Name of Project	Construction of Ganga Expressway, an access controlled Greenfield Expressway in Meerut, Hapur, Bulandshahar, Amroha, Sambhal, Badanyu, Shahjhanpur, Hardoi, Unnao, Raibarely, Pratapgarh and Prayagraj Districts in the state of Uttar Pradesh (FP/UP/ROAD/144793/2021)

COST BENEFIT ANALYSIS

(As per MoEF&CC guidelines for conducting Cost Benefit Analysis
Vide no. 7-69/2011-FC (Pt.) dt.1st AUG,2017

Nature of Proposal: Diversion of 121.4716 ha. of Forest Land under FCA, 1980 for road construction.

Purpose: The Cost-Benefit Analysis is being undertaken for proposed Diversion of Forest Land being affected due to the development of project.

Table: A Details of Types of project involving Forest Land for which cost-benefit analysis will be required.

S. No.	Nature of proposal	Applicable/Not Applicable	Remark
1.	All categories of proposals involving Forest Land upto 20 Hectares in plains and upto 5 Hectares in hills.	Not Applicable	-
2.	Proposals for defense installation purposes and oil prospecting (Prospecting only)	Not Applicable	No such area is involved in the project.
3.	Habitation, establishment of industrial units tourist lodges/complex and other building construction.	Not Applicable	No such activities are involved in the project.
4.	All other proposals involving forest land more than 20 ha in plains and more than 5 ha in hills including toads, transmission lines, minor, medium and major irrigation projects, hydel projects, mining activities, railway lines, auto repeater controls, towers etc.	Not Applicable	The proposed project involves 121.4716 ha. of Forest Land. Hence, the CBA is applicable. Hill=Nil Plain=121.4716ha.

Table: B-Estimation of cost of forest diversion

S. No.	Parameters	Remarks
1.	Ecosystem service loss due to proposed diversion	The proposed Forest area to be diverted is mostly characterized by dry deciduous forest. Considering Open forest of Eco-Class III, an average value of NPV of INR 6.26 lacs per

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		hectare (as per MoEF&CC GO 5-3/2007-FC dt. 05-02-2019) Therefore, ecosystem services losses due to proposed diversion of 121.4716 ha. of forest land=Rs. 760.41 lacs, considered as total NPV.
2.	Loss of animals husbandry productivity including loss of fodder	There is no loss in animal husbandry, productivity including loss of fodder due to the diversion of forest land. 10% of NPV is maximum i.e. Rs. 76.04 lacs
3.	Cost of human resettlement	Nil. There is no displacement of people in the forest area proposed for diversion
4.	Loss of public facilities and administrative infrastructure (Roads, Buildings, Schools, Dispensaries, Electrics lines, Railways etc.) on which would require forest land if these facilities were diverted due to the project.	Nil. There are no loss in public facilities and administrative infrastructures (road, buildings, schools, dispensaries, electric lines, railways etc.) on proposed diverted forest land.
5.	Possession value of forest land diverted	30% of NPV cost i.e. Rs. 228.12 lacs
6.	Cost of Suffering to oustees	Nil. There are no oustees involved in the forest area.
7.	Habitat Fragmentation Cost	50% of total NPV i.e. Rs. 380.20 lacs
8.	Compensatory afforestation and soil & moisture conservation cost	The compensatory afforestation will be taken up in equivalent Non-Forest Land i.e. 121.4716 ha. of in lieu of proposed forest to be diverted. As per guidelines Standard Compensatory Afforestation, Restoration Factor (SCARF) assuming 4% discounted rate for Open forest for Tropical Dry Deciduous Forests is 5.81% of NPV and the proposed NPV rates is Rs. 11.17 lacs per ha. So the adjusted NPV rates will be [11.17 - (0.0581x11.17)] = Rs. 10.52 lacs per ha. Therefore, the compensatory afforestation cost will be 121.4716 ha. x Rs. 10.52 lacs = Rs. 1277.88 lacs

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Therefore, cost of Forest Diversion: Rs. 760.41 (Eco-system loss) + Rs. 76.04 lacs (Animal husbandry) + Rs. 228.12 lacs (Possession value) + Rs. 380.20 lacs (Habitation fragmentation) + Rs. 1277.88 (Compensatory Afforestation) = Rs.2722.65 lacs

Table: C - Existing guidelines for estimating benefits of forest-diversion in CBA

Sl. no.	Parameters	Details
1	Increase in productivity attributable to the specific project.	The project will enable smooth accessibility in the region by which people of the region will be directly benefitted. This will also accelerate industrialization and commercialization in the region and the same will directly generate maximum employment opportunities in these areas, which boost up the economy of the region and the state. Due to the proposed project there will be overall development of the project area in terms of transportation of agriculture produces, easy access to education, health, etc.
2	Benefits to economy	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. Proposed improved connectivity will accelerate the growth in these areas. It will provide last and economical transport of goods. After completion, the local people and industries situated in the area will be greatly benefited. The proposed project road will provide safe, fast, economic and environmental friendly transportation to the state which in term will accelerate the rate of growth in this area. In addition to that there are several other benefits that may accrue due to proposed development are saving in fuel, reduction in time to commute, vehicle maintenance, reduction in carbon emission etc. "However, they have not been quantified as it will be a function of various govt. policy variables." Exact quantification of the value is not possible as it is time and policy dependent.
3	No. of population benefited.	The proposed project will traverse twelve

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		districts viz. Meerut, Hapur, Bulandshahar, Amroha, Sambhal, Badanyu, Shahjhanpur, Hardoi, Unnao, Raibarely, Pratapgarh and Prayagraj. The total population of these districts are 3,87,72,962 persons as per the Census of India, 2011. These people will get benefited due to the proposed project. In addition to the above, the neighbouring districts commutators will also get benefited.
4	Economic Benefit due to direct and indirect Employment due to the project	Direct a) Permanent Employment: 3000 Person x 31acs per annum = 9000 Lacs b) Temporary Employment (Skilled/unskilled and Semi-skilled): 10,80,000 Man Days x INR650 per day =Rs. 7020 Lacs Total: **16020 lacs**
5	Economic Benefit due to Compensatory Afforestation (CA)	In Lieu of total forest land to be diverted, Compensatory Afforestation required to be done as per the Forest (Conservation) Act 1980 and its prevailing guidelines CA will be done in 121.4716 ha. of Non-Forestland. The ecological value of forest for a 50 years period of density of 1.0 is 126.74 lac per ha. as per Forest Conservation Act 1980. By considering the maximum density, the ecological gain by this project due to CA would be **Rs. 15395.311 lacs**

Therefore, the Environmental benefits will be: Rs. 16020 lacs (Employment generation) + Rs. 15395.311 lacs (Economy benefits due to compensatory afforestation) = Rs. 31415.310 lacs.

Benefit-Cost (BC) ratio = Total Environmental Benefit/Total Cost = 31415.310 /2722.65 =11.53 which is greater than 1. Hence, Project is found viable.

Authorized Signatory
Uttar Pradesh Expressways
Industrial Development Authority
(UPEIDA)