

COST – BENEFIT ANALYSIS

[As per cost (Conservation) Rules 2003, Rules 6, Form 'A' S. No. 1 (v) and
Guidelines – application of Forest Act 1980, Chapter II (2.6)]

EVALUATION OF LOSS OF FORESTS

S.No.	Parameters	Remarks	Monetary Equivalent
1	Ecosystem services losses due to proposed forest diversion	Economic value of loss of ecosystem 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). Note: In case of National Parks the NPV shall be 10 times the normal NPV and in case of Wildlife Sanctuary the NPV shall be five(5) times the normal NPV or otherwise prescribed by the ministry or any other competent authority.	NPV for the diverted forest area is considered as Rs.9.39 lakh / Ha Forest area to be diverted = 4.0 Ha. Rate per hectare for Khellong = 9.39 Lakh Forest Division = 9.39 x 4.0 = 37.56 Lakh
2	Loss of animal husbandry productivity, including loss of fodder	To be quantified and expressed in monetary terms or 10% of NPV applicable whichever is maximum	NIL. Loss of animal husbandry productivity including fodder plants is 'NIL' as there is no animal husbandry activity and rearing of animals and also there is no cultivation of fodder plants in proposed area.
3	Cost of human resettlement	To be quantified and expressed in monetary terms as per approved R/R plan	NIL. As there is no displacement of local people because of this industrial project, the question of human resettlement does not arise. As such the loss on this account is 'NIL'
4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways etc.) on forest land, or which would required forest land if these facilities were diverted due to the project.	To be quantified and expressed in monetary terms on actual cost basis at the time of diversion	NIL. There is no any public facilities and administrative infrastructure like roads, buildings, schools, dispensaries, electric lines, railways etc. located in the proposed area. So, there is no such infrastructures available in the proposed area and therefore the loss on this account will be 'NIL'

5	Possession value of forest land diverted	30% of environmental costs (NPV) due to loss of forest or circle rate of adjoining area in the district should be added as a cost of component as possession value of forestland whichever is maximum.	<p>There will be minimal impact of the environment as most of the proposed area is open land with scattered bushes and bamboos. The plantation of ornamental trees and flowers will be carried out in space between the industrial units.</p> <p>Hence, the environmental loss for 4.0 ha over a period of 50 years works out as under :-</p> <p>Environmental Loss for 50 years :- $150 \times 0.4 \times 4.0 = 240 \text{ Lakhs}$</p> <p>Environmental Loss for 50 years : $240 / 50 = 4.8 \text{ Lakhs}$</p> <p>Environmental Loss per year and per ha. $4.8 / 4 = 1.20 \text{ Lakhs}$</p> <p>Therefore, environmental loss per year for 4.0 ha. for 50 year lease will be $= 4.80 \times 50.0 = 240.00 \text{ Lakhs}$</p> <p>Here, we have considered 30% of environmental cost (NPV). $= 240.00 \times \frac{30}{100} = 72.00 \text{ Lakh}$</p>
6	Suffering to oustees	The social cost of rehabilitation of oustees (in addition to the cost likely to be incurred in providing residence, occupation and social services as per R/R plan) be worked out as 1.5 times of what oustees should have earned in two years had he not been shifted	Not applicable. Since, there is no any displacement of people due to this Industrial project. Hence, the social cost of rehabilitation of oustees is NIL.
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	<p>Here, we have considered 50% of NPV. $= 37.56 \times \frac{50}{100} = 18.78 \text{ Lakh}$</p>
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	<p>Cost of CA is considered as Rs. 3.50 lakh per hectare $= 4.0 \times 3.5 = 14.00 \text{ Lakh}$</p>

Therefore, the total loss of forest, as per the approved parameters, works out to as given hereunder:

Total of cost parameters No.(1+2+3+4+5+6+7+8)

= ₹ 142.34 Lakh


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Estimation of Benefits of Forest Diversion in CBA


Sl. No.	Parameters	Remarks	Monetary Equivalent
1	Increase in productivity attribute to the specific project	To be quantified & expressed in monetary terms avoiding double counting	<p>Establishment of 'Food Park' will enable setting up of food processing industrial units in the proposed area to the tune of atleast 4(four) units. The industrial units will promote agriculture & horticulture production & marketing in the project area. Taking into consideration the benefits in industrial units, the monetary benefits per year will be to the tune of :</p> $= 4 \times ₹ 50,00,000$ $= ₹ 2,00,00,000$ $= \mathbf{200.00 \text{ Lakh}}$
2	Benefits to economy due to the specific project	The incremental economic benefit in monetary terms due to the activities attributed to the specific project	<p>The proposed industrial projects will provide bussiness avenues to the local entrepreneurs which in turn will improve the economy of the state. The monetary return of the project per year is calculated as given hereunder;</p> <p>(i) Kiwi Wine</p> $= 20000 \text{ Ltr } @ \text{ Rs. } 1000 / \text{Ltr}$ $= 20000 \times 1000$ $= 20000000$ $= \mathbf{200.00 \text{ Lakh}}$ <p>(ii) Kiwi Juice</p> $= 25000 \text{ Ltr } @ \text{ Rs. } 100 / \text{Ltr}$ $= 25000 \times 100$ $= 2500000$ $= \mathbf{25.00 \text{ Lakh}}$ <p>(iii) Apple Juice</p> $= 22000 \text{ Ltr } @ \text{ Rs. } 100 / \text{Ltr}$ $= 22000 \times 100$ $= 2200000$ $= \mathbf{22.00 \text{ Lakh}}$ <p>(iv) Tomato Pulping</p> $= 500 \text{ MT } @ \text{ Rs. } 40 / \text{Kg}$ $= 500 \times 40 \times 1000$ $= 20000000$ $= \mathbf{200.00 \text{ Lakh}}$ <p>Total = (I + ii + iii + iv)</p> $= \mathbf{447.00 \text{ Lakh}}$

3	No. of population benefitted due to specific project	As per the detailed project report	<p>The enterprenuers and and the farmers in the four earstwhile kameng District i.e. Tawang, West Kameng, East Kameng & Pakke Kessang will be benefitted directly and indirectly the whole state.</p> <p>(i) Directly benefitted = 5000 Nos.</p> <p>(i) Indirectly benefitted = 15000 Nos.</p> <p>The lump sum mometary equivalent of the benefit is considered as = 50 lakh</p>
4	Economic benefits due to direct and indirect employment due to the project	As per the detailed project report	<p>Temporary labour engagement of approx. 11429 mandays during execution of the project along with various firms/suppliers/manufacturers will be generated for a period of 3 years and permanent employment of atleast 50 person will be created.</p> <p>The lump sum mometary equivalent of the direct and indirect employment is calculated as = 500 lakh</p>
5	Economic benefits due to compensatory afforestation	<p>Benefits from such compensatory afforestation accruing over next 50 years monetised and discounted to the present value should be included as benefits of compensatory afforestation.</p> <p>***For benefits of CA the guideline of the ministry for NPV estimation may be consulted.</p>	<p>Benefits from compensatory afforestation accruing over next 50 years is huge and monetary equivalent is considered as = 50 lakh</p>
Total Benefit of the project (monetary equivalent)			<p>= (1 + 2 + 3 + 4 + 5) = 1247.00 Lakh</p>

$$\text{Cost Benefit Ratio (CBA Ratio)} = \frac{\text{BENEFIT}}{\text{COST}}$$

$$= \frac{1247.00}{₹ 142.34}$$

$$\text{CBA Ratio} = 8.76 : 1$$


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