

# Mumbai-Ahmedabad High Speed Railway Project



## Annexure-5

### Combined Cost Benefit Analysis

## COST BENEFIT ANALYSIS REPORT

(As per MoEFCC Guideline 7-69/2011-FC (Pt) dtd. 01-August-2017)



**Forest Area Proposed for Diversion- 0.0562 Ha.**

**Table-A: Estimation of Cost of Forest Diversion**

S. No.	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion	Economic value of loss of eco-system services due to diversion of forest is equal to NPV= 130275874/- INR
2	Loss of animal husbandry productivity, including loss of fodder	10% of the NPV= 13027587.4/- INR
3	Cost of human settlement	There would not be any displacement due to proposed diversion of forest land. Hence, the cost of human settlement= Nil
4	Loss of public facilities and administrative infrastructure (roads, building, school, dispensaries, electric lines, railways etc.) on forest land, which would require forest land if these facilities were diverted due to the project.	There would not be any loss of public facilities and administrative infrastructure.  Hence the cost on account of loss of public facilities and administrative infrastructure= Nil
5	Possession value of forest land diverted	30% of NPV= 39082762.2/- INR
6	Cost of suffering to oustees	In view of S. No. 3, the cost of suffering to oustees= Nil.
7	Habitat fragmentation Cost	50% of NPV=65137937/- INR
8	Compensatory afforestation and soil & moisture conservation cost	Rs. 2709151/- INR <b>Say 27.09 LAKH</b>
<b>TOTAL</b>		<b>250233311/- INR Say 2502.33 Lakh</b>
<b>Rupees Twenty-Five Crore Two Lakh Thirty-Three Thousand Three Hundred Eleven Only.</b>		

**Table-B: Estimation of benefits of Forest-Diversion in CBA**

S. No.	Parameters	Description
1	Increase in productivity attribute to the specific project.	Implementation of entire project will ensure fast and safe mode of transport, reducing significant travel by achieving speed of 350 km/hour. Project also aims to enhance the industrial, commercial, agricultural, tourism sectors development resulting in to employment generation, capacity building as well as connectivity between various industrial places like Ahmedabad, Surat, Valsad and Mumbai. In monetary terms it may be to the tune of Rs. 1200.00 Lakh INR.
2	Benefits to economy	Due to the proposed project 70% travel time will be saved, Fuel and maintenance of vehicles will be reduced at about 75%. It will provide safe and faster transport link between important cities like Ahmedabad, Bharuch, Vadodara, Surat, Valsad, Mumbai and serve better connectivity to Industrial growth center. Traffic and Tourism of area will be uplifted approximately 40%. The above benefit in term of rupees is about 500.00 Lakh INR.

S. No.	Parameters	Description																																																																														
3	No. of population benefited	Entire population of the project corridor and proposed growth centre area will be benefited due to construction of this high speed rail. The number of population worked out to be 23407226.																																																																														
4	Economic benefits due to direct and indirect employment due to the project	<div>More local people will be benefited during construction as well as operation of this HSR corridor</div> <div>Rs. 2.76 Crores through employment generations as under :</div> <table><thead><tr><th></th><th></th><th>During Construction</th><th>During Maintenance</th></tr></thead><tbody><tr><td>i)</td><td>Skilled</td><td>5000</td><td>3000</td></tr><tr><td>ii)</td><td>Semiskilled</td><td>8000</td><td>6000</td></tr><tr><td>iii)</td><td>Unskilled</td><td>20000</td><td>8000</td></tr><tr><td></td><td></td><td>-----</td><td>-----</td></tr><tr><td></td><td>Total</td><td>33000</td><td>17000</td></tr><tr><td></td><td></td><td>-----</td><td>-----</td></tr></tbody></table> <div>This further per hector per year out as under :</div> <div>a) <b>During construction :</b></div> <table><thead><tr><th>M.D.</th><th></th><th></th><th>Rate</th><th>Amount</th></tr></thead><tbody><tr><td>i)</td><td>Skilled</td><td>5000</td><td>1000</td><td>50,00,000</td></tr><tr><td>ii)</td><td>Semiskilled</td><td>8000</td><td>600</td><td>48,00,000</td></tr><tr><td>iii)</td><td>Unskilled</td><td>20000</td><td>400</td><td>80,00,000</td></tr><tr><td></td><td>Total</td><td>33000</td><td></td><td>1,78,00,000</td></tr></tbody></table> <div>b) <b>During maintenance :</b></div> <table><thead><tr><th>M.D.</th><th></th><th></th><th>Rate</th><th>Amount</th></tr></thead><tbody><tr><td>i)</td><td>Skilled</td><td>3000</td><td>1000</td><td>30,00,000</td></tr><tr><td>ii)</td><td>Semiskilled</td><td>6000</td><td>600</td><td>36,00,000</td></tr><tr><td>iii)</td><td>Unskilled</td><td>8000</td><td>400</td><td>32,00,000</td></tr><tr><td></td><td>Total</td><td>17000</td><td></td><td>98,00,000</td></tr></tbody></table> <div>Total benefits works out to Rs. 27600000 per year for 131.3016 Hector. <b>Say Rs 276 Lakh INR</b></div>			During Construction	During Maintenance	i)	Skilled	5000	3000	ii)	Semiskilled	8000	6000	iii)	Unskilled	20000	8000			-----	-----		Total	33000	17000			-----	-----	M.D.			Rate	Amount	i)	Skilled	5000	1000	50,00,000	ii)	Semiskilled	8000	600	48,00,000	iii)	Unskilled	20000	400	80,00,000		Total	33000		1,78,00,000	M.D.			Rate	Amount	i)	Skilled	3000	1000	30,00,000	ii)	Semiskilled	6000	600	36,00,000	iii)	Unskilled	8000	400	32,00,000		Total	17000		98,00,000
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5	Economic benefits due to Compensatory Afforestation	<div>a) Benefits due to increase in forest cover due to CA=34860575/- INR</div> <div>b) Benefits due to Carbon storage due to CA= 34332545/- INR</div> <div>Total= 69193120/-INR</div>																																																																														
Total		Rs. 2667.93 Lakh INR																																																																														

The Cost to benefit ratio is the ratio of estimated cost (Table A) and estimated benefits (Table B). The cost to benefit ratio for this forest proposal comes out as under:

Total estimated Cost due to diversion of forest in Rs. Lakh	Estimated benefits due to project in Rs. Lakhs	Cost to benefit Ratio
2502.33	2667.93	1.07

**Note:** While calculating cost ratio as above, only parameters of evaluation of loss of forests and parameters of evaluation of benefits approved by the Government of India in their guidelines issued vide No. 7-69/2011-FC (Pt.) dated 01-August-2017 by the MoEFCC, have been taken into consideration.