



IMFA Building
Bhubaneswar -751010
Odisha, India

Corporate Identity No.
L27101OR1961PLC000428

TEL +91 674 3051000
+91 674 2580100
FAX +91 674 2580020
+91 674 2580145

mail@imfa.in

www.imfa.in

Title of Project: Proposal for diversion of 7.397 Ha within the ML area of 73.777 Ha (forest area as per sabik records as on 25.10.1980) is being submitted with pursuance to the MoEF & CC circular No. F.No.8-78/1996-FC, dated 10.03.2015 in respect of Mahagiri Mines (Chromite) of M/s. Indian Metals & Ferro Alloys Ltd for mining of chromite ore.

Mahagiri Mines (Chromite), M/s Indian Metals & Ferro Alloys Ltd

Cost Benefit Analysis for the Project.

**A. PARAMETER FOR EVALUATION OF BENEFIT
NOTWITHSTANDING LOSS OF FOREST.**

SL No	Parameters	Compliance
1	Increase in productivity attributable to the specific project.	
2	Benefit to the Economy	
3	Number of population benefited.	5000
4	Employment potential.	500
5	Cost of acquisition of facilities wherever feasible.	Nil
6	Loss of (a) Agricultural due to diversion of forest land. (b) Non- Agricultural due to diversion of forest land.	Nil
7	Cost of Rehabilitating the displaced persons as different from compensatory amounts given for displacement.	Not applicable
8	Cost of supply of firewood to workers residing in or near forest during the period of construction.	Not applicable
	Total	

For Indian Metals & Ferro Alloys Ltd.


(Sanjeev Das)
Constituted Attorney



B. PARAMETER FOR EVALUATION OF LOSS OF FOREST.

SL No	Parameters	Compliance
1	Loss of valuable timber, fuelwood and minor forest produce on an annual basis, including loss of man-hour per annum of people who derived livelihood wages from the harvest of these commodities.	
2	Loss of Animal Husbandry Productivity including loss of fodder.	Nil
3	Cost of human settlement.	Nil
4	Loss of Public facility and administrative infrastructure (roads, building, school, dispensaries, electric line, railways etc.) on forest land or which would require forest land if these facilities were diverted due to the project.	Nil
5	Environmental losses: Soil erosion, effect on hydrological cycle, wildlife, habitat, microclimate upsetting of ecological balance.	
6	Suffering on oustees..	Nil
7	N.P.V.	Rs 444.58 Lakhs
	Total	

C. COST BENEFIT ANALYSIS.

Benefit to Economy:

Loss on Forest:

This proposal is for diversion of 7.397ha of forest land(as per sabik settlement) within the lease area of 73.777 ha Mining Lease area of M/s IMFA Ltd. Out of the 73.777 ha ML area, FC has been accorded for 66.38 Ha. (i.e. 63.91Ha and for safety zone 2.47 ha.). During the approval of Forest clearance for 63.91ha,the Cost to benefit ratio has been calculated as 1:90, the same is attached.

Thus, the project gives positive Benefit/ Cost Ratio. The monetary returns of the project are positive over the environmental losses.

For Indian Metals & Ferro Alloys Ltd.

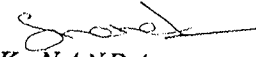


(Sanjeev Das)
Constituted Attorney

PARAMETERS FOR EVALUATION OF BENEFIT
NOTWITHSTANDING LOSS OF FOREST

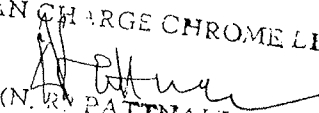
Sl No	Parameters	Mining Projects
1	Increase in productivity attributable to the specific project	This will be mechanised opencast chromite mine. The reserves of the chromite ore of all grades has been estimated at about 3.670 million tonnes. Since the chromite ore produced from this mines shall be utilised for the production of charge chrome by the applicant, the total quantities of charge chrome produced out of the total resources shall be about 1.31 million tonnes [@ 2.8 tonnes of ore to a tonne of charge chrome]
2	Benefits to economy	<p>a) Through the conversion a total quantity of about 35750 tonnes of charge chrome shall be produced per annum on utilisation of 100000 tonnes of chromite ore per annum. Thus, the total value generated on utilisation of 100000 tonnes of chromite ore per annum shall be Rs. 107.25 crores [@ Rs. 30000.00 per tonne of charge chrome]</p> <p>b) The total reserve of chrome ore in the mining lease area is estimated to be 3.670 million tonnes. Ore available from this lease is totally lumpy type and falls entirely in the forest area only and hence the contribution of chrome ore from forest land is 100%. Annual production of chromite ore will be 65000 tonnes from this lease area. The total value generated from the lumpy chromite ore from this lease area will be Rs. 1560.00 lakhs per annum. [@ Rs. 2400.00 per tonne of ore]</p> <p>c) i. Lumpy chromite ore will be available to charge chrome plant at a lower orice</p> <p>ii. Cost of production of charge chrome will be reduced, as the raw material will be available at the cost of production</p>

For Indian Charge Chrome Ltd.,


P. K. NANDA
Jr. Officer (Public Relation)

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For INDIAN CHARGE CHROME LIM. LTD.


(N. R. PATTNAIK)
SR. MANAGER (LAWSON)
CONSULTANT ATTORNEY

- lii. Overall development of the area
- lv. Increase of per capital income of the local people
- v. Direct and indirect employment to local people
- Vi. Socio-economic development of the local tribal inhabitants

3 Number of population benefited : Besides direct and indirect employment about 2000 people living within 5 kms. radius of the mines in different villages will be benefited. Infrastructure facilities like power, water, communication, road etc. shall improve and vocational training, creche, medical facilities shall be provided under this project which will augment the socio-economic status of the nearby villagers

4 Employment potential : Direct employment 298
Indirect employment 2000 Likely to be increased in future

5 Cost of acquisition facilities wherever feasible : Not possible

6 Loss of (a) Agricultural due to diversion of forest land Does not arise
(b) Non-agricultural due to diversion of forest land Does not arise

7 Cost of rehabilitating the displaced persons as different from compensatory amounts given for displacement : Not required

8 Cost of supply of firewood to workers residing in or near forest during the period of construction : Not applicable

Counter signed

DIVISIONAL FOREST OFFICER
ATHASHER DIVISION

For INDIAN CHARGE COMPANY LIMITED


(N. R. PATTNAIK)
SR. MANAGER (LIAISON)
CONSULTED ATTORNEY

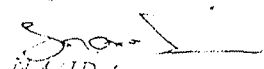
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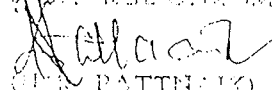
PARAMETERS OF EVALUATION FOR LOSS OF FOREST
(COST BENEFIT ANALYSIS)

1. Parameters for calculation of loss of forest over 63.91 Ha. of forest land proposed for release for mining purpose (of which 1 Ha. of forest land already broken up after 25.10.1980 and 62.91 Ha. of forest land to be broken) by M/s ICCL in the earstwhile lease hold of Sukinda Chromite Mines of M/s TISCO under Sukinda Range of Jajpur Dist.
- (i) Loss of valuable timber over 62.91 Ha. of forest land proposed to be broken (broken up forest land 1 Ha. is devoid of forest growth) in which 100% enumeration done for 586 nos of trees = 69.85 units at the Rs 1510.69 per unit for 50 years Rs 1,05,521.69 or Rs 1,05,522.00
Or Rs 1.055 Lakhs
 - (ii) Loss of fire wood Already covered under (i) above
 - (iii) Loss of animal husbandry productivity including loss of fodder Nil
 - (iv) Loss of human settlement Nil
 - (v) Loss of public facilities and administrative infrastructures (roads, buildings, schools, dispensaries, electric lines etc) on forest land, if these facilities were diverted due to the project Nil
 - (vi) Environmental losses (Soil erosion affect of hydrological cycle, wild life habitat, micro elements, upsetting of ecological balance)
 Environmental losses value as per thumb rule over 63.91 Ha. of forest land of average density of forest 0.1 for 50 years $Rs\ 126.74 \times 63.91 \times 0.1$ Rs 809.995 Lakhs
 Hence total loss of value due to loss of environment per year Rs 16.199 Lakhs
 Hence total loss of forest per year (Rs 1.055 Lakhs + Rs 16.199 Lakhs) Rs 17.254 Lakhs

N.B Nearest coupe value is collected from division office Athagarh, Daitari coupe (No IX Lot No 11 for 1991-92 Rs 640.70 with 10% rise up in 2000-2001


 Athagarh
 DIVISIONAL FOREST OFFICER
 ATHAGARH DIVISION

For Indian Charge

 P. K. NANDI
 Jr. Officer (Public Relation)

For INDIAN CHROME LIMITED.

 P. K. PATTHAIK
 SR. MANAGER (REGION)
 CONSULTANT (LAWYER)

COST BENEFIT RATIO

Sl No	Description	Details
1	(a) Total reserve of chrome ore in the ML area	= 3.670 million tonnes
	(b) Ore available falls entirely in the forest area only	= 3.670 million tonnes
	(c) Total annual production generated from 63.91 Ha. of forest land (as per approved mining plan of Page 37)	= 65000 tonnes
	(d) Cost of annual production of chromite ore from 63.91 Ha. of forest land @ Rs. 2400.00 per tonne	= 65000 X Rs. 2400.00 = Rs.1560,00,000 or 1560 Lakhs
2	Total loss of value of timber etc.	
	(a) Over 63.91 Ha. of forest land proposed for diversion (of which 1 Ha. broken up having devoid of forest growth) Annexure)	= Rs 1.055 Lakhs
	(b) Loss of environment (Annexure)	= Rs 809.995 Lakhs
	i. Loss of environment per annum (Rs 809.995 Lakhs / 50)	= Rs 16.199 Lakhs
	Hence total loss of value due to loss of forest and environment per year	= Rs 1.055 lakhs + Rs 16.199 Lakhs = Rs 17.254 Lakhs
	So, cost benefit ratio per annum	= Rs 1560.00 Lakhs / 17.254 Lakhs = 1 : 90.413

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 Athagarh
DIVISIONAL FOREST OFFICER
 ATHAGARH DIVISION

For INDIAN CHROME LIMITED

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SRI J. S. PATIL
 COST BENE-
 FITTED ATTORNEY

**NOTE ON PARAMETERS FOR EVALUATION OF LOSS OF FORESTS
(COST BENEFIT ANALYSIS)**

This proposal is for diversion of Safety Zone area as per direction in the Specific Condition (iii) of the Environmental Clearance issued to IMFA for its Mahagiri Chromite Mines in village Kaliapani No.15 and Forest Block No.27 under Sukinda Range of Jajpur District.

1. Safety Zone diversion was not a part of earlier mechanism. However, we had to deposit 1½ times of the Safety Zone Plantation Scheme with CAMPA as per the then practice.
2. The safety zone of 2.47 ha. will be developed as a Green Belt under the afforestation programme besides plantation in the 1 ½ times of safety zone area identified by DFO, for which necessary steps have already been taken by way of payment to CAMPA fund.
3. Since the entire safety zone will be a Green Belt area, there is loss of ;
 - (a) Fire wood, (b) valuable timber, (c) Animal husbandry productivity, (d) Human settlement, (e) public facilities and administrative infrastructure and (f) environmental loss.
4. It is therefore not essential to deposit the cost benefit analysis for safety zone separately in view of the afforestation programme.
5. However, the cost benefit analysis which were submitted earlier for diversion of 63.91 ha. of forest land excluding safety zone area and for which MoEF has already granted Stage-II clearance, is enclosed as **Annexure-VIII** for kind perusal and therefore,

San Metals & Ferro Alloys Ltd.

(Sanjeev Das)
Constituted Attorney

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the safety zone diversion need not have the cost benefit analysis as normally envisaged in the diversion proposal.

6. However, the amount already deposited for safety zone and Safety Zone Plantation Scheme is as follows :

- (a) Cost of protection and re-generation of Safety Zone - Rs.18.03 lakh
- (b) Cost of afforestation of 1½ times of Safety zone - Rs.4.76 lakh

Indian Metals & Ferro Alloys Ltd.

(Sanjeev Das)
Constituted Attorney