While this topic is covered extensively in Course F, it is valuable to introduce some of the concepts here. Environmental management systems are a relatively new environmental management tool which seek to consider and control potential environmental impacts in a structured and systematic way. EMS are usually applied as a system of management within industry to help them manage pollution control and environmental impacts. The attraction of improved management, with greater efficiency and improved use of resources, has prompted a useful trend of environmental self-improvement within industry. This voluntary approach has proved very successful in complimenting traditional regulation-based approaches.



Worldwide, public administrators responsible for managing development, infrastructure and utilities, are also finding EMS a useful tool for organizing the planning and implementation of environmental

initiatives. The EMS model appears to be appropriate for national and international environmental protection bodies to adopt to enhance management of natural resources.

There has been a trend toward the standardization of environmental management system approaches with the launch of ISO 14001. International standardization is intended to provide the core elements of effective management, while still being applicable to diverse geographical, cultural, economic and social conditions.

Key elements of the ISO 14001 Standard which form the basis for an industry's EMS are:

- Initial environmental reviews
- Developing an organization, issue or site-based environmental policy
- Development of a legislative compliance system
- Environmental aspect compilation and assessment
- Defining procedures for operation control (i.e. compliance and performance monitoring, risk management, and emergencies)
- Environmental management program development to facilitate continuous improvement
- Training to develop environmental competence amongst staff with environmental responsibilities
- Contractor and supplier management
- Environmental research, survey and analysis
- Environmental audits
- Defining an effective management review system to achieve real results.

GOVERNMENT EXPENDITURES

Governments can choose to use public money for environmental protection. Grants and subsidies can be given to organizations or industry to assist them in achieving more environmentally-sound practices. Governments can also identify tracts of land to be set aside as habitat conservation areas. Some of the most effective uses of public funds lies in the government's ability to set up and maintain long-term research or environmental monitoring projects.

Examples of important environmental programs being undertaken by MRB riparian countries under the auspices of the Mekong River Commission are briefly described below.

The Program for Fisheries Management and Development Cooperation

This program evolved out of concern for the fisheries resources of the MRB. The economic and social importance of fish to the people of the Basin cannot be overemphasized, nor can the need to monitor the health of these resources. Production and revenue from the fishery may be threatened by habitat degradation and water management developments that block fish migration routes, as well as by increased fishing efforts in parts of the Basin.

The program's overall objective is coordinated and sustainable management of the fisheries of the Lower Mekong Basin (LMB), including development of the economic and nutritional potential of the inland living aquatic resources in the Basin. The program emphasizes regional

cooperation and is focused on two main sub-sectors:

- Capture fisheries and aquatic resources – Fisheries management systems established ensuring sustainable economic use and conservation of the biodiversity of the region
- Small-scale aquaculture development – Farmers' incomes raised through the development of economic and sustainable small-scale fish production.

The program has been responsible for research studies aimed at the development of fisheries management at the regional level, including identification of important habitats, describing fish migrations and assessing the transboundary effects of water management development projects on migratory fish species. Specific program components are shown in Table 1.

The Water Quality Monitoring Network Project

A Water Quality Monitoring Program in the four riparian countries of the LMB was started in 1985. The program was initiated with support from donor organizations, but the program will probably move to a combination of donor and national support from the four LMB countries in the future. The objectives of the program are:

- Monitoring to determine background conditions in the Mekong River and to follow water quality changes in the main river and some of its tributaries
- Establishment of systems for early recognition of water quality problems arising from current and future development activities

Table 1 MRC Fisheries Program

FISHERIES SUB-SECTOR	COMPONENT
CAPTURE FISHERIES AND AQUATIC RESOURCES	Assessment of Mekong Fisheries – Fish migrations and spawning and impact of water management (Basin-wide)
	Management of the freshwater capture fisheries of Cambodia
	Management of reservoir fisheries in the Mekong Basin
	Strengthening of Inland fisheries information systems in the Mekong Basin
SMALL-SCALE AQUACULTURE	Rural extension for aquaculture development in the Mekong Delta
	Aquaculture of indigenous Mekong fish species (Basin-wide)
	Highland fisheries development (Basin-wide)
	Institutional support (Basin-wide)

ECONOMIC INSTRUMENTS AND FINANCIAL INCENTIVES

An alternative means to encourage environmental protection is through the use of economic instruments, which provide market-based incentives. There are many examples of economic instruments and this is an evolving field in developing countries. The most frequently mentioned example of an economic instrument is the ‘polluter pays’ principle. This involves the establishment of a set of monetary charges to industry for the discharge of waste. The basic concept is that more money is paid as more waste is produced. The premise is that there will be financial gains to individual industries as a result of their efforts to reduce waste and protect the environment.

- Development of predictive tools and mitigation strategies for complex water-related environmental problems of natural and human origin in the MRB.

A network of 102 sampling stations was established and consists of the following:

- 18 stations along the main river (14 on the Mekong River and 4 on the Bassac River)
- 35 stations along the tributaries of the Mekong River
- 44 stations in the Vietnam Mekong Delta
- 5 stations in the wetlands of the Mekong River.