

Indradhnuash Gas Grid Limited
Cost Benefit Analysis for Land Diversion
(Ref.: MoEF guideline No. 07 – 69/2011 – FC(Pt) Dated – 01.08.2017)

Subject: Diversion of 5.7750 Hectare of Forest Land for Guwahati-Shillong-Silchar Natural Gas Pipe line Project under East Khasi Hills & Ribhoi District of Meghalaya State

Table – A: Cases under which a cost – Benefit Analysis for forest diversion are required.

No.	Nature of Proposal	Applicable / Not Applicable	Remarks
1	All categories of proposal involving forest land up to 20 hectare in plains and up to 05 hectares in hills	Not Applicable	-
2	Proposal for defence installation purpose and oil prospecting (Prospecting Only)	Not Applicable	-
3	Habitation, Establishment of industrial units, tourist lodge complex and other building construction	Not Applicable	-
4	All other proposal involving forest land more than 20 hectares in plains and more than 05 hectares in hills including Roads, transmission lines, minor / Medium / Major irrigation projects, hydro projects, mining activities, railway lines, location specific installation like micro – wave stations, auto repeater centre, TV Towers etc.	Applicable	These are case where a cost benefit analysis is necessary to determine when diverting the forest land to non-forest use in the overall public interest.

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Table – B: Estimate of Cost of Forest Diversion:

Sr. 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 (05) times the NPV or any other component authority.	NPV for the diverted forest area is considered as Rs. 9.39 Lakhs / Hectare Total value of NPV in Rs. = (Rs. 9.39 Lakhs x 5.7750 Hectare) = Rs. 54.227250 Lakhs (say, Rs. 54.23 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	NIL As the proposed project is an underground transmission line, there will be no loss of animal husbandry productivity including loss of fodder. After completion of Pipeline laying work, natural vegetation / plantation of dwarf species will cover up the areas which were temporarily damaged during construction.
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 Plan.



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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 expressed 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.) under this Pipeline Project.
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.	The possession value of forest land diverted is calculated as Rs. = 54.23 Lakhs (NPV) x 30 % = Rs. 16.27 Lakhs However, in case of Pipeline Project the possession of diverted forest land is not completely required by the User Agency after completion of the Project and during operation and maintenance (O&M) stage. As per existing MoEF guidelines, dwarf species plantation will be undertaken above the Pipeline Corridor (ROW) by forest Department.
6	Cost of suffering to oustees	The special 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 for this project since there is no resettlement involved.



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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.	Habitat Fragmentation Cost is worked out as = Rs 54.23 Lakhs (NPV) x 50 % = Rs. 27.12 Lakhs
8	Compensatory afforestation and soil and moisture conservation cost	The actual cost of compensatory afforestation (CA) and soil & moisture conservation and its maintenance in future at present discontinued value.	Cost of CA is considered as = Rs. 8.5 Lakhs / hectare Total CA Cost = Rs. 8.5 Lakhs x 5.7750 Hectare x 2 = Rs. 98.18 Lakhs
Total Cost of Forest Diversion			= (54.23 + 16.27 + 27.12 + 98.18) Lakhs = 195.80 Lakhs

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

Sr. No.	Parameter	Remarks	Monetary Equivalent
1	Increase in productivity attribute to the specific project	To be quantified & expressed in monetary terms avoiding double counting	Leveraging of Hydrocarbon potential, Socio economic development & industrial growth and City Gas distribution to households will have major stake in the socio – economy of the state through clean eco-friendly fuel and other intangible benefit on Environmental impact. a) Industrial & Commercial Usage = 2,81,389.53 Lakhs b) City Gas Distribution=Rs. 2,540.05 Lakhs The lump sum monetary equivalent of the above benefit is considered as Rs. 2,83,929.59 Lakhs (Calculation sheet attached for ready reference)
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.	The monetary return of the specific Pipeline Project of entire North East Gas Grid Pipeline (1656 Km) for 50 years w.e.f. Financial Year 2024 would be Rs. 44,321.43 Lakhs. (Calculation sheet attached for ready reference)
3	No. of population benefited due to specific project	As per the detailed project report	The population of all north eastern states will be benefited on the ground that ancillary business opportunities will crop up due to project intervention. And being Natural Gas as Clean fuel, whole nation will be benefited and help in keeping environment pollution free.

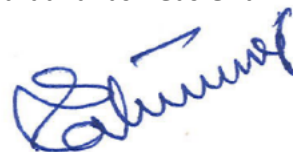


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4	Economic benefits due to direct and indirect employment due to the project	As per the detailed project report	Temporary labour engagement (approx.. 50 Nos. per day) during execution of the project along with various firms / suppliers / manufacturers and operational stage. Permanent employment of 10 Nos. will also be generated. The lump sum monetary equivalent of economic benefit due to direct / indirect employment is calculated Rs. 10,037.50 Lakhs.
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 MoEF for NPV estimation may be consulted).	Benefits from compensatory afforestation accruing over next 50 years is huge and monetary equivalent is considered as Rs. 50 Lakhs
Total Benefit of the Project (Monetary Equivalent)			= (2,83,929.59 Lakhs + 44,321.43 Lakhs + 10,037.50 Lakhs + 50 Lakhs) = 3,38,338.52 Lakhs

Cost Benefit Ratio (CBA) = Benefit / Cost
= 3,38,338.52 Lakhs / 195.784050 Lakhs
= **1727.72 : 1**

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