

STATE REVIEWS



# Indian Minerals Yearbook 2019

(Part- I)

58<sup>th</sup> Edition

**STATE REVIEWS  
(Arunachal Pradesh)**

(ADVANCE 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](mailto:cme@ibm.gov.in)  
Website: [www.ibm.gov.in](http://www.ibm.gov.in)

**March, 2021**

## ARUNACHAL PRADESH

### Mineral Resources

The most important mineral resource of the State is **petroleum & natural gas** and its chief occurrence is reported in Ningru and Dam Duma areas. These hydrocarbon deposits are located in the Assam Arakan Fold Belt (AAFB) and Upper Assam basin in the State. The State also reports resources of **coal** in Namchick Namphuk and Miaobum Coalfields; **Copper** in East Kameng district **dolomite** in West Kameng district; **fuller's earth** in Tirap district; **graphite** in Lohit, East Siang and Upper Subansiri districts; **limestone** in Dibang Valley, Lohit, East

Siang and Upper Subansiri districts and **quartzite** in West Kameng district (Tables-1 and 2).

### Exploration & Development

Exploration activities carried out by GSI for copper and gold, graphite, REE and vanadium during the year 2018-19 are furnished in Table-3. National Oil Companies (NOC) continued its operations for exploration of oil and gas in the State during 2018-19.

### Production

Petroleum (crude) and natural gas (ut.) were the important minerals produced in Arunachal Pradesh. The value of minor minerals' production was estimated at ₹ 34 crore for the year 2018-19. (Table - 4).

**Table – 1 : Reserves/Resources of Minerals as on 1.4.2015 : Arunachal Pradesh**

Mineral	Unit	Total Reserves (A)	Remaining resources				Total resources (A+B)
			Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
Copper							
Ore	'000 tonnes	-	-	-	0.02	0.02	0.02
Metal	'000 tonnes	-	-	-	10	10	10
Dolomite#	'000 tonnes	-	204	77633	-	77837	77837
Fuller's earth##	tonne	-	10700	20000000	-	20010700	20010700
Graphite	tonne	-	-	-	72758257	72758257	72758257
Limestone	'000 tonnes	-	49220	433575	1	482795	482795
Quartzite#	'000 tonnes	-	-	5270	-	5270	5270

*Figures rounded off.*

*Note: The proved and indicated balance recoverable reserves of crude oil and natural gas as on 1.4.2019 in the state are 3.36 million tonnes and 63.57 billion cu. m. respectively.*

*# Declared as Minor Mineral vide Gazette Notification dated 10.02.2015.*

*##: Minor Mineral before Gazette Notification dated 10.02.2015.*

**Table – 2 : Reserves/Resources of Coal as on 1.4.2019: Arunachal Pradesh**

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
<b>Total</b>	<b>31.23</b>	<b>40.11</b>	<b>18.89</b>	<b>90.23</b>
Namchik-Namphuk	31.23	40.11	12.89	84.23
Miao Bum	-	-	6.00	6.00

*Source: Coal Directory of India, 2018-19.*

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**Table – 3 : Details of Exploration Activities in Arunachal Pradesh, 2018-19**

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>GSI</b>							
<b>Copper &amp; Gold</b>							
East Kameng	Pakke Kessang block	1:2000	1.0	-	-	-	During preliminary exploration (G3) for copper and associated Au, Sn and W mineralisation in the metasedimentary sequence of Bomdila Group in Pakke Kessang Block, an area of 1 sqkm was mapped on 1:2,000 scale. The mineralised zone was found to extends for 1.5 km (approx.) in the study area. Within the metasedimentaries, pyrite, chalcopyrite, pyrrhotite and magnetite were observed. Stains of malachite were observed on the outcrop. Mineralisation was observed to occur in form of veins, stringers, dissemination and sporadic cavity filling. Samples from quartz mica schist yielded up to 1,259 ppm Au and 0.9% Cu value and garnetiferous quartz mica schist yielded 1.013 ppm Au.
<b>REE</b>							
West Siang	Laggi Gamlin area	-	-	-	-	30	Preliminary exploration for Neodymium and other Rare-earth Elements (REE) mineralisation in the metasedimentary sequence of Bomdila Group in Laggi Gamlin area, West Siang district was taken up. A total of 4 bands of carbonaceous phyllite with strike extension of less than 200 m and thickness of 5-20 m were mapped during the traverse. During 11.34 line km. of Ground Magnetic survey, high magnetic anomaly was noted in north-western part of block due to presence of the magnetite and haematite. Magnetite yielded high TREE of 17,530 ppm and Nd in the range from 5.38-1,194.5 ppm. The soil samples (30) developed over carbonaceous phyllite and magnetite-rich rocks yielded TREE from 121.8-4,682.53 ppm and Nd concentration between 9 and 547 ppm. Trenching was carried out in the anomalous zone obtained from geophysical survey.
<b>Vanadium</b>							
Papum Pare	Depo area	1:2000	1.0	-	58	3	Preliminary exploration for vanadium and associated base-metal and gold mineralisation was carried

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Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							out in the metasedimentary sequence of Bomdila group in Depo area, Papum Pare district. Detailed mapping of 1 sq. km. on 1:2,000 scale along with sampling and drilling upto 58 m were taken up. Chemical analysis results of 03 bedrock samples from Band-1 yielded 127 ppm to 2,264 ppm of V. 10 composite sample of 1 m length yielded vanadium in the range of 1,717 ppm to 3,296 ppm with an average of 2,485 ppm. Trench sample of another band of carbonaceous phyllite yielded 1,852 ppm to 3,850 ppm vanadium with an average of 2,477 ppm.
Lower Subansiri	Deed area	1:12500	50.0	-	-	153	Reconnaissance survey for vanadium and associated minerals in Deed area, Lower Subansiri district, that comprised Large-Scale Mapping of 50 sqkm area on 1:12,500 scale with 50 cu.m of pitting/trenching were carried out to evaluate the potential of vanadium mineralisation in the area. Chemical analyses of BRS samples (77) from carbonaceous phyllite assayed vanadium values ranging from 612 ppm to 5,318 ppm. Trench samples assayed values of vanadium ranging from 700 ppm to 1800 ppm. Channel sampling (76) was carried out in order to delineate zone wise potential of carbonaceous phyllite, which assayed vanadium values ranging from 689 ppm to 5,107 ppm. Gold values from more than 25 BRS samples of carbonaceous phyllite gave values more than 150 ppb reaching up to 198 ppb. Fixed carbon analysis for 76 channel samples of carbonaceous phyllite showed 7 to 36% of fixed carbon.
<b>Gold and associated basemetal mineralisation</b>							
Papum Pare	Depo area						Preliminary exploration for gold and associated base-metal mineralisation involved detailed mapping over an area of 1 sqkm and systematic drilling in the northern part of the block. A limonitised zone in schistose quartzite intruded by granitic and quartz veins showed Au

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Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							concentration up to 1,158 ppb and was traced up to 210 m along strike extension.
<b>Graphite &amp; REE</b>							
Papum Pare	Ampuli area	-	-	-	-	70	A G4 stage reconnaissance survey for graphite, associated base-metal and REE mineralisation was taken up in Pakro-Rilo-Pakke Kessang and Longchung-Sagali-Balapu sections. The area was covered by Large-Scale Mapping followed by 44 cu m trenching. The highest copper value 1,050 ppm was reported in spot sample and highest value of vanadium of 2,493 ppm was reported from 36 m long channel in meta-sedimentaries. Seventy soil samples were collected from the different soil horizons from a granitic terrain to identify the possibilities of REE mineralisation in the mapped area. Rilo granite intruded by clay veins of thickness up to 30 cm yielded TREE value of about 1,068 ppm near Village Rilo. The exploration will continue in field season 2019-20.
<b>Graphite</b>							
East Kameng & Papumpare	Pakro-Rilo-Pakke Kessang & Longchung-Sagali-Balapu	1:2000	1.0	-	-	-	During preliminary exploration (G3) for copper and associated Au, Sn and W mineralisation in the metasedimentary sequence of Bomdila Group in Pakke Kessang Block, an area of 1 sqkm was mapped on 1:2000 scale. The mineralised zone was found to extend for 1.5 km (approx.) in the study area. Within the metasedimentaries, pyrite, chalcopyrite, pyrrhotite and magnetite were observed. Stains of malachite were observed on the outcrop. Mineralisation was observed to occur in form of veins, stringers, dissemination and sporadic cavity filling. Samples from quartz mica schist yielded up to 1,259 ppm Au and 0.9% Cu value and garnetiferous quartz mica schist yielded 1.013 ppm Au.

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Table – 3 (concl'd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Dibang valley	Hunli area	1:12500	50.0	-	-	-	G4 stage reconnaissance survey for graphite was undertaken around Hunli area, Dibang Valley district with an objective to delineate and assess the economic potentiality of the area for graphite. Three major bands of carbonaceous phyllite were reported in the Hunli area with the prominent band having true thickness varying in the range between 150 and 800 m with strike extension of around 2.5 km – 3.0 km. The other two bands have thickness varying between 150-200 m with the strike extension of 1.0 km – 1.5 km. The study will continue in field season 2019-20.

**Table-4 : Mineral Production in Arunachal Pradesh, 2016-17 to 2018-19  
(Excluding Atomic Minerals)**

(Value in ₹'000)

Mineral	Unit	2016-17			2017-18			2018-19 (P)		
		No. of mines	Quantity	Value <sup>s</sup>	No. of mines	Quantity	Value <sup>s</sup>	No. of mines	Quantity	Value <sup>s</sup>
<b>All Minerals</b>				<b>337209</b>			<b>337209</b>			<b>337209</b>
Natural Gas (ut.)	m c m		28	-		30	-		12	-
Petroleum (crude)	'000t		56	-		50	-		42	-
Minor Minerals <sup>@</sup>			-	337209		-	337209		-	337209

<sup>s</sup> Excludes the value of Fuel minerals.

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