



## Review Paper

# A Complete Study for Evaluating Environmental Impact Assessment in Industries

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Received 20<sup>th</sup> January 2016, revised 8<sup>th</sup> March 2016, accepted 22<sup>nd</sup> April 2015

## Abstract

EIA is taken up as a rapid assessment technique for evaluating the current status of the environment and identifying its impact on different activities on environmental parameters. EIA typically refers to a process involving the systematic identification and evaluation of the potential impacts of proposed projects, plans, programs, or policies on indicators of the physical-chemical, biological (ecological), cultural, and socioeconomic components of the total environment. The ultimate purpose of EIAs is to help reconcile environmental protection and sustainable development. Hence EIA is an important management tool for ensuring optimal use of natural resources for sustainable and green development. The Ministry of Environment and Forests (MoEF) of India has been in a great effort in Environmental Impact Assessment in India. The main laws in action are The Water Act (1974), The Indian Wildlife (Protection) Act (1972), The Air (Prevention and Control of Pollution) Act (1981) and The Environment (Protection) Act (1986).

**Keywords:** EIA, Planning, Monitoring, Identification, Decision-Making.

## Introduction

An environmental impact assessment is an assessment of the possible positive or negative impact that a proposed project may have on the environment, together consisting of the natural, social and economic aspects<sup>1</sup>. It involved a technical evaluation that would lead to objective decision making. It is a formal study process used to predict the environmental consequences of any development project. EIA thus ensures that the potential problems are foreseen and addressed at an early stage in project planning and design.

According to Stephen J., as practiced today EIA is being used as a decision aiding tool rather than decision making. On the use of EIA, there is growing dissent as its influence on the development decisions is limited and it is decreasing short of its total potential. For the stronger foundation of EIA it should practice via training, guidance and research<sup>2,3</sup>.

## History

The U.S. National Environmental Policy Act (NEPA) 1969 was the first legislation in this category to provide a framework for allowing all recognized environmental concerns to be addressed simultaneously. This created the EIA process as a means to integrate the generation and dissemination of useful environmental information, and foster collaboration of diverse set of public and private sectors and stakeholders which characterize environmentally controversial decisions.

Lynton Keith Caldwell (1914-2006), one of the principal drafters of the National Environmental Policy Act (NEPA) 1969<sup>4</sup>.

The United Nations Environmental Programme (UNEP) 1987, set specific goals of EIA, and defined it as "An examination, analysis, and assessment of planned activities with a view to ensure environmentally sound and sustainable development". The Rio declaration in 1992 has given emphasis to EIA (principle No. 17) as a "national instrument, which shall be undertaken for proposed activities that are likely to have a significant and adverse impact on the environment and are subject to a decision of a competent national authority"<sup>5</sup>.

## Contents of Environmental Impact Assessment

i. Proposed activity description, ii. Analysis of selected procedure and alternate method, iii. Baseline conditions, iv. Description of positive and negative environmental, social, economic and cultural impacts, v. Significance of impacts under above area, vi. Mitigation plans, vii. Identification of issues related to human health, viii. Consideration of alternatives, ix. Monitoring plans, x. Contingency plans for unpredicted impacts, xi. Waste minimization, reuse and recycling plans, xii. Public consultation program, xiii. Release of toxic entities minimize, xiv. Terms of references, xv. Any other information if necessary<sup>6,7</sup>

## EIA Process

Environmental Impact Assessment (EIA) is the systematic process of evaluating and documenting information on the potential, capacity and function of natural resources and systems<sup>8</sup>. EIA involves the systematic identification and evaluation of the potential impacts of proposed projects or policies with indicators of physical, chemical, biological, cultural and socioeconomic components of the whole environment. EIA process is increasingly based on the use of scientific information and technical conformance with both local and regional institutional policies and requirements<sup>5,9</sup>.

Creation of EIA system is necessary to confirm socio-economic development projects for environmental safety and thereby ensure sustainable development. As development is an ever-growing process, its impact on the environment is also ever increasing and leading to rapid deterioration in environmental conditions. It helps in planning and management to take long-term measures for effective management as well as environment conservation<sup>10</sup>.

## Methods

Three important are as follows:

**Industrial products:** Life Cycle Analysis (LCA) is used for identifying and analysing the impact of industrial products on the environment. EIAs consider different activities for different stages of the product<sup>11</sup>.

**Genetically modified plants:** For genetically modified plants, specific methods are available to perform EIAs. Some are GMP-RAM, INOVA etc.<sup>12</sup>.

**Fuzzy Arithmetic:** To measured estimate values of impact indicators EIA methods need specific parameters and variables. However, many of the environment impact properties viz. landscape quality, lifestyle quality; social acceptance etc. cannot be measured on this scale. To assess these impacts we may require EIAs expert criteria, sensitivity of affected population etc. For the treatment of this information-systematically, fuzzy arithmetic and approximate reasoning methods can be utilized. This is called as a fuzzy logic approach.

At the end of the project, it should be followed by an audit. An EIA audit evaluates the performance of an EIA by comparing actual impacts<sup>13,14</sup>.

## Purpose

EIA's purpose is to ensure that decision makers consider the ensuing environmental impacts when deciding to proceed with a project. The International Association for Impact Assessment (IAIA) defines EIA as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made"<sup>1</sup>. EIAs are

unique in that they don't need adherence to a pre analysed environmental outcome, but rather they require decision makers to account for environmental values in their decisions and to justify those decisions in light of detailed environmental studies and public comments on the potential environmental impacts of the proposal<sup>15,16</sup>.

## Effects

Development causes an indirect effect through various activities during manufacturing process. These are always at higher magnitude than that of direct effects assessed by EIA. Big proposals cause wide ranging national as well as international environmental effects, which should be taken into consideration in EIA for its better impact<sup>17</sup>.

## Benefits of EIA

i. It develops healthier local environment. ii. It increases quality of human health. iii. It maintains biodiversity level. iv. Decreases the use of resource. v. Fewer conflicts over natural resource use. vi. It increases community skills, knowledge and pride<sup>6</sup>.

## Participatory Monitoring and Evaluation of Environmental Impact

For effective participation following technique can be employed: Interviews, G D, Questionnaires, Observations, Scientific Testing, Maps, drawings and other visual techniques, Through Comparison<sup>6,18</sup>.

## Conclusion

EIAs are still criticized for their limitations in different field viz. area and time. This limitation can be overcome by applicant and main assessor, however in practice, nearly all EIAs shows direct and quick on-site effects. EIAs and the impacts measured during, or following project implementation. Expanding the object of EIA may be beneficial for conservation of various threatened/endangered species.

## Acknowledgement

The author is thankful to the Director, BUIT, BU, Bhopal, HOD of Department of Engg. Chemistry and Environmental Sciences, BUIT, BU, Bhopal and HOD of Chemistry Department, SNGGPG (Nutan) College, Bhopal.

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