South Central Railway



Office of the Deputy Chief Engineer (Construction-II) उपमुख्यइंजीनियरकार्यालय (निर्माण-II) Guntur

COST - BENEFIT ANALYSIS

Name of the proposal: Diversion of 32.25 Ha of forest land under FCA Act 1980 for "Construction of Double line between Diguvametta and Gajulapalli stations in GNT-GTL railway doubling project in Prakasam and Kurnool districts of Andhra Pradesh".

Purpose: The cost Benefit Analysis is under taken for proposed diversion of forest land. Division wise area proposed for diversion:

Name of The Forest Division	Name of the Reserve Forest	Area in Ha.
Nandyal	Sirivel	23.04
Uyyalawada	Gundlakamma	9.21
Total proposed diversion of forest in Ha.		32.25

Table— A: cases of under which a cost — Benefit Analysis for forest Diversion is required.

Sl. No.	Nature of Proposal	Applicable/Not Applicable	Remarks
1	All categories of proposals involving forest land up to 20 Ha in plains and up to 5 Ha. In hills	Applicable	Diversion in plains> 20 Ha. 32.25 Ha.
2	Proposal for defence installation purpose and oil prospecting (Prospecting only)	Not Applicable	
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction	Not Applicable	

4	All other proposals involving forest land more than 20 Ha. In plains and more than 5 ha. In hills including roads, transmission lines, minor, medium and major irrigation projects, hydro projects, mining activity, railway lines, locations specific installations, like micro wave stations, auto repeaters	Applicable	More than 20 Ha. Is to be diverted for widening of existing railway line.

Table -B: Estimate of cost of Forest Diversion

SI. No.	Parameters	Remarks	
1	Ecosystem services losses due to proposed forest diversion	o zaki s per ria.	
2	Loss of Animal husbandry production, including loss of fodder	Loss = 5 Tonne/hectare/year @ Rs. 125 per Tonne = 5 x 125 x 32.25 = Rs. 20,156.25 = 20,156.25 x 50 (For 50 years) =Rs. 10,07,812.50/- (or) = 10% of environmental costs (NPV) = 201.885 Lakhs x 10/100 = Rs.20.188 Lakhs	
3	Cost of human settlement	Taking higher of the values i.e. Rs. 20.188 Lakhs No human settlement is found	
4	Loss of public facilities and administrative infrastructure (roads, buildings, schools, dispensaries, electric lines, Railway etc).	No such loss	

5	Possession value of forest Per hectare rate along		T in the second of the second	
	land diverted	For diverted land area in hectare= 40 x 32.25 Ha		
			= 1290.00 Lakhs	
			(or)	
		=30% of environmental costs (NPV)		
		=30/100 x 201.885 Lakhs		
		=Rs. 54.95 Lakhs		
		Considering higher	of the above values i.e.,	
		1290.00 Lakhs.		
6	Cost of suffering to oustees	Not applicable		
7	Habitat Fragmentation Cost = 50% of NPV applicable as		thumb rule.	
		=201.885 *50%		
		=Rs. 100.942 Lakhs		
8	Compensatory afforestation	Approximate CA cost per h	na with 10 years maintenance	
	and soil & moisture	(considering cost escalation		
	conservation cost	CA Cost = 4 x (32.25 x 2) =		

Total Cost (Environmental Loss) (A) = Rs. 1871.015 Lakhs

Table —C: Existing guidelines for establishing benefits and forest diversion in CBA

Sl. No.	Parameters	Remarks
1	Increase in productivity attribute to the specific project	This stretch is predominantly known to all because of its forest land and small patches of agriculture lands
2	Benefits to the economy due to the specific project	Improvement of Railway Double line between Diguvametta and Gajulapalli stations in GNT-GTL railway doubling project will improve connectivity and more number of traffic potential to transport goods trains. In addition to above, substantial economic gain in terms of reduced trains operating cost and reduced travel time will be achieved.
3	No of population benefitted due to the specific project	This double line after completion will provide better connectivity to newly formed capital of Andhra Pradesh with eastern states.

4	Economic benefits due to centres, TV towers etc. direct	30000 man days benefit due to employment = INR 500
	and indirect employment due to	per day
	the specific project	=30000x500
		=1,50,00,000/- or 150 lakhs
5	Economic benefits due to compensatory afforestation.	CA will be taken up in 64.50 Ha. of land having a minimum density of 0.7. The ecological value for 50 years period for the density of 1.0 is Rs. 126.74 Lakhs per hectare as per forest act 1980. Therefore ecological gain would be Rs. 5722.311 Lakhs

Total benefit (B) = 5872.311 Lakhs

Benefit to cost ratio = (B) / (A)

= 5872.311/1871.015

=3.14(>1)

The benefit to cost ration being greater than 1 (i.e. 3.14) the project is found viable as per the analysis / described criteria.

Dy.Chief Engineer Con-H/GNT Dy.Chief Engineer (CON-II) दक्षिण मध्य रेलये, गुद्र S.C.Railway, GUNTUR