

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF INFRASTRUCTURE DEVELOPMENT PROJECTS IN DEVELOPING COUNTRIES

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Abstract: Environmental Impact Assessment (EIA) is a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. The process leads to the selection of the projects on the principle of sustainable development, so that the adverse effects of the new developments are mitigated through proactive and rational decisions making. Over the years, EIA has not been practiced holistically in the developing countries and particularly in South Asian Nations. However in the last few years Governments, environmentalists, researchers, media and communities of these countries have formulated sufficient legislative and institutional frame work for the EIA. In this paper, an overview of the EIA practices in developing countries and particularly South Asia, have been given, with special reference to the developments in Pakistan. The creation of awareness and formulating legislation has thus forced the countries to abandon many developmental projects, which were detrimental to the environment Some of the basic flaws in the EIA of a mega project (Zero Point Interchange Project-ZPIPO) have been highlighted. .

Keywords: Environmental Impact Assessment, economic impacts, South Asia.

I. INTRODUCTION

Environmental Impact Assessment (EIA) is a systematic process to apply current scientific knowledge to check the social and environmental consequences of projects, policies and programmes

and device strategies to mitigate their adverse impacts. EIA aims to predict the environmental impacts of the developmental activities at an early stage in project planning & designing to find ways and means to reduce their adverse impacts, shape projects to suit the local environment and present options to decision-makers. [1]

The international history of EIA dates back to the National Environmental Policy Act of the United States of America (NEPA) in 1969 [2]. Following the US initiative, several countries implemented EIA systems, for example Australia (1974), Thailand (1975), France (1976), Philippines (1978), Israel (1981) and Pakistan (1983) [3]

Three decades back, there seems very negligible policy and legislative framework for EIA in developing countries, but today, EIA is firmly established in the planning process in many of these countries [4]. The World Bank, Asian Development Bank and UNEP have developed guidelines for EIA in the developing countries [5]. The enforcement of EIA guidelines in these countries is still a big challenge and the individual efforts by various departments in these countries have not brought the desired results. The environmental sustainability in the developing countries has not been assured by the EIA [4]. Hence there is need to develop Strategic Environmental Assessment (SEA).

In this paper the problems and issues relating to establishing EIA and SEA in the developing countries with special reference to Pakistan have been identified and suggestions have been made to

improve the policy and institutional framework. Some basic flaws in the EIA of a mega project namely Zero Point Interchange Project (ZPIP) have been highlighted at the end.

1.2 Constraints in implementation of EIA procedure in developing Countries: [6]

- i. EIA implementation unit is often the subsidiary of the project management units in developing countries and hence placed at very priority. The relatively low status of these agencies in the bureaucracy makes it difficult for them to have sufficient influence to ensure effective implementation of the EIA process.
- ii. The EIA monitoring and Management units are lacking the qualified and trained human resource. There is a shortage of qualified environmental engineers, ecologists and socio- economists in many parts of the developing countries.
- iii. The project managers are often expert in monitoring and execution of construction projects, with very little or no knowledge about the Environmental monitoring and management. There is a need to place the EIA as core subject in Civil Engineering and Project Management curriculum.
- iv. In many developing countries a time limit is imposed on approval of the EIA to avoid project delays in public and private sectors. But due to limited human resource in the relevant departments and subsequent pressure on the agencies involved, the quality of the review of EIA is not of the desired standards. While examining the EIA process in many developing countries, Ross [7] stated pointed out the following major problems in the EIA review:
 - a. The EIA process is seen as a bureaucratic requirement needed to obtain project approval in developing countries;
 - b. Political interference determines the outcomes of some environmental reviews;
 - c. Questionable practices by public servants serve to discredit the process; and

d. The treatment of projects in environmentally critical areas is less than satisfactory.

- v. Public participation is an effective tool for the involvement of the basic stakeholders in the EIA process and particularly the affected community. But unfortunately this process is often neglected in developing countries. In some countries the government is unwilling to have any form of public debate or scrutiny of its development policy. In other countries, while there are no formal prohibitions, there are no mandatory requirements for public participation. In most countries, affected groups do not have sufficient resources to participate in the process.
- vi. The Environmental Impact Statement (EIS) or Environmental Impact Report is not well standardized in the developing countries of Asia. The variety of formats used by these countries makes the analysis and assessment of the developmental projects towards environmental impact more difficult. The lack of baseline data and shortage of requisite information makes the prediction of the potential developments on environment more difficult. Asian Development Banks (ADB) has reported the following weaknesses in the EIA reports of the developing countries: 1) assessment of ecological impacts; 2) analysis of alternatives; 3) economic analysis of environmental impacts; and 4) public participation. [8]
- vii. Finally, the environmental management plans proposed for implementation of the recommendations of the EIA report were usually inadequate both in terms of the institutional arrangements proposed and the funding allocated.

II. EIA PROCESS IN PAKISTAN:

In Pakistan EIA started with the promulgation of Pakistan Environmental Protection Ordinance (PEPO) of 1983 (repealed in 1997). The National Environmental Protection Act was enacted in 1997, which was followed by National Environmental Policy in 2005. The ECNEC (Executive Committee of the National Economic Council) decided in 2004, that "in case of development projects having environmental implication, an environmental impact assessment (EIA) report should be submitted along

with the project document at the time of getting approval.

The Pakistan Environmental Protection Agency is the main organization to evaluate and monitor EIA.

The generic EIA process followed in Pakistan is shown in Fig.1.

Current EIA Process in Pakistan (Pak. EPA 2005)

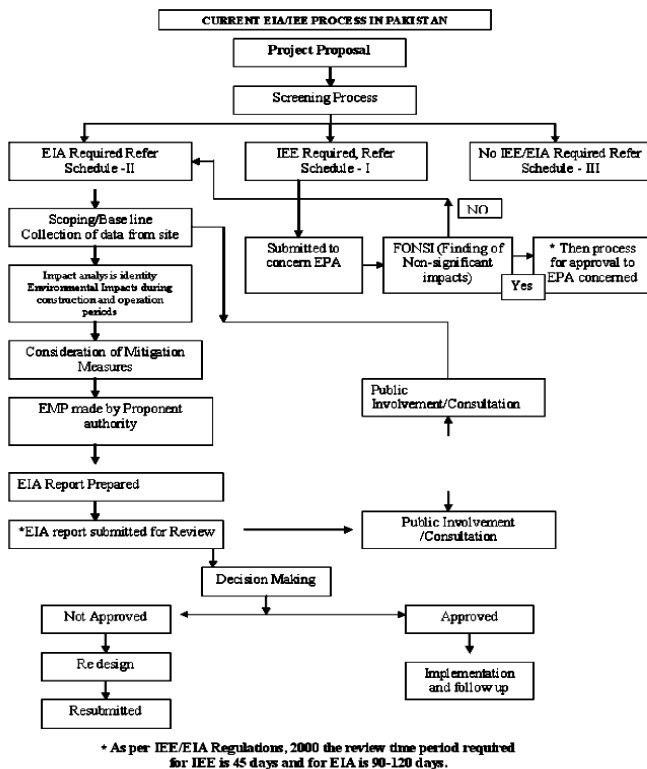


Fig. 1: Current EIA process in Pakistan [9]

The EIA in Pakistan is comprised of the following steps:

- i. **Screening:** The first question we need to answer is whether EIA is required or not? In Pakistan, the projects have been grouped into three schedules. Schedule-1: includes the projects which require only Initial Environmental Examination (IEE) and in case Non Significant Impacts, the project is approved. The schedule-2: is comprised of the projects, which required detailed EIA study. However the projects in Schedule-3: don't require both IEE and EIA. For the projects requiring EIA, the following further steps are undertaken:
- ii. **Scoping:** This is one of the most important steps in EIA process, as here the baseline data about the existing environmental

parameters is collected. In developing countries like Pakistan, the non availability of sufficient baseline data makes the scoping both time consuming and expensive process. For developmental projects, the baseline data about Air quality, Noise levels, water quality, landscape and visual quality etc. are more important considerations.

In scoping the scientific community and policy makers are involved to develop alternative solutions for the proposed projects.

- iii. **Impact Assessment:** Once the baseline data about the exiting environmental parameters of interest is collected, the next step involves, the predictions of impact owing to the new projects. The historical data of similar projects and expert judgments may provide some insight into the impact assessment. The EA methods are used to collect data and EA techniques are used to assess the impacts of new developments on environment, which include checklists, matrices, networks and mapping techniques. The environmental impacts during construction and operation are assessed.

- iv. **Considering of mitigation measures:** Once the environmental impacts of a new project are assessed, the mitigation measures to reduce or eliminate the adverse impacts are proposed.

- v. **Development of Environmental Monitoring Plan (EMP):** The EMP covers the Institutional arrangements, Implementation and supervision responsibilities, monitoring and evaluation requirements ,implementation schedule, Training needs; and budgets for EIA during the project life cycle. . A rigorous EMP is required to implement the EIA.

- vi. **Preparation of draft Environmental Impact Statement (EIS):** EIS or EIA report is a detailed and exhaustive document which covers all essential aspects of the EIA study. The report must be easy to understand by general public and stakeholders. The EIA report is submitted for review to the respective authority.

- vii. **Public Consultation:** The EIA provides an ideal forum for checking that the affected public has been adequately consulted and their views taken into account in project

preparation. The process helps in obtaining the local knowledge at one hand and reducing conflicts during in project implementation. The process must be inclusive, transparent, fair and credible. A good public consultation process must provide essential information, time for feedback of the stakeholders.

viii. Final Approval of the project:

On the basis of the public consultation and feedback process, the EIS may be revised and resubmitted for review. In case the relevant concerns have been attended, the project may be approved for implementation. However in many case the project is redesigned resubmitted for approval.

2.1 Problems and issues in EIA of developmental Projects in Pakistan.

Like many other countries of the South Asia, serious efforts have been made at policy and institutional levels to develop EIA studies for developmental projects in Pakistan, however the following issues as identified by Pak EPA (2000)[10] through consultation with the stakeholder, needs to be addressed:

i. Availability and reliability of baseline data:

The accuracy of the anticipated impacts depends on the available base line data and selection of appropriate methods and techniques for prediction of the impacts owing to the proposed developmental activities. The lack of baselines data about the existing environment is one of the major impediments to the quality of EIA studies. To solve this problem more research is required to develop and enhance the existing database and linking of the available data for easy access to researchers, through National Database System.

ii. Lack of standardization and dissemination of EIA procedures

The procedures and methods adopted for EIA are not standardized at Federal and provincial levels and again these are not well disseminated. There is a need to use all print and electronic media besides internet and other sources for data sharing.

iii. Lack of institutional capacity, trained human resources and shortage of non human resources:

The exiting institutional framework of the nation building departments is not sufficient to deal with the volume of EIA work and its

review. The existing Environment Cells in the Planning and Development Departments at provincial levels are not having the desired human and non human resources for the implementation of the EMP. It is required to clearly define the roles and responsibilities of these organs and one hand and provide them the necessary equipment and infrastructure on the other hand.

iv. Poor implementation and enforcement of EIA

One can see some good EIA work at the planning stage, but its implementation has been always an uphill task due to potential pressure from the politicians and other influential groups. The lack of political will and poor infrastructure at low levels makes the implementation of EIA, very difficult. The involvement of core stakeholders at the lowest level is essential and It has been proposed that the EIA may be involved through the Tehsil Municipal Authority (TMA), monitored and controlled by Provincial EPA and evaluated by the Federal EPA for the involvement of stakeholders.

v. Weak public participation practices:

The public Participation is considered as an important part of EIA process, for creating awareness and ownership amongst the community and basic stakeholders. In Pakistan, the public participation process is most of the time a formality and the affected populations and communities are not mobilized for their participation. The media persons, though appear in the process, but their knowledge is often is limited and they cannot guide the masses about the detrimental aspects of the projects. There must be training and awareness opportunities for these basic stakeholders and media people.

vi. Lack of standards consultancy services for Environmental Assessment.

The quality of services provided by the consultants for Environmental Assessment of developmental projects is usually of low quality and lacks the desired depth. Most of the consultancy firms in the Environmental Assessment at Pakistan are predominantly engineering and design firms registered with Pakistan Engineering Council (PEC). Their

expertise and involvement in the Environmental Assessment (EA) of Projects has been very marginal. The Environmental Assessment requires active collaboration of the multidisciplinary groups of experts to analyze a variety of environmental consequences of a project on natural environment, built environment and socio-economic environment. The existing level of expertise with the consultants in Pakistan is superficial and cursory. Hence an objective and realistic ES is rarely developed. The report is more focused on getting approval of the project rather than to highlight negative aspects of the projects and their mitigation. The low capacity of the EPA (Pakistan) and lack of awareness of the community, the EIA doesn't serve the purpose of sound planning.

vii. Insufficient Judicial support and lack of financial resources:

Despite of the facts that much legislation have been done in last two decades for Environmental improvement and sustainability but the enforcement part is still lacking due to insufficient policy and institutional framework. The lack of will on the part of political and public fabrics, require active perusal of the judiciary towards cases relating to environmental degradations. The recent judiciary role for developing good governance in Pakistan is a hallmark of the history of the country; however the Environment needs to be placed on top most agenda besides good governance.

The Govt. must allocate sufficient funds in the Public Sector development Program (PSDP), for the capacity building of the human resources, acquisition of tools and equipment and collection of data primary data by research at various levels.

Though there have been some serious efforts in developing countries during the last two decades to develop compliance to environmental legislation, yet the true benefits of these endeavors lie in the firm commitment on the parts of politicians, media and general public to play their due roles in these efforts.

In the following a case study of EIA of Zero Point-Interchange, a mega under construction project in Islamabad-Pakistan has been discussed to highlight the weaknesses and shortcomings in the study.

III. ENVIRONMENTAL IMPACT ASSESSMENT OF ZERO POINT INTERCHANGE ISLAMABAD-PAKISTAN.

Islamabad is the capital city of Pakistan, which has been planned and designed on the principles of modern Town planning and Urban Development. In last few years, the road network of the city has been improved substantially and barrier free Avenues and underpasses have been constructed. The Zero Point Interchange Project (ZPIP) is one of the mega projects initiated by the Capital Development Authority (CDA)-Islamabad [11] in last five years. The layout of ZIPP has been given in Fig.2.

The salient features of the ZIP are given as follows:

Client : Capital Development Authority, Islamabad-Pakistan.

Consultant : ECIL (Pvt.) Limited.

Contractor : Maqbool Associates (Pvt.) Limited.

Locations : The Project is located at the intersection of two major arterial roads in Islamabad i.e. Islamabad Highway & Kashmir Highway.

Interchange Type: Cloverleaf Interchange

Project Cost: Pak Rs. 2.500 Billions (US\$ 300 million)

Completion Period: 24 Months

Date of Commencement: September, 2008

Date of Completion: September, 2010

Defect Liability Period: 730 Days.

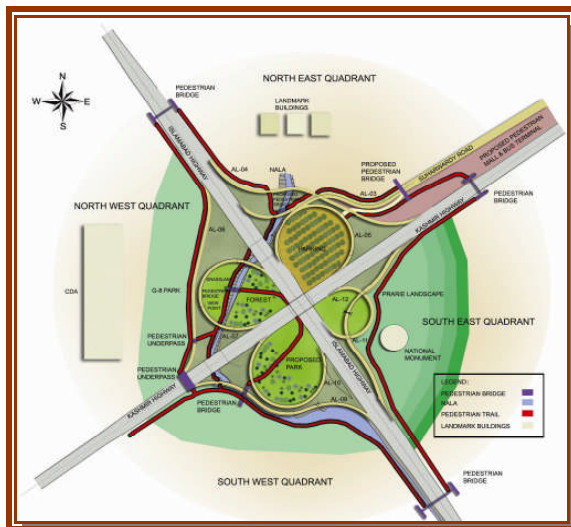


Fig 2. The layout of Zero Point Interchange Project (ZPIP)-Islamabad-Pakistan.
[CDA,2010]

The following issues have been observed in the EIA study of the ZPIP:

- i. The major objections raised on the construction of Zero Point Interchange Islamabad, was that Capital Development Authority (CDA) being proponent of the project did not submit Environmental Impact Assessment (EIA) report, a mandatory requirement under Section 12 of Pakistan Environmental Protection Act, 1997 [12] in time and before approval of the project. It was agreed that the EIA shall be submitted by Jan, 2010 before major work is started, but it was not complied with and major earthwork was started well before it.
- ii. The Flora & Fauna, Light & Visual Pollution was not given due considerations. It was assumed that no trees will be cut except paper mulberry and eucalyptus and all other trees, which fall in the construction area, will be replanted. But unfortunately no such efforts are observed at site.
- iii. It was also agreed that road safety and signage measures for the

commuters will be ensured and necessary mitigation measures will be taken to construct the level of dust pollution, but no efforts have been made for that.

- iv. It was ensured that the Capital Development Authority (CDA) pledged to plant 7,400 new trees at Zero Point Interchange in place of 530 trees to be cut during construction activities, but no such efforts have been initiated.
- v. During Public hearing of the project, CDA had assured that. 706 trees will be transplanted and 1000 indigenous trees shall be planted but the efforts are not seemingly.
- vi. Huge concrete work was planned and executed at various components of ZPIP, which has violated the principles of resource conservation. There could have been better solution in terms of indigenous and environment friendly designs and material.
- vii. The ZPIP will severely affect the visual quality of the buildings in the adjoining areas and many buildings have lost their significance and uniqueness in the area. The access to many such buildings is again a major problem.
- viii. On the economic side, the construction of ZPIP after completion of many signal free Avenues in Islamabad at a huge cost of US\$300 million is considered as a pre-mature project, where the diversion of vehicular traffic to other newly constructed arteries in the city will make the ZPIP underutilized, after completion. The opportunity cost of this investment at the time, when the CDA and country is facing financial crunch, is very high as many other important housing and building projects need finances. The housing problem of the city has been worsening for the last one

decade, as no serious efforts have been made to solve the problem on rational grounds. The money collected from the sales of plots in housing projects has been spent on relatively insignificant projects, which shows the non serious attitudes of the planners and CDA executive management towards solving the long standing housing problem in the capital city of Pakistan.

ix. The quality of EIA report later submitted to EPA, was regarded up to the desired by the concerned authorities, however the actual success of the EIA would depend on the compliance to various commitments exhibited in the report and Environmental Management Plan (EMP) of the EIA studies, which seems a remote possibility for ZPIP.

Some of the damages inflicted to the environment by ZPIP has been shown in Fig.3.



a. Extensive deforestation

b. severe damage to National Monument

c. Huge concrete works



d. Unnecessary use of concrete in pedestrian crossing. e. Visual quality of many building damaged

f. Huge earth & concrete work.

Fig 3 : The various environmental issues observed during execution of the ZPIP.

IV.CONCLUSION

Sustainable built environment requires equitable use of natural resources to provide modern facilities to the people for their socio-economic development. The developing countries require more physical development for their economic uplift and alleviation of poverty, but the principles of sustainable development need to be religiously followed. Despite of visible changes in the attitudes of legislature, policy makers, media people and general public towards environmental improvement, there is a need for more funding and support for the concerned organization for the improvement in the human

resources and equipment for better compliance towards the commitments in the EIA for developmental projects.

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