

Project Name : Improvement and Up-gradation of NH-731 to 2-Lane with Paved Shoulder from Km 40.00 to Km 88.750 under Package 1 in Shahjahanpur District and Forest Division (Total Length-48.75 Km of Package 1)
Proposal No. : FP/UP/ROAD/148376/2021

COST BENEFIT ANALYSIS IN ACCORDANCE WITH **GOI FC GUIDELINES NO-7-69 / 2011-FC DATED 01-08-2017**

Name of Project: Diversion of Protected Forest Land for Improvement and Up-gradation of Existing Road (NH-731) to 2-Lane with Paved Shoulder from Km 40.00 to Km 88.750 of NH-731, Start of Khutar Bypass to Start of Shahjahanpur Bypass in Shahjahanpur District of NH-731 in the State of Uttar Pradesh under Shahjahanpur Forest Division of Uttar Pradesh State (Total Length – 48.75 Km of Package 1)

Nature of Proposal: Diversion of 26.4080 ha of Forest land under FCA, 1980 for road construction

Purpose: The Cost Benefit Analysis has been undertaken for proposed diversion of Protected Forest Land being affected due to Improvement and Up-gradation of Existing Road (NH-731) to 2-Lane with Paved Shoulder and Service Road from Km 40.00 to Km 88.750 of NH-731.

Total Length of the Project: 48.75 km

Number of districts involve: 01

Number of forest divisions involve: 01

S. No.	Forest Division	Proposed Forest Area for Diversion (ha)
1	Shahjahanpur	26.4080
	Total	26.4080

Table A: Cases under which a Cost-benefit analysis for forest diversion are required

S. No.	Nature of Proposal	Applicable / Not Applicable	Remarks
1	All Categories of proposal involving forest land up to 20 hectares in plains and up to 5 hectares in hills	Not Applicable	These proposals may be considered a case-to-case basis and value judgments.
2	Proposed for defense installation purpose and oil prospecting only	Not Applicable	In view of national priority accorded to these sectors, the proposal would be critically assessed to help ascertain that the utmost minimum forest land is diverted for non-forest use
3	Habitation, establishment of industrial units, tourist lodge complex and other building construction	Not Applicable	These activities being detrimental in protection and conservation of proposals would be rarely entertained.
4	All other proposal involving forest land more than 20 hectares in plain and more than 5 hectares in hills including roads, transmission line, minor, medium, and major irrigation projects, hydro projects, mining activity, railway line, location specific installations like microwave stations, auto repeater centers, TV tower etc.	Applicable	These are cases where a cost benefit analysis is necessary to determine when diverting the forest land to non-forest use in the overall public interest.

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Since, the proposal is for diversion of forest land measuring more than 20 hectare in plain area for the road project, cost benefit analysis report is applicable.

Table B: Estimation of Cost of forest diversion

S. No	Parameters	Given Guideline	Evaluation
1	Ecosystem services losses due to proposed forest diversion	Economic value of loss of ecosystem services due to diversion of forest shall be the net present Value (NPV) of the forest land being diverted as prescribed by central Government (MoEF&CC) Note: In case of National parks the NPV shall be ten (10) times the normal NPV and in case wildlife Sanctuary the NPV shall be five (5) times the normal NPV or otherwise prescribed by the ministry or any other competent authority	NPV value has been taken as INR 8.03 (Tropical Dry Deciduous Open Forest with density in the range of 0.4 to 0.7) lakhs per hectare Therefore losses = 8.03 x 26.4080 = 212.06 Lakhs
2	Loss of animal husbandry productivity, including loss of fodder	To be quantified and expressed in monetary terms or 10% of NPV applicable whichever is maximum	The forest land proposed for diversion is road-sides plantation notified by Govt. of Uttar Pradesh as Protected Forest. No grazing activity is being / has been carried out on these patches. Therefore, no loss of animal husbandry productivity including loss of fodder will take place. 10% of NPV =10% of NPV (212.06) =21.21 lakhs. So considered amount is INR 21.21 Lakhs.
3	Cost of human resettlement	To be quantified and expressed in monetary terms as per approved R & R plan.	NIL No resettlement in the forest land proposed for diversion.
4	Loss of public facilities and administrative infrastructure (Roads, buildings, School, dispensaries, electric lines, railways etc.) on forest land, or which would require forest land if these facilities were diverted	To be quantified and expressed in monetary terms on actual basis at the time of diversion.	No loss of public facilities and administrative infrastructure on forest land.

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S. No	Parameters	Given Guideline	Evaluation
	due to the project.		
5	Possession value of forest land diverted	30% of environment costs (NPV) due to loss of forests 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	Possession value of Forest Land= 30 % of NPV = 30% of 212.06 = 63.62 Lakhs
6	Cost of Suffering to oustees	The social cost of rehabilitation of Ousteers (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 had he not been shifted	Nil as no Resettlement and Rehabilitation is required in forest land proposed to be diverted.
7	Habitat fragmentation Cost	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.	Habitat fragmentation Cost= 50 % of NPV = 50% of 212.06 Lakhs = 106.03 Lakhs
8	Compensatory afforestation and soil & moisture conservation cost	The actual cost of compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted value	Total 52.816 Hectare degraded forest land which is about two times of the forest area proposed for diversion has been proposed for CA in lieu of 26.4080 ha forest land. Cost of CA is INR 211.26 Lakhs (@ 4.0 lakhs per ha)

Table C: Existing Guidelines for estimating benefits of forest land diversion in CBA

S. No	Parameters	Given Guideline	Evaluation
1	Increase in productivity attributable to the specific project	To be quantified and expressed in monetary terms avoiding double counting	The proposal for which diversion of forest land is sought is for Improvement and Up-gradation of Existing Road (NH-731) to 2-Lane with Paved Shoulder from Km 40.00 to Km 88.750 of NH-731. The proposed improvement eases the traffic situation between Palia-Shahjahanpur-Hardoi to Lucknow. Proposed improvement will enable smooth accessibility in the region by which people of the region will be directly benefitted. This will accelerate industrialization / commercialization in region and the same will directly generate employment opportunities in

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S. No	Parameters	Given Guideline	Evaluation
			these areas and boosting up the economy of the region and the state. Again, directly the project will have the potential for employment generation for local people 224250 man-days during the construction period. The proposed project does not involve any manufacturing or production. Hence, this section is not applicable. Monetary benefits due to increase in productivity is NIL .
2	Benefits of economy due to the specific project	The incremental economic benefit in monetary terms due to the activities attributed to the specific project.	Economic benefit in terms of increase in trade, saving in vehicular operation and maintenance cost, better connectivity, safer journey to commuter and saving of travel time. Improved road connectivity helps in better implementation and management of government schemes. It will provide last and economical transport of goods, after completion of project, the local people and industries situated in the area will be greatly benefited. The project improvement will provide safe and fast, economical and environment friendly transportation to the State, which in term will accelerate the rate of growth in this area. The proposed improvement may reduce the travel distance between two points slightly, however, result in time savings of over 14 minutes. Average Annual Daily Traffic = 11336 Passenger Car Unit (PCU). Fuel saving = 1 Litre per PCU (@ avg. fuel economy of 16 km / Litre Average fuel cost = INR 90 per Litre Fuel saving on 11336 PCU = 1 x 11336 = 11336 Litres per day Savings (in monetary terms) = 11336 x 90 = 10,20,274 INR = INR 10.2 Lakhs Total benefits in 28 years = 10.203 x 365 x 28 = INR 104244.0 Lakhs
3	No. of population benefited due to specific project	As per the detailed project report	Population of Shahjahanpur (3006538) district will be benefitted due to proposed development.
4	Economic benefits due to of direct and indirect employment due to the	As per the detailed project report	A total of 224250 man-days employment will be generated during construction phase for skilled / unskilled labour.

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S. No	Parameters	Given Guideline	Evaluation
	project.		Base wage rate for the year 2019 – 20 is INR 360 per day. Total financial implication will come out to be = 224250×360 = INR 807.3 Lakhs
5	Economic benefits due to Compensatory Afforestation	Benefits from such compensatory forestation accruing over next 50 years monetized and discounted to the present value should be included as benefits of compensatory afforestation. *For benefits of CA the guideline of the ministry for NPV estimation may be considered.	In lieu of total trees to be removed from the proposed Row in forest land along the project road, it is proposed to undertake at least twice of affected area as Compensatory afforestation as per Forest Conservation Act, 1980 to increase the net productivity. The Compensatory Afforestation will be done in 53.568 ha of degraded forest land which is down the line would be having a density of minimum 0.7. The ecological value for a 50 years period for the density of 1.0 is INR 126.74 Lakhs per hectare. By considering minimum 0.4 density the ecological gain for the project would be $INR\ 126.74 \times 0.4 \times 26.4080$ = INR 2677.56 Lakhs

Summary of Cost –Benefit Analysis for the Project

S. No	Cost (in Lakh)	Benefit (Lakh)
1	Ecosystem services losses = INR 212.06 Lakhs	Benefits of economy due to the specific project = INR 104244.0 Lakhs
2	Loss of Animal Husbandry Productivity including loss of Fodder = INR 21.21 Lakhs.	Economic benefits due to of direct and indirect employment due to the project = INR 807.3 Lakhs
3	Possession Value of Forest Land diverted = Rs 63.62 Lakhs	Ecology gain due Compensatory Afforestation = INR 2677.56 lakhs
4	Habitat Fragmentation Cost = INR 106.03 Lakhs	
5	Compensatory Afforestation and Soil and Moisture Conservation = INR 211.26 Lakhs	
	Total Cost = INR 614.18 Lakhs	Total Benefit = INR 107728.86 Lakhs

Therefore, project will have multifold benefit on the economy.

National Highways Authority of India (NHAI)

Place: Bareilly

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