

# Literature Study of Environment Impact Assessment during construction of Highways

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## ABSTRACT

The Environmental Impact Assessment is a precise examination of both positive and negative effects on the physical, natural financial condition, which would be caused or incited because of a proposed task. EIA gives an arrangement to lessen the negative natural impact of proposed improvement venture through elective approaches, structure alteration and medicinal measures. The assessment centers around the natural impact evaluation of the endeavor in the light of the present situation of the site. The parameters peddled in the assessment are money related, natural, air, dust, water, commotion, coincidental, ecological and soil, trial of air, water and soil were taken to research their momentum condition.

**Keywords:** EIA, Environment Impact Assessment, Highway.

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## I. INTRODUCTION

The EIA ensures that various Acts, Rules and Regulations for preservation, conservation and management of the environment along with R & R (Resettlement & Rehabilitation) issue are appropriately taken care of in the suggested EMP. Recently, the role of EIA of Roads and Highways have become more important as Central Government is undertaking widening and upgrading of various National Highways throughout the country under the different phases of National Highway Development Programme (NHDP). The present paper briefly describes provisions and procedure for carrying out EIA for the Roads and highways along with the EMP for mitigating various negative environmental impacts during different phases of the project. Highway development enhances mobility and is critical to the economic growth of a community and a country as a whole [1].

The results assess the environmental vulnerability around the road and its impact on environment by integration the merits of GIS. This Paper presents a review for analysis of EIA for a transportation project. This Paper would provide a methodology which will allow transportation planners to make a cost effective coordination of environmental information and data management. Environmental Impact Assessment (EIA) is a tool to study various impact to be occurred due to new development actions. Tragically, improperly arranged, planned, and developed parkways can exasperate the states of poor people, and mischief the normal and financial condition. The basic antagonistic effects of roadway advancement incorporate harm of characteristic scene, environment and bio-assorted variety, decimation of social and social structure of influenced networks, making of air and water contamination, and age of clamor and vibration. To limit unfavorable natural and financial effects, expressway foundation must be worked to a high caliber and kept up to an elevated requirement. This can be accomplished by incorporating natural contemplations into expressway advancement arranging, plan, and development. The procedure comprises of three key components [2]:

1. Recognizable proof of the full scope of potential effects on the regular and financial condition
2. Assessment and evaluation of these effects.

Definition of measures to maintain a strategic distance from, moderate and make up for the envision impacts The above procedure which deliberately manages these components is called Environmental Impact Assessment (EIA).

## II. ENVIRONMENTAL CONSIDERATION IN HIGHWAY PROJECTS

Roads impact on the environment in many different ways. This applies from the initial construction to maintenance,

upgrading and usage. Streets that hinder waste or cause run-off to be thought or contaminated, can genuinely debase the earth. Vehicles going on streets can add to surrounding clamor and diminish air quality, which can possibly influence individuals' wellbeing. All street advancement proposition must experience a procedure of discussion with other government offices to distinguish potential effects on the Environment and the network. Contingent upon the size and potential effect of the undertaking, a proper appraisal might be required under the Northern Territory's Environmental Assessment Act. For instance, a huge street venture with potential for unfriendly ecological effect or open concern might be dependent upon a Public Environmental Report (PER) or an increasingly point by point assessment through an Environmental Impact Statement (EIS) [3].

Undertakings with restricted natural effect, for example, the broadening or duplication of a street require an ecological leeway from the Office of Environmental and Heritage, which oversees the Environmental Assessment Act Routine upkeep doesn't more often than not require ecological evaluation under the Act. The natural effect of streets doesn't end with development and support. Engine vehicles utilizing streets can cause issues, for example, traffic commotion, diminish air quality, dust contamination and tainting of regular water assets just as scene corruption and soil disintegration. The natural issues which are related with the highways, strangle the street framework in a large portion of the cases. The most well-known issues are [4]:

1. Air pollution
2. Noise pollution
3. Water pollution
4. Vibration
5. Discharge of effluents on the road sides
6. Wild life disturbance
7. Deforestation
8. Accidental data
9. Contamination of soil
10. Setting up of brick kilns and other industries along the highway

### III. REVIEW OF LITERATURE

Various study was done by different authors are explaining below:

**A) Fernandez et al.(2000)** The utilization of an Integrated Landscape Ecological Approach on the assessment of the effect of a proposed interstate over a high touchy environment of the exceptionally imperiled Iberian (Lynx exculpation is portrayed. This technique anticipates the event of normal blunders in the basic leadership process by permitting an expanded information of the natural requirements of the task. paper portrays how, inside an Environmental Impact Assessment (EIA) Process of an interstate going through a profoundly delicate natural region, the Integrated Landscape Ecological Analysis (ILA) produces an assessment and expectation of the objective species biology, permitting a relative assessment of options without the predisposition of prejudgments over —less negative options. The undertaking target of the EIA procedure thinks about the development, temporarily (2000–2001), of a roadway between Lisbon (the capital) and Algarve (the southern piece of Portugal). Paper considers the EIA of the anticipated parkway area crossing the chain of mountains that different the Algarve from the remainder of the nation and ought to be found around 50 km eastbound from the present primary access street that, together with the railroad, finishes a valley a characteristic topographical issue [5].

**B ) Kuitunen et al.(2007)** examined about the aftereffects of EIA and SEA looked at by utilizing Rapid Impact Assessment Matrix (RIAM) Method. There are numerous strategies that have been produced for use in effect appraisal forms, including perusing, agendas, lattices, subjective and quantitative models, writing surveys, and choice emotionally supportive networks RIAM was initially created to analyze the effect of elective systems in a solitary venture. In this investigation, we utilized RIAM to analyze the natural and social effect of various tasks, plans and projects acknowledged inside the equivalent geological territory. RIAM scoring depends on five separate criteria. The RIAM criteria were applied to the effect that was viewed as the most huge in the assessed cases, and scores were given both on natural and social effect. Our outcomes uncovered that the RIAM technique could be utilized for examination and positioning of isolated and particular activities, plans, projects and arrangements, in light of their negative or positive effect. One of the motivations behind Environmental Impact Assessment (EIA) is ahead of time to recognize and assess the significant ecological results of proposed ventures [6].

**C) Tullos et al.(2008)** Analysis of the EIA procedure for the Three Gorges Project (TGP) in China as a contextual analysis for assessing this input between the EIA and science and arrangement this paper displays an examination concerning whether examples exist between the logical intrigue (through number of productions) in natural effects.

1. The distinguishing proof of effects as unsure or need by the EIA.
2. Choices or political occasions related with the dam.
3. Effect type suggestions about those institutional changes expected to improve the criticism between the science and arrangement, and at last the ecological supportability, of huge dams.

Enormous dams offer society numerous advantages however all the while force unfavorable, and regularly irreversible, impacts on nature As environmental change expands the potential for flooding and dry season and the worldwide interest for vitality and of a developing human populace additionally increment, a flood in new huge dam undertakings is probably going to happen. Be that as it may, without far reaching examination of the potential effects of a noteworthy venture, irreversible and effects to the earth will happen [7].

**D) ZHOU et al. (2011)** China's EIA Law became effective in 2003 and officially requires street transport framework advancement activities to be dependent upon Environmental Impact Assessment (EIA). EIAs (counting venture EIA and plan EIA, or vital ecological effect appraisal, SEA) have been as a rule broadly applied in the interstate framework arranging field. Three contextual analyses (one freeway venture EIA and two PLEI plan SEAs) were analyzed to see at present how EIAs are applied to road foundation improvement arranging. The reasons causing those issues are investigated and potential arrangements are proposed planned for upgrading EIA work on, conveying better basic leadership and at last improving the ecological exhibition of road framework. From the contextual analyses, the key issue to rise was the institutional and administration inability to give the proper degree of evaluation to the important size of foundation and basic leadership. The absence of program level SEA and the misapplication of venture level EIA to vital framework e is the base of the issue for the PLEI system program appraisal [8].

**E) Villarroya et al. (2012)** Discussed about decrease natural effects brought about by improvement ventures, evasion, minimization and pay systems must be contemplated together along Environmental Impact Assessment (EIA) techniques Environmental effect evaluation (EIA) targets improving the manageability of certain ecologically controlled activities, by distinguishing their critical natural effects and proposing measures to counter new practices in EIA must be cultivated together with new conceptualizations in the event that we need to accomplish progressively economical tasks. What's more, not exclusively are new ideas and practices required yet in addition explicit recommendations to push them to be embraced crosswise over genuine EIA settings. Effect shirking and minimization are available not just in the mentality of EIA experts in Spain yet in addition in their ordinary practice. Something comparative ought to be advanced for remuneration. The focal job of biological assessment and the manner in which it works in EIA methodology might be unnoticed by people in general. Thus, environmental effect remains halfway shadowed, especially with respect to leftover effects and biological remuneration ignored in some EIA settings, as in cases in Spain. The audit of 72 street and railroad Records of Decision (RODs) in Spain demonstrated that most RODs (and, thus, EIA) in Spain organize sway evasion and minimization measures over pay and moreover that natural assessment and remaining effect assessment—the base and measure for following remuneration practice—is frail, if not missing in one of the primary legitimately official, openly accessible narrative sources on EIA basic leadership [9].

**F) Sharma et al. (2005)** examined about the striking highlights of the amended EIA methodology and rules with specific reference to streets and parkways and analyzes opposite prior May 1994 notice. The broad rundown of 32 tasks in the pre – reconsidered (MAY 1994)EIA Notification has been supplanted and regrouped into 8 primary heads and sub heads(i.e. classes and sub categories)(based on limit of contamination potential. The regrouping has been done based on need of natural freedom between focal government (classification An) and state government (class B).The extends under classification An essentially require ecological leeway from EAC (for example MOEF at focal level) though the venture following under classification B may additionally arranged in Category B1 and B2 require natural leeway chosen by the state ecological effect appraisal authority at state level .Various street and thruway activities have been classes into class An and classification B ventures [category 7f] relying on the screening criteria indicated modified EIA notice. ALL street parkway ventures coming into class An and classification B1 should fundamentally did open meeting including formal proceeding according to the updated technique determined under changed 2006 notice [10].

**G) Paliwal et al. (2006)** assessed EIA process in India through quality, shortcoming, opportunity and danger (SWOT) examination and she proposed that in India ecological effect evaluation (EIA) depended on the institutional edge work that has a solid supporting authoritative , managerial and procedural set up. Both focal and state specialists together are sharing the duty of its improvement and the executives.

The SWOT examination taken up of the EIA proposed that there are a few issues that should be readdressed. A few

imperatives, going from inappropriate screening and checking rules to incapable observing and post venture assessment were featured. The open doors tended to for improving EIA were expanding open mindfulness, activities of natural gatherings business network and ground breaking to coordinate ecological thought into plans and pollution. It was referenced that improved viability would likewise rely upon quality of government office coordination, incorporated basic leadership satisfactory preparing to different partners and supporting foundation for reason full observing and requirement. It was additionally suggested that undertaking level EIA needs prompt consideration yet endeavors ought to likewise be focused to incorporate ecological preservation worries at approach and arranging level. Such activities would help in topping off the holes in coordination between different government specialists engaged with arranging and execution [11].

### **Major Environmental Impacts Identified and their Mitigation Measures Proposed**

#### **a) Beneficial Impacts Due to Project Activities**

During construction stage, helpful effects, for example, age of work openings and pay expanding of neighborhood individuals might be produced. During activity organize, gainful effects like shortening of movement time and sparing of vehicle running expense may happen.

#### **b) Adverse Impacts on Physical Environment**

Brief and perpetual change in land use, sway on air quality corruption, sway on surface water quality debasement, impacts because of expanding commotion, sway because of squanders, sway after existing open utilities, and so on may happen.

#### **c) Adverse Impacts on Social, Economic and Cultural Environment**

Change of private horticulture land zone venture influenced individuals, whose land and structure will be utilized and gained by the Project to build its parts. Close to these, there are no different effects which are of genuine nature. Other related social effects are : Inaccessible to the properties because of discontinuity of open and private land because of the street arrangement; Impacts because of word related wellbeing and security of laborers; Decrease in farming generation because of loss of rural land; Impacts because of physical parts of networks; Effect or weight on social help offices; Impacts because of progress in social conduct, for example, wrongdoing and Smuggling exercises; Possibility of social clashes because of development of criminal operations; and Impact because of flame after auto collision [7-8].

### **Environmental Management and Mitigation Plan**

The pattern, consistence and effect observing including ecological review of the proposed Project have been prescribed alongside checking pointers in order to guarantee legitimacy of effect expectation, viability of moderation measures and in general, long haul supportability of this Project and naturally solid fast financial advancement of the network contiguous the Project region. Financial limit has likewise been distributed for checking during development period and during the primary year of activity and ecological reviewing cost additionally has been dispensed [11].

### **CONCLUSIONS**

Some impacts are of short duration it can be reduced by appropriate mitigation measures. Operation phase are also less magnitude can be prevent from mitigation measures concludes that the proposed project will be environmental friendly. The main objective of the proposal is to study priority environmental impacts and issues associated with the constructions, widening/upgrading and operation of national highways in India and to suggest possible mitigation measures for the associated impacts.

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