

COST BENEFIT ANALYSIS

Name of Project: Protected forest land to be diverted for Doubling of Existing Railway Track from (Km No.- 1.000 to 125.000) Bhatni - Aunrihar Railway line in Forest Division -Deoria (From Km. 1.000 to 28.226), Forest Division - Ballia (Km. 28.226 to 52.952 in Ballia district), Forest Division - Mau (Km. 52.952 to 81.874 in Mau district) and Forest Division - Ghazipur (Km. 81.874 to 125.000 in Ghazipur district), Uttar Pradesh.

Nature of Proposal: Doubling of Existing Railway Track

Total Length of the project road section: 124.000 Km.

Number of District through which Railway Line is traverses: Deoria, Ballia, Mau and Ghazipur.

Total Forest Area Proposed for Diversion: 162.8776

Purpose: The Cost Benefit Analysis is being undertaken as the proposed diversion of forest land being affected due to Doubling of Existing Railway Track (2nd Line) and forest land proposed for diversion is > 20 Ha.

(a) Parameters for Evaluation of the Loss of Forests

Sr No.	Nature of Project	Applicable/Not Applicable	Remarks																								
1.	Ecosystem Services losses due to Proposed forest diversion	Economic Value of Ecosystem services due to diversion of forest = Proposed Forest area x NPV Rate per Ha Net Present Value (NPV) for forest land of Eco-class III 6,26,000/- and 8,03,000/- per Ha. Therefore, division wise ecosystem services losses due to proposed diversion of forest land are as follows:	<table border="1"> <thead> <tr> <th>Division</th><th>Proposed Forest Area (ha.)</th><th>NPV Rate</th><th>Ecosystem Services Losses in INR.</th></tr> </thead> <tbody> <tr> <td>Deoria</td><td>38.8283</td><td>8,03,000/-</td><td>31179124.90</td></tr> <tr> <td>Ballia</td><td>33.2900</td><td>6,26,000/-</td><td>20839540.00</td></tr> <tr> <td>Mau</td><td>29.5769</td><td>6,26,000/-</td><td>18515139.40</td></tr> <tr> <td>Ghazipur</td><td>61.1824</td><td>6,26,000/-</td><td>38300182.40</td></tr> <tr> <td>Total</td><td>162.8776</td><td></td><td>108833986.70</td></tr> </tbody> </table> <p>Total 6715 Trees will be affected due Forest land Proposed for diversion (2052 Trees in Deoria, 2172 Trees in Ballia, 1049 Trees in Mau and 1442 Trees in Ghazipur) Total Value of Trees is :11,68,410/-</p>	Division	Proposed Forest Area (ha.)	NPV Rate	Ecosystem Services Losses in INR.	Deoria	38.8283	8,03,000/-	31179124.90	Ballia	33.2900	6,26,000/-	20839540.00	Mau	29.5769	6,26,000/-	18515139.40	Ghazipur	61.1824	6,26,000/-	38300182.40	Total	162.8776		108833986.70
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2.	Loss of animal husbandry, productivity including loss of fodder	Nil																									
3.	Cost of human resettlement	Nil																									

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4.	Loss of public facilities and administrative infrastructure (roads, buildings, schools, dispensaries, electric lines, railways etc) on forest land or which would require forest land if these facilities were diverted due to the Project.	There are no Public facilities and administrative infrastructure (roads, buildings, schools, dispensaries, electric lines, railway etc.) on proposed diverted forest land.																		
5.	Environmental losses (soil erosion, effect on hydrological cycle, wild life habitat, microclimatic upsetting of ecological balance)	<p>As per Forest (Conservation) Act, 1980 the environmental loss for a 50 years period for the density of 1.0 is INR 126.74 Lacs per hectare, The division wise environment loss is as follows:-</p> <table border="1"> <thead> <tr> <th>Division</th><th>Proposed Forest Area (ha.)</th><th>Environmental Loss in INR</th></tr> </thead> <tbody> <tr> <td>Deoria</td><td>38.8283</td><td>147632962.26</td></tr> <tr> <td>Ballia</td><td>33.2900</td><td>126575238.00</td></tr> <tr> <td>Mau</td><td>29.5769</td><td>112457289.18</td></tr> <tr> <td>Ghazipur</td><td>61.1824</td><td>232627721.28</td></tr> <tr> <td>Total</td><td>162.8776</td><td>619293210.72</td></tr> </tbody> </table> <p>Therefore Per hectare Environmental loss is 38,02,200 Per Hectare and Total environmental loss for the project is = 6192.93 Lakhs.</p>	Division	Proposed Forest Area (ha.)	Environmental Loss in INR	Deoria	38.8283	147632962.26	Ballia	33.2900	126575238.00	Mau	29.5769	112457289.18	Ghazipur	61.1824	232627721.28	Total	162.8776	619293210.72
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6.	Possession value of forest land	30% of environment costs due to loss of forests = 30% x 619293210.72/- = 185787963.22/-																		
7.	Suffering to outsee	Nil																		

Therefore, Current Environment Net loss
108833986.70 (Ecosystem Losses) + 1168410/- (Trees Values) + 619293210.72/-
(Environmental Loss) + 185787963.22/- (Possession Value of forest land) = INR
915083570.64

Expenditure for development and maintenance of the project for 15 years
= Cost of Project + Renewal cost of BC for two cycle
= INR 11,77,96,00,000/- + 5,88,98,00,000/-
= INR 17,66,94,00,000/-

Net Total Losses+Cost = INR 915083570.64 + 17,66,94,00,000/-
= INR 18,58,44,83,570.64/-

(b) Parameters for evaluation of Benefit Not withstanding Loss

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S.No.	Parameter	Description
1.	Increase in productivity attributable to the specific Project	<p>In Lieu of total area to be affected in forest land it is proposed to undertake at least twice of the affected trees as compensatory afforestation as per Forest (Conservation) Act, 1980. Since, due to the current project there will be total <u>6715</u> no. of felling of trees thus; total <u>13430</u> trees are to be planted as per compensatory afforestation.</p> <p>The CA will be done in 326.00 ha of degraded forest land, which is down the line after ten years would be having the density of 1.0. The Compensatory Afforestation cost will be INR 5,29,13,629/-</p> <p>The ecological value for a 50 years period of density of 1.0 is 126.74 lac per hectare. By considering the min 0.5 density the ecological gain for this project would be INR 2,06,43,10,702.40/-</p>
2.	Benefits to economy due to specific project	<p>Socio economic benefits due to the railway line project include: Doubling of Bhatni - Aurinhar route will allow shifting of traffic and thereby decongestion it.</p> <p>The project will generate employment to several unemployed, thus reducing the rate of unemployment and will lead to increase in GDP of India.</p> <p>Improve punctuality of trains & less wear and tear of existing rail line will benefit to overall growth of country.</p> <p>In general there will be enhancement of socio-economic condition of the area along the project corridor.</p> <p>The overall mission is to increase the GDP of the said region and make it comparable with the nation GDP.</p>
3.	No. of population benefited due to specific project	The Population of 750000 People from districts Deoria, Ballia, Mau and Ghazipur will be benefited directly or indirectly.
4.	Economic benefit due to direct and indirect Employment Potential	Approximately 75 permanent employment and 14,000 man days of temporary employment will be generated due to the Project.

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5.	Economic benefit due to specific Project	Project Details	Increasing Rate of Cost year	Project cost after 50 Years	Current Cost Involve in Construction of Project	Net Profit in 50 year
		Protected forest land to be diverted for Doubling of Existing Railway Track from (Km No.- 1.000 to 125.000) Bhatni - Aunrihar Railway line in Forest Division - Deoria (From Km. 1.000 to 28.226), Forest Division - Ballia (Km. 28.226 to 52.952 in Ballia district), Forest Division - Mau (Km. 52.952 to 81.874 in Mau district) and Forest Division - Ghazipur (Km. 81.874 to 125.00 in Ghazipur district)	8%	58,89,80,00,000/-	11,77,96,00,000	47,11,84,00,000/-
So benefit of economy in 50 years = 47,11,84,00,000/-						

Therefore Project Benefit:

5,29,13,629 (CA cost) + 2,06,43,10,702.40/- (Ecological gain) + 47,11,84,00,000/-

(Economic gain) + 59,67,37,588 (Saving) + 108833986.70 (NPV)

Net Profit : INR 49,94,11,95,906/-

Therefore Benefit Cost ratio = $49,94,11,95,906 / 18,58,44,83,570.64 / - = 2.6872$

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