## COST BENEFITS ANALYSIS IN ACCORDANCE WITH GOI FC GUIDLINES NO 7-69/2011-FC DATED 01-08-2017'

**Project Name:** - Improvement and Up-gradation of Moradabad - Kashipur section of NH-734 including Moradabad bypass under NHDP pahse-VII in the state of Uttar Pradesh. Package-II: Moradabad - Kashipur Road (Length= 39.750 km) Start from Ch. 0+00 (Existing Km. 389+000) at Bijna and ends at Ch. 39+750 at UP/UK Border near Dhandi River.

Nature of Proposal: Diversion of 63.5796 ha. of Protected Forest in Moradabad Forest division.

Total Length of Project Road Section: 39+750 Km.

Length of the project road along the Protected Forest: 39+750 km. in Moradabad Kashipur

Road Upto UP Border

Total Forest Area Proposed for Diversion: Total Forest area in both districts is 63.5796 ha.

Purpose: The Cost Benefit Analysis is being undertaken as the proposed diversion of forest land being affected *due* to widening (Two Lanning) of existing road for above said project is >20 Ha.

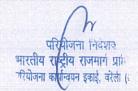
NOTE- NPV cost will be provided by the concern DFO office, however, to calculate the Cost Benefit Analysis we have assumed the forest as Eco class – IV (OF) and accordingly density 0.4.

The NPV cost/ha. will be Rs. 4,38,000/-, therefore District wise NPV calculation value is given below-

Sr.No.	District Name	Area (ha.)	Density	Rate/Ha.	Amount (Rs.)
1.	Moradabad	63.5796	0.4	4,38,000	27,847,865
TOTAL AREA & NPV VALUE		63.5796			27,847,865/-

## Cost Benefit Analysis as per Guidelines for Forest Land Diversion-2017

Sr. No	Nature of Project	Applicable/Not Applicable	Remarks
1	All categories of proposal involving forest land upto 20 ha. In plains and upto 5 Ha. In hills		These proposals may be considered on a case-to-case basis and value judgements.
2	Proposal for defense installation purpose and oil prospecting (prospecting only)	Not Applicable	In view of national priority accorded to these sectors, the proposals would be critically



Sr. No	Nature of Project	Applicable/Not Applicable	Remarks
			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 determine to protection and conservation of proposal would be rarely entertained
4	All other proposals involving forest land more than 20 Ha. In plains and more than 5 Ha. In hills including roads, Transmission line, minor, medium and major irrigation projects, hydro projects, mining activity, railway line, location specific installations like	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

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

Table-B: Estimate of Cost of Forest Diversion Moradabad District

Sr. Parametei No.	rs Given Guideline	Evaluation
Services due Proposed diversion	ecosystem service due to diversity of forests shall be the net preservalue (NPV) of the forest lare being diverted as prescribed Central Government (MoEF&CO).  Note: - in case of National Parksty NPV shall be ten (10) times normal NPV and in case Will Sanctuary the NPV shall be five times the normal NPV or other prescribed by the ministry or other competent authority.  Note: -1: Net Present Value (NP) environment and ecosystems service loss: - The concept of Net and the service in the net prescribed in the net prescribed by the ministry or other competent authority.	Conservation act 1980 is in between Rs. 5.8 and 9.2 lac per hectare.  Accordingly, NPV value for proposed diverted land is assumed for  Wise any Total NPV for the Division is = Rs. 278.478 Lac.  V) of em let of Net land

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		Forest land for non-Forestry purpose, the NPV represents the net value of various ecosystem services and other environment services in monetary terms which if the Forest would not have been diverted.		
2.	Loss of animal husbandry, productivity	To be quantified and expressed in monetary terms of 10% of NPV applicable whichever is maximum.	Loss of Animal husbandry due to proposed diversion is very moderate and calculated below.	
	including loss of fodder		Gross Loss @ 5 ton/Ha/year @ Rs. 100/- per tonne. Therefore, loss of folder as estimated for about 63.5796 Ha. Will be 63.5796 X5X100= 31,790/Yr X 50 years=Rs. 1,589,490/-(15.89Lac).	
			Further considering 10% of NPV will be = 278.478 Lac X 0.1 = Rs. 27.8478 Lac.	
			So, considered amount (maximum one) is Rs. 27.8478 Lac.	
3.	Cost of human resettlement	To be quantified and expressed in monetary terms on actual terms as per approved R&R plan.	Nil human Resettlement is required since no family residing in forest land.	
4.	Loss of public facilities and administrative infrastructure (roads, buildings, schools, dispensaries, electric lines, railways etc) on forest land or which would require forest land if these facilities were diverted due to the Project.	To be quantified and expressed in monetary terms on actual cost basis of the time of diversion.		
5.	Possession value of forest land.	30% of environmental cost (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 forestland whichever is maximum.	land will be • (considering 30% of NPV) =0.3 X 278.478	िरियोजना निदेशक

		Note 2: Possession value of forest land diverted:- The forest land diverted for the project such as irrigation, hydropower, railways, roads, wind and transmission lines and mining etc are unlikely to be returned and remains in the possession of the user agencies, Therefore 30% of the net present value (NPV) of forest land diverted or market rate of adjoining area in the district should be added as a cost component as "possession value of forest land" in addition to the environmental cost due to loss of forests.	of Moradabad district forest land (as per average circle rate) = 63.5796 ha. X 50 Lac = 3,178.98 lac and Per hectare land rate along the highway in district Moradabad.  So Total possession value of forest land of the division (as per average circle rate) = Rs. 3,178.98 Lac.  So, considered amount (Maximum one) is Rs. 3,178.98 Lac.
6.	Cost of Suffering to ousters	The social cost of rehabilitation of ousts (in additional 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	NIL, no resettlement & rehabilitation is identified or required in forest land which is proposed to be diverted. Also, the
		of what ousts should have earned in two years had he not shifted.	community residing along the project road is not dependent on forest or forest produce.  There will not be any losses
			on this account as diversion of the forest land to this project will not affect any house or structure in protected forest area which is basically a linear plantation.
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 is 50% of NPV that is Rs. 278.478 X 50% = Rs. 139.239 Lac.
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.	The rate is approximately same as those adopted in other stage-I approved projects of NHAI in the area i.e. approx. 3 Lakhs per hectare However the exact amount will be provided by concern DFO office.  Considering 3 Lakhs per hectare for estimate the Cost of CA = 3X 63.5796= Rs. 190.7388Lakhs

Sr. No.	Parameters	Given Guideline	Evaluation
1	Increase in productivity attributable to the specific project	To be quantified & expressed in monetary terms avoiding double counting.	Socio economic benefits due to the road project will provide the
			• Though overall mission to increase the GDP of the said region and make it comparable/above the nation GDP Again, directly approximately 9000-man days of temporary and 50 permanent employment will be generated during the construction of the Project for a period of 2 years
2	Benefits to economy due to 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

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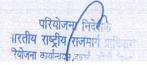
				widening of project road will provide safe, fast, economic and environmentally friendly transportation to the state which in term will accelerate the rate of growth in this area. In addition to that there are several other benefits that may accrue due to saving in fuel, reduction in time to commute, 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 due To specific project/	As per detailed project report.	The Population of 47.7 lakhs People from district Moradabad will be benefited directly.
Value of the second	4	Economic benefit due to direct and indirect Employment Potential	As per detailed project report.	Approximately 9000- man days of temporary and 50 permanent employment will be generated during the construction of the Project for a period of 2 years
	5	Economic benefit due to compensatory afforestation	Benefit fromsuch compensatory afforestation accruing over next 50 years monetized and discounted to the present value should be included as benefit of CA the guideline of the Ministry for NMI estimation may be consulted.	In Lieu of total forest land to be affected it is proposed to be undertake at least twice of the affected trees as Compensatory Afforestation as per Forest (Conservation) Act 1980.  Apart from compensatory plantation and on road divider plantation. The compensatory afforestation will be taken up in about 63.5796 ha (Moradabad forest division) for diverted protected land, so Total compensatory afforestation will be taken 63.5796* 2 = 127.1592ha. Degraded forest land which is two

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	times of the area proposed to be
	diverted.
	The Compensatory
	Afforestation will be done in <b>127.1592</b> ha. Of
	degraded forest land,
	which is down the line
	would be having a density
	of minimum 0.4. The ecological value for a 50
	years period of density of
	1.0 is 126.74 lac per
	hectare (As per Forest
The second secon	Conservation Act 1980).  By considering minimum
	0.4 density, the ecological
	gain
	for this project.
	would be 126.74lacX0.4X127.1592 = Rs.
	6,446.4628 Lakh

## Summary of Cost-Benefit Analysis for the project.

Sr. No.	Loss in Lac	Benefit in Lac
1	Ecosystem Services losses = Rs. 278.478 Lac.	ecological gain for this project would be 126.74lacX0.4X127.1592 = Rs. 6,446.4628 Lakh
2	Loss of animal husbandry, productivity including loss of fodder = Rs. 27.8478 Lac	9050- man days will be generated for unskilled/semi-skilled worker in terms of Salary and Wages @ Rs. 500/day (average) = Rs. 500X 9050=45.25 Lac.
		Basic living amenities including alternative fuel (LPG solar cooker etc) will be supplied to labours/workers in construction period by contractor-2 years.  Number of labours at peak time-225  Approx. 50% labour assume to be local.
		Per head cost of fuel- Rs. 2.00/day for rest 112 labours. Total Cost = Rs. 2.00 X 112 labours X 730 days = Rs. 163520.00/- of Rs. 1.64 Lac.
3	Loss of public facility = <b>Rs.</b> 3234.00 Lac	
4		
	Possession value of Forest land diverted = Rs. 3,178.98 Lacs	
5	Habitat Fragmentation Cost = Rs. 139.239 Lac	



6	Compensatory afforestation and soil & moisture conservation cost= Rs.	
7	190.7388Lakhs.  Total Cost/Loss = 278.478  Lac+27.8478+3234.00  Lac+3178.98Lakh+139.239 Lac+ 190.7388 Lac = Rs. 7,049.2836 Lac	Total gain/benefit from project = Rs. <b>6,446.4628</b> lac + 45.25 Lac + 1.64 Lac = <b>Rs. 6,493.3528Lac.</b>

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Cost Benefit Ratio = Total Benefit/Total Loss = 7049.2836/ 6,493.3528 =1.10 which is >1, so project is found valuable based on given/above described criteria.

Date:

Place:

