

## Mine Abandonment: A Status Review

Abandoning a mine may mean a bad business asset due to a variety of reasons but more often is found reflective of uneconomical operations or exhausting of minerals, the life of a mine may sometimes get reduced i.e. faster you mine to serve the market, more you move towards abandonment and reaching a climax situation in a mining life cycle but this climax becomes unending when the protective measures or the guidelines for mine closure are given a lighter look. Abandoning by choice or by enforcement may mean differently in a given situation. A miner may abandon a mine owing to low economic value of minerals whereas the temporary abandonment (cancellation of leases) which took place in Karnataka by an order of the Hon'ble Supreme Court owing to illegal mining and illegal grant of leases led to some impact assessment and suggested some checks.

The impression left by an abandoned mine for reasons of uneconomical operation may reveal poor or low quality exploration and also discourages other probables to put their hand into such ventures. And this trail continues with no effective closure. Abandonment impacts locally over the environment, people and livelihoods but the absolute domain/duty remains with the government and its policies. Mine closure rules were introduced only a decade before but the states take the plea that mines abandoned prior to notification of rules does not come under scrutiny.

But how many mines are abandoned and what is their status is still opaque as there is no public disclosure of detailed inventory of such mines with actual progress to track the statutory requirements. Form D and D1 under the Mineral Conservation and Development Rules (MCDR), 1988 are to be submitted to Indian Bureau of Mines for intention to abandon a mine and temporary discontinuance of mine respectively. Rule 23 and Rule 24 of MCDR 1988 are in place for that purpose but amendments about mine closure were introduced in year 2003. Modification of mining plan is adopted within the mining lease period operation to enhance the production but there is no consequent urgency to adopt a cogent approach to vision closure due to exhaustion.

Information about abandoned mines, status of mine closure and other characteristics are being described below for few states;

STATE: ANDRA PRADESH; IBM REGIONAL OFFICE: HYDERABAD		
Mineral	District	Area (hectares)
<b>Calcite</b>	Visakhapatnam	70.85
Calcite Total		70.85
<b>Feldspar</b>	Rangareddi	5.26
Feldspar Total		5.26
<b>Limekankar</b>	Srikakulam	35.63
	Vizianagaram	70.683
Limekankar Total		106.313
<b>Manganese</b>	Vizianagaram	15.93
Manganese Total		15.93
<b>Quartz</b>	Vizianagaram	50.21
Quartz Total		50.21
<b>Grand Total</b>		<b>248.563</b>

- All mines abandoned prior to 2003.
- Out of 15 mines, 10 belonged to Ferro Alloys Corp. Ltd. And all these mines have reported about mineral exhausted but no details available on reclamation of environment
- Borra Calcite mine is the largest among these 15 (70.85)
- Most of the mines abandoned prior to enactment of Mine Closure Rules (2003)

STATE: TAMIL NADU; IBM REGIONAL OFFICE: CHENNAI		
Mineral	District	Area (Hectares)
<b>Bauxite</b>	Namakkal	214.41
Bauxite Total		214.41
<b>Limestone</b>	Ariyalur	4.67
	Namakkal	8.68
	Perambalur	4.88
	Salem	7.934
	Thoothukudi	15.19
	Trichy	9.215
Limestone Total		50.569
<b>Magnesite</b>	Salem	81.62
Magnesite Total		81.62
<b>Quartzite &amp; Feldspar</b>	Coimbtore	4.025
	Erode	2.34
	Erode (LN Patti)	1.01
	Karur	19.53
	Namakkal	3.2
	Salem	4.58
	Tiruppur	9.1
Quartzite & Feldspar Total		43.785
<b>Silica Sand</b>	Villupuram	5
Silica Sand Total		5
<b>Grand Total</b>		<b>395.384</b>

- Out of 61 abandoned mines, 12 are those abandoned prior to 2003 and Final Mine Closure Plan (FMCP) is not taken up.
- For 20 mines, FMCP has been approved and it approves of backfilling and leveling.
- For 11 mines, FMCP has been submitted. Reddimangudi Mine (Trichy) has restarted working.
- Selurnadu Mine is the largest mine of MALCO (151.57 hectares) followed by Kurumpatti Mine (Tamil Nadu Magnesite Ltd.) of magnesite (81.62 hectares) among these abandoned mines.

#Another MALCO mine of Bauxite - Ariturnadu Mine is 62.84 hectares

Mines restarted working - S.No. 16, 17 & 22

STATE: JHARKHAND; IBM REGIONAL OFFICE: RANCHI		
Mineral	District	Area (Hectares)
<b>Bauxite*</b>	Gumla	1480.655
	Lohardaga	307.536
Bauxite Total		1788.191
<b>Fireclay</b>	Bhagalpur (BR)	141.12
	Latehar	97.4
Fireclay Total		238.52
<b>Mica</b>	Koderma	130.71
Mica Total		130.71
<b>Grand Total</b>		<b>2157.421</b>

All the bauxite mines (6) except one belonging to M&M Minerals belong to Hindalco. Out of 1651 hectares of mining lease area, 815 hectares has been surrendered and FMCP has been submitted. Manduapat mine of M&M minerals was surrendered and retains the status as of 2005.

7 mines of fireclay & mica and a bauxite mine (M&M minerals) comprise an area of 507 hectares. Dhadu (fireclay mine) is permanently closed and possession taken up by government

STATE: MADHYA PRADESH; IBM REGIONAL OFFICE: JABALPUR		
Count of Area (Hectares)		
District	Mineral	No. of Leases
Annupur	Bauxite\$	1
Damoh	Limestone	1
Dindori	Ochre	3
Jabalpur	Dolomite	1
	Fireclay	2
Jabalpur Total		3
Katni	Fireclay	4
	Limestone	2
Katni Total		6
Mandal	Dolomite	1
Morena	Limestone	1
Rewa	Limestone	1
Sagar	Pyrophyllite	1
Satna	Laterite	1
	Limestone	1
	Ochre	5
Satna Total		7
Shahdol	Ochre	2
	White Earth	1
Shahdol Total		3
Tikamgarh	Pyro. & Diaspore	3
Umari	Ochre	2
<b>Grand Total</b>		<b>39</b>

Note: No area information available for Madhya Pradesh, only a count of identified abandoned leases is listed above

\$ - The lease was executed in 1963 over lease area of 1236.20 acres and abandoned on 01.04.04. Employed 108 labourers, among which 93 contract labour

STATE: GUJARAT; IBM REGIONAL OFFICE: UDAIPUR						
S.No	Name of Mine & Earlier Lessee	Mineral	District	Area (Hectares)	Status of mines req. Rec. & Rehab.	Estimated Cost (Rs. Lakhs)
1	Vadnagar, Kodinar	Limestone	Junagarh	16.351	Required	5.68
2	Vadnagar, Kodinar	Limestone	Junagarh	6.381	Required	9.65
3	Vadnagar, Kodinar	Limestone	Junagarh	90.044	Required; abandoned 30.9.2009, mineral exhausted; employed 22 company labour	9.6
4	Rampara	Limestone	Veraval	131.655	Required; abandoned 31.12.08; employed 19	120.8

					company labour	
5	Pedhavada	Limestone	Kodinar	15.1737	Required, Abandoned on 31.07.10 ; employed 14 labour	8.53
6	Vadnagar	Limestone		4.381	Required	4.5
7	Eral	Chinaclay	Chittorgarh	119	Not Req. Area is not used	
	<b>Total</b>			<b>148.4709</b>		<b>158.76</b>

STATE: GOA; IBM REGIONAL OFFICE: GOA						
S.No	Name of Mine & Earlier Lessee	Mineral	Date of Abandonment	Reasons of Abandonment	Status of FMCP	Remarks
1	Hunantlo Dongar Mine (Fe & Mn) [A.X. Poi Palondocar]	Iron Ore & Manganese	16.10.2008, ML ended on 21.11.07	Sufficient ore body is not available and uneconomic operations	Surrendered 10.5196 ha.	Receipt of Notice on 13.01.2009
2	Costi Iron Ore Mine [V.D.Chowgule]	Iron Ore, Area under lease -167.78 hectare	22.11.2007	Only part of exhausted pit is taken up for backfilling	Permission for backfilling has been granted on 13.02.2009	Receipt of Notice on 06.06.2008; employed 136 company labour
3	Nomoxiembo de Caurem Iron Ore Mine	Iron Ore, ML area – 100 ha	21.12.2008	Exhaustion of ore/mineral	Permission for backfilling has been granted on 20.11.2009	Receipt of Notice on 11.09.2009; employed 80 contract labour
4	Girgaon Bauxite Mine [Bharatesh Const. Co.]	Bauxite, ML – 140.2 hectare	ML period (30 yrs., ending 2030)	ore mined / exhausted		Receipt of Notice on 24.11.2010; employed 25 company labour & 68 contract labour
5	Hoteache Vondivoril Dongor [Manharlal D Rajani]	ML – 98.90 hectares	20.02.2011	No Environment Clearance		Receipt of Notice on 08.04.2011
6	Gavanem Xelpem [Chowgule & Co. Pvt. Ltd.]	ML – 37.82 hecares	February, 2011	Part of mine where ore exhausted	proposed for backfilling (2011-13)	Receipt of Notice on 18.07.2011; employed 6 contract labour
7	Godbaem ou Cuttiem [Rajesh P Timblo]	Iron Ore, ML – 69.47 hectares	01.04.2012	Exhaustion of ore/mineral in Pit no. 3		Receipt of Notice on 20.09.2011; employed 3 company labour and 3 contract labour

STATE : ORISSA; IBM REGIONAL OFFICE: BHUBANESHWAR						
S.No	Name of Mine & Earlier Lessee	Mineral	District	Area (Hectares)	Reasons of Abandonment	Remarks
1	Bankiamunda [IMFA Ltd.]	Quartz	Bolangir	88.415	Deposit exhausted	
2	Domuhani [AMTC Pvt. Ltd.]	Manganese	Sundargarh	141.8217	Mining uneconomical due to high stripping ratio	
3	Nuapara II	Quartz	Bolangir	41.338	Deposit exhausted	Surrender to Govt.
4	Sargipalli [Hindustan Zinc Ltd.]	Lead, Zinc & Copper	Sundargarh	499.596	Deposit exhausted	Mine abandoned as per COM (CZ) letter dated 20.02.2003
5	Nuagaon [K.C.Pradhan]	Manganese	Sundargarh	35.87		

Nuagaon mine date of abandonment 01.04.2010, no dates mentioned for others

STATE: RAJASTHAN; IBM REGIONAL OFFICE: AJMER						
S.No	Name of Mine & Earlier Lessee	Mineral	Date of Abandonment	Reasons of Abandonment	Status of FMCP	Remarks
1	Khutani Gypsum Mine [RSSML]	Gypsum, ML – 161.55 hectares	01.09.2002	Exhaustion of mineral		Employed 4 contract labour
2	Ranasar Gypsum Mine [RSSML]	Gypsum, ML – 232.25 hectare	-	-	-	-

STATE: KARNATAKA; IBM REGIONAL OFFICE: BANGALORE			
S.No.	Name of Mine & Earlier Lessee	Mineral	District
1	Mysore Champion amalgamated mine [M/s Bharath Gold Ltd.]	Gold	Kolar
2	Nandidurg Mine [M/s Bharath Gold Ltd.]	Gold	Kolar

STATE: UTTARAKHAND; IBM REGIONAL OFFICE: DEHRADUN		
S.No.	Name of Mine & Earlier Lessee	Mineral
1	Maldeota Mine [PPCL]	Rock Phosphate
2	Durmala Rock Phosphate [PPCL]	Rock Phosphate
3	Malla Limestone [ACC]	Limestone

### Guidelines Issued by Indian Bureau of Mines for Activities and Financial Assurance for Closure

The guidelines provide a basic cost towards mine closure but in many metallic and fuel mineral mines, the costs for remediation and reclamation may be enormous and whatever abandonment has happened before the mine closure rules add to the legacy which mining leaves behind.

While determining the closure cost the following items and activities should be the part of estimation of closure cost.

1. Decommissioning/demolition
2. Removal of infrastructure
3. Removal of equipment and heavy machineries.
4. Site safety
5. Remediation/mitigation measures
6. Reclamation and rehabilitation of workings
7. Maintenance/monitoring during and after closure operation.
8. Retrenchment and re-location cost.
9. Research & Development.
10. Administration/management.

Cost Estimation follows the unit cost to lease area criteria rather than actual estimation by which the realistic amount could have been arrived at case to case basis;

- (i) A category mines – Rs.25000 per hectare to the minimum of Rs.2 lakhs.
- (ii) B category mines – Rs.15000 per hectare to the minimum of Rs.1 lakh