ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)

Safety & Environment Department
P.O. DULIAJAN-786602,
ASSAM, INDIA
Phone : 0374-2800542
Fax : 0374-2801796
Email: safety@oilindia.in

COST BENEFIT ANALYSIS FOR FOREST LAND DIVERSION

(Ref : MoEF guideline No: 7 – 69/2011- FC (Pt) Dtd. 01 Aug, 2017)

Project : Diversion of 27.43 Ha of Forest Land for Oil & Gas Pipeline Project in between Kumchai EPS to Kusijan in Duarmara and Burhidihing Reserve Forest under Doomdooma Forest Division and Upper Dihing East Block & Upper Dihing West Block under Digboi Forest Division of Tinsukia District..

TABLE – B: Estimate of cost of Forest diversion

Sl No	Parameter	Remarks	Monetary Equivalent
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 Central Government (MoEF & CC). Note: In case of National Park the NPV shall be ten (10) times the normal NPV and in case of Wildlife Sanctuary the NPV shall be five (5) times the NPV or any others component authority.	Considering the Net Present Value for the Forest area to be diverted be 10.43 lakhs per Ha as per density in Class I. Total value of NPV in Rs =(10.43 Lakhs x 27.43 ha)= Rs.**286.095 Lakhs**
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	10.43 Lakhs x 27.43 Ha x 10% =Rs **28.609 Lakhs**

3	Cost of human resettlement	To be quantified and expressed in monetary terms as per approved R&R Plan	NIL There is no human resettlement issue in this project. Hence no cost involved for any R&R scheme.
4	Loss of public facilities and administrative infrastructure (Not applicable on forest land which would require forest land if these facilities were diverted due to the project	To be quantified and express in monetary terms on actual cost basis at the time of diversion	NIL There is no requirement of any diversion of public facilities and administrative infrastructure (Roads, building, schools, dispensaries electric lines, railways etc.)
5	Possession value of forest land diverted	30% of environmental cost (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.	Considering 30% of environmental cost (NPV) due to loss of Forest. The possession value of forest land diverted is calculated as **Rs 85.828** Lakhs. (10.43 Lakhs x 27.43 Ha x 30 % = 85.828 Lakhs.
6	Cost of 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 not be shifted	**Not applicable** for this project, since there is no resettlement involved.
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.	No Habitant fragmentation of people will be at construction of pipeline. Hence loses NIL

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.	Considering 4.5 Lakhs per Ha including Compensatory Afforestation and Soil & Moisture conservation cost. (4.5 Lakhs x 27.43 ha)= **123.435 Lakhs**
9	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.	Considering 50% of applicable NPV total losses. (4.5 Lakhs x 27.43 hax 50%)= **61.718 Lakhs**
		Total cost of forest diversion	**(286.095+28.609+85.828+123.435+61.718) Lakhs** **= 585.685 Lakhs**

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

Sl No	Parameter	Remarks	Monetary Equivalent
1	Increase in productivity attribute to the specific project	To be quantified & expressed in monetary terms avoiding double counting.	Total Quantity and value of product carried by 16 " Gas & 8 " Oil Pipeline **Gas Pipeline** a) Average Flow rate of gas through pipeline 0.53 MMSCMD (Million Metric Standard Cubic Meter per day). b) Average Volume of Unit gas volume – Govt. published 6 month tariff is (INR 7000/1000 scm). c) Average value: Gas sent out every year: 0.53x365=193.45 MMSCMD. Total value 193.45X INR 7000/1000 scm = **13542 Lakhs./Year**. **Crude Oil** Total quantity and value of product carried by 14" pipeline on annual basis Total quantity per day 700 KLPD. Total Quantity per year 700x365=255500 KL. Total quantity in Barrel=255500x6.28981=1607046 barrel. Transportation Cost per annum 5000/bbl. Total Value per

			year=1607046x5000=**80352 Lakh/year.** Total quantity of gas and crude oil transported through 18inch & 8 inch pipeline= (13542+80352)= **93894 Lakhs/year**
Q	Benefits to economy due to the specific project	The incremental economic benefit in monetary terms due to the activities attributed to the specific project.	As above
3	No of population benefited due to specific project.	As per the detailed project report.	Gas will be supplied to BCPL & AGCL and OIL will be supplied to other Refineries. (NRL,BPCL)
4	Economic benefits due to direct and indirect employment due to the project	As per the details project reports.	Temporary labour engagement (App 120 nos per day) during execution along with various Firms /supplier/manufactures will be engaged for 1 year(average 250days/year). Labour Charge 350 per day 120x250x350=**105 Lakhs**
5	Economic benefits due to compensatory afforestation	Benefit from such compensatory forestation 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 guide line of the Ministry for NPV estimation may be consulted*)	Considering it to be equivalent to the NPV on area to be diverted. Hence Benefit 10.43Lakh X 27.43 Ha=**286.09 Lakhs**
Total benefit of the project (Monetary Equivalent)			**= (93894+105+286.09) = 94285.09 Lakhs**

Cost Benefit Ratio (CBA) = BENEFIT/COST

= 94286.09 Lakhs/ 585.685 Lakhs

= 160.98:1

Yours faithfully
Oil India Limited

(Suranjan Majumder)
Chief General Manager (HSE)
For **Resident Chief Executive**

Nodal Officer (EC/FC/NBWL)
OIL INDIA LIMITED