ANNEXURE-XVI

COST BENEFIT ANALYSIS FOR FOREST DIVERSION PROPOSAL OVER AN AREA OF 80.826 HA. (INCLUDING SABIK FOREST OVER AN AREA OF 64.260 HA) WITHIN TIRINGPAHAR IRON & MANGANESE MINES OFM/S TATA STEEL LTD UNDER THE JURISDICTION OF KEONJHAR FOREST DIVISION

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 proposals involving forest land upto 20 hectares in plains and upto 5 hectare in hills	Not Applicable	-
2	Proposal for defence installation purposes and oil prospecting (prospecting only)	Not Applicable	-
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction	Not Applicable	-
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, hydro projects, mining activity, railway lines, location specific installations like micro-wave stations, auto repeater centres, TV towers etc.	Applicable	This is applicable for diversion proposal of balance forest land of 80.826 ha i.e. Forest land over an area of 16.566 and Non-forest Land recorded as Forest in Government Records as on 25.10.1980 (Sabik Forest) over an area of 64.260 ha within Tiringpahar Iron & Manganese Mine of Tata Steel ltd.

Table-B: Estimation of cost of forest diversion

SN	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion	NPV paid @ Rs. 7, 30,000/-per hectare X 80.826 ha. = Rs. 59002980.00
2	Loss of animal husbandry productivity, including loss of fodder	Rs. 5900298.00 (10% of NPV Value)
3	Cost of human resettlement	Not Applicable, since no human resettlement has been done in the said project.
4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways etc.) on forest land, which would require forest land if these facilities were diverted due to the project	No infrastructure involved within the applied diversion area.
5	Possession value of forest land diverted	Rs. 17700894.00 (30% of NPV Value)
6	Cost of suffering to oustees	Not Applicable
7	Habitat Fragmentation Cost	Rs. 29501490.00 (50% of NPV Value)
8	Compensatory afforestation and soil & moisture conservation cost	Rs. ..... (As per Compensatory Afforestation Scheme)

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	a) Rs. 14839 per Tonne X 85000.00 = Rs. 1261315000.00 (Benefit to the economy due to the production of 85000 MT Manganese Ore of marketable grade ore attributable from this project) b) Rs. 3007 per Tonne X 10000 MT = Rs. 30070000 (Benefit to the economy due to the production 10000 Tonnes of Iron Ore attributable from this project)
2	Benefits to economy due to the specific project	a) Rs. 14839 per Tonne X 85000.00 = Rs. 1261315000.00 (Benefit to the economy due to the production of 85000 MT Manganese Ore of marketable grade ore attributable from this project) b) Rs. 3007 per Tonne X 10000 MT = Rs. 30070000 (Benefit to the economy due to the production 10000 Tonnes of Iron Ore attributable from this project)
3	No. of population benefited due to specific project	Direct-1,050 Indirect-500
4	Economic benefits due to direct and indirect employment due to the project	Rs. 595648800.00

5	Economic benefits due to Compensatory afforestation	To be calculated by DFO, Keonjhar as in the remarks column it is mentioned that Benefits from such compensatory afforestation accruing over next 50 years mentioned 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 counted.

FOR TATA STEEL LTD.
By their Constituted Attorney

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Extract from Monthly Statistics of Mineral Production January 2018 issue.

6 (a). State wise Average Sale Price of minerals by Grades

[see rules under MCDR, 2017 / Mineral (Auction) Rules, 2015 / Minerals(Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016]

Month : January 2018

State / Mineral / Grades	Unit	ASP (₹)
Cement		382
Marl	t	287
Meghalaya		
Limestone	t	
Chemical		356
Cement		382
Marl	t	287
Odisha		
Chromite	t	
Lumps		
Below 40% Cr2O3		4800
40% to below 52% Cr2O3		9874
52% Cr2O3 and above		12501
Fines		
Below 40% Cr2O3		2522
40% to below 52% Cr2O3		8412
52% Cr2O3 and above		11584
Concentrates		8218
Iron Ore (lumps)	t	
Below 55% Fe		1992
55% to below 58% Fe		1992
58% to below 60% Fe		3203
60% to below 62% Fe		3203
62% to below 65% Fe		3825
65% Fe and above		3825
Iron Ore (fines)	t	
Below 55% Fe		540
55% to below 58% Fe		963
58% to below 60% Fe		1023
60% to below 62% Fe		1080
62% to below 65% Fe		1875
65% Fe and above		1875
Iron Ore Conc.	t	1428
Manganese Ore	t	
Dioxide ore		28271
Below 25% Mn		1192
25% to below 35% Mn		6651
35% to below 46% Mn		15936
46% Mn and above		22143
Garnet (abrasive)	t	7060
Graphite	t	
With less than 40% fixed carbon		NA
With 40% or more fixed carbon but less than 80% fixed carbon		NA
With 80% or more fixed carbon		NA
Sillimanite	t	6667
Limestone	t	
BF		376
Cement		382
Marl	t	287
Rajasthan		
Iron Ore (lumps)	t	
Below 55% Fe		914
55% to below 58% Fe		NA
65% Fe and above		NA
Iron Ore (fines)	t	
Below 55% Fe		NA
Iron Ore Conc.	t	300(U)
Manganese Ore	t	
25% to below 35% Mn		3000
Phosphorite	t	
Upto 25% P2O5		543
Above 25% to 30% P2O5		NA
Above 30% P2O5		4156
Fluorite (graded)	t	
Below 30% CaF2		NA
30% to below 70% CaF2		NA
70% to below 85% CaF2		NA
Garnet (abrasive)	t	3000
Garnet (gem)	kg	NA
Limestone	t	
LD		427
Chemical		356
Cement		382
Marl	t	285
Selenite	t	NA
Siliceous Earth	t	685
Vermiculite	t	NA
Wollastonite	t	873
Tamil Nadu		
Bauxite	t	
Non-Metallurgical		
Cement		NA
Garnet (abrasive)	t	NA
Graphite	t	
With less than 40% fixed carbon		NA
With 40% or more fixed carbon but less than 80% fixed carbon		NA
With 80% or more fixed carbon		NA
Limestone	t	
LD		NA
Chemical		NA
Cement		382
Magnesite	t	3817
Marl	t	287
Vermiculite	t	3310
Telangana		
Iron Ore (lumps)	t	
55% to below 58% Fe		NA
Manganese Ore	t	
Dioxide ore		NA
Below 25% Mn		4245
25% to below 35% Mn		6403
Limestone	t	
Cement		382
Marl	t	287
Uttar Pradesh		
Limestone	t	
Cement		382
Marl	t	287
Uttarakhand		
Magnesite	t	1550
West Bengal		
Apatite	t	NA
Moulding Sand	t	NA

NA : Not Available

t : Tonne

ASP : Average Sale Price

(U) : Under Reference