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ENVIRONMENTAL IMPACT ANALYSIS OF INTERSTATE EXPRESSWAYS IN INDIA

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ABSTRACT

The PM Gati Shakti Plan is the most revolutionary initiative for the use of this country in terms of infrastructure development. Among its star projects, one is Bharatmala Pariyojna, which the Ministry of Road Transport and Highways, Government of India, has launched. This project is aimed at improving the efficiency of National Corridors through expressway and highway development. Though these projects are based on economic growth and augment national connectivity, these certainly have environmental implications, too. This paper is concerned with finding the environmental impacts of large infrastructure development projects with stress on the Environmental Impact Assessment process. For such a study, the Delhi - Dehradun Expressway, wherein Asia's largest wildlife corridor will be featured, has been identified as a case study. So, this research evidently sets out to follow the contradiction between development and environmental sustainability. Central points are deforestation, habitat fragmentation, wildlife displacement, and socio-economic consequences for local communities. It describes some of the gaps in the EIA process and those gaps that need comprehensive environmental safeguards and efficient public participation. The paper thus analyses the Delhi-Dehradun Highway and achieves them to formulates insights to enhance the EIA framework for developing more sustainable infrastructural development without compromising ecological integrity.

INTRODUCTION

The expressways in India have brought the economy forward very much especially in the post-liberalization period¹. Economic reforms brought in the 90s gave a lot of impetus to infrastructure development to enhance connectivity and integration among the regions. Such projects form an important part in solving urbanization problems as they draw people to cities where they will get the services they need in growing numbers.

¹ Drishti IAS coaching in Delhi, Best UPSC Website for IAS Test Series & Study material. (n.d). https://www.drishtiiias.com/daily-updates/daily-news-analysis/bharatmala-pariyojana-1/print_manually

National corridors have made a lot of difference in personal and freight movement owing to the development of expressways connecting main urban centres. The construction of the Delhi-Mumbai Industrial Corridor and other expressway projects serve to prove this honor to these infrastructures; widening the trade horizon and minimizing travel times to improve regional economies. Such corridors encourage the development of cities and attract investment potential in the realms of real estate, technology, and manufacturing. The contrary part of the coin has been the difficulty of keeping an ecological balance with the economic quest. To properly execute environmental legislation, Environmental Impact Assessments (EIA) must be undertaken before allowing any infrastructure to be put in place, to evaluate its potentially harmful effects on the environment. It intends to make sure that every participant in an investment decision has in mind the ecological aspects related to it. At the preliminary stages of project planning and design, this instrument anticipates environmental effects, explores options for reducing negative ones, aligns projects with terrestrial contexts, and presents predictions and alternatives for the responsible parties.²

The construction of highways across the country will go a long way in ensuring economic growth and linking different parts of India. However, these large structures can change not only topography but also ecology, leading to deforestation and land acquisition issues, among others, such as pollution increase or drainage pattern change. For this reason, environmental impact assessment (EIA) plays an important role in reconciling these two competing interests. An essential element in the E.I.A procedure is that it pinpoints earlier possible environmental repercussions during configurations for the expressway project plans. It emphasizes prospectively happening environmental repercussions in expressway project planning since a need for an E.I.A process is paramount. This means evaluating ecological effects with a view to avoiding irrevocable ecosystems' collapse, especially in areas where endangered species are found or designated for preservation according to E.I.A regulations. Hence, it implies that no project will start if concerned people have not implemented appropriate measures against negative environmental impacts.³

Finally, what the EIA does is engage the communities and other parties that have an interest to encourage their involvement in decision-making. As a result, it enhances transparency as well

² P. Leelakrishnan, **Environmental Law in India** (6th ed. 2021).

³ Peter Wathern, *Environmental Impact Assessment Theory and Practice* (Routledge 1992).

as accountability, which are crucial for minimizing the negative impacts of infrastructure development on the environment and society. Environmental legislation such as the Wildlife Protection Act of 1972 and the Forest Conservation Act of 1980 are also promoted through EIA to avoid any legal contention and ensure that any project will remain applicable over time. Moreover, some components embrace unique alleviation measures, including but not limited to reforestation plans, animal passageways, and pollution management in EIA outlines. On one hand they seek to reduce ecological footprints associated with highway constructions while allowing for physical advancement without distorting nature's balance within such places.

LEGAL FRAMEWORK FOR ENVIRONMENTAL PROTECTION IN INDIA

The formation of National Environment Policy marked the beginning of systematic environmental assessments meant to foresee possible ecological consequences and allow alternative options to decision-makers before any project could be carried out. Soon, other countries like Canada, Australia, and some European states replicated this model after N.E.P.A.'s success in the U.S.A.

Many countries worldwide adopted E.I.A.s in the 1970s and 1980s based on their specific social, political, or environmental contexts. For example, Canada introduced its E.I.A. Act in 1973, whereas as late as 1985, the European Community released a specific directive on E.I.A. All these developments indicated an increasing worldwide consensus on the need to integrate environmental concerns into development planning. In some developing countries, E.I.A. was viewed as a way of introducing environmental planning to a country without a clearly defined land-use control system. Colombia became the first Latin American country to introduce E.I.A. in 1974. Also, Thailand, the Philippines, and other Asian countries made E.I.A. procedures part of their early national environmental management frameworks. In the year 1994 India officially made its way into this and this was seen as some sort of revolution in sustainable development. However, it is important to note that this acceptance and enforcement is based on The Environment Protection Act (1986), The Indian Wildlife Protection Act (1972) and the Forest Conservation Act (1980), all of which emphasize on environmental conservations. All infrastructure projects including those scheduled in ecologically sensitive areas must undertake an environmental assessment so as to reduce their negative impacts on nature in accordance with these laws. As such the EIA Process has once more proved India's commitment to

maintaining harmony between development and conservation efforts.

KEY ENVIRONMENTAL LAWS

1. ENVIRONMENT PROTECTION ACT, MAY 23, 1986

Termed as a major incident in the history of India, the Bhopal gas tragedy or the *Union Carbide Corporation vs Union of India*⁴, wherein the Union Carbides pesticide factory released toxic gas that caused many deaths and raised serious questions on Indian Laws, underlining the need for legislation that deals with the protection of the environment, thereby emphasizing the Environment Protection Act, 1986. For example, it awakened Indian authorities and accelerated all-inclusive legislative efforts in environmental law-making. In the same spirit, EPA was established as a direct parliament response to this calamity with a view to providing a proper legislative framework aimed at environmental protection and enhancement, ensuring the prevention of future industrial accidents, and also correcting existing laws with regard to all environmental matters. As such, the Bhopal case catalyzed stricter controls on industries' operations affecting the environment in India, thus indicating a significant shift by the Indian government towards it.

PROVISIONS THAT HIGHLIGHT THE NEED OF ENVIRONMENTAL IMPACT ASSESSMENT WHILE FORMULATING LEGISLATION

EPA is an essential legislative act that allows the national authority to do anything regarding environmental protection. This includes controlling and managing operations that could negatively affect Nature.

*Union Carbide Corporation v. Union of India*⁵ is a recognizable industrial accident worldwide. A substantial leak of methyl isocyanate gas from Union Carbide India Limited's (UCIL) pesticide unit at Bhopal resulted in the instantaneous death of thousands of people and brought about serious health problems for many others on December 2-3, 1984. This disaster showed how much India's environmental and industrial safety laws were lacking since they could not have stopped it from happening, and there was no way to deal with it when it did occur. As a result, the absence of stringent environmental laws and the necessity for a unified regulatory framework to monitor and carry out industrial safety and environmental protection were brought to light in the legal aftermath of this calamity.

⁴ 1990 AIR 273 1989 SCC (2) 540 1989 SCALE (1)932

⁵ 1990 AIR 273 1989 SCC (2) 540 1989 SCALE (1)932

The Bhopal Gas Tragedy⁶ resulted in, and thus, the Environment Protection Act of 1986, which is the heart of the EIA process in India. Different means, such as setting standards, regulating pollution, and enforcing compliance, empower the central government to protect and improve the environment. The main provisions which support EIA process are in Section 3⁷ that calls for environmental assessments and Section 6⁸ which specifies pollution control standards. Sections 7⁹ and 8¹⁰ look into hazardous substance management so that assessment is paramount while following necessary procedures. Enhanced public participation via legal action against violators is provided by Section 19¹¹, fostering accountability. For effective administration of the E.P.A., rule formulation is allowed under Section 25¹² by the government to ensure that E.I.A. process is all-round and transparent. This legislative framework is essential in ensuring a harmonious co-existence of development and environmental conservation, especially in large infrastructure projects such as interstate expressways.

INTERRELATEDNESS WITH INTERSTATE EXPRESSWAYS

Interstate expressway building holds significant importance regarding connectivity and economic prosperity; however, it leads to ecological severe effects that ought to be managed with great caution. Passed in 1986, the Environmental Protection Act (E.P.A.) impacts incredibly much on how these issues are dealt with via Environmental Impact Assessment (EIA). This process requires that each expressway project is subjected to a thorough assessment of possible ecological effects; for example, effects on air and water quality, destruction of wildlife habitats, as well as effects on adjoining communities before any building can start. The E.P.A. has stringent criteria that all projects must fulfill for them to go forward and thereby safeguard against environmental devastation.¹³

In addition to that, expressways in the regions that are environmentally sensitive have to be made in such a way that wildlife does not get harmed. Rigorous assessments and compensatory measures such as reforestation and wildlife crossings may mitigate these impacts. It is in the

⁶ 1990 AIR 273 1989 SCC (2) 540 1989 SCALE (1)932

⁷ Section 3 of Environment Protection Act,1986

⁸ Section 6 of Environment Protection Act,1986

⁹ Section 7 of Environment Protection Act,1986

¹⁰ Section 8 of Environment Protection Act,1986

¹¹ Section 19 of Environment Protection Act,1986

¹² Section 25 of Environment Protection Act,1986

¹³ Environment Protection Act,1986

EIA process that public participation is critical to ensure that communities raise their concerns, influence project decisions and thus achieve information access and fairness in the environment. Besides, the EPA implements mitigation measures and compliance monitoring throughout its implementation so as to avoid belated environmental impacts. In India, this agency plays a balancing role between economic progress and conservation while promoting sustainable infrastructure development.

2. INDIAN WILDLIFE PROTECTION ACT, SEPTEMBER 9,1972

The reason why this law was enacted is that there were very alarming concerns about the declining population of wildlife in India and the rising number of threats faced by their habitats. Previously, there wasn't a proper system for taking care of problems related to wildlife conservation in India and this resulted in unrestricted hunting on top of poaching and clearing their habitats. Consequently, it was an important milestone for providing wildlife and its environment with legal protection thereby showing the determination of the country to maintain its diverse biological systems.

Wildlife depletion at an alarming rate caused by hunting and habitat encroachment during late 1960s and early 1970s necessitated strict legal measures. To encompass these issues entirely, Indian Wildlife Protection Act was introduced in 1972. The act aimed at protecting wild animals, birds as well as plants so that the country might have environment and ecological safety. It also set out the legal framework for establishing protected areas like national parks and wildlife sanctuaries, which help conserve the natural habitats of wildlife. For violators, severe penalties were imposed because, in addition, it banned the hunting or trading in wild beasts and associated items.¹⁴

CONTRIBUTION OF THE CASES IN THE FORMATION OF THE INDIAN WILDLIFE ACT:

With the assistance of various key cases, the Indian Wildlife Protection Act of 1972 has gone through a significant transformation which has strengthened its objective and expanded its reach. In this context, the Supreme Court of India has been critical in interpreting the act, which has ensured full enforcement of its provisions for the protection of the country's abundant diversity. One such case is *State of Bihar v. Murad Ali Khan (1989)*, where the court stressed

¹⁴ S. Rajak, *The Evolution of Wildlife Protection Laws and Policies in India: A Historical Analysis*, 8 Indian Journal of Novel Research (2023).

illegal hunting and poaching as serious national issues requiring immediate attention. This was a precursor to how strict its implementation would be, particularly regarding endangered species protection.

To further solidify the application of the Act, the Supreme Court intervened in the Sariska Tiger Reserve in Rajasthan to stop mining activities that posed a danger to tigers' survival and the ecological balance of the reserve itself. As a result, this case brought up need for all-encompassing environmental impact assessments before new development projects were executed in any protected area. This decision illustrated the judiciary's active part in enforcing this law.

In *Chief Forest Conservator (Wildlife) v. Nisar Khan (2003)*¹⁵ The court dealt with the issue of illegal trade in wild birds and upheld provisions in an Act that prohibited such acts, further reinforcing government regulation powers to prevent birds from being exploited commercially. The *T.N. Godavarman Thirumulpad v. Union of India (1997 onwards)*¹⁶ case, has had deep implications for enforcing the Act. Orders given by the Supreme Court on this case led to the extension of protected areas, a ban on timber harvesting, and the formation of monitoring committees so as to oversee various aspects of wildlife conservation, thus ensuring that provisions under the Act are strictly enforced throughout the country. These landmark cases highlight how the Indian Wildlife Protection Act of 1972 has evolved, making it a backbone to India's efforts at conserving her wildlife.

In India, the current development process includes building interstate highways and maintenance of wildlife, which requires the Wildlife Protection Act. The act, together with rigorous environmental assessment (EIA) processes necessary under the Environment Protection Act 1986, is a crucial factor in ensuring that development meets connectivity and environmental preservation needs. This is achieved through stringent environmental impact assessment of expressway construction plans and mitigation measures to reduce the ferocity of such project impacts on different wildlife species and habitats, thereby protecting biodiversity. For proper implementation, these laws evolve due to oversight from the judiciary, ensuring that nothing done financially hampers ecological integrity in the nation.

3. BIOLOGICAL DIVERSITY ACT OF OCTOBER 1,2002

¹⁵ Chief Forest Conservator (Wildlife) v. Nisar Khan (2003) 2003 (4) SCC 595

¹⁶ T.N. Godavarman Thirumulpad v. Union of India (1997 onwards) (1997) 2 SCC 267

Biodiversity refers to the variability among living organisms and between them, for that reason it has three main components - intra-individual variation, inter-individual variation and ecosystem diversity¹⁷. Its importance is based on what it is able to do in terms of stability and resilience of natural systems providing multiple services such as the provision of clean water and air, pollination of plants as well as climate control. Healthy ecosystems provide all forms of life with these essential services which must be conserved if they are to be obtained by safeguarding biodiversity.¹⁸

HOW INDIA'S COMMITMENTS RESULTED IN THE EMERGENCE OF THE SAID LEGISLATION

The involvement of India with the 1992 Convention on Biological Diversity (CBD) can be seen as an epitome of its commitment¹⁹ to conservation of biological diversity, which was ratified in Rio de Janeiro during the Earth Summit. There are three primary objectives of CBD:

1. Maintaining the variety of life forms
2. Responsible utilization of the variety of life forms
3. Just and unbiased sharing of genetic materials.

Someways in which India has aligned its domestic policies and laws with the principles and objectives of CBD are by being an associate of it. In accordance with that, the Biological Diversity Act 2002 was formulated²⁰ to safeguard biological diversity, ensure its sustainable utilization, and distribute the advantages in a fair manner. Statutory Provisions for Protection of Biological Diversity

The foundation upon which the legislative framework regarding biodiversity conservation in India is based is the Biological Diversity Act, 2002. It was enacted to ensure that India abides by its duty under the CBD and thus confirms that usage of biological resources within its territory are sustainable and preserved. This involves regulation mechanisms for accessing biological resources and accompanying knowledge, preventing bio-piracy as well as sharing benefits derived from the same on fair terms.

The NBA was set up for the purpose of regulating biological resources and knowledge related

¹⁷ Chaudhary, H., Banerjee, S., & Chakraborty, I. Emerging Trends & Issues in Roads and Highways in India.

¹⁸ Punam Singh, Critical Review of Biological Diversity Act 2002 (M.Phil. thesis, Indian Institute of Technology Bombay, Department of Humanities and Social Sciences, [year of submission]).

¹⁹ Chaudhary, H., Banerjee, S., & Chakraborty, I. Emerging Trends & Issues in Roads and Highways in India.

²⁰ Tandon, U., Parasaran, M., & Luthra, S. (Eds.). (2017). Biodiversity: Law, Policy and Governance (1st ed.). Routledge India. <https://doi.org/10.4324/9780203704066>

to them at the national level, per the Act. It is imperative that every state in India sets up a State Biodiversity Board (SBB) for proper biodiversity conservation and sustainable use. At the local level, this requires the establishment of Biodiversity Management Committees (BMCs) to conserve, utilize sustainably²¹ and document biodiversity. Important Judgments that Therefore Support Biological Diversity Conservation.

More than plenty of revolutionary judgments have significantly affected how the Biological Diversity Act of 2002 functions and emphasized its importance in the preservation of biodiversity within Indian legislation.]

1. **Alembic Pharmaceuticals Ltd v. Rohit Prajapati & Ors:** ²²The Supreme Court of India, in a landmark ruling dealing with post-facto environmental clearance, condemned such clearances in a very strong language based on the fundamental principles of environmental law. The court held that non-conformity to environmental regulations amounts to strict liability, and therefore, every project that commences without prior approval contravenes statutes geared towards environmental conservation, including biodiversity. ²³In this case, the Supreme Court of India has dealt with the issue of post-facto environmental clearance in which it has severely criticized these types of clearance on the basis of essential tenets of ecological jurisprudence. According to the court, environmental²⁴ laws have to be complied with strictly, and any project that starts without prior clearance is in violation of the legal framework set up for the protection of the environment, including bio-diversity.
2. **Puducherry Environment Protection Association v. The Union of India (2017):** ²⁵In this case, the Madras High Court discussed balancing economic growth and conserving nature. The court said, however, that while job creation may be an important bonus for an economy, it shouldn't compromise on our ecological future. Through this case, we see how a precautionary approach as well as sustainable development become vital for biodiversity conservation initiatives.

²¹ Sharma, P. (2024, November 8). Delhi-Dehradun Expressway corridor set to reduce human-wildlife conflicts - The Tribune. *The Tribune*. <https://www.tribuneindia.com/news/himachal/delhi-dehradun-expressway-corridor-set-to-reduce-human-wildlife-conflicts/>

²² Alembic Pharmaceuticals Ltd v. Rohit Prajapati & Ors: AIRONLINE 2020 SC 445

²³ Supra Note 12

²⁴ Islam, K.M.B., & Nomani, Z.M. (Eds.). (2021). *Environment Impact Assessment: Precept & Practice* (1st ed.). CRC Press. <https://doi.org/10.4324/9781003198208>

²⁵ Bannerjee J I (Reportable, 13 October 2017) <https://main.sci.gov.in/supremecourt/2021/18773/18773_2021_38_1502_34384_Judgement_25-Mar-2022.pdf> accessed 19 September 2024

3. **S.P. Muthuraman v. Union of India (2018):**

The National Green Tribunal (NGT) claimed that post-facto environmental clearance is unreasonable. According to the court, this defeats the purpose of environmental laws such as one passed under the Biological Diversity Act of 2002. This is why it is said that we must strictly follow environmental laws so that biodiversity may not be lost.

The National Green Tribunal was established as it is irrational to grant ex-post-facto environmental clearances. The Tribunal said that this contravenes the intention of environmental laws, including those under the 2002 act of Biological Diversity. Therefore, strict compliance with environmental laws is necessary to prevent biodiversity extinction.

CHALLENGES IN IMPLEMENTING ENVIRONMENTAL LAWS

ANALYSIS OF THE INTERSTATE EXPRESSWAY PROJECT: DELHI-DEHRADUN ECONOMIC CORRIDOR²⁶

Delhi – Dehradun Economic Corridor is a critical infrastructure project built by the Ministry of Road Transport and Highways to enhance connectivity between the two cities. The project intends to cut down significantly on time taken for travel while improving general road safety. However, throughout implementation, there have been several problems faced by this grand plan:

1. **Environmental Concerns:**

The corridor traverses sensitive ecological zones, including reserved woodland areas in Uttar Pradesh and Uttarakhand. The Forest and Wildlife clearances were mandatory before constructing elevated wildlife corridors and tunnels. Keeping the project on course while ensuring minimal environmental harm constituted a big challenge.

2. **Land Acquisition Issues:**

There were delays in land acquisition processes, mainly through Baghpat, Shamli, Muzaffarnagar, and Saharanpur districts. The project took a long time to be completed due to the complexities of dealing with landowners during negotiations and bureaucratic impediments, which are associated with buying lands for public developments.

3. **Balancing Development with Environmental Preservation:**

²⁶ B. Dutt, *Delhi-Dehradun Highway: How Govts “looked Away” & Ignored Wildlife*, *The Quint* (Apr. 8, 2021), <https://www.thequint.com/voices/opinion/delhi-dehradun-national-highways-authority-wildlife-environmental-destruction-felling-of-trees-govt-clearances-inspection-reports>.

The project aimed at improving connection and fostering economic growth had to be weighed against the need for environmental conservation. This balance was particularly precarious in locations where the project meets with animal territories, thereby calling for some extraordinary measures like incorporating such things as wildlife corridors and tunnels that would lessen its effects on them.

4. **Public Opposition:**

Though the scheme promised many benefits, environmentalists and local community groups are not happy about it because they think it will lead to displacement of people and loss of biodiversity in the area. This meant that for it to remain on track, addressing these sentiments had to be done diplomatically during the negotiations, and sometimes some alterations were made to the project's design.

EXAMINATION OF THE E.I.A. PROCESS, PUBLIC PARTICIPATION, AND LEGAL HURDLES²⁷

1. **Environment Impact Assessment Process:**

One of the most critical steps toward determining the possible ecological dangers from the project was carrying out an Environmental Impact Assessment (E.I.A.) for the Delhi-Dehradun economic corridor. EIA aimed to ensure that methods to reduce environmental effects were incorporated into the project's design, particularly in ecologically vulnerable areas. Nevertheless, evaluating all the actual consequences on the environment was very complicated and challenging because a project of such magnitude had to move quickly.

2. **Public Participation:**

Public participation is significant in the EIA process by law and for fair representation of people affected squarely by the project. Public consultations were carried out herein, and numerous stakeholders, ranging from local communities to environmental organizations, participated. However, it has been reported that there was a lack of inclusivity in public participation, leading to less transparency than expected. Some local communities claim not to have responded to their issues reasonably enough, hence feeling that EIA was merely a formality rather than considering the opinions of those to whom it should have catered.

²⁷ Delhi P., *Shri Nitin Gadkari Sanctions Improvement and Strengthening Works of National Highways in Uttar Pradesh and Uttarakhand*, Press Information Bureau (Nov. 18, 2021), <https://pib.gov.in/PressReleasePage.aspx?PRID=1772991>.

3. Legal Hurdles:

The project has faced numerous legal issues, especially regarding Environmental Clearances. Environmental groups and some local inhabitants moved to court, questioning whether the E.I.A. was sufficient or how quickly these clearances were given. It brought out the conflict between the country's development plan and adequate measures for environmental monitoring. Thus, the project was required to adhere to very strict environmental guidelines, creating several hindrances in project execution that turned out more costly.

