Teacher Tune-up

Quick Content Refresher for Busy Professionals

What is involved in studying the environmental impact of a construction project?

In the latter part of the twentieth century, Americans' growing awareness of the importance of ecosystems, and concern about the effects of pollution and industrial activities on our health and our environment, led the country to establish key federal environmental laws that remain in force today. These laws include the National Environmental Policy Act (1970), the Endangered Species Act (1973), the National Historic Preservation Act (1966), and the Clean Water Act (1972). Some states have also enacted environmental laws, such as the California Environmental Quality Act and the Minnesota Environmental Policy Act, which are modeled on these federal laws.


Incidents such as the polluted Cuyahoga River (Cleveland, Ohio) catching on fire in 1969 were catalysts for the establishment of environmental laws. **Source**: Cleveland State University Library via [Allegheny Front](#).

Today, most new building and infrastructure projects require an **environmental impact review (EIR).**

A complete EIR should

- identify the **regulatory framework** (which sets the parameters of analysis);

- assess the **affected environment** (which identifies the resources in the project area);

- **predict the impacts** of the proposed project (which projects what a proposed action would do to the resources on site);

- identify **environmental management** measures for those impacts (which lessens any adverse impacts of the proposed project); and

- solicit and consider **input from the public and applicable agencies**.
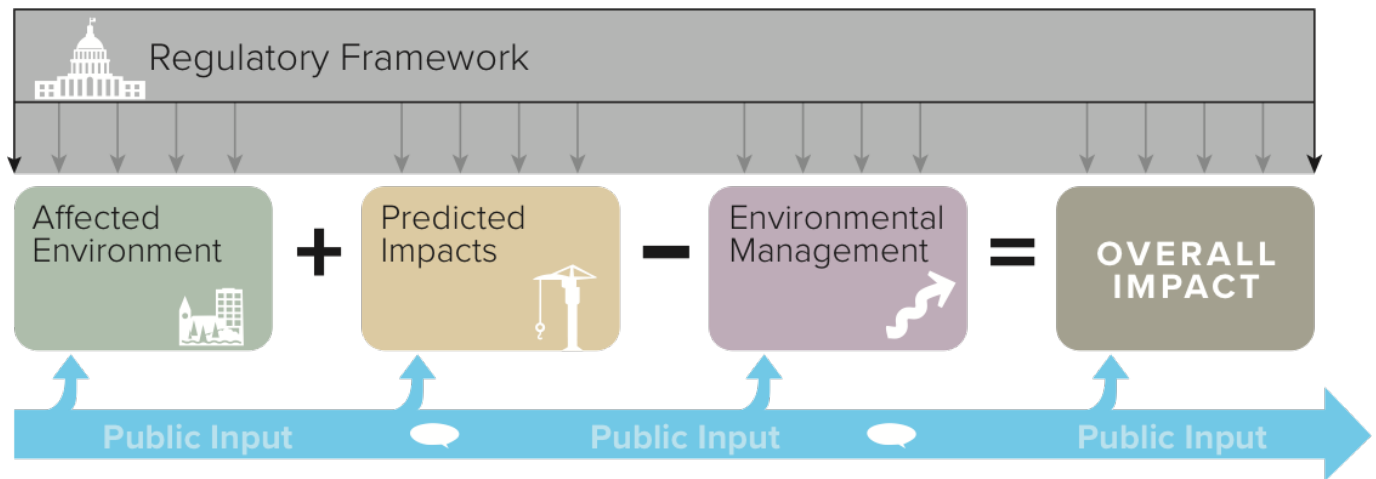
Regulatory Framework. Analysts must first identity and evaluate the laws, ordinances, and regulations that may be applicable to a project area and/or to the type of project. These rules (local, state, and federal) constitute the regulatory framework for the assessment.

Affected Environment. Analysts determine the geographic area to assess, then identify and characterize the existing conditions within that area. The EIR identifies the natural, cultural, and built-environment resources present in a project area. Three approaches provide a rounded picture of these resources: (1) a "desktop" review scours databases, aerial photographs, maps, and research papers for data; (2) scientists (e.g., archaeologists, biologists, hydrologists, traffic engineers) directly inspect the site; and (3) public and agency input is solicited, compiled, and considered.

Predicted Impacts. The EIR considers the full life cycle of a project when predicting its potential impacts. The phases of a full life cycle include

- construction (as the project is built);

- operation (ongoing activities at the site);

- maintenance (what's required to keep the project active); and

- demolition (anticipating removal at the end of the project's useful life).

For the construction phase, for example, the EIR could consider the effects of clearing and grading of land; installing utilities and underground features; laying the foundation; building the structure; and providing access to the site for trucks and other construction equipment. The EIR should also consider what debris might be generated. Each action's impact on the affected environment is analyzed. For instance, the use of loud machinery such as a grading machine may create noise that disturbs nearby residents and wildlife, or create dust that would degrade air quality. Fluids used to run the machine may leak, and could contaminate soil or nearby waterbodies. If the machine is slow-moving, it may temporarily create traffic impacts on a nearby road.

Environmental Management Measures. The EIR identifies environmental management measures that could reduce or eliminate the project's impact, divided into three types and prioritized as follows.

- Avoid: the preferred outcome. For example: redesigning a project to avoid sensitive biological habitat or a historic house.

- Minimize: if avoidance is not possible. For example: installing a fence near a water body to reduce sediment run-off, or removing archeological artifacts from a site to study them and preserve them for other researchers to investigate more in the future.

- Offset: the lowest-priority option. For example: planting a new grove of trees to replace an area where trees will be removed, or documenting historic buildings through drawings and photographs before they are demolished.

Public Involvement. All along the way, the community has a say about whether the project should go ahead as planned or undergo changes to reduce its impacts. Relevant agencies (such as the United States Fish and Wildlife Service, local air quality districts, and State Historic Preservation Offices) and the general public give valuable input on environmental features whose protection should be prioritized in project design and environmental management measures. Many environmental laws require that the public have an opportunity to comment on proposed work, and that these comments be considered during the decision-making process. Public notices are often placed in local newspapers, on the Internet, or (for compliance with Federal laws) in the Federal Register.

Example Resources Considered in Environmental Analysis:

Natural Environment	Cultural Resources	Built Environment
Air Quality	Archaeology	Aesthetics
Biology- Plants	Historic Buildings or Structures	Community Cohesion
Biology- Invasive Species	Traditional Cultural Places	Environmental Justice
Biology- Wildlife Species		Farmland Resources
Floodplains		Hazardous Materials
Geology and Soils		Land Use & Planning
Groundwater		Noise
Mineral Resources		Recreation
Sole Source Aquifers		Transportation
Waters of the United States		Utilities & Public Services
Wetlands		
Wild and Scenic Rivers		