

### COST BENEFIT ANALYSIS

**NAME OF PROJECT:** Construction of Two Lane with Paved Shoulder of Old Tamenglong- Phelong Section (Package-3, from Km31.430 to Km43.480) of Tamenglong- Mahur Road in the state of Manipur on EPC mode.

**NATURE OF PROPOSAL:** Diversion of Forest Land under FCA, 1980 for road project.

**PURPOSE-** This Cost Benefit Analysis is being undertaken for proposed Diversion of Forest Land being taken for Construction of Two Lane with Paved Shoulder of Old Tamenglong- Phelong Section (Package-3, from Km31.430 to Km 43.480) of Tamenglong- Mahur Road in the state of Manipur on EPC mode. Estimated construction cost for Package-3 of project road is 176.54Cr.

TABLE-A: ESTIMATION OF COST OF FOREST DIVERSION					
1	Ecosystem servicesses due to proposed forest diversion	1. Proposed forest area to be diverted for road constrction		47.833	ha.
		2. Proposed forest area to be diverted for Muck Disposal		7.1	ha.
		2. Crown density of the proposed area		0 to 60	%
		3. Forest Cover Area in (ha.)			
		A. Class		Total (area) ha.	
		i. Very Dense forest		0	
		ii. Medium Dense forest		9.323	
		iii. Open forest		45.61	
		Total		54.933	
		4. As per Supreme court,s order date 28.03.2008 in WP© No. 202/1995			
i. Forest type of the proposed diversion area		ECO-class I			
ii. Net Present Values (NPV)		Area	Rate per ha. (Lakhs)	Amt (Rs.) in Lakhs	
i. Very Dense forest		0	10.43	0.000	
ii. Medium Dense forest		9.323	9.39	87.543	
iii. Open forest		45.61	7.3	332.953	
Total NPV (a+b)				420.496	


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2	Loss of animal husbandry productivity, including loss of fodder @10% of NPV		10% of NPV	Amt(Rs.) in Lakhs =	42.050
3	Cost of human resettlement	<p>Nil</p> <p>The cost of human resettlement for diversion of forest land is nill. However, any R&amp;R cost, if required is being considered in project clearnce cot</p>			
4	Loss of public facilities and administrative infrastructure (Roads, building, school, dispensaries, electric lines, railways, etc.) on forest and, which would require forest land if these facilities were diverted due to the project	<p>Nil</p> <p>Electric Lines &amp; Poles, Water pipelines, ater tank etc, public facilities hich are being affected have been considered in the budget. the budgets for affected Community Properties resettlement have been considered</p>			
5	Possession value of forest land diverted	30% of environmental cost (NPV)	30% of NPV	Amt(Rs.) in Lakhs =	126.149
6	Cost of suffering to Outsters	The widening and strengthening of the project road is to be undertaken on the adjoining land of the existing road, so there are no sufferings to outtees			
7	Habitat Fragmentation Cost	As per thumb rule: 50% of (NPV)	50% of NPV	Amt(Rs.) in Lakhs =	210.248
8	Compensatory afforestation and soil & moisture conservation cost	<p>Compensatory Afforestation cost of 109.866 ha land for 54.933 ha proposed forest land diversion is Rs. 218.633 lakhs @ Rs. 225-wage rate (including Rs. 11.86 lakhs as soil &amp; moisture conservation cost which is 10% of CA item work cost for a maintenace period of 8 Years)</p> <p>Amt(Rs.) in Lakhs 218.633</p>			
<b>Total (Table A: Cost of Forest Diversion)</b>			<b>1017.576</b>	<b>Lakh</b>	
<b>Estimated cost of construction for Package road section</b>			<b>17654</b>	<b>Lakh</b>	
<b>Total Cost (Forest Diversion+Construction Cost)</b>			<b>18671.58</b>	<b>Lakh</b>	

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**TABLE-B: ESTIMATION OF BENEFIT OF FOREST DIVERSION**

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1	Incease in productivity attribute to the specific project	In lieu of total trees and forest land to be affected due to project, it is proposed to undertake comensatory afforestation as per Forest (Conservation) Act. The Project road will improve connectivity between State Capitals of Assam and Manipur State. This will enhance the economic improvement in the Project Districts with additionalgrowth in the GDP due to the project.		
2	Benefit to economy due to the specific project	Main objective of this project is to provide all weather connectivity between Tamenglong and Mahur with improvement of road. Widening and curve improvement under the project will minimize the chances of accidents. Economics benefits will be in terms of saving in travel time and Vehicle operating cost for a period of 30 years.  VOC per year for project road (90Km) = 182 cr VOC per year for Package Section (approx. 12.05 km)		
		Saving for 30 Year		
		15.10 cr x 30 yrs	45300	Lakhs (Rs.)
3	No. of population benefited due to specific project	Entire population of project districts (East & West Imphal and Tamenglong) shall be benefited from the project as projected population is 14.50 Lakhs. Further specific individuals will be benefited, those will be engaged in construction works is estimated as below.		
		100 nos. x 600 re. x 300 days x 3yrs		540 Lakhs (Rs.)
		For Package road section		72.3 Lakhs (Rs.)

  
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4	Economic benefits due to direct and indirect employment due to the project	During Construction of the project			Amt(Rs.) in Lakhs
		Semi-skilled Labour	50 nos. x 350 rs. X 300 days x 3 yrs		157.5
		Technical People	10 nos. x 2500 rs. X 300 days x 3 yrs		225
				Sub-total	382.5
		During Operation stage of the project			Amt(Rs.) in Lakhs
		Skilled Labour	10 nos. x 600 rs. X 300 days x 30 yrs		540
		Semi-skilled Labour	5 nos. x 350 rs. X 300 days x 30 yrs		157.5
		Technical People	2 nos. x 2500 rs. X 300 days x 30 yrs		450
				Sub-total	1147.5
				Total	1530
		For Package road section			204.85
5	Economic benefits due to Compensatory Afforestation	52736 Man days as per prevailing wage rate for a maintenance period of 8 years of (54.933*2 = 109.866 ha CA area) @ present wage rate Rs. 225.00 M day = Rs. 118.655 lakhs			
		Area for CA (ha.)	Man days per ha. In a yr.	Period (yrs)	Total Mandays
		109.866	60	8	52735.68
		Maintenance cost	Daily wage	Total Mandays	Amount (Lakh Rs)
			225	52735.68	118.655
		Total (Table - B: Benefits of Forest Diversion)			45695.81 Lakh
		Ratio of benefits to cost of forest land diversion for project road section			2.45

  
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