Civil Engineering, VI-Semester

Elective – II CE- 6005 (3)

Environmental Impact Assessment

UNIT-III

Impact analysis

Need for better practice frameworks

Follow-up is the element that can transform EIA from a static to a dynamic process: the missing link between EIA and project implementation. The federal Minister of the Environment advocates follow-up as "an essential component of an effective environmental assessment process," Included amongst the Minister's amendments is the recognition of the need to strengthen the EIA follow-up process. it is recommended that the results of follow-up programs be used to improve the quality of environmental assessments. Recognizing the importance of follow-up activities in the sustainable development of the environment, and in compliance with the recommendations of the Minister of Environment, Development for 2002-2003 recognizes the need to improve the effectiveness of followup programs. This can be achieved through focus on systematic best practice methodology for future follow-up in EIA. The need to make follow-up programs more efficient and more effective is consistent with CEAA requirements. It is here where the proposed research will make a practical contribution to improving follow-up through evaluating recent practice and identifying transferable learning opportunities.

follow-up includes:

The collection of data, the structuring and analysis of this data and the appraisal of the generated information about the impacts of a project (or plan) that has been subject to EIA. It also involves decision-making on remedial action and communication of the results of this process.

follow-up is comprised of four key activities

1. Monitoring: the collection of data and comparison with standards, prescriptions and expectations;

2. Evaluation: the appraisal of the conformance with standards, predictions or expectations as well as the environmental performance of the activity;

3. Management: making decisions and taking appropriate action in response to issues arising from monitoring and evaluation activities; and,

4. Communication: informing the stakeholders as well as the general public about the results of the EIA follow-up. Stakeholders are included as they are directly affected; for example resident communities around BHPB. The general public needs to be informed for learning purposes.

Types of Follow-up

Follow-up implementation takes different shapes and forms and mainly depends on the objectives of each individual program. Follow-up may also involve different types of assessment in one single program.

Monitoring

Monitoring is defined as the collection of data with the aim of providing information on the characteristics and/or functioning of environmental variables.

Auditing

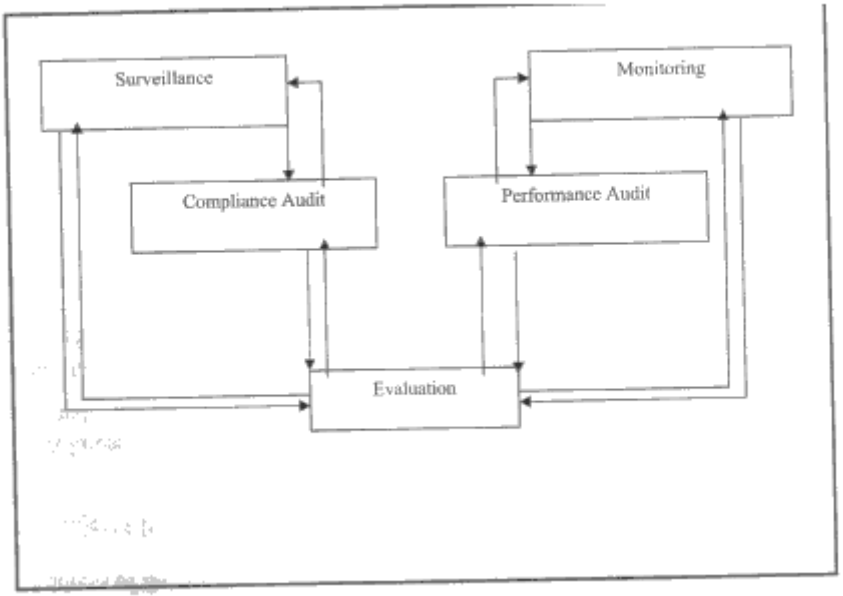
Auditing involves an objective examination and comparison of observations with pre-defined criteria to facilitate management or to determine compliance.

Evaluation

Evaluation is a term used in planning and policy for the generic process of gathering, structuring, analysing and appraising information and involves valuejudgments.

Post-decision analysis

Post-decision analysis refers to a wide range of activities (Fig 2.1) that can occur after a decision has been made and the implementation of a project has commenced.


Surveillance
Monitoring
Compliance Audit
Performance Audit
Evaluation


THE ENVIORNMENT PROTECTION ACT (1986)
By : Charu Jaiswal

ENVIORNMENT PROTECTION ACT
(passed in March 1986 and came into force on 19 Nov. 1986)

- The Constitution of India clearly states that it is the duty of the state to 'protect and improve the environment and to safeguard the forests and wildlife of the country'. The Department of Environment was established in India in 1980.This later became the Ministry of Environment and Forests in 1985
- The EPA (Environment Protection Act), 1986 came into force soon after the Bhopal Gas Tragedy and is considered an umbrella legislation as it fills many gaps in the existing laws. Thereafter a large number of laws came into existence as the problems began arising, or example, Handling and Management of Hazardous Waste Rules in 1989.

INTRODUCTION

- The concern over the state of environment has grown, the world over since the sixties. The decline in environmental quality has been evidenced by increasing pollution, loss of vegetal power and biological diversity, excessive concentration of harmful chemicals in the ambient atmosphere and in food chains, growing risks of environmental accidents and threat to life support systems.
- From time to time various legislations relating to protection of environment from specific types of pollution have been passed by the Indian legislature. However, the Environment (Protection) Act, 1986 is the most comprehensive act on the Indian statute book relating to environment protection. It is a general legislation for the protection of environment. It was enacted under Article 253 of the Constitution.
- The world community's resolve to protect and enhance the environment quality found expression in the decisions taken at the United Nations Conference on the Human Environment held in Stockholm June, 1972. The Government of India participated in the conference and strongly voiced the environmental concerns. While several measures had been taken for environmental protection, both before and after the conference, the need for general legislation further to implement the decision of the Conference had become increasingly evident. Therefore the Environment (Protection) Act, 1986 was passed.

OBJECTIVES

- To implement the decisions made at the U.N. Conference on the Human Environment held at Stockholm in June, 1972.
- · To co-ordinate activities of the various regulatory agencies under the existing laws and creation of an authority or authorities for environment protection.
- · To provide for deterrent punishment to those who endanger human environment, safety and health.
- · To ensure sustainable development is also one of the goals of the EPA, 1986. If the act is not armed with the powers to ensure sustainable development, it will become a barren shell.
- · To enact general law on environmental protection which could cover uncovered gaps in the areas of major environmental hazards as the existing laws generally focused on specific types of pollution or on specific categories of hazardous substances and some major areas of environmental were not covered.
- In short, the EPA, 1986 aims at protecting and improving the environment and prevention of hazards to human beings, other living creatures, plant and property

SCHEME OF THE ACT

- The Environment (Protection) Act, 1986 has 26 Sections and it has been divided into four chapters relating to
- i) Preliminary,
- ii) General Powers of the Central Government,
- iii) Prevention, Control, and Abatement of Environmental Pollution,
- iv) Miscellaneous.

General Powers of the Central Government

- To make rules to regulate environmental pollution; To notify standards and maximum limits of pollutants of air, water, and soil for various areas and purposes; Prohibition and restriction on the handling of hazardous substances, and location of industries (Sections 3-6).
- Under Sec (3): may constitute authority or authorities for the purpose of exercising of performing such of the powers and functions;
- Under Sec (4): may appoint a person for inspection;
- Under Sec (5): may issue directions in writing to any officers or any authority to comply;
- Under Sec (6): it empower the government to make rules to achieve the object of the Act.
- Under Sec (7): persons carrying on industry, operation etc. not to allow emission or discharge of environmental pollutants in excess of the standards;
- Under Sec (8): persons handling hazardous substances must comply with procedural safeguards.

Prevention, Control, and Abatement of Environmental Pollution

- The Central Government has the power to take all such measures as it deems necessary for the purpose of protecting and improving the quality of environment and preventing, controlling and abating environmental pollution. Such measures may include:
- · Co-ordination of actions by the State Government officers and other authorities under this act or under any law.
- · Planning and execution of nation- wide programmes for the prevention, control and abatement of environmental pollution.
- · Laying down standards for the quality of environment in the various aspects.
- · Laying down standards for the emission or discharge of environmental pollutants.
- · Restriction of areas in which any industry, operation or process shall be carried out.
- · Laying down procedures and safeguards for handling of hazardous substances.
- · Examination of manufacturing processes, materials and substances which are likely to cause environmental protection.
- · Carrying out and sponsoring investigations and research relating to problems of environmental pollution.
- · Establishment and recognition of environmental laboratories.
- · Such other matters as the Central Government may deem necessary of the purposes of securing effective implementation of this Act.
- Under section 3(3), the Central Government may constitute an “authority” or “authorities” to exercise powers and perform functions as mentioned above.

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AIR QUALITY IMPACT ASSESSMENT

Introduction

This section of the EIA evaluates the likely air quality impacts associated with the operational phase of the Project. The study focuses on the future road traffic emission impacts (Nitrogen Dioxide (NO2) and Respirable Suspended Particulates (RSP)) and considers the existing Air Pollution Control Ordinance (APCO), the Technical Memorandum on Environmental Impact Assessment Process (EIA-TM), representative sensitive receivers and potential sources of air pollutants. The APCO establishes a number of Air Quality Objectives (AQOs) which stipulate the allowable Hong Kong statutory limits for a range of pollutants, including NO2 and RSP (Section 3, Table 3.1). This assessment has been undertaken to evaluate potential residual impacts and determine their acceptability.

In accordance with Clause 3.6.1 of the EIA Study Brief ESB-004/1998, no construction dust impact assessment is required for this EIA study. However, under this Chapter, the potential for the generation of construction dust will be addressed qualitatively and recommendations on the appropriate remedial actions to minimise any potential impacts will be provided. This will be done to ensure compliance with Air Pollution Control (Construction Dust) Regulations (section 43, cap.311 of Air Pollution Control Ordinance) and to ensure effective control of any potential dust impacts.

Description of Surrounding Environment

1. Baseline Conditions
2. Future Trends
3. Air Sensitive Receivers (ASRs)
4. Meteorology
5. Construction Phase Air Quality Impacts

Water Quality Impact

Introduction

This section presents an assessment of the potential water quality impacts associated with the construction and operation phases of the Project. Recommendations for mitigation measures have been made, where necessary, to reduce the identified water quality impacts to an acceptable level.

Environmental Legislation, Standards and Guidelines

1. Water Pollution Control Ordinance
2. Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
3. Water Supplies Department (WSD) Water Quality Criteria
4. Practice Note for Professional Persons on Construction Site Drainage
5. Suspended Solids Criterion for Benthic Organisms
6. Sediment Quality Criteria for the Classification of Sediment

Identification of Environmental Impact

Potential sources of water quality impact associated with the proposed construction activities at the works areas of the proposed SIL(E) have been identified and include:

Dredging/ excavation and seawall modification for the construction of piers/pier foundations of bridge in Aberdeen Channel

- Barging facilities and activities
- Wastewater discharge from tunnelling and open cut excavation
- Sewage effluent from construction workforce
- Construction site runoff and drainage

The effect of noise on the environment

In nature, noise causes many adverse effects on animals and even plants – here are some examples:

- Birds in a city need to call longer and louder than their country counterparts
- Birds that rely on hearing to help locate prey are seriously disadvantaged by industrial noise
- Noise disturbs feeding and breeding patterns of some animals and has been identified as a contributing factor of the extinction of some species.
- Aircraft noise and sonic booms have been implicated as a cause of lowered reproduction in a variety of animals.
- Military sonar has been responsible for the deaths of possibly thousands of dolphins and whales.
- Even outboard motor noise can confuse some whales and dolphins.
- In dairy cows, excessive noise reduces feed consumption, milk yield, and rate of milk release
- Noise causes increased incidence of miscarriages in caribou
- Intense noise can affect growth of chickens and egg production
- Canaries can suffer hearing damage at relatively low decibel levels if the noise is sustained
- Noise has also been shown to have a detrimental effect on the reproduction of some plants through interfering with pollinator or seed spreading activity.
- Traffic noise could be hampering the reproductive process of frogs in metropolitan areas by drowning out the mating calls of males.
- When squid, octopus and cuttlefish are subjected to low frequency sound, sever lesions can develop in their auditory structures

socio-economic environment.

Socioeconomics (also known as social **economics**) is the social science that studies how **economic** activity affects and is shaped by social processes. In general it analyzes how societies progress, stagnate, or regress because of their local or regional **economy**, or the global **economy**. Socioeconomics (also known as social **economics**) is the social science that studies how **economic** activity affects and is shaped by social processes. In general it analyzes how societies progress, stagnate, or regress because of their local or regional **economy**, or the global **economy**.

The five economic goals of full employment, stability, **economic growth**, **efficiency**, and equity are widely considered to be beneficial and worth pursuing. Each goal, achieved by itself, improves the overall well-being of society. Greater employment is typically **better** than less. **Stable** prices are **better** than **inflation**.

Scope of the Socio-Economic Impact Assessment

As per the Terms of Reference (TOR) for the Environmental Impact Assessment (EIA) of the Project issued by Alberta Energy Regulator (AER), the Socio-Economic Impact Assessment (SEIA) addresses the socio-economic impacts of construction and operation of the Project on the communities in the RSA. The SEIA also considers the Canadian Environmental Assessment Agency (CEAA) guidelines for the Project which note that the assessment should consider the socio-economic environment via a broad range of socio-economic matters that affect communities in the study area.

Valued Components

The SEIA draws on the following sources for identifying the key socio-economic valued components:

Section 8 of the TOR for the EIA of the Project, as issued by Alberta Energy Regulator 2015 (AER 2015);

• Regulations Designating Physical Activities in the Canadian Environmental Assessment Act, 2012;

• discussions with regional service providers;

• responses by the AER, other stakeholders, and interveners, to recent SEIAs in the course of the regulatory review process, including public hearings;

• socio-economic studies and reports prepared by government, industry or regional service providers; and

• analysis of recent SEIAs for other mining and large industrial projects.

These sources indicate that the socio-economic value components to be considered in this analysis fall into the following categories:

• employment;

• personal and business income;

• government tax and royalty income;

population;

• regional infrastructure and services, including: - housing, including worker housing;

- social infrastructure (e.g. health, education, policing, emergency,

recreation and social services);

- municipal infrastructure and services;

- transportation effects; and

• traditional (Aboriginal Groups) land use.