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Research Article – Environmental Assessment

Environmental impact assessment of proposed NH-6 of Chhattisgarh

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Abstract

NH 6 is the national highway which connects Mumbai to Kolkata. Environmental Impact Assessment (EIA) process for the proposed NH 6 Toll Road project has been undertaken in accordance with the EIA Regulations. Proposed project road connecting the villages and towns by providing better quality and safe roads to the users in a sustainable and environment friendly manner. Government of India (GoI) through Ministry of Environment and Forests (MoEF) enforces Environment (Protection) Rules, 1986 for environmental protection because of intervention of new projects or activities, or on expansion and modernization of existing projects or activity based on their environmental impacts.

Key words: Environmental Impact Assessment; national highway; Chhattisgarh

Introduction

Environmental assessment (EA) is the assessment of the environmental consequences (positive and negative) of a plan, policy, program, or concrete projects prior to the decision to move forward with the proposed action. In this context, the term "environmental impact assessment"(EIA) is usually used when applied to concrete projects by individuals or companies and the term "strategic environmental assessment" (SEA) applies to policies, plans and programmes most often proposed by organs of state (Ahmad and Sammy, 1987). Environmental assessments may be governed by rules of administrative procedure regarding public participation and documentation of decision making, and may be subject to judicial review. Or it may also defined as the process of examining the environmental effects of the development – from consideration of the environmental aspects at design stage, through to the preparation of an Environmental Impact Statement, evaluation of the EIS by a competent authority and the subsequent

decision as to whether the development should be permitted to proceed, also encompassing public response to that decision.

History of EIA

Environmental impact assessments commenced in the 1960s, as part of increasing environmental awareness. EIAs involved a technical evaluation intended to contribute to more objective decision making. In the United States, environmental impact assessments obtained formal status in 1969, with enactment of the National Environmental Policy Act. EIAs have been used increasingly around the world. The number of "Environmental Assessments" filed every year "has vastly overtaken the number of more rigorous Environmental Impact Statements (EIS).

Before the First World War, rapid industrialization and urbanization in western countries was causing rapid loss of natural resources. This continued to the period after the Second World War giving rise to concerns for pollution, quality of life and environmental stress. In early 60s, investors and people realized that the projects they were under taking were affecting the environment, resources, raw materials and people. As a result of this, pressure groups formed with

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the aim of getting a tool that can be used to safeguard the environment in any development. The USA decided to respond to these issues and established a National Environmental Policy Act in 1970 to consider its goal in terms of environmental protection. The USA became the first country to enact legislation on EIA. This was the first time that EIA became the official tool to be used to protect the environment.

Step-wise Structure of EIA

EIA Process can be itemized into the following 9 steps. (Referring the model of Ahmad and Sammy) Public disclosure and participation are the key factors throughout the EIA system, and should be implemented at the effective timing at every step. Practically, however, the timing of implementation differs by systems applied by each country/organizations.

- 1) Preliminary Activities and Decision of Terms of Reference (TOR)
- 2) Scoping
- 3) Baseline Study
- 4) Environmental Impact Evaluation
- 5) Mitigation Measures
- 6) Assessment of Alternative Measures
- 7) Preparation of Final Document
- 8) Decision-making
- 9) Monitoring of Project Implementation and Its Environmental Impacts

Who prepares an EIA?

Depending on the EIA system, responsibility for producing an EIA will be assigned to one of two parties: (1) the government agency or ministry, or (2) the project proponent. If EIA laws permit, either party may opt to hire a consultant to prepare the EIA or handle specific portions of the EIA process, such as public participation or technical studies. Some EIA laws recognize the inherent conflict of interest produced when a mining company or other project proponent hires a consultant to prepare an EIA. Using a consultant carries the risk that the document will be biased in favor of proceeding with the project. If a consultant is hired by the mining company, conflicts may arise if the consultant believes it will receive future work if the project is approved or even indirect benefits from related activities (e.g., consulting work for a port where ore will be exported).

Addressed some of the following factor

The Environmental Impact Assessment (EIA) should be prepared on the basis of the existing background pollution levels vis-a-vis contributions of pollutants from the proposed plant. The EIA should address some of the basic factors listed below:

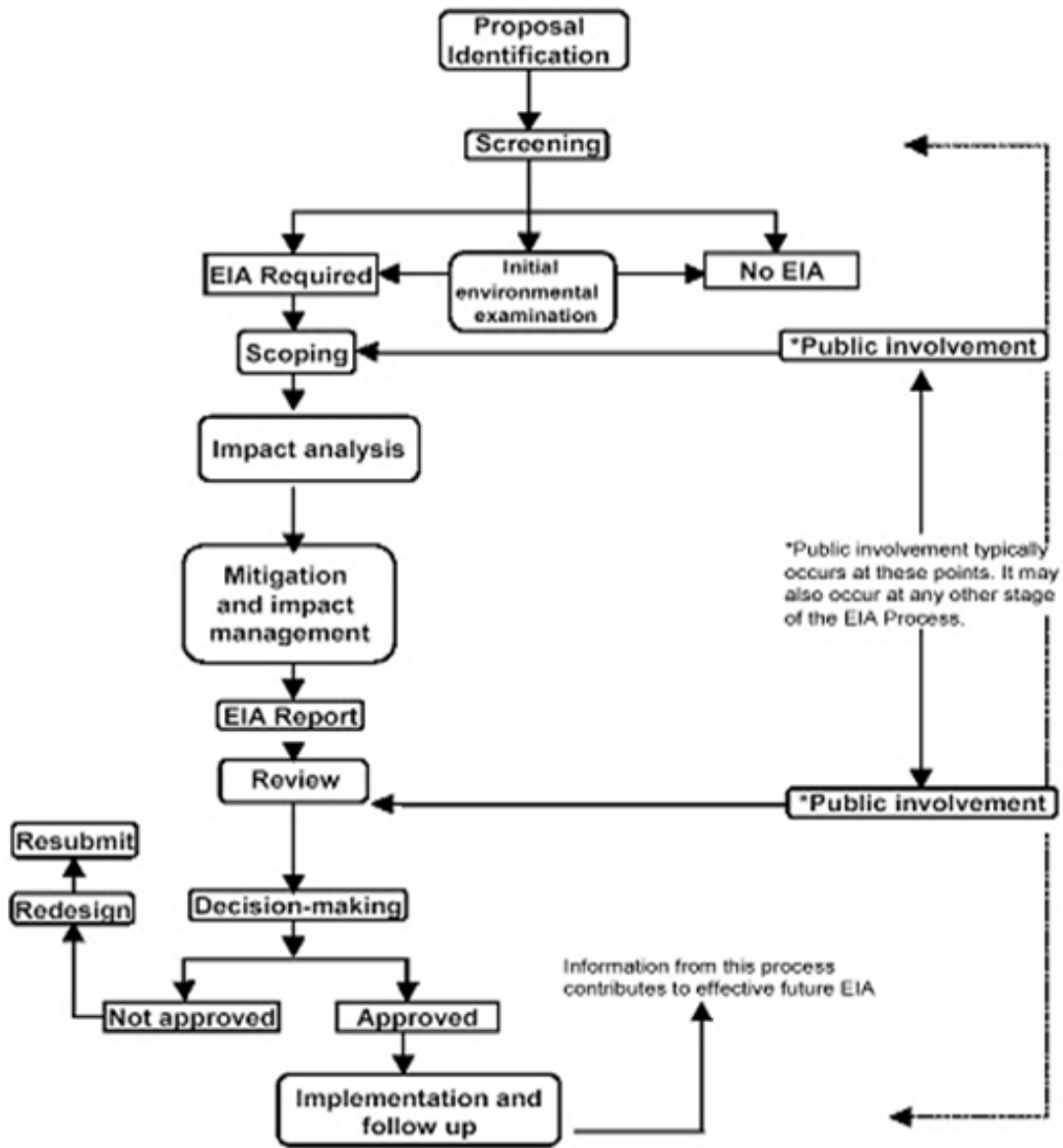
- Meteorology and air quality ambient levels of pollutants such as Sulphur Dioxide, oxides of nitrogen, carbonmonoxide, suspended particulate matters, should be determined at the center and at 3 other locations on a radius of 10 km with 120 degrees angle between stations. Additional contribution of pollutants at the locations are required to be predicted after taking into account the emission rates of the pollutants from the stacks of the proposed plant, under different meteorological conditions prevailing in the area.
- Hydrology and water quality
- Site and its surroundings
- Occupational safety and health
- Details of the treatment and disposal of effluents(liquid,air and solid) and the methods of alternative uses
- Transportation of raw material and details of material handling
- Control equipment and measures proposed to be adopted

The Benefits of Environmental Assessment

Most governments and donor agencies acknowledge the contribution of EA to improved project design. The weakness of EA in the past has been largely due to poor techniques and the failure to pay attention to findings at the implementation stage (ESSA Technologies 1994). A review of current environmental practices found the major benefits of the EA process for project sponsors to be (ESSA Technologies 1994: 16):

- Reduced cost and time of project implementation.
- Cost-saving modifications in project design.
- Increased project acceptance.
- Avoided impacts and violations of laws and regulations.
- Improved project performance.
- Avoided treatment/clean up costs.

Fig 1.1 Generalised flow chart of EIA



The benefits to local communities from taking part in environmental assessments include:

- A healthier local environment (forests, water sources, agricultural potential, recreational potential, aesthetic values, and clean living in urban areas). Environment Management 100.
- Improved human health.
- Maintenance of biodiversity.
- Decreased resource use.
- Fewer conflicts over natural resource use.

- Increased community skills, knowledge and pride.
- Potentially screens out environmentally-unsound projects
- Proposes modified designs to reduce environmental impacts
- Identifies feasible alternatives
- Predicts significant adverse impacts
- Identifies mitigation measures to reduce, offset, or eliminate major impacts
- Engages and informs potentially affected communities and individuals

- Influences decision-making and the development of terms and conditions

Principle of EIA It is important to recognise that there is a general principle of assessment that applies to EIA, and to other assessment processes. There are several other processes that relate closely to the review of environmental impacts that may result from a proposed project. The following are well recognised processes:

Social Impact Assessment Risk Assessment

Life Cycle Analysis Energy Analysis Health Impact Assessment Regulatory Impact Assessment Species Impact Assessment

- Technology Assessment
- Economic Assessment
- Cumulative Impact Assessment
- Strategic Environmental Assessment
- Integrated Impact Assessment

Some, like Energy Analysis, focus on a particular part

EIA scheme for national highway

The National Roads Authority (NRA) was established under the Roads Act, 1993, and given the task “to secure the provision of a safe and efficient network of national roads”. The Authority’s responsibilities relate to the national primary and national secondary roads, which together account for approximately 6% of the total public road network of the country. The statutory Environmental Impact Assessment (EIA) process is the framework within which environmental considerations are effectively integrated into national road scheme planning. This is complemented by the NRA’s National Roads Project Management Guidelines (NRPMG) which place an emphasis on the identification and avoidance of environmental impacts in the early stages of project planning and design. This process occurs prior to taking the project through the statutory procedures, including, where appropriate, the preparation of the Environmental Impact Statement.

Direction to Prepare an EIS

In relation to sub-threshold schemes, it is important to note that in a situation where a proposed road development is likely to have significant environmental effects, only An Board

Pleanála can issue a direction for an EIS to be prepared. A road authority cannot decide to prepare an EIS (i.e. under the relevant statutory procedures) for a sub-threshold scheme but must inform the Board where it considers it likely that significant environmental effects will occur. Where the Board concurs, the Board then issues a direction to the road authority to prepare an EIS. It is important to note that the Board may decide not to concur with the position of the road authority, and in this situation the Board would not issue a direction to prepare an EIS. In this situation there is no requirement on the road authority to publicly notify the basis for considering that a proposed road development is likely to have significant environmental effects.

National Roads Project Management Guidelines

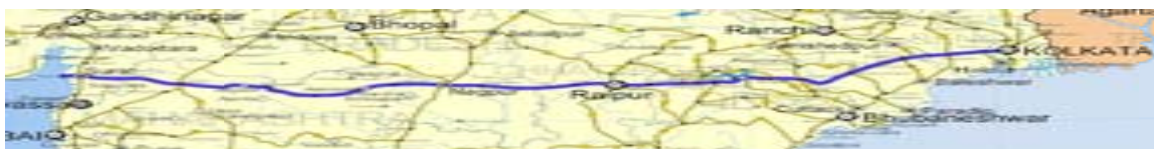
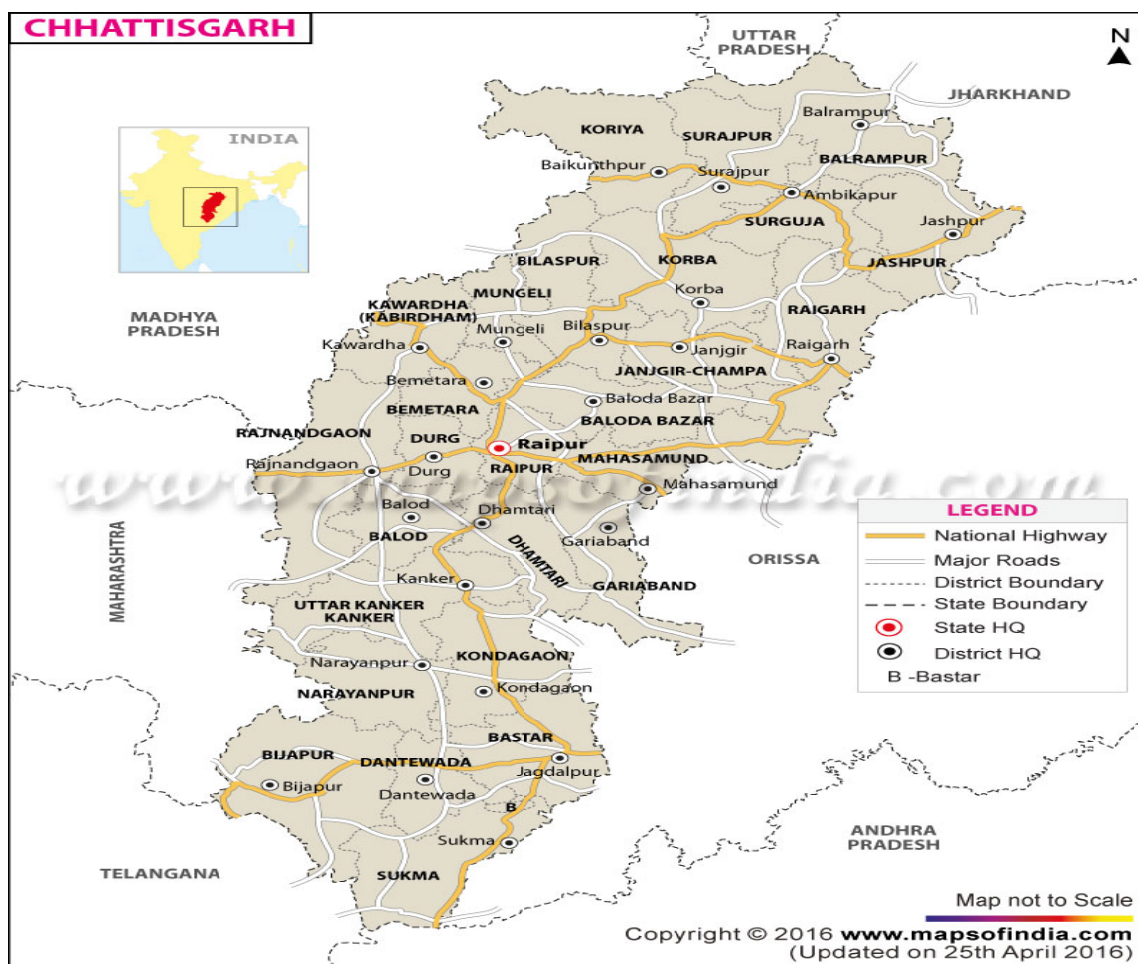
In the NRPMG1, planning for road schemes is divided into four phases culminating in the statutory procedures.

Phase 1 involves the overall planning of the scheme, including:

- Defining the road need,
- Obtaining NRA formal approval to undertake the further phases,
- Setting out to incorporate the objective of providing the road scheme in the local authority development plan.

Phases 2 and 3, the Constraints and Route Corridor Selection studies, are two fundamental components of the EIA process primarily concerned with the early identification and avoidance of significant adverse environmental impacts (i.e. where feasible) and the consideration of alternative route options. Phase 4 includes the preparation of the Environmental Impact Statement (EIS) for the preferred route, where required. As the scheme progresses through the stages (from 2-4), the area of study generally decreases and becomes more focused, while the level of detail in the study increases. Extensive public consultation is catered for during the early planning stages (2-4). It should be noted that public involvement at these stages takes place much earlier than is required by the statutory EIA framework set out in the Roads Act, which stipulates that public consultation begins only when the Compulsory Purchase Order/Motorway Scheme has been made and the EIS is published.

Fig 1.2 Chhattisgarh map show NH-6 (Project area)



Environmental impact assessment in the project

National Highway 6, commonly referred to as NH 6, is a busy National Highway in India that runs through Gujarat, Maharashtra, Chhattisgarh, Odisha, Jharkhand and West Bengal state in India. In Chhattisgarh it covers Rajnandgoan, Durg, Raipur, Mahasamund, Sambalpur, cities. The total length of the project road is 462 km. Project road starting point is Mahasamund (Km 0.00) and the termination point is Rajnandoan (Km 462).

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The highway passes through the cities of Surat, Dhule, Jalgaon, Bhusaval, Akola, Amravati, Nagpur, Bhandara, Durg, Raipur, Mahasamund, Sambalpur, Keonjhar, and Kolkata. The road is the part of National Highway network of India, and it is officially listed as running over 1,949 km (1,211 mi) from Mumbai to Kolkata. It is also known as Mumbai Road.

Scope of EIA

Report The scope for the environmental impact assessment has been decided based on past experience of consultants of similar projects and Terms of Reference of consultants. The outcome of the environmental screening study carried out

Table 1. The themes considered to be most relevant for road projects are covered in this guideline, namely:

Themes to be included in an EIA	Method of assessment
<i>Monetary themes</i> Time savings Savings in vehicle operating costs Benefit from generated traffic Savings in accident costs	Cost Benefit Analysis
<i>Non-monetary themes</i> Geological resources Agriculture Surface water Archaeological and other historical assets Biophysics - wildlife and vegetation Aesthetic impacts Noise nuisance and local air pollution Social environment - effects on community life Short-term effects during construction	Significances of impacts are assessed by combining the value of the asset and the magnitude of the Impacts. Significance can range from four pluses to four minuses via zero + + + + 0 - - - - Check list

by the consultants also helped in finalising the scope for the EIA study.

Anticipated environmental impacts and mitigation measures

A. Physical Environment

1. Topography, Geology, and Soils

a. Construction

The main impact-generating activities during construction will be clearing of rights-of-way, cutting and filling, blasting, and dismantling damaged pavements and borrow pits. The topography along the national highways will change to some extent because of filling and cutting of hills, filling and construction of project related structures. This type of impact will not occur in provincial highways because the project will not require extensive widening of its RoW. It might occur along some rural roads, particularly the rural roads in mountainous area. Nonetheless, leveling of road embankments will take place on all project roads. To avoid landslides, land stabilization has been included in the project design. Visual changes to the landscape will have no mitigation measures, but the project design should consider aesthetic concerns. Tree planting along the roadsides should be properly planned

Road projects often involve issues of conflicting interests. An EIA is, in this respect, a useful tool for documenting the various impacts and interests. An EIA also provides a transparent basis for comparing the alignments and recommending or deciding on alternative options.

Conclusion

EIA certainly has a crucial role to play in addressing environmental issues surrounding project development and especially power projects. Based on the specialist studies undertaken within this EIA, both benefits and negative impacts are anticipated as a result of the proposed project. The benefits associated with the proposed project predominantly pertain to the social environment. However, the direct ecological impacts of the alignment presented in this EIA, although significant in identified sensitive areas, are considered to be acceptable from a holistic environmental perspective. The integration of environment into development planning is the most important tool in achieving sustainable development. Environmental protection and economic development must thus be dealt with in an integrated manner. EIA process is necessary in providing an anticipatory and preventive mechanism for environmental management and protection in any development. Several developing countries are still at the infancy stage of operationalization of their EIA processes. The need for capacity building for quality EIA is also eminent in NH-6 of Chhattisgarh..

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