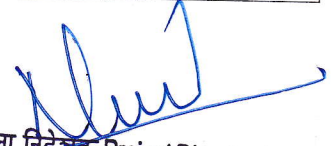


### Cost Benefit Analysis

**Project:-** 4 L of Addahole (Near Gundya) to Bantwal Cross Section (Pkg-01) from Design Km. 255.140 to Design Km. 270.270 of NH-75 (Old NH-48)

#### **A. Cases under which a cost-benefit analysis for forest diversion are required**

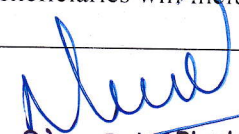
S. No.	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion.	<p>Economic value of loss of eco-system services due to diversion of forests shall be the net present value (NPV) of the forest land being diverted as prescribed by the Central Government (MoEF&amp;CC).</p> <p>All the reference parameters were qualified in the net present value for the forest land suggested by Central Empowered Committee constituted by Supreme Court of India.</p> <p>Presently NPV per Ha is 10.43 lakhs per Ha</p> <p>Hence total NPV cost due to forest Diversion for 2.5315 Ha is as below <math>2.5315 \text{ Ha} \times \text{Rs } 10.43 \text{ Lakhs} = \text{Rs } 26.4035 \text{ Lakhs}</math></p>
2	Loss of animal husbandry productivity, including loss of fodder.	<p>10% of NPV</p> <p>Hence <b>Rs 2.64035 Lakhs.</b></p>
3	Cost of human resettlement.	<p>There is no human resettlement in the proposed forest land being diverted to the said project.</p> <p>Hence it is not applicable.</p>
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.	<p>There is no loss to public facilities and administrative infrastructure on forest land of this project.</p>
5	Possession value of forest land diverted.	<p>30% of environmental costs (NPV) due to loss of forests or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum.</p> <p>Considering the 30 % of the NPV, the possession value will be <b>Rs 7.92105 Lakhs</b></p>

  
परियोजना निदेशक Project Director  
भारतीय राष्ट्रीय राजमार्ग प्राधिकरण  
National Highways Authority of India  
परियोजना कार्यान्वयन इकाई-मंगलूर  
Project Implementation Unit - Mangalore

S. No.	Parameters	Remarks
6	Cost of suffering to oustees.	Not applicable since there is no resettlement from forest area for development of said project.
7	Habitat Fragmentation Cost.	The project is 4 L of Addahole (Near Gundya) to Bantwal Cross Section (Pkg-01) from Design Km. 255.703 to Design Km. 270.270 of NH-75 (Old NH-48) and there is no fragmentation of any habitat involved in this.
8	Compensatory Afforestation and soil & moisture conservation cost.	The proposed forest land is to 4 L of Addahole (Near Gundya) to Bantwal Cross Section (Pkg-01) from Design Km. 255.140 to Design Km. 270.270 of NH-75 (Old NH-48) Hence the project is expected to have only minor impact on environment.  Compensatory Afforestation cost in forest land is estimated to be  $2.5315 \text{ ha} \times \text{Rs } 15.93 \text{ lakhs} = \text{Rs } 40.3265 \text{ Lakhs}$
	Total Cost due to forest land diversion for the project	Parameter 01 + parameter 02 + parameter 05 + parameter 08.  $\text{Rs } 26.4035 \text{ Lakhs} + 2.64035 \text{ Lakhs} + \text{Rs } 7.92105 \text{ Lakhs} + \text{Rs } 40.3265 \text{ Lakhs} = \text{Rs } 77.2914 \text{ Lakhs}$

**B. Benefits, notwithstanding Loss of forest for Diversion of 2.5315 ha of forest land additional for 4 L of Addahole (Near Gundya) to Bantwal Cross Section (Pkg-01) from Design Km. 255.140 to Design Km. 270.270 of NH-75 (Old NH-48) .**

Sr. No.	Parameters	Remarks
1	Increase in productively attribute to the specific project.	The monetary benefits due to highway will total to <b>Rs 2500 Lakhs</b> in design life of 5 years and O& M of 28 years due to reduction in travel time, vehicle operating cost, fuel consumption, accident risks, congestion, increased economic growth along the project influenced areas, reduced environmental pollution etc.
2	Benefits to economy due to the specific project.	Highway development will trigger incremental economic development in the project influence area with opportunities for new commercial and industrial establishments. Better connectivity with reduced travel time and better road geometrics will result in saving in time travel, fuel, and health improvements due to smoother road and congestion reduction which will add to economic growth of the state and interstate and interstate commuters.
3	No. of population benefited due to specific project.	Since the project stretch is having national importance and is a notified National Highway, the direct beneficiaries will include both state and interstate.

  
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 भारतीय राष्ट्रीय राजमार्ग प्राधिकरण  
 National Highways Authority of India  
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Sr. No.	Parameters	Remarks																																																																						
4.	Economic benefits due to of direct and indirect employment due to the project.	<p>More local people will be benefited during construction as well as operation of this National Highway.</p> <p>The project results in <b>Rs 149.58 Lakhs</b> through employment generations as under.</p> <table><tr><th>Sl no</th><th>Employment type</th><th>Construction</th><th>Maintenance</th></tr><tr><td>01</td><td>Skilled</td><td>13</td><td>2</td></tr><tr><td>02</td><td>Semi Skilled</td><td>17</td><td>3</td></tr><tr><td>03</td><td>Unskilled</td><td>50</td><td>5</td></tr><tr><td></td><td></td><td>80</td><td>10</td></tr></table> <p>The economic value per year out of this employment potential is as under.</p> <p>a) During construction</p> <table><tr><th>Sl no</th><th>Employment type</th><th>MD</th><th>Rate/ day</th><th>amount</th></tr><tr><td>01</td><td>Skilled</td><td>4680</td><td>650</td><td>3042000</td></tr><tr><td>02</td><td>Semi Skilled</td><td>6120</td><td>450</td><td>2754000</td></tr><tr><td>03</td><td>Unskilled</td><td>18000</td><td>380</td><td>6840000</td></tr><tr><td></td><td></td><td></td><td></td><td>12636000</td></tr></table> <p>Employment cost during construction works out to <b>Rs 126.36 Lakhs/year</b></p> <p>b) During Maintenance</p> <table><tr><th>Sl no</th><th>Employment type</th><th>MD</th><th>Rate/ day</th><th>amount</th></tr><tr><td>01</td><td>Skilled</td><td>720</td><td>650</td><td>468000</td></tr><tr><td>02</td><td>Semi Skilled</td><td>1080</td><td>450</td><td>486000</td></tr><tr><td>03</td><td>Unskilled</td><td>3600</td><td>380</td><td>1368000</td></tr><tr><td></td><td></td><td></td><td></td><td>2322000</td></tr></table> <p>Employment cost during operation phase works out to <b>Rs 23.22 lakhs /year</b></p>	Sl no	Employment type	Construction	Maintenance	01	Skilled	13	2	02	Semi Skilled	17	3	03	Unskilled	50	5			80	10	Sl no	Employment type	MD	Rate/ day	amount	01	Skilled	4680	650	3042000	02	Semi Skilled	6120	450	2754000	03	Unskilled	18000	380	6840000					12636000	Sl no	Employment type	MD	Rate/ day	amount	01	Skilled	720	650	468000	02	Semi Skilled	1080	450	486000	03	Unskilled	3600	380	1368000					2322000
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5	Economic benefits due to Compensatory afforestation.	<p>The standard Compensatory Afforestation Restoration factor(SCARF) has been estimated to further the applicable NPV based on the proportion of the value of ecosystem services restored due to compensatory afforestation. SCARF Adjustment of Rs 40.80461 lakhs per hectare is considered for this project.</p> <p>5.063 Ha X Rs 40.80461 lakh / Ha =<b>Rs 206.593 Lakhs.</b></p>																																																																						

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 Project Implementation Unit - Mangalore

Sr. No.	Parameters	Remarks
	Total benefit due to project not withstanding loss of forest.	Parameter 01 + parameter 04 + parameter 05. = Rs 2500 Lakhs + Rs 149.58 Lakhs + Rs 206.593 Lakhs. = Rs 2856.173 Lakhs

**C. Cost Benefit Ratio**

Cost Benefit Analysis	
Total Cost due to forest land diversion for the project	Rs 77.2914 Lakhs
Total benefit due to project not withstanding loss of forest.	Rs 2856.173 Lakhs
Cost benefit Ratio	36.953

  
 परियोजना निदेशक Project Director  
 भारतीय राष्ट्रीय राजमार्ग प्राधिकरण  
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