

### Cost Benefit Analysis Guidelines for forest land diversion-2017

Guidelines for conducting cost-benefit analysis for projects involving forest diversion.


- (i) While considering proposal for diversion of forest land for non-forestry use, it is essential that ecological and environmental losses and eco-economic distress caused to the people who are displaced are weighted against economic and social gains.
- (ii) Whenever the forest land is involved in the development projects, the cost of ecosystem services and fragmentation of habitat of wildlife and economic distress caused to people depended on forest and the cost of settlement of people dependent on forest should also be added as the cost of forest diversion in addition to the standard project cost which would have been incurred by the user agencies without involvement of forest land while conducting the cost benefit analysis of the project. Similarly the benefit from the project accruing due to diversion of forest land and used in the project should also be accounted for in the benefit component in addition to the standard benefits of the project which would have been accrued without involvement of forest land while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iii) The cost of compensatory afforestation and its maintenance in future and soil & moisture conservation at present discounted value and future benefits from such compensatory forestation accruing over next 50 years monetized and discounted to the present value should be included as cost and benefits respectively of compensatory afforestation while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio)
- (iv) Table-A lists the details the types of projects involving forest land for which cost-benefit analysis will be required. Table-B lists the parameters according to which the cost aspect of forest land diverted for the development project will be determined while Table-C lists the parameters for assessing the benefits accruing to the project using of forest land.
- (v) A cost-benefit analysis as above should accompany the proposal sent to the Central Government for forest clearance under the forest conservation Act.



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**Table-A: Cases under which a cost-benefit analysis for forest diversion are required**

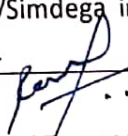
No.	Nature of proposal	Applicable/not applicable	Remarks
1	All categories of proposal involving forest land upto 20 hectares in plains and upto 5 hectare in hills	Not applicable	These proposal may be considered on a case to case basis any value judgement.
2	Proposal for defence installation purposes all oil prospecting (Prospecting only)	Not applicable	In view of national priority accorded to these sectors, the proposal would be critically assessed to help ascertain that the utmost minimum forest land is diverted for non-forest use.
3	Habitation, establishment of industrial units tourist lodges complex and other building construction.	Not applicable	These activities being detrimental to protection and conservation of forest, as a matter of policy, such proposais would be rarely entertained.
4	All other proposal involving forestland more than 20 hectare in plains and more than 5 hectare in hills including roads, transmission lines, minor, medium and major Irrigation projects, hydro projects, mining activity, railway lines, location specific installations like micro- wave stations, auto repeater centres, TV towers etc.	Applicable	These are cases where a cost-benefit analysis is necessary to determine when diverting the forest land to non-forest use in the overall public interest.

  
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**COST BENEFIT ANALYSIS FOR DIVERSION OF 76.477 Ha FOREST LAND**  
(under Simdega Forest Division) in Simdega District, JHARKHAND

**Table - B: Estimation of cost of Forest diversion**


S. No.	Parameters	Remarks
1.	Ecosystem services due to proposed forest diversion.	Assuming NPV @Rs 8,03,000/- per hec. for proposed diversion of 76.477hec. Forest Land, the economic value of loss of eco-system due to diversion of Forest land shall be $(76.477 \times 8,03,000/-) = 6,14,11,031/-$
2.	Loss of animal husbandry productivity, including loss of fodder.	Assuming Rs 2,958 per hec. for diversion of 76.477 hec. Forest Land, the loss of animal husbandry/productivity will be $76.477 \times 2958/- = 2,26,219/-$ or higher of 10% of NPV will be Rs 61,41,103/-.
3.	Cost of human re-settlement.	Since the area proposed for diversion is notified as Protected Forest & deemed forest. There is no displacement of peoples in forest area, hence there would no cost due to human re-settlement.
4.	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways, etc.) on forest land, which would require forest land if these facilities were diverted due to the project.	since the area proposed for diversion is notified as Protected forest & deemed forest, the public facilities such as Roads, Buildings, Schools, and Dispensaries etc. are not located within the Forest land proposed for diversion. Hence, there is no such infrastructure loss at all.
5.	Possession value of forest land diverted.	Cost component as possession value of land 30% of the NPV for diversion of 76.477 ha forest land will be Rs 1,84,23,309/-.
6.	Cost of suffering to oustees.	Since the area proposed for diversion is notified as Protected Forest & deemed forest. There will be no displacement of people in Forest Area, hence there would be no cost of suffering to oustees.
7.	Habitat Fragmentation Cost	As per thumb rule assuming 50% of NPV for diversion of 76.477 hec. Forest land, the Habitat fragmentation Cost would be Rs 3,07,05,515/-.
8.	Compensatory afforestation and soil moisture conservation cost.	Area of compensatory land will be 153.00 hec. & to be incorporated by DFO/Simdega in part-I of the Forest Diversion Proposal.

  
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**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.	Cost of project from Kurkura to Orga Railway station (Village – Ketka to Dhelsera in Simdega District) is Rs. 1724.2 Cr x 55 km / 158.5 km = Rs. 598.303 Cr. The Railway's doubling project is expected to increase GDP by 1.5%. Therefore saving of Rs 8,97,450/- is expected due to modal shift from Road to Rail.
2.	Benefits to economy due to the specific project.	Reduced unit cost of transportation resulting in market competitive rail tariff for customer and reduced transit time. Modal Shift of freight from road to the low carbon-intensive mode-rail transport. Assisting in growth of the Rourkela and Bokaro steel plants by way of faster and easier movement of raw material and finished products. The doubling project would generate direct and indirect source of employment. Opportunities for construction (equipment, machinery & manufacturing) industry. Reduction in Green House Gas Emission.
3.	No. of population benefited due to specific project.	The project connects 2 states i.e. Jharkhand and Odisha directly. In addition it will help connection of the north as well as to the South and Western India. Approximately 32 Million Population of Jharkhand would be benefited.
4.	Economic benefits due to direct and indirect employment due to the project.	1.50 lakh man days will be benefited in terms of Salary and Wages @ Rs 403/day = RS 6,04,50,000/- Establishment & Development of Industrial corridors & logistics hubs along DECO alignment.
5.	Permanent employment to be generated due to this Project	150 persons
6.	Economic benefits due to compensatory afforestation.	To be incorporated by DFO/Simdega in part II of the Forest diversion.

  
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# SUMMARY OF COST-BENEFIT ANALYSIS FOR THIS PROJECT.

S. No.	Cost (in lakhs)	Benefit (in Lakhs)
1.	Ecosystem Service Loss - Rs. 6,14,11,031/-	1.50 lakh man days will be benefited in terms of Salary and Wages @ Rs 403/day = Rs.6,04,50,000/-
2.	Loss of Animal Husbandry including Fodder Rs. 61,41,103/-	Basic living amenities including alternative fuel (LPG, Solar Cooker etc.) will be supplied to labours/workers. Construction period - 2.0 years. Number of labours at peak time – 250 Per head cost of fuel - Rs 20 Total Cost - 36,50,000/-
3.	Possession value of Forest Land Rs. 1,84,23,309/-	To be incorporated by DFO/Simdega in Part 1 of the Forest Diversion.
4.	Habitat Fragmentation Cost Rs. 3,07,05,515/-	Increase in Productivity - due to doubling project GDP growth is expected to increase by 1.5%.
5		Benefits to Economy due to Project (A) (i) Cost of Freight through of one Truck from Hatia to Bondamunda = Rs. 20000/- (capacity = 10 ton) (ii) Capacity of one train rake = 56 wagon x 60 T = 3360 ton. Thus one Rake of goods train can accommodate capacity of 336 trucks Cost of one Train load Freight = Rs. 50 lakhs (iii) of Freight through 336 Trucks @ Rs. 20,000= 67,20,000 Total saving = 17,20,000/- per rake.  Assuming movement 10 rakes per day for 1 years, total saving = Rs. 17,20,000/- x 10 x 365 = Rs. 627,80,00,000/-  (B) Savings due to other benefits has not been monetized.
6	Compensatory Afforestation Cost Rs. 2,44,44,170/-	
	Total Cost: Rs. 14,11,25,128/-	Total Benefit: Rs. 634,21,00,000/-
Cost Benefit Ratio = Benefit/loss = 634,21,00,000 / 14,11,25,128= 44.94		



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