

### COST BENEFIT ANALYSIS

**Name of Project:** Construction of 4/6 Laningof Arrah-Sasaram-Patna road section of NH-119A from Km 40+450 (Sakla) to Km 84+300 (Patar) under BharatmalaPariyojana (Lot-7/Package-2) in the State of Bihar (Package-II).

**Nature of Proposal:** Diversion of 22.716hectare of forest land for non- forest purpose for the project "Construction of 4/6 Laningof Arrah-Sasaram-Patna road section of NH-119A from Km 40+450 (Sakla) to Km 84+300 (Patar) under BharatmalaPariyojana (Lot-7/Package-2) in the State of Bihar (Package-II)."

**Total Length of Project:** 43.850 Km

**Number of Forest Division involve:** 01

S. No.	Division Name	Proposed Forest Area for Diversion (Hectare)
1.	Forest DivisionBhojpur	22.716
Total Forest Area for Diversion (Ha)		22.716

**Purpose:** The cost Benefit Analysis is being undertaken as the proposed diversion of forest land being affected due to construction of new national highway for above said project > 20 hectare.

#### Estimation of cost of forest diversion


S. No.	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion	Ecosystem services losses due to proposed forest diversion Economic value of loss of ecosystem services due to diversion of forest = Net Present Value (NPV) of the forest land being diverted as per prescribed by the Central Government (MoEF&CC). As the forest land proposed does not fall in National Park and Wild Life Sanctuary.
2	Loss of animal husbandry productivity including loss of fodder	The land proposed for diversion is canal/road sides Protected Forest notified by Government of Bihar. No activity is being /has been carried therefore no loss of animal husbandry productivity including loss of fodder will take place.
3	Cost of human resettlement	No resettlement is involved in land proposed for diversion in Forest area.



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4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways, etc.). On forest land or which would require forest land if these facilities were diverted due to the project	No loss of public facilities and administrative infrastructure is involved in the proposed project.
5	Possession value of forest land diverted	As per MoEF&CC guideline 30% of Net Present Value (NPV) due to loss of forest or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum.
6	Cost of suffering to oustees	As per MoEF&CC guideline the social cost of rehabilitation of oustees (in addition to the cost likely to be incurred in providing residence, occupation and social services as per R&R plan) be worked out as 1.5 times of what oustees should have earned in two years has he not been shifted.
7	Habitat Fragmentation Cost	As per MoEF&CC guideline while the relationship between fragmentation and forest goods and services is complex, for the sake of simplicity the cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule.
8	Compensatory afforestation and soil & moisture conservation cost.	As per MoEF&CC guideline the actual cost of compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted value.

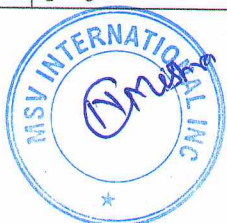


  
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**Existing guidelines for estimating benefits of forest diversion in CBA**


S. No.	Parameters	Remarks
1	Increase in productively attributable to the specific projects	<p>Project stretch falls in the state of Bihar. Bihar is in eastern India. It is contiguous with Uttar Pradesh to its west, Nepal to the north, the northern part of West Bengal to the east, and with Jharkhand to the south. Bihar covers a total area of 94,163 Km<sup>2</sup>, with an average elevation above sea level of 53 m. It is dominated by a vast stretch of fertile plain which is divided unevenly by the Ganges River. Central parts of Bihar have some small hills, such as the Rajgir hills. Bihar has reserved Forest area of 6,845 Km<sup>2</sup>, which is 7.27% of its geographical area. The State has 26 nos. of National Highways with aggregate length 5301 Kms.</p> <p>The proposed road would act as the prime artery for the economic flow to this region. It will enhance economic development, provide employment opportunities to locals, strengthen tourist development, ensure road safety, provide better transportation facilities and other facilities such as way side amenities etc. Vehicles operating cost will also be reduced due to improved road quality.</p>
2	Benefits to economy due to the specific project	<p>The proposed project road will provide uninterrupted free flow of traffic and shall result in</p> <ol style="list-style-type: none"> <li>1. Saving in Travel time, Cost &amp; Natural resources (Fuel).</li> <li>2. Saving in foreign exchange due to less consumption of fuel.</li> <li>3. Increase in income of truck, bus, taxi etc. Owners as they will be able to communicate maximum distance in short time.</li> <li>4. Reduction in accidents as it will provide safe travel.</li> <li>5. Will act as catalyst to the industrial development.</li> </ol>
3	Number of population benefited due to specific project	Population of Bihar, Uttar Pradesh and Jharkhand will be benefited through proposed road.



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4	Economic benefits due to of direct and indirect employment due to the project	Direct and indirect employment will be generated during construction and operation period.
5	Economic benefits due to compensatory afforestation	<p>Economic benefits due to Compensatory Afforestation (CA): As per MoEF&amp;CC guideline these benefits are the benefits from such compensatory afforestation over next 50 years monetized and discounted to the present value should be included as benefits of compensatory afforestation – For benefits of CA the guidelines of Ministry for NPV estimation may be consulted accordingly these benefits have been calculated on two heads namely benefits to CA &amp; benefits due to carbon storage by the afforestation done on CA land.</p> <p>As per MoEF&amp;CC guideline the estimated benefits for the diversion of forest land is the sum total of benefits to economy due to specific project, Economic benefits due to of direct and indirect employment due to the project and Economic benefits due to compensatory afforestation.</p>



  
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