COST BENEFITS ANALYSIS

Name of the Project: Diversion of 31.53 ha. Of Forest land for Four Laning of existing Goa/Karnakata Border Panaji Section of NH-4A from Km. 97.000 to Km. 153.075 in the state of Goa (Mollem to Panaji section)

Name of the Proposal: Diversion of 31.53 Ha. Forest land under FCA, 1980 for road widening.

Purpose: The Cost of Benefit Analysis is undertaken for proposed diversion of Forest land.

Division- wise Area Proposed for Diversion:

Name of the Forest Division	Name of the Reserve Forest	Area (Ha.)
North Goa division		31.53 ha.

TABLE-A: Cases under which a Cost- Benefit Analysis for Forest Diversion is Required.

S No	Nature of Proposal	Applicable / Not Applicable	Remarks
1	All categories of proposals involving forest land up to 20 hectare in plains and up to 5 hectare in hills.	Applicable	Diversion in plains> 20 Ha. (31.53 ha)
2	Proposal for defence installation purposes 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 repeater centres, TV towers etc	Applicable	More than 20 Ha. is to be diverted for Road widening.

TABLE-B: Estimate of Cost of Forest Diversion

S No	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion.	NPV = 9.39 Lakh per Ha. = 31.53*9.39 = 296.067 lakh
2	Loss of animal husbandry productivity, including loss of fodder.	Loss = 5ton/Ha./year@ INR 100/- per tonne.

S No	Parameters	Remarks
		=5*31.53*100 =15,765*50 (for 50 years) =78.8250 lakh OR =10% of environment costs (NPV) =(10/100)*296.067 =29.6067 lakh
3	Cost of human settlement	No human settlement is found
4	Loss of public facilities and administrative infrastructure (Roads, Buildings, Schools, Dispensaries, electric lines, railways etc.) on forest land, which would require forest land if these facilities were diverted due to project.	No such loss
5	Possession value of forest land diverted.	Per hectare rate along highway = 55 lakh For 31.53 Ha. = 55*31.53 =1734.15 lakh OR =30% of environment costs (NPV) =(30/100)*296.067 =88.8201 lakh Considering INR 1734.15 Lakh
6	Cost of suffering to oustees.	Not Applicable
7	Habitat Fragmentation Cost	=50% of NPV applicable as thumb rule = (50/100)*296.067 =148.0335 lakh
8	Compensatory afforestation and soil & moisture conservation cost.	Approximate CA cost per hectare with 10 years maintenance considering cost escalation is =INR 9.2 lakhs CA cost = 9.2 lakh * (31.53*2) =580.152 lakh

Total Cost (Environment Loss) (A) = 2837.2275 lakh

TABLE-C: Existing Guidelines for Estimating Benefits of Forest Diversion in CBA

S No	Parameters	Remarks
1	Increase in productively attribute to the specific project.	During construction period, temporary employment generation = 500 people for 3 years- 547500 man-days. During operation period (including

S No	Parameters	Remarks
		toll) for 25 years, permanent employment for 100 people would be generated.
2	Benefits to economy due to the specific project.	Economic benefit in terms of increase in trade in saving vehicular operation and maintenance and saving travel time. However they have not been quantified as it will be a function of various government policy variables.
3	Number of population benefited due to specific project	Proposed project connects NH-4 at Balgaum in the state of Karnataka with NH-17 at Panaji in the state of Goa. thus it serves the needs of approximately 20.50.000 population. In addition, to local commuters/freight from Mollem to Panaji and vice-versa gets facilitated.
4	Economic benefits due to of direct and indirect employment due to the project.	Benefit due to temporary employment = INR 500 per day =500*547500 man days =2737.50 lakh Assuming 50% of labour in construction period as locals, utilities cost per day per person, assuming, INR 25 Total cost = 25*250*1095 =68.43750 lakh Benefit due to permanent employment with approx. annual income 2.8 lakh =100*2.8*25 =7000.00 lakh
5	Economic benefits due to compensatory afforestation	CA will be taken up in 63.06 Ha. Having a minimum density of 0.7 The ecological value for 50 years period for the density of 1.0 is INR 126.74 lakh per hectare as per Forest © Act 1980. Therefore ecological gain would be =7992.2244 lakh

Total Benefit (B) =17798.1619 lakh

Benefit to Cost Ratio = (B) / (A)

= 17798.1619/ 2837.2275

= 6.27(>1)

The Benefit to cost ratio being greater than 1 (i.e. 6.27) the project is found viable as per the analysis/described criteria.

Signature
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Place: Ponda

Date :.....................