

COST-BENEFIT ANALYSIS

Name of the Project : Diversion of forest land for Construction of Under Ground Petroleum Products Pipelines and associated facilities from Mahul (Mumbai Suburban District) to Rasayani (Raigad District) in Maharashtra

Estimation of cost of forest diversion:

Sr no	Parameter	Cost in INR	Remarks
1	Eco-system service losses due to proposed forest diversion 18.22 cr	Area 0.0085 ha X NPV for Eco- Class of density 0.1 and below Rs. 7.30 Lakh/ha = 0.062 lakhs	Economic value of loss of eco-system services due to diversion of forest shall be the Net Present value (NPV) of the forest land being diverted as prescribed by MoEFCC vide circular dated 01.08.2017
2	Loss of animal husbandry, productivity including loss of fodder	NIL	Since the pipeline is underground passing along road shoulder and land shall be handed over to respective owners.
3	Cost of human settlement	NIL	There is no resettlement involved Hence cost of resettlement is NIL
4	Loss of public facilities and administrative infrastructure (roads, Buildings, Schools, dispensaries, electric lies, railway etc.) on forest land or which would require forest land if these facilities were diverted to the project	Nil	There are no such public facilities and administrative infrastructure on the forest land which would require relocation, hence the loss on this account is Nil.
5	Possession value of forest land diverted	30% \times 0.062=0.00186 Lakhs	As per NPV of MoEFCC circular dated 01.08.2017.
6	Cost of suffering to ousters	Nil	Since no human resettlement is involved, there is no loss on this account.
7	Habitat fragmentation cost	Nil	Since, there will not be habitat fragmentation due to this project.
8	Compensatory afforestation and soil & moisture conservation cost	Nil	As per NAV of MoEF
	Total Cost= (A) =	0.06386 Lakhs	

Estimation of Benefits due to forest diversion:

Sr no	Parameter	Cost in INR	Remarks
1	Increase in productivity attributable to the specific project	18.22 Crores	LPG pipeline shall supply LPG to domestic and commercial LPG to nearby district of Raigad for local people and industrial belt like MIDC.
2	Benefits to economy due to the specific project	-	Same as above, hence not considered
3	No of population benefited due to specific project	--	Easy availability of LPG Product to people in Maharashtra and nearby states.
4	Economic benefits due to the direct and indirect employment due to the project	-	Direct employment shall be generated after construction of Pipeline for ROW during construction phase (4 line walkers, 1 nos supervisors. Indirect employment during operation and maintenance work of continuous nature.
t5	Economic benefits due to Compensatory afforestation	0.062 Lacks	Equivalent to NPV of the diverted forest land to be covered under plantation in Compensatory afforestation.
	Total Cost	18.22066 Crores	

Loss per ha. Of Forest land	= Total costs/ Total Forest land = 0.06386 /0.0085 ha. =7.512 lakhs /ha
Total area occupied by project	= 0.3304 ha.
So, Benefit/ha. From project	= Total benefit / Total area = 18.22066/0.3304 = 55.14 Lakhs/ ha.
Benefit to Cost ratio	55.14 Lakhs/ ha. = ----- 7.512 Lakhs/ ha. = 7.340

The project shows Benefit to Cost ratio “positive”

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 proposals would be rarely entertained
4	All other proposals involving forest land more than 20 hectares in plains and more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation projects, mining activity, railway lines, location specific installations like micro-wave stations, auto repeater centers, TV towers etc.	Not 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

Table-B: 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 shall be the net present value NPV) of the forest land being diverted as prescribed by the Central Government (MoEF& CC)
2	Loss of animal husbandry productivity, including loss of fodder.	There is no loss of animal husbandry productivity or any kind as its passing along existing road shoulder.
3	Cost of human resettlement	There shall be no human resettlement since its cross country pipeline passes through open areas.
4	Loss of public facilities and administrative infrastructure (Rods, building, schools, dispensaries, electric lines railway, etc) on forest land, which would require forest land if these facilities were diverted due to the project.	Same as above point no. 3.
5	Possession value of forest land diverted	30% of environment costs (NPV) due to loss of forest 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.
6	Cost of suffering to outtees	No outtees shall be suffered as it is passing on road shoulder.
7	Habitat Fragmentation Cost.	While the relationship between fragmentation and forest goods and services is complex, for the sake of

		simplicity the cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule.
8	Compensatory afforestation and soil & moisture conservation cost	The actual cost of compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted value

Table – C Existing guidelines for estimating benefits of forest-diversion in CBA

Sr. No.	Parameters	Remarks
1	Increase in productivity attribute to the specific project	To be quantified & expressed in monetary terms avoiding double counting.
2	Benefits to economy due to the specific project	The international economic benefits in monetary terms due to the activities attributed to be specific project
3	No. of population benefits due the specific project	People in Maharashtra shall easily get LPG.
4	Economics benefits due to of direct and indirect employment due to the project	As per the Detailed project report
5	Economic benefits due to Compensatory afforestation	Benefits from such Compensatory Afforestation accruing over next 50 years monetized and discounted to the present value should be included as benefits of Compensatory Afforestation. *For benefits of CA the guideline of the Ministry for NPV estimation may be consulted.

Note-1: Net Present value (NPV) of environment and ecosystem services loss:

The concept of Net Present value of the forest land diverted is a scientific method of calculating the environmental cost and other losses caused due to diversion.