

STATE REVIEWS



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(Part- I)

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STATE REVIEWS
(Assam)

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648

E-MAIL : cme@ibm.gov.in

Website: www.ibm.gov.in

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ASSAM

Mineral Resources

Coal, petroleum & natural gas, limestone and minor minerals are the chief mineral resources of the State. **Coal** occurs in United Mikirs, North Cachar Hills, Sivasagar and Lakhimpur districts. Coal extracted from the State is friable and contains high sulphur. **Petroleum & natural gas** occurs in Digboi oilfields, Lakhimpur district and Moran and Rudrasagar oilfields in Sivasagar district located in Assam Arakan Fold Belt (AAFB), Upper Assam and Assam basins. **Limestone** occurs in Karbi Anglong, North Cachar Hills and Nagaon districts. Besides, **china clay** occurs in Karbi Anglong and Lakhimpur districts; **fireclay** in Dibrugarh, Karbi Anglong, North Cachar Hills and North Lakhimpur districts; **fuller's earth** in Nalbari district; **granite** in Goalpara, Kamrup and Karbi Anglong districts, **iron ore (hematite)** in Kokrajhar district; **iron ore (magnetite)** in Dhubri, Goalpara & Kokrajhar districts; **quartz/silica sand** in Nagaon district, and **sillimanite** in Karbi Anglong & Nagaon districts (Tables - 1 and 2).

Exploration & Development

GSI carried out exploration for coal in Sukchar-Singrimari block in Langrin coalfield (Table-3).

ONGC and OIL continued their seismic survey and drilling for exploration of petroleum & natural gas. A total of 41 wells with a metreage of 1,27,000 were drilled in the State by ONGC & a total of 31 wells with a meterage of 1,05,000 were also drilled by OIL.

Details of exploration activities conducted by OIL and ONGC for petroleum & natural gas during 2011-12 are furnished in Table - 4.

Significant discoveries of oil/gas struck by OIL in various districts of Assam during 2011-12 are given below.

The details of discovery of oil/gas made by OIL during 2011-12 in Assam are given below:

i) The well Diroi 5 (Loc.MFH) located on the Dikcham structure in the Moran Extension area in the District Dibrugarh of Assam. The well

was drilled to a depth of 4600 meters within the basement to probe the hydrocarbon prospects within the Lakadong + Therria formation. The well has encountered a number of prospective sand ranges within the Lakadong + Therria formation, showing evidence of oil during testing. This discovery has opened up a new area for exploration in the Diroi area, especially in the Palaeocene-Lower Eocene formations.

ii) The well Nahorkatiya 594 (Loc.CM) located in the Kharikatia structure in Chabua area in the District Dibrugarh of Assam. The well was drilled down to a depth of 3,905 meters within the basement to probe the hydrocarbon prospects within the Lakadong Therria formation and is currently producing gas from one of the tested sands. The discovery of gas in this well has opened up a new area for exploration in the Kharikatia area especially in the Palaeocene-Lower Eocene formations.

iii) The well Nahorkatiya 595 (Loc, NLC) in Amgurigaon structure in the District Dibrugarh of Assam. The well was drilled down to a depth of 3055 meters to probe the hydrocarbon prospects within the Barail formation and secondary prospects within the Tipam formation. The well has encountered oil bearing sand within the Barail formation, which has been tested and two more possible oil bearing sands within the same formation. The discovery of oil within the Barail formation in this well has opened up a new area for exploration in Amgurigaon structure within the Nahorkataiya extension ML area.

iv) The well, Makum 41 (Loc. HVI) located in the North-West Makum structure of the Makum-North Hapjan oil field area in the Tinsukia district of Assam. This well was drilled to a depth of 4,174 meters within the basement to probe the hydrocarbon prospects within the Barail and Tipam formations as primary target and Palaeocene-Lower Eocene formations as secondary target. On testing, the well produced oil from Barail formation. This discovery of oil in this well has opened up a new play for exploration/exploitation in the North-West Makum structure in the Hugrijan area.

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- v) The well Makum 43 (Loc. HVL) located in the West Makum Structure in the Tinsukia District of Assam. The well was drilled to a depth of 3060 meters within the Barail formation to probe the hydrocarbon prospects within the Barail and Tipam formations. The well has encountered one gas bearing sand within the Barail formation (tested) and two possible hydrocarbon bearing sands within the Tipam formation. The discovery of gas within the Barail formation in this well has opened up a new play for exploration/exploitation in the West Makum structure in the Hugrijan area.
- vi) The well, located in the Balimara structure in the Dibrugarh district of Assam. This well was drilled to a depth of 4985 meters within the Kopili formation to probe the hydrocarbon prospects within the Tipam and Barail formations and additionally to probe hydrocarbon prospects within the Kopili formation in the southern part of the Upper Assam Basin near the Belt of Schuppen. The well produced oil on testing the Barail formation. Presence of oil within the Kopili formation was also established in this well for the first time in OIL's operational area in Assam which has opened up a new area for exploration in the region. The discovery of oil within the Barail formation in this well has opened up a new play for oil exploration/exploitation in the Balimara structure in the Dumduma area.
- vii) The well Nahorkatiya 597 (Loc. HUM) located in the East Zaloni structure in the District Tinsukia of Assam. This well was drilled up to a depth of 1989 meters within the Tipam formation to probe hydrocarbon prospects within the Girujam formation. The well has encountered one gas bearing sand within the Girujan formation (tested) and a hydrocarbon possible gas bearing sand within the Upper Tipam formation. The discovery of gas within

the Girujan formation in this well has opened up new gas play for gas/oil exploration/exploitation in East Zaloni structure in the Hugrijan area.

Production

The value of mineral production in 2011-12 in Assam at ₹ 11,476 crore increased by 6% as compared to that in the previous year. Assam claims seventh position which contributed about 5% to the total value of mineral production in the country in 2011-12. Petroleum (crude) was the principal mineral produced in the State, contributing 80% whereas the share of natural gas (utilised) was 16% and rest of the value of mineral production accrued from coal, limestone & minor minerals in 2011-12 (Table-5).

Assam was the second largest producer of natural gas (utilised) and fourth largest producer of petroleum (crude) accounting for about 6% and 13% respectively in the total production of respective mineral items in the country. During 2011-12, the production of petroleum (crude) increased by 6% and that of natural gas (utilised) by 8% as compared to the previous year. It also increased by 49% for sulphur. However, a decrease of 45% in coal and 31% in limestone was observed as compared to the output of previous year.

The production value of minor minerals was estimated at ₹ 37 crore for the year 2011-12.

The number of reporting mines in 2011-12 was 10 as against 11 in the previous year.

The index of mineral production in Assam (base 2004-05 =100) was 109.18 in 2011-12 as compared to 103.96 in the previous year.

Mineral-based Industry

The principal large and medium-scale mineral-based industries in the organised sector in the State are given in Table - 6.

Table – 1 : Reserves/Resources of Minerals as on 1.4.2010 : Assam

Mineral	Unit	Proved		Probable		Total (A)	Remaining resources				Total Resources (A+B)			
		STD111	STD121	STD122	STD121		STD122	Feasibility STD211	Pre-feasibility STD221	Measured STD331		Indicated STD332	Inferred STD333	Reconnaissance STD334
China Clay	000 tonnes	-	-	-	-	-	-	131	392	-	-	3520	-	4043
Fireclay	000 tonnes	-	-	-	-	-	-	-	-	-	-	3161	-	3161
Fuller's earth tonne		-	-	-	-	-	-	-	-	-	-	18860000	-	18860000
Granite (Dimen. stone)	000 cum	-	-	-	-	-	-	-	-	800	-	583150	-	583950
Iron Ore (Hematite)	000 tonnes	-	-	-	-	-	-	-	-	8600	-	4000	-	12600
Iron Ore (Magnetite)	000 tonnes	-	-	-	-	-	-	-	-	-	-	15380	-	15380
Limestone	000 tonnes	183788	152562	-	-	336350	10902	9828	154644	34200	897161	-	1110992	1447342
Quartz-silica sand	000 tonnes	-	-	-	-	-	-	-	-	-	-	1790	-	1790
Sillimanite	tonne	-	-	-	-	-	-	-	-	850000	6700	3748000	4604700	4604700

Figures rounded off.

The proved and indicated balance recoverable reserves of crude oil and natural gas as on 1.4.2012 are 178.71 million tonnes and 178.14 billion cu m, respectively. The figures include those of Nagaland, Tripura and Arunachal Pradesh. Figures rounded off.

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Table – 2: Reserves/Resources of Coal as on 1.4.2012 : Assam

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	464.78	45.51	3.02	513.31
Singrimari	-	2.79	-	2.79
Makum	432.09	20.70	-	452.79
Dilli-Jeypore	32.00	22.02	-	54.02
Mikir Hills	0.69	-	3.02	3.71

*Source: Coal Directory of India, 2011-12.***Table – 3 : Details of Exploration Activities in Assam, 2011-12**

Agency/ State/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI Coal (Singrimari coalfield) Dhubri	Sukchar- Singrimari block,	-	7.20	3	254.30	-	Prospecting stage (G-3) regional exploration was taken at the border of Assam and Meghalaya to explore the behaviour and the northward extension of the coal bands established in adjacent area during F S 1985-88 and to establish the coal resource potentiality of the area. The area forms a part of the Precambrian Gneissic Complex comprising of migmatites, biotite gneiss, granite gneiss, porphyritic granite and Tertiary sedimentary rocks. Thinly laminated rocks characterised by greenish coloured shale, siltstone, sandy clay, light greenish coloured sandstone belonging to the Talchir Formation and Karharbari Formation comprising coarse grained, gritty to pebbly sandstone, medium to fine grained sandstone siltstone light grey to black carbonaceous shale occurred in Hallidayganj. Isolated occurrences of Lower Gondwana rocks exist in the extreme NW corner of the area. Carbonaceous shale horizons with coal stringers occur within gritty sandstone of the Karharbari Formation. The work is in progress.
DGM Coal Dibrugarh	Sapekhati, Sivasagar & Abhoypur	1:25,000	70.0	-	-	-	Two coal seams in Abhoypur areas and three coal seams in Holongmari area (Sapekhati) have been encountered. These three coal seams varying in thickness from 0.60 m to 1.00 m & is associated with shale, carbonaceous shale, clay & sandstone. About 0.12 million tonnes, 0.20 million tonnes resources of coal were estimated in Abhoypur & Sapekhati area, respectively.

(Contd.)

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Table - 3 (Concl.d.)

Agency/ State/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Coal	N/V Tonggaon & Shalibhui hills	1:5,000	-	-	-	-	Investigated area was mostly covered with alluvium and residual soil with a few weathered boulders of sandstone. Two very thin coal seams were encountered of about 1m apart with a thickness varies from 5 cm - 8 cm. But the extent of coal seam is very small which suggest little economic viability of the deposit.
Limestone (Cement grade) Dima Hasao	New Umrangshu	1:20,000	1.02	-	-	-	Two bands of limestone varies in thickness 32 m - 36 m were encountered. Top band is slightly ferruginous with low CaO content whereas bottom band is suitable for the manufacture of portland cement (CaO - 43% - 52%, Fe ₂ O ₃ - 4.48%, MgO - 1.95% Al ₂ O ₃ - 3.96%. About 19.25 million tonnes of limestone resources were estimated.
Iron ore (Haematite) Kamrup	N/V Kampaduli	1:2,000	0.68	-	-	-	Area is mostly covered by residual boulders of fine to medium grained grey and pink porphyritic granite and grey granite gneiss presence of few residual boulders of amphibolite are also noticed. Apart from this two veins of Banded Magnetite Quartzite (BMQ) were found across the Boko river.

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Table – 4 : Exploration of Petroleum & Natural Gas in Assam during 2011-12

Agency	Drilling					
	Seismic Survey		Exploratory		Development	
	2D(GLKM)	3D(SQKM)	Wells	Meterage	Wells	Meterage
ONGC	121.15	218.07*	18*	53.83*	24*	85.03*
OIL	885.83**	267.70**	-	-	-	-

* Including Assam(Upper), Assam(Silcher) & Tripura.

** Including Arunachal Pradesh.

**Table – 5 : Mineral Production in Assam, 2009-10 to 2011-12
(Excluding Atomic Minerals)**

(Value in ₹ '000)

Mineral	Unit	2009-10			2010-11			2011-12 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		11	100069898		11	107874779		10	114758020	
Coal	'000t	7	1113	3965200	7	1101	4072600	7*	602	3988000
Natural Gas (utilised)	m c m	-	2703	10115831	-	2680	17154680	-	2905	18594905
Petroleum (crude)	'000t	-	4740	85527470	-	4721	86196867	-	5025	91747355
Limestone	'000t	4	396	93537	4	350	82772	3	242	59900
Sulphur#	t	-	665	-	-	3328	-	-	4968	-
Minor Minerals@		-	-	367860	-	-	367860	-	-	367860

Note: The number of mines excludes petroleum (crude), natural gas (utilised) and minor minerals.

* Relates to coal mines as on 31.03.2011.

Recovered as by-product from oil refinery.

@ Figures for earlier years have been repeated as estimates because of non-receipt of data.

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Table – 6 : Principal Mineral-based Industries in Assam

Industry/plant	Capacity (‘000 tpy)
Asbestos Products	
Assam Roofing Ltd, Bonda, Dist. Kamrup.	58.4
Cement	
Barak Valley Cements Ltd, Badarpurghat, Dist. Karimganj.	460 (TPD)
CCI Ltd, Bokajan, Dist. Karbi. Anglong.	198
Poneharatna Cement Pvt Ltd, Borera Titatabor, Dist. Jorhat.	81
Mahashakti Cement, Bymihat, Dist. Kamrup.	66
R. J. Cement Industries, Jabrakowa, Dist. Nagaon.	60
River Valley Cement Corpn., Laxmi Nagar, Dist. Kamrup.	54
Sri Balaji Cement Pvt Ltd, Charingiagaon, Dist. Jorhat	30
RCL Cement Pvt Ltd, Umrangshu.	NA
Ceramic	
Rum Rum Tiles	NA
Rongtheang, Diphu, Dist. Karbi, Anglong.	NA
Fertilizer	
Assam State Fertilizer & Chemicals Ltd, Chandrapur, Dist. Kamrup	33.00 (SSP) 16.50 (H ₂ SO ₄)
Brahmaputra Valley Fertilizers Corpn. Ltd, Namrup, Dist. Dibrugarh	510 (Urea)
Iron & Steel	
Shri Ganapati Ispat Pvt Ltd, Tinsukia	NA
Petroleum Refinery	
BRPL, Bongaigaon	2350
Indian Oil Corporation, Moonmati, Guwahati.	1000
Indian Oil Corporation, Digboi.	650
NRL, Numaligarh, Golaghat.	3000