

Title of the Proposal: Diversion of 16.107 Ha of Forest Land at Upper Shillong Protected Forest (15.296Ha) and Private Deemed Forest (0.811 Ha) for improvement/ widening to 2-lane with paved shoulders/ 4 laning of stretch of Package-1 (km 1+390 to 8+980) between 2 1/2 Mile Upper Shillong to Pomlum PHC Baniun in the State of Meghalaya for execution on EPC mode under JICA funding.

COST-BENEFIT ANALYSIS

TABLE - A

S. No.	Particulars	Applicability	Amount (Rs. Crores)
01	All category of proposals involving land less than 5 ha in Hills and less than 20 ha in Plain	Not Applicable	
02	Proposal for defence installation purposes and oil processing (Prospecting only)	Not Applicable	
03	Habitation, establishment of Industrial units tourist lodges/complex and other buildings constructions	Not Applicable	
04	All other proposals involving forest land more than 5 ha in Hills and more than 20 ha in Plain including roads, transmission lines, minor, medium, and major irrigation projects, hydel projects, mining activities, railway lines, locations specific installations micro-wave stations, auto repeater controls, towers, etc.	Applicable (Roads)	Diversion of 16.107 Ha of Forest Land at Upper Shillong Protected Forest (15.296 Ha) and Private Deemed Forest (0.811 Ha) for improvement/ widening to 2-lane with paved shoulders/ 4 laning of stretch of Package-1 (km 1+390 to 8+980) between 2 1/2 Mile Upper Shillong to Pomlum PHC Baniun in the State of Meghalaya for execution on EPC mode under JICA funding.
05	Total cost (Investment Incurred)		
(a)	Civil Construction Cost of Project		Approx. Rs 110 Cr in Forest Areas
(b)	Alternative Plantation/Environment Cost/ Substitute		Environmental Mitigation cost taken in DPR as 5.79 Cr



S. No.	Particulars	Applicability	Amount (Rs. Crores)
(c)	N.P.V. cost of 16.107 Ha. Amount to be disposed @ 9.20 lakh/Hectare		NPV cost 9.20 lacs/ha * 16.107Ha = 1.48 Crore.
(d)	Loss of value of timber, fuel wood and minor forest produce on an annual basis including loss of man hours per annum of people who derived livelihood and wages from the harvest of these commodities		Nos. of trees to be affected shall be accounted during joint inspection with Forest Dept. and Cost Benefit Analysis shall be updated accordingly. However, since the forest area is classified as moderately dense forest, for estimation of loss at this stage of project, canopy density of 0.7 no. /sq. m has been considered as affected due to proposed development. Therefore, total values of trees @ average INR 3500 per tree = INR 3500 x 0.7 x 161070 = INR 39.46 Crore
06	Benefits (Construction of Four Lane Road in the subject stretch)		Proposed upgradation of the project will result in smooth flow of traffic, reduction in traffic congestion, reduction in fuel consumption, low vehicle maintenance cost, improved transport facilities, control of air and noise pollution, reduction in road accidents, Improvement in tourism sector.



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COST-BENEFIT ANALYSIS

TABLE - B

S. No.	Parameters	Remarks
01	Ecosystem services losses due to proposed Forest Diversion	1. Diversion of Forest Land of 16.107 Ha. 2. Economic value of loss of ecosystem services due to diversion of forest land = NPV of the forest land being diverted as Rs 1.48 Crore. 3. Loss of value of timber = 39.46 Crore
02	Loss of Animals husbandry productivity including loss of fodder	NIL
03	Cost of human resettlement	NIL There will be no displacement in Protected Forest area and hence no resettlement is required.
04	Loss of public facilities and administrative infrastructure (Roads, Buildings, Schools, Dispensaries, Electric Lines, Railways etc.) on which would require forest land if these facilities were diverted due to the project.	No loss of public facilities and administrative interest occurs.
05	Possession value of forest land of Diverted Forest Land	Possession value of forest land will be 30 % of NPV as per circular issued by MOEFCC vide no 7-69/2011-FC (pt) dated 01/08/2017, Hence, it will be 30% of 1.48 Crore =0.444Crore.
06	Suffering to Oustees	Nil
07	Habitant Pragamentation Cost	Nil
08	Environmental losses (Soil erosion, effect on hydrological cycle, wildlife habitat, micro climate upsetting of ecological balance)	The total area of forest land along the project road required for the proposed up-gradation is 16.107 Ha. The loss for density 1.0 is 126.74 Lacs per ha. As per Forest Conservation Act, 1980 for 50 years considering the density of the forest as 0.7, the total cost of environment losses per ha is Rs 88.72 Lacs for 50 years. 16.107* 88.72 = 1429.01 Lacs = say 14.29 Crores.



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COST-BENEFIT ANALYSIS

Table - C

S. No.	Parameters	Remarks
1.	Total Economic Benefits	Total revenue generation/economic benefit directly and indirectly by development of the project road over a period of 15 years shall be around Rs. 270 Crores.
2.	Increase in productivity attributable to the specification project.	Due up-gradation of the existing highway to two lane paved shoulder/4-lane configuration, there will be overall development of the project area. There would be easy and fast movement of the traffic, so that it will save time, saving in fuel and maintenance cost of the vehicles. This will also result in reduction in accidents. Hence, widening of road will result in improved traffic condition, low maintenance cost of vehicles and saving in travel time will result in economic benefits.
3.	Benefits to economy	<p>The project usually contributes the growth of local economy by increased commercial and agricultural and tourism activities due to improved highway.</p> <p>The economic benefits due to project are given below:</p> <ol style="list-style-type: none"> 1. Reduce pollution level due to better surface quality and traffic speed will be increased up to 80 kmph. 2. Fuel consumption is estimated to be reduced and saving travel time. 3. Provision of safety measures, road furniture along the road, truck lay bye, rest area and bus bays, necessary amenities provided and reduction in accidents. 4. Vehicles operating cost will be reduced due to better transportation. 5. Social economic growth will take place due to improved connectivity. 6. Fast and Safe Connectivity



S. No.	Parameters	Remarks
		7. Decongestion of traffic on the road 8. Savings in fuel, travel time and total transportation cost of road users. 9. Reduction in road accidents. 10. Employment opportunity to people. 11. Development of tourism. 12. Development of local industry and handicrafts. 13. Quick transportation of agricultural produce, forest products and perishable goods. 14. Improved quality of life for people
4.	No. of population benefited.	From the project stretch passing through Shillong to Dawki, approximately 70000 population shall be benefited.
5.	Economic Benefits due to of direct and indirect employment due to project.	Due to Upgradation of the project road, about 400 workers will get direct employment for duration of 3 years and 6000 indirect employment will also be generated during the construction of the project road.
6.	Economic Benefits due to Compensatory Afforestation	The benefits of Compensatory Afforestation estimated as NPV.

Cost of projects including forest/Environment loss etc. = 110 + loss of timber + environment loss = 110 + 39.46 + (1.48+14.29) = 165.23 Crore

Financial benefits of the project = 270.00 Crore

Benefit Cost ratio: $270.00/165.23 = 1.63 > 1$

Hence, Project is found viable




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