

PROJECT EVALUATION (1.011)

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Lecture 2

Instructors: Professor Joseph Sussman
Carl Martland

Teaching Assistants:
Nihit Jain
Edna Edzell

Civil and Environmental Engineering
Massachusetts Institute of Technology

Outline

- Word/phrases
- Checklists
- Public Projects, Martland Chapter 4 is main reference
- *Macro-engineering*, Chapter 2

Impacts of Large Public Projects

- Economic
- Environmental
- Equity
- Aesthetics
- “Other” Impact

Table 4.1 Examples of Public Infrastructure: Multiple Purposes and Multiple Measures

Type of

Infrastructure

Purpose

Measures

Transportation

Mobility
 Accessibility
 Regional competitiveness
 Safety
 Emissions

Service levels (travel time, congestion)
 Cost of transportation
 Fuel consumption

Dams

Flood control
 Irrigation
 Hydropower
 Recreation (boating, swimming,
 camping, picnic sites)

Risks associated with floods
 Volume of water available for irrigation
 Land area to be irrigated
 Electricity production (cost and revenue)
 Impact on wildlife

Water and sewage
 use

Clean water for consumption
 Water for industry and irrigation
 Cost per unit

Volume of water available for each type of
 Cleanliness (risk of disease)

Table 4.1 Examples of Public Infrastructure: Multiple Purposes and Multiple Measures

<u>Type of Infrastructure</u>	<u>Purpose</u>	<u>Measures</u>
Public housing	Housing for elderly	Number of units
	Housing for low-income residents	Size and quality of buildings
	Housing for homeless	Cost per unit (construction and operation) Safety and security Aesthetics
Parks and recreation	Open space for residents	Open space as a percentage of total space
	Protect environment	Visitors per year
	Aesthetics	Diversity of wildlife Safety

Some key environmental concerns:

- Ecosystems
- Pollution
- Wetlands, aquifers, and drainage
- Wildlife habitat
- Renewable versus nonrenewable resources
- Climate change

Table 4.2 Selected Questions to Consider Regarding a Project's Impact on Ecosystems

Area of Concern

Questions

Habitat fragmentation

Have other sites been considered as an alternative to encroaching on the existing habitat?

Has the critical area necessary for survival of the ecosystem been determined?

Can the area of the habitat that will be altered be minimized?

Has the project been designed to avoid the fragmentation of existing habitats into a number of smaller areas?

Does the project establish a system of natural corridors (that take into consideration the behavior of the species in question) to link habitat areas?

Table 4.2 Selected Questions to Consider Regarding a Project's Impact on Ecosystems

<u>Area of Concern</u>	<u>Questions</u>
Habitat alteration	<p>Does the project include mitigation measures, such as restoration of damaged habitats or the creation of new habitats?</p> <p>Does the project or development include adequate buffer zones between the developed area and wetlands or other habitats?</p> <p>Has project planning considered sources of water and controls of water flow to wetlands or other habitats?</p>
Introduction of exotic species	<p>Will landscaping activities avoid (or at least minimize) the use of exotic species?</p>

Source: SAIC (1995), 19–22.

Table 4.4 Selected Questions to Consider in Reviewing the EIS for Flood Control Projects

Area of Concern

Questions

Ecosystem concerns

Has the use of alternatives involving levee setbacks or the use of floodways been considered?

Will the project lead to land use changes in the watershed, particularly those that result in increased surface water runoff and nonpoint source pollution?

Have modifications to existing flood control structures been evaluated to determine if they can eliminate the need for the new channelization or channel modification project?

Does the plan include native plant revegetation of areas disturbed by construction to minimize erosion and sedimentation?

Area of Concern

Questions

Project design and planning

Have alternatives, such as upstream watershed management and floodplain widening, been considered?

Will building be prohibited within a defined distance from the streambed to protect the stream bank?

Are channel slopes graded so animals can crawl or climb out?

Construction

Will construction take place during the dry season?

Will site access routes and equipment storage areas be planned and located to minimize erosion potential?

Will construction and storage areas be sited away from critical habitats?

Maintenance

Will vegetation removal methods that use chemicals, grazing, or burning be prohibited? (Chemical herbicide residuals and animal wastes can be washed into waterways during rainy periods.)

Table 4.5 Principles for Social Impact Assessment

1. **Achieve extensive understanding of local and regional populations and settings to be affected by the proposed action, program, or policy.**
2. **Focus on the key elements of the human environment related to the proposed action, program, or policy**
3. **The SIA is based upon sound and replicable scientific research concepts and methods.**
 - **Research methods should be holistic in scope.**
 - **Research methods must describe secondary and cumulative social effects related to the action or policy.**
 - **Ensure that methods and assumptions are transparent and replicable.**
 - **Select forms and levels of data collection and analysis that are appropriate to the significance of the action or policy.**

Table 4.5 Principles for Social Impact Assessment

4. **Provide quality information for use in decision making:**
 - **Collect qualitative and quantitative social, economic, and cultural data sufficient to usefully describe and analyze all reasonable alternatives to the action.**
 - **Ensure that the data collection methods and forms of analysis are scientifically robust.**
 - **Ensure the integrity of collected data.**
5. **Ensure that any environmental justice issues are fully described and analyzed:**
 - **Ensure that research methods, data, and analysis consider underrepresented and vulnerable stakeholders and populations.**
 - **Clearly identify who will win and who will lose, and emphasize vulnerability of underrepresented and disadvantaged populations.**

Table 4.5 Principles for Social Impact Assessment

6. Undertake project, program, or policy monitoring and evaluation and propose mitigation measures if needed:
- Establish mechanisms for evaluation/monitoring of the proposed action that involve agency and stakeholders and/or communities.
 - Where mitigation of impacts is required, provide analyses and assessments of alternatives.
 - Identify data gaps and assess data needs.

Source: ICPGSIA, “Principles & Guidelines for Social Impact Assessment in the USA,” *Impact Assessment & Project Appraisal* 21, no. 3 (2003): 231–50.

Table 4.6 Examples of Negative Social Impacts of Projects

Type of Impact

Examples

Relocation of people

- Entire villages displaced for the construction of a dam
- Hundreds of people and small businesses relocated to allow the construction of a highway through a city

Deaths and injury during construction

- Deaths of more than 20,000 from tropical disease in the various efforts that eventually led to the Panama Canal
- Deaths resulting from workers falling off bridges or buildings in situations where safety nets were not installed

Table 4.6 Examples of Negative Social Impacts of Projects

Type of Impact

Examples

Deaths, injury, or illnesses resulting during normal operation of infrastructure

- Millions of people severely injured or killed in highway accidents**
- Bridges and tall buildings serving as jump-off points for suicides**
- Asthma and other illnesses resulting from air pollution caused by emissions from power plants, automobiles, or home heating**
- Tens of thousands of people injured or killed annually worldwide in grade-crossing accidents between highway vehicles and trains**

Table 4.6 Examples of Negative Social Impacts of Projects

<u>Type of Impact</u>	<u>Examples</u>
Deaths and injuries resulting from infrastructure failure	<ul style="list-style-type: none">-Thousands of deaths and destruction of cities resulting from dam failures-Loss of life from buildings and structures that collapse in earthquakes
Disruption of neighborhoods	<ul style="list-style-type: none">-Limited-access highways serving as barriers when they are constructed to divide urban neighborhoods-Loss of property values following construction of large, noisy, or ugly buildings or infrastructure-Creation of suburbs and decline of central cities following construction of better highways and policies that encouraged home ownership

Table 4.6 Examples of Negative Social Impacts of Projects

Type of Impact

Examples

Loss of livelihood caused by negative environmental aspects of a project

- Destruction of fishing and shell-fishing areas following construction of bridges, port facilities, or oil spills**
- Decline in use of informal taxis and buses following opening of new subway lines in large cities in Latin America and Asia**

Table 4.6 Examples of Negative Social Impacts of Projects

Type of Impact

Loss of livelihood related to projects that help competitors

Examples

- Bankruptcy of canal companies following construction of railroads.**
- Bankruptcy of railroads following construction of highways and invention of cars, trucks, and airplanes**
- Decline in newspapers following widespread use of the Internet**
- Disruption of the lives of native peoples following construction of roads or railroads through their previously remote homelands**
- Noise and dust resulting from construction of a highway**
- Shade resulting from construction of tall buildings**

Loss of privacy

Reduced quality of life

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