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History and Legislative Mandates for Environmental Valuation

In the earliest versions of benefit-cost analysis of federal projects, there was no provision for accounting for economic gains or losses due to environmental benefit or harm. Even when aware of the physical harm a project or policy would have on the environment, decisionmakers were unable to quantify these using the available economic tools of the time. Economic theory has progressed to address the problems of environmental valuation, as have federal environmental laws and regulations.

HISTORY

Environmental valuation has its origin in the **River and Harbor Act of 1902**. This Act required a board of engineers to report on the desirability of the Army Corps of Engineers' river and harbor projects by accounting for both the costs and benefits to commerce.

In the 1930s, the idea of broader social justification for projects emerged as a theme. For example, the **Flood Control Act of 1936** authorized federal participation in flood-control schemes if the benefits of such actions exceeded the estimated costs. The practice of such analyses then spread to other agencies concerned with water development projects. The purpose was both to justify public works projects and to help decide who should pay for these projects.

By the end of World War II, federal agencies had broadened their approach to account for secondary, or indirect, benefits and costs as well as **intangibles**. Intangibles reflected what are now considered environmental assets. This was really the beginning of benefit-cost analysis (as will be discussed in greater detail in Chapter 3). In the 1950s, a federal interagency committee produced the **Green**

Environmental Valuation Legislative History

- **River and Harbor Act of 1902**
- **Flood Control Act of 1936**
- **Broadened approach to include *intangibles***
- ***Green Book* published in 1950**
- **Environmental movement of the late 1960s**
- **National Environmental Policy Act of 1969**
- **Clean Air Act of 1970**
- **Clean Water Act of 1972**
- **Comprehensive Environmental Response, Compensation and Liability Act of 1980 and natural resource damage assessment**
- **Executive Order 12291 (Regulatory Iimpact Analysis) issued in 1981**

Book, an attempt to codify and agree on general principles of project justification. This document was notable for bringing in the language of welfare economics.[1]

In the late 1960s, the environmental movement began. Pollution control was of particular concern and the economics community was ready and willing to play a role. Unfortunately, the economic view had little impact on the initial surge of legislation for pollution control. Two of the cornerstones of federal environmental policy on pollution control — the **Clean Air Act of 1970** and the **Clean Water Act of 1972** — explicitly prohibited weighing benefits and costs in the setting of environmental standards. Instead, standards were based solely on public health criteria.

While the **National Environmental Policy Act of 1969** (as amended through 1982) required the use of benefit-cost analysis in environmental impact statements, environmental valuation did not really come into its own until the 1980s, when **Executive Order 12291** (the Regulatory Impact Analysis requirement) was issued.[2] Additional environmental legislation, particularly the **Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)**, gave natural resource trustees the right to claim damages for injuries to natural resources that result from the release of oil and other hazardous materials into publicly owned rivers, lakes, estuaries, oceans, or other aquatic or terrestrial habitats. The natural resource damage assessment process explicitly calls for the estimate of interim lost values of injured natural resources and resource services.

During the 1980s, interest in environmental valuation continued to expand, and this attention has continued into the 1990s. This increased attention stems from the implementation of the **Oil Pollution Act of 1990** and its subsequent natural resource damage assessment regulations. The Act put pressure both inside and outside of government to improve the decision-making criteria affecting public funds and resources. In addition, relatively recent legislative mandates, through amendments to existing legislation, have strengthened the requirement of net economic benefit analysis as part of management and regulatory programs.

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[1] Interagency River Basin Committee, Proposed Practices for Economic Analysis of River Basin Projects.

[2] Early in the Reagan Administration the President issued Executive Order 12291. This Order requires cabinet-level departments to prepare benefits-cost analyses justifying major rules. These analyses are scrutinized by the Office of Information and Regulatory Affairs within the Office of Management and Budget. Executive Order 12291 has subsequently been superseded by Executive Order 12866.

LEGISLATIVE MANDATES

The following section provides a summary of legislation which indicates the extent of the applications of environmental valuation in the coastal and marine resource management and policy arena.

► **WETLANDS PERMITTING.** Among the many pieces of legislation related to wetlands, the most important is probably Section 404 of the Clean Water Act which is a component of the permit process necessary for wetlands conversion for development. When making a permitting decision, the Army Corps of Engineers is expected to balance the public and private benefits of the project against the costs, and to take into account environmental values. No guidelines are provided on how the Army Corp of Engineers should measure costs and benefits. Nor is there any requirement that an actual study be conducted. However, agencies making recommendations to the Corps can (and occasionally do) make their arguments in terms of costs and benefits.

► **NONPOINT SOURCE POLLUTION CONTROL. Section 319 of the Clean Water Act** establishes a national program to control nonpoint sources of water pollution. In addition, **Section 6217b of Coastal Zone Act Reauthorization Amendments of 1990** requires that all states with coastal management programs must develop and submit to EPA and NOAA for approval a Coastal Nonpoint Pollution Control Program. Under **Section 6217g**, EPA is required to publish guidance for specifying economically feasible management measures. All management measures in *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* are to be economically achievable and cost-effective. This language does little to aid the coastal manager or planner in actually evaluating which management measures create the greatest welfare to society. In order to determine the depth and breadth of nonpoint source pollution control, the value of the resources (water quality, shellfish beds, recreation) must be determined. Once the value of the resources is established, the costs of such regulations can be weighed against the benefits (i.e., enhanced resource and resource service quality).

► **ENVIRONMENTAL REGULATION. The National Environmental Policy Act (NEPA)** requires federal government agencies to conduct an assessment of environmental impacts of proposed legislation and "other major federal actions significantly affecting

the quality of the human environment." Over the years this authority has been extended to include any actions funded in part or regulated by the federal government, even though they are carried out by private parties. The result of the assessment is an Environmental Impact Statement (EIS). Under NEPA, benefit-cost analysis is discussed but not required. When a benefit-cost analysis is prepared, a discussion of the relationship between the analysis and any analyses of unquantifiable environmental impacts, values and amenities must be included.

► **FISHERIES MANAGEMENT. The Magnuson Fishery Conservation and Management Act of 1976** and its amendments require the preparation of fishery management plans under federal jurisdiction by the Fisheries Management Councils for review by the Secretary of Commerce/National Oceanic and Atmospheric Administration (NOAA). Benefit-cost analysis is required under the regulatory impact review component of the plan. Typical analyses might include determining the value of a recreational fishing day or the value of a sector of the commercial fishing industry to society. The National Marine Fisheries Service (for Commerce and NOAA) has issued guidance from time to time on economic analysis, but the adequacy of these analyses has yet to be challenged in court.

► **LITIGATION OF OIL AND HAZARDOUS WASTE SPILLS. The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)** mandates the preparation of regulations by which natural resource damages from spills of oil or hazardous substances should be assessed to compensate society for losses before the resources are fully restored. **The Oil Pollution Act of 1990 (OPA)** also mandates the preparation of regulations by which natural resource damages, specifically from oil spills, will be calculated. Under CERCLA and OPA, in the event of a spill of oil or other hazardous substances, the public must be compensated for natural resource injuries in order to make them as well off as they would have been without the spill. In developing a damage claim, the resource trustees must determine the value of lost resources and service flows pending restoration. In this case, values may include the value of injured marine mammals or seabirds or the value society attaches to just knowing that a natural wilderness area exists. CERCLA and OPA natural resource damage assessment has attempted to incorporate state-of-the-art environmental valuation techniques. Methods for measuring damages are discussed by name in the regulations, in-

A Sampling of Legislative Mandates

- Wetlands Permitting: Section 404 of Clean Water Act
- Litigation of Oil and Hazardous Waste Spills: The Comprehensive Environment Response, Compensation and Liability Act of 1980
- Oil Pollution Act of 1990
- Coastal Resource Management: Coastal Zone Management Act of 1972 (as amended)
- Marine Sanctuary Designation: Marine Protection, Research and Sanctuaries Act of 1972 (as amended)

cluding travel costs, hedonic valuation, and contingent valuation. Also discussed is the range of types of values, including market-related, nonmarket use values, and nonuse values.

► **OTHERS.** The Coastal Zone Management Act of 1972 (as amended) identifies coastal resource uses subject to management that may require benefit-cost analysis including the siting of major facilities related to energy; fisheries developments, recreation, ports and transportation; and the location of new commercial and industrial developments. In addition, the Act encourages the preparation of Special Area Management Plans (SAMP) for reasonable coastal-dependent economic growth. Net economic benefit analysis, in this case, is prepared by state Coastal Zone Management (CZM) programs and submitted to NOAA, which issues SAMP funds.

The **Marine Protection, Research and Sanctuaries Act of 1972** (as amended) requires that public and socio-economic benefits derived from sanctuary designation be assessed as part of the approval process for a proposed site. In addition, an environmental impact statement, fisheries management guidance, and ocean pollution regulations are required.

The **National Estuary Program (NEP)** was established under **Sections 317** and **320** of the **Water Quality Act of 1987** (amendments to the Clean Water Act). Under the NEP, the Administrator of EPA is authorized to convene management conferences that represent a partnership across federal, state, and local levels, designed to reach consensus on priority problems of the estuary, the causes of those problems, and the actions that must be taken to correct those problems. The management conference also provides a mechanism for obtaining commitments to take action. These commitments, reflected in the **Comprehensive Conservation and Management Plan (CCMP)**, are the result of the NEP process. Development of the CCMP is critically dependent on the determination of values of estuarine functions and services. Environmental valuation could be an integral part of the scientific characterization process, linking science with policy-relevant issues. Such values could play a major role in the socio-political acceptability of action plan alternatives laid out as a part of the CCMP development and implementation process. Recent guidelines on the role of environmental valuation in NEP planning have been issued by the EPA Ocean Coastal Protection Division.