

COST BENEFIT ANALYSIS

NAME OF THE PROJECT :	PROPOSAL FOR FOREST CLEARANCE FOR THE UPGRADATION OF NH-29 FROM 2 LANE TO 4-LANE NATIONAL HIGHWAY FROM DABOKA TO LAHORIJAN (NAGAON SOUTH FOREST DIVISION, HOJAI PART) UNDER BHARATMALA PARIYOJANA (LOT-1- PACKAGE-II) IN HOJAI DISTRICT
NATURE OF PROPOSAL :	Diversion of Forest Land under FCA, 1980 for Widening/Upgradation of NH-29 from 2 Lane to 4-Lane National Highway
PURPOSE	This Cost widening Benefit Analysis is being undertaken for Proposed Diversion of Forest Landbeing affected due to Upgradation of NH-29 from 2 lane to 4-lane National Highway from Daboka to Lahorijan (Nagaon South Forest Division, Hojai part) under Bharatmala Pariyojana (Lot-1- Package-ii) in Hojai District

TABLE - A: ESTIMATION OF COST OF FOREST DIVERSION

Sl.	Parameters	Description			
1	Eco-system Services Losses due to Proposed Forest Diversion	Rs. 192.495 Lakhs			
		1) Propose Area to be diverted 20.50 Ha			
		2) Crown density of the proposed area 0-60 %			
		3) Forest Cover Area		Area in Hectare	
		(i) Moderately Dense Forest		20.50	
		Total Forest Diversion Area =		20.50	
		4) As per Supreme Court's Order dated 28.03.2008 in WP(C) No. 202/1995			
		(i) Forest type of the proposed diversion area : Eco-Class I			
		(ii) Net Present Value :			
		Forest Class	Area (Ha)	Rate (Lakhs/Ha)	Amount (Lakhs)
		(a) Moderately Dense Forest	20.50	9.39	192.495
		Total =			192.495
2	Loss of animal husbandry productivity, including loss of fodder	10% of NPV = 10% of Rs.192.495 Lakhs =			19.249 Lakhs
3	Cost of human Resettlement.	Nil The cost of Human Resettlement for diversion of Forest Land is Nil.			
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 due to the project.	Nil There is no requirement of any diversion of public facilities and administrative.			
5	Possession Value of Forest Land Diverted	30% of NPV = 30% of Rs.192.495 Lakhs =			57.748 Lakhs
6	Suffering to oustees	Nil The widening and upgradation of the project road is to be undertaken on the adjoining land of existing road, so there are no sufferings to oustees.			
7	Habitat Fragmentation Cost	50% of NPV = 50% of Rs. 192.495 Lakhs =			96.247 Lakhs



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Sl.	Parameters	Description	
8	Compensatory Afforestation and Soil & Moisture Conservation Cost	Compensatory Afforestation cost of 41 Ha. of forest Land Diversion =3.50/ha	143.5 Lakhs
TOTAL (TABLE - A: COST OF FOREST DIVERSION)			509.239 Lakhs

TABLE - B: ESTIMATION OF BENEFITS OF FOREST DIVERSION			
Sl.	Parameters	Description	
1	Increase in Productivity and Economy	<p>VOC Savings The unit Vehicle Operating Cost (VOC) by vehicle type and VOC savings section-wise has been computed by the HDM model. The VOC computation takes into account capacity augmentation, pavement characteristics, roughness progression vis-à-vis intervening surface treatment and strengthening policies, traffic characteristics, geometric conditions and vehicle characteristics.</p> <p>Time Savings The HDM Model has generated average speeds in km/hr by vehicle type, in the existing (without project) and the improved (with project) road conditions. The time savings for passengers and goods (in transit) vehicles have been derived separately. For computing time saving for passengers of cars and buses, a weighted average occupancy was used viz. Car – 4 persons and Bus – 30 persons. The average payloads considered for goods vehicles are: LCV – 6 tonnes, Truck-16.2 tonnes and MAV – 24 tonnes.</p> <p>The value of time (VOT) for passengers and goods considered in this analysis has been based on earlier studies carried out in recent years. For the average car passenger, VOT has been taken as Rs. 51 per hour, and for the average bus passenger it was Rs. 35 per hour. The value placed on time is rather on the conservative side. For goods in transit, time value has been worked out using the inventory cost method, with a 15% interest rate considered as the opportunity cost of capital. The VOT for goods (Cargo) vehicle worked out to Rs. 2.56 per hour for LCV, Rs. 7.87 per hour for 2-axle trucks and Rs. 14.72 per hour for multi-axle vehicles. All above said values are based on Road User Cost Study Report by CRRI.</p> <p>Accident Cost Savings A distinction made between main cause of accident and the contributory factors of accident. It is usually difficult to identify the main cause of accidents; whereas several factors which could have contributed to accidents can be identified.</p>	
2	Benefits to economy	<p>Importance of the Road:- The subject stretch is proposed for widening/ up gradation to 4 Lane with paved shoulder from Existing Km 38+500 to Km 51+246 to provide connectivity to Dimapur.</p> <p>Connectivity to Nagaland:</p> <ul style="list-style-type: none"> To Dimapur via NH 29 To Kohima via NH 29 (via Dimapur) <p>Connectivity to Manipur:</p> <ul style="list-style-type: none"> To Senapati via NH 29 & NH 2 (via Dimapur, Kohima) To Imphal via NH 29 & NH 2 (via Dimapur, Kohima, Senapati) It also connects important town Nagaon, Manja, Diphu, 	


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TABLE - B: ESTIMATION OF BENEFITS OF FOREST DIVERSION

Sl.	Parameters	Description
		<p>Salient features of the above mentioned project is as under:</p> <ol style="list-style-type: none"> Formation width -24.5m (Rural area), 20.5m (In Hill section), 24.5m (Bypass / Realignment area) Carriageway including Kerb shyness- 15 m (Rural /Bypass/Hill area). New Construction (Bypass/Realignment) length – 0.260 Km New Construction (EUP Approach) length – 2.975 Km Paved Shoulder -2.5m either side (Rural /Bypass area) and 2.0 m either side (VUP/ROB Location) and 1.5m either side (Hill section) Complete design in accordance with IRC:SP:84-2019 and Hill manual IRC SP:48-1998 Provision of culverts and drains etc. as per IRC:SP:84:2019 The proposed right of way is 42m in Rural and realignment sections. 35.5m in forest section, 42.5m in EUP approaches, 47m in built-up sections <p>Protection Work-</p> <ol style="list-style-type: none"> Provision of Stone Masonry Breast Wall- 660m (minimum) Provision of Stone Masonry Retaining Wall/Toe wall -4510m(minimum) Provision of RCC Retaining Wall - 4500m (minimum) Provision of W-Beam Crash Barrier- 16090m
3	No. of Population benefited due to specific project	Widening and Upgradation of NH-29 from 2 Lane to 4-Lane National Highway from Daboka (Km 38+500) to Lahorijan (Km 157+460) is going to benefit the entire population of Hojai District of Assam as well as the border districts of Nagaland and Manipur.
4	Economic benefits due to direct and indirect employment due to the project	During the construction stage employment will be generated for skilled and unskilled manpower. About 110 persons will be employed during the peak working season for construction resulting in about 16,500 man days would be required during the construction phase of two years. The local people will also get the opportunity to carry out contract works subject to their work capability/expertise- After the completion, about 10 people will be employed upkeep and maintenance of use road and other structures – The road will facilitate in tourism and horticulture where local population as per their experience and qualification will get benefitted
5	Cost of Acquisition facility on non-forest land wherever feasible	The cost of acquisition of land will amount to Rs. 59.92
6	Loss of (a) Agriculture and (b) Animal Husbandry products due to diversion of forestland	There is no any agriculture or Animal Husbandry activity going on along the project road stretch.
7	Cost of Rehabilitating the displaced persons as different from compensatory amounts given for displacement	Not Applicable There is no displacement due to the diversion of the land for the project purpose.
8	Cost of Supply of free fuel –wood to workers residing in or near forest area during period of construction	During the construction, alternative source of fuel like LPG and Kerosene will be provided to the workers residing in or near the forest area. A wood depot will be setup for supply of firewood as a backup fuels to avoid illegal felling of trees for cooking purpose.



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