REGULATORY AND ECONOMIC INSTRUMENTS TO CONTROL POLLUTION AND MANAGE WASTE

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The are two principal approaches to pollution control and waste management: the command- and-control and economic strategies. Since the inception of environmental policy in most developed countries, the command-and-control approach has been the predominant strategy. This involves direct regulation, along with monitoring and enforcement systems and relies primarily on applications of regulatory instruments, such as standards, permits and licenses, as well as land and water use controls. The command-and-control approach shows how much pollution levels will be reduced. Although this approach has been criticized for being economically inefficient and difficult to enforce, command-and-control strategies have made significant progress in meeting the objectives of environmental legislation and policies.

In recent years, many countries, primarily industrialized ones, have adopted economic instruments to introduce more flexibility, efficiency, and cost-effectiveness into pollution control measures. These instruments act as incentives to polluters to choose their own means of pollution control. To various degrees, they incorporate the polluter-pays and user-pays principles. According to the polluter-pays principle, the polluter pays a financial penalty for higher levels of pollution and pays a smaller penalty or receives a financial reward for lower levels of pollution. According to the user-pays principle, the user of a resource pays the full social cost of supplying the resource, such as for water and related services including treatment costs.

Overall, the economic approach has several advantages. When properly implemented, it can: promote cost-effective means for achieving acceptable levels of pollution; stimulate development of pollution control technology and expertise in the private sector; provide government with a source of revenue to support pollution control programs; provide flexibility in pollution control technologies; and eliminate a government's requirement for large amounts of detailed information needed to determine the feasible and appropriate level of control for each plant or product. Despite these strengths, economic instruments have certain disadvantages. One significant problem is that the effects of economic instruments on environmental quality are not as predictable as those under

the traditional regulatory approach, since polluters may choose their own solutions. Other problems are that some polluters may choose to pollute if the charge is not set at an appropriate level and that they require sophisticated institutions to implement and enforce them.

The command-and-control approach to pollution control and waste management relies primarily on regulatory instruments (for example, standards, permits, licenses, land use controls); the economic approach usually incorporates regulatory instruments as well as economic instruments such as charges, marketable permits, and subsidies.

In practice, economic instruments are rarely used alone to achieve environmental protection objectives. Generally, they supplement direct environmental regulations to raise revenues for financing pollution control activities or other environmental measures, provide incentives to better implement regulations, and stimulate technical innovation. The regulatory and economic instruments selected to achieve pollution control and waste management objectives will have broad implications for institutions at the national, state or provincial, and local levels of government, as well as for nongovernmental organizations. The choice of instruments will determine in large part the responsible level of government and the type of institution as well as the mechanisms for enforcement. In general, the activities requiring the greatest degree of political consensus and highest level of complexity (for example, setting standards) and risk are assigned to the national government level. The state and provincial levels tend to be responsible for policies that affect natural resources shared by several municipalities; local government generally is responsible for policy instruments associated with solid waste management, wastewater collection and disposal, air pollution from automobiles or local industries, and ground-water contamination. In some situations, pollution control responsibilities are assigned to watershed or air shed authorities. The institutions that would be responsible for pollution control and waste management include: national sector agencies; state and provincial agencies such as pollution control boards, watershed or air shed authorities, and county or municipal agencies. The courts and nongovernmental organizations also play roles in the development and enforcement of environmental regulations.

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