

Indian Minerals Yearbook 2018

(Part-I)

57th Edition

STATE REVIEWS (Tamil Nadu)

(FINAL RELEASE)

GOVERNMENT OF INDIA MINISTRY OF MINES INDIAN BUREAU OF MINES

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TAMIL NADU

Mineral Resources

Tamil Nadu is the leading holder of country's resources of vermiculite, molybdenum, dunite, rutile, garnet and ilmenite. The State accounts for the country's 79% vermiculite, 65% dunite, 48% garnet, 52% molybdenum, 25% sillimanite and 16% fireclay resources. As per AMD of the Department of Atomic Energy, Tamil Nadu accounted for 167.70 million tonnes of ilmenite resources and 7.85 million tonnes of rutile resources.

Important minerals that are found to occur in the State are: bauxite in Dindigul, Namakkal, Nilgiris & Salem districts; dunite/pyroxenite in Salem district; felspar in Coimbatore, Dindigul, Erode, Kanchipuram, Karur, Namakkal, Salem & Tiruchirapalli districts; fireclay in Cuddalore, Kanchipuram, Perambalur, Pudukottai, Sivaganga, Thiruvallur, Tiruchirapalli, Vellore & Villupuram districts; garnet in Ramanathapuram, Tiruchirapalli, Tiruvarur, Kanyakumari, Thanjavur & Tirunelveli districts; granite in Dharmapuri, Erode, Kanchipuram, Madurai, Salem, Thiruvannamalai, Tiruchirapalli, Tirunelveli, Vellore & Villupuram districts; graphite in Madurai, Ramnathapuram, Sivaganga & Vellore districts; and gypsum in Coimbatore, Perambalur, Ramnathapuram, Tiruchirapalli, Tirunelveli, Thoothukudi & Virudhunagar districts. Similarly, occurrences of minerals, such as, lignite deposits are located in Cuddalore, Ariyalur, Thanjavur, Thiruvarur, Nagapattinam, Shivganga & Ramanathapuram districts; limestone in Coimbatore, Cuddalore, Dindigul, Kanchipuram, Karur, Madurai, Nagapattinam, Namakkal, Perambalur, Ramnathapuram, Salem, Thiruvallur, Tiruchirapalli, Tirunelveli, Vellore, Villupuram & Virudhunagar districts; magnesite in Coimbatore, Dharmapuri, Karur, Namakkal, Nilgiri, Salem,

Tiruchirapalli, Tirunelveli & Vellore districts; quartz/silica sand in Chennai, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kanchipuram, Karur, Madurai, Namakkal, Periyar, Perambalur, Salem, Thiruvallur, Thiruvarur, Nagapattinam, Tiruchirapalli, Villupuram, Virudhunagar & Vellore districts; talc/steatite/soapstone in Coimbatore, Salem, Tiruchirapalli & Vellore districts; titanium minerals in Kanyakumari, Nagapattinam, Ramanathapuram, Thiruvallur, Tirunelveli & Thoothukudi districts; vermiculite in Dharmapuri, Tiruchirapalli & Vellore districts; and zircon in Kanyakumari district have been established.

Other minerals that occur in the State are: apatite in Dharmapuri & Vellore districts; barytes in Erode, Madurai, Perambalur, Tirunelveli & Vellore districts; bentonite in Chennai district; calcite in Salem district; china clay in Cuddalore, Dharmapuri, Kanchipuram, Nilgiris, Sivaganga, Thiruvallur, Tiruvannamalai, Tiruchirapalli & Villupuram districts; chromite in Coimbatore & Salem districts; copper, lead-zinc and silver in Villupuram district; corundum and gold in Dharmapuri district; dolomite in Salem & Tirunelveli districts; emerald in Coimbatore district; iron ore (magnetite) in Dharmapuri, Erode, Nilgiris, Salem, Thiruvannamalai, Tiruchirapalli & Villupuram districts; kyanite in Kanyakumari & Tirunelveli districts; molybdenum in Dharmapuri, Dindigul & Vellore districts; pyrite in Vellore district; sillimanite in Kanyakumari, Karur & Tirunelveli districts; tungsten in Madurai & Dindigul districts; and wollastonite in Dharmapuri & Tirunelveli districts (Table-1). District-wise reserves/resources of lignite are provided in Table-2.

In addition to the above, Petroleum and natural gas deposits are found to be located in Cauvery basin area.

Table - 1: Reserves/Resources of Minerals as on 1.4.2015: Tamil Nadu

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Table -1(Concld)

Probable Total Feasibility Pre-feasibility Measured STD231 Indicated Inferred STD334 Recommaissance Total Tesources STD334 (B) (A+B) 5TD11 STD211 STD221 STD331 STD334 (B) (A+B)				Reserves						Remaining	Remaining Resources				Total
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Note:The proved and indicated balance recoverable reserves of crude oil and natural gas in the State as on 1.4.2018 are 9.16 million tonnes and 39.11 billion cu m, respectively.

Declared as Minor Minerals vide Gazette Notification dated 10.02.2015.

Minor Minerals before Gazette Notification dated 10.02.2015. Figures rounded off

Table - 2: Reserves/Resources of Lignite as on 1.4.2018: Tamil Nadu

(In million tonnes)

District/Area	Proved	Indicated	Inferred	Total
Total	4093.53	22648.33	9392.85	36134.71
Cuddalore	3189.30	2263.56	1302.23	6755.09
Ariyalur	904.23	302.50	512.37	1719.10
Thanjavur	-	2306.17	156.33	2462.5
Thanjavur & Thiruvarur	-	17248.06	3123.46	20371.52
Thanjavur & Nagapattinam	-	359.21	926.62	1285.83
Thiruvarur & Nagapattinam	-	-	574.05	574.05
Ramanathapuram	-	168.83	1812.58	1981.41
Ramnad	-	-	964.97	964.97
Ramnad & Sivaganga	-	-	20.24	20.24

Source: Coal Directory of India, 2017-18.

Exploration & Development

The details of exploration activities conducted by GSI & various agencies for lignite and other minerals during 2017-18 are furnished in Table - 3.

Production

The principal minerals produced in the State were lignite, natural gas (utilised), limestone,

petroleum (crude), magnesite, garnet (abrasive), graphite (r.o.m.), bauxite and vermiculite in 2017-18.

The value of minor minerals production was estimated at `409 crore for the year 2017-18.

The number of reporting mines was 110 in 2017-18 in the case of MCDR minerals (Table-4).

Table – 3: Details of Exploration Activities in Tamil Nadu, 2017-18

Agency/	Location		ping	Drilli	_	Sampling	Remarks
Mineral/ District		Scale	Area (sq km)	No. of boreholes	Meterage	(No.)	Reserves/Resources estimated
GSI Lignite			(- 1)				
Ramanan-thapuram	Kalari East Sector Ramanad sub-basin		-	5	2667		Preliminary exploration for Lignite was carried out in this area. A total of five vertical boreholes were completed for a cumulative drilling depth of 2,667 m. Lignite seams were intersected in all the five boreholes and individual seam thickness varied from 1.0 to 16.50 m. Cumulative thickness of lignite seams varied from 16.0 m to 22.4 m and cumulative parting thickness varied from 29.30 m to 39.00 m. Three main lignite seams were intersected in the upper, middle and lower portions of the lignite zone. The top most seam was the thickest admeasuring about 10.20 m to 16.50 m. The middle and bottom seams were comparatively thinner. The content of fixed carbon varied from 14.9 to 34.8% and the calorific value ranged from 1,848 to 3,510 kcal/kg.
RM and REE	Vellalakundam- Singipuram,	1:12500	100				Reconnaissance survey for iron ore in banded magnetite quartzite was taken up between Vellalakundam and Singipuram in Salem district. The study involved large-scale mapping of 100 sq km on 1:12500 scale and 124 cu m of pitting and trenching. The BMQ band of Godumalai hills (Band-I) was found to be extending from Agrahara Nattarmangalam to 970 m hills NW of Seshanchavadi. The BMQ band was found to be 8 km long with width of 6 m to 86 m. BMQ bands of Singipuram and Vepillaipatti area was noticed to be the two major bands in the southern block. The width of Singipuram Band (Band-II) varied from 3 m to 11 m with strike length of 6 km while the width of Vepillaipatti Band (Band-III) varied from 4 m to 8 m with strike length of 3.5 km. BMQ bands have been found to be massive and the width of individual magnetite band varied from 0.1 cm to 0.7 cm. The magnetite quartzite ratio was established as 1:1 to 1:3. Apart from these bands, five minor bands M1, M2, M3, M4 and M5 with strike length 1 km, 875 m, 750 m, 750 m and 560 m respectively were mapped in the area.
RM and REE Salem & Dharmapuri	Mechchery & Perumbalai taluks	1:12500	100	-	-	217	During reconnaissance survey for RM and REE in the southern extension of Alkaline Carbonatite Complex in parts of Mechchery and Perumbalai taluks, Salem and Dharmapuri districts, an area of 100 sq km was mapped on 1:12500 scale and collection of 106 BRS, 25 PS, 15 each of PCS & OM, 10 EPMA, 16 XRD and 50 samples each regolith &

(Contd)

Table - 3 (Contd)

Agency/	Location	Ma	pping	Dril	ling	Sampling	Remarks
Mineral/		Scale	Area	No. of	Meterage	(No.)	Reserves/Resources estimated
District			(sq km)	boreholes			

colluvial was carried out. Besides, 30 samples were collected from pyroxenite to assess the potential of platinum group of elements. The major litho units demarcated in the area included fuchsite quartzite, amphibolite, banded magnetite quartzite, meta-gabbro, hornblende biotite gneiss, epidote hornblende gneiss, migmatite gneiss, quartzofeldspathic gneiss, pyroxenite, syenite, carbonatite, quartz reef and quartz pegmatite veins. Pyroxenite, syenite, carbonatite occur as intrusive while quartz reef & quartz pegmatite vein occur as acid intrusive. Two carbonatite bodies were also delineated. Carbonatite body from about 500 m south of Pottaneri showed an average value of REE up to 2,447.48 ppm. The total REE ranged from 465.46 to 3941.40 ppm which included LREE that ranged from 438.79 to 3,785.33 ppm and HREE that ranged from 26.67 to 156.06 ppm. In Vellore and Dharmapuri districts, reconnaissance survey for rare metals and REE was carried out in Koratti Complex involved large-scale mapping of 100 sq km. The various rock types mapped with an emphasis on REE mineralisation in the area were syenites, carbonatite, syenitoidal pegmatite, pyroxenite and hornblende biotite gneiss. The intrusive carbonatite body extended for a strike length of 1 km with width varing from 30 m to 120 m. Carbonatite was found to be intruded into by pyroxenite in the north and by syenite and gneiss in the southern contact. Samples from syenite variety showed REE values ranging from 83 ppm to 412 ppm and pegmatite samples showed REE values ranging from 86 ppm to 131 ppm. One sample from pyroxenite showed REE value up to 644 ppm. Eleven bedrock samples collected from the carbonatite showed total REE varying from 632 to 2,066 ppm.

(Contd)

Table - 3 (Concld.)

Agency/	Location	Ma	pping	Drill	ling	Sampling	Remarks
Mineral/ District	Bookiton	Scale	Area (sq km)	No. of boreholes	Meterage	(No.)	Reserves/Resources estimated
Neyveli Lig Company Lignite							
Cuddalor	Palayamkottai and Veeranam block,	-	32	65	9316.55	550	Exploration for lignite in this block was taken up through NMET scheme to bring the resources into proved category. In Palayamkottai block (32.00 sq km area), 65 boreholes were drilled to a total depth of 9316.0 m and 550 samples were collected for chemical analysis.
		-	150	55	14423	208	In Veeranam block (150.00 sq m area), 55 boreholes were drilled to a total depth of 14423.0 m and 208 samples were collected for chemical analysis. The drilling continuing at 400 m grid interval.

 $\begin{array}{c} Table-4 \ : Mineral \ Production \ in \ Tamil \ Nadu, \ 2015-16 \ to \ 2017-18 \\ \hline & (Excluding \ Atomic \ Minerals) \end{array}$

(Value in ` '000)

									`	
			2015-1	. 6		2016	-17		2017-1	8 (P)
Mineral	Unit	No. of mines	Qty	Value [§]	No. of mines	Qty	Value ^{\$}	No. of mines	Qty	Value [§]
All Minerals		247		11598798	237		11571600	110		10044305
Lignite	'000 t	-	24227	-	-	26204	-	-	23569	-
Natural Gas (ut.)	m cu m	-	1011	-	-	983	-	-	1208	-
Petroleum (crude)	'000 t	-	255	-	-	284	-	-	345	-
Bauxite	t	3	27146	19002	3	7269	4812	3	-	-
Garnet (abrasive)	t	2	10693	81737	3	10612	85009	3	6813	76169
Graphite (r.o.m.)	t	2	90825	73508	2	95061	66744	1	-	-
Limestone	'000 t	223	23008	6623612	213	23670	6692906	98	20277	5507871
Limeshell	t	1	-	-	1	-	-	-	-	-
Magnesite	t	15	264913	705318	14	223406	623084	4	122408	362627
Vermiculite	t	1	968	2170	1	1690	5594	1	1265	4187
Minor Minerals@		-	-	4093451	-	-	4093451	-	-	4093451
Minor Minerals@		-	-	4093451	-	-	4093451	-	-	4093

Note: The number of mines excludes Fuel and Minor Minerals.

^{\$} Excluding the value of fuel minerals.

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

Table - 5 (Contd)

Ramco Cement (formerly Madras Cement),

Ramco Cement (formerly Madras Cement),

Alathiyur Works, Distt Ariyalur.

Capacity ('000 tpy)

3050

3500

Industry/plant

Mineral-based Industry

The present status of each Mineral-based Industry is not readily available. However, the important mineral-based industries in organised sector in the State are provided in Table -5.

Table – 5: Principal Mineral-based Indus-

Table – 5: Principal Mineral-ba tries in Tamil Nadu	sed Indus-	Ramco Cement (formerly Madras Cement) Ariyalur Plant, Govindpuram, Distt Ariyalur.	, 3500
Industry/plant	Capacity ('000 tpy)	Ramco Cement (formerly Madras Cement) Chengalpet Grinding Unit, Uthiramerur, Distt Kanchipuram (G).	, 600
Abrasives Carborandum Universal Ltd, Chennai. NA		Ramco Cement (formerly Madras Cement) Valapady, Distt Salem (G).	, 1600
Cutfast Abrasives Tools Pvt. Ltd, Chennai.	NA	Tamil Nadu Cements, Alangulam, Distt Virudhunagar.	400
Asbestos Products Hyderabad Industries Ltd, Kannigaiper.	100	Tamil Nadu Cements, Ariyalur, Distt Ariyalur.	500
Ramco Industries Ltd, Arakkonam, Distt Vellore.	NA	Zuari Cements Ltd, Chennai Grinding Unit, Attipattu, Tiruvallur (G).	1000
Southern Asbestos Cement Ltd, Arakkonam, Distt Vellore.	NA	Ceramics Carborandum Universal Ltd, Hosur.	NA
Tamil Nadu Asbestos, Alangulam, Distt Virudhunagar.	28.5	Murugappa Morgan Thermal Ceramics Ltd, Ranipet, Distt Vellore.	5.44
Cement ACC Ltd, Madukkarai, Distt Coimbatore.	1180	Neycer India Ltd, Vadalur, Distt Cuddalore.	9.0
Chettinad Cement Corpn Ltd, Puliyar, Distt Karur.	1700	Roca Bathroom Product Pvt Ltd, Ranipet, Distt Erode.	12.6
Chettinad Cement Corpn Ltd, Karikalli Distt Dindigul.	4500	Roca Bathroom Product Pvt. Ltd, Perundurai, Distt Vellore.	24
Chettinad Cement Corpn Ltd, Ariyalur.	5500	Spartek Ltd, Chennai.	NA
Dalmia Cements, Dalmiapuram, Distt Tiruchirapalli.	4000	Copper Smelter Sterlite Industries (I) Ltd, Thoothukudi.	400 (Cu smelting) 205 (Cu cathode)
Dalmia Cements, Ariyalur.	2500		90 (wire rods) 1050 (H ₂ SO ₄)
India Cements Ltd, Sankarnagar, Distt Tirunelveli.	2050	Fertilizer Coimbatore Pioneer Fertilizer Ltd, Muthugoundanpudur, Distt Coimbatore.	66 (SSP) 30 (H ₂ SO ₄)
$India\ Cements\ Ltd,\ Sankari,\ Distt\ Salem\ (G).$	860		3 (oleum)
India Cements Ltd, Dalavoi, Distt Perambalur.	1850	Coramandal International Ltd, (Formerly EID Parry), Ranipet, Distt N. Arcot. 33 (H ₂)	132 (SSP) SO ₄)
India Cements Ltd, Vallur, Distt Chennai (G).	1100	Coramandal International Ltd, Ennore, Distt Thiruvallur.	330 (Complex)
UltraTech Cement Ltd, Reddipalayam, 1400 Distt Ariyalur.		Kothari Industrial Corp. Ltd, Ennore.	66 (SSP)
Ultra-Tech Cement Works (ARCW), Arakkonam (G).	1100	Madras Fertilizer Ltd, Manali, Distt Thiruvallur.	486.8 (Urea) 840 (NP/NPKs)
Ramco Cement (formerly Madras Cement),	2000	Greenstar Fertilizers Ltd, Guindy.	115 (SSP)
R.S. Raja Nagar, Distt Virudhunagar.	(Contd)		(Contd)

FAI Statistics and Survey of Cement Industry & Directory respectively.

Table -5 (Contd)

Table -5 (Contd)		Table -5 (Concld)	
Industry/plant	Capacity ('000 tpy)	Industry/plant	Capacity ('000 tpy)
Southern Petrochemical Industries	620 (Urea)	Refractory	
Corpn Ltd), Thoothukudi.		ABREF Pvt. Ltd, Gummidipoondi,	1.3
Chemicals		Distt Thiruvallur. Sharda Ceramics Pvt. Ltd, Ambattur, Chennai.	9.9
	5 (anhydrous HF),	Sharaa Cerannes I vi. Eta, Annoattar, Chemiai.),)
	16.5 (AlF ₃)	Shri Natraj Ceramic & Chemical Industries	Ltd, 42
	$67.5 (H_2SO_4)$	Dalmiapuram, Distt Tiruchirapalli.	
	Hydrofluoric acid)	VDW Defendance Vananana	21.6
3.4 (s ₁	peciality fluorides)	VRW Refractories, Vanagaram.	21.6
Tuticorin Alkali Chemicals &	115 (soda ash)	Zirconium Complex, Pazhakayal,	0.5 (Zr-Oxide)
Fertilizers Ltd, Thoothukudi	105 (A/Cl)	Thoothukudi.	0.25 (Zr sponge)
Synthetic Rutile		DBM & Calcined Magnesite	
DCW Ltd, Sahupuram, Distt Thoothukudi.	48	SAIL Refractory Co. Ltd (formerly Burn	18 (calcined
, ,		Standard Co. Ltd), Salem.	magnesite)
TiO ₂ Pigment			54 (DBM) 48 (refractory)
VVTi Pigments (P) Ltd, (formerly, Kilburn	13		46 (Terractory)
Chemicals) Distt Thoothukudi.		Dalmia Magnesite Corpn, Chettichavadi	72 (DBM)
Iron & Steel		Distt Salem.	
Salem Steel Plant (SAIL), Salem.	180 (Crude/ Liquid steel)	Ramkrishna Magnesite Mines, Salem.	3 (calcined)
	_	Tamil Nadu Magnesite Ltd,	19.5 (calcined
JSW Steel Plant (acquired Southern Iron	1180 (sinter)	Kurumbapatty, Distt Salem.	magnesite)
& Steel Co. Ltd), Salem.	180 (pig iron) 1000 (specialised		30 (DBM)
	alloy steel)	Sri Pon Kumar Magnesite Ltd, Salem.	26.5 (DBM)
Change Iven			
Sponge Iron Akshara Industries Ltd, Eguvarpalayam,	60	Silicon Carbide	37.4
Distt Thiruvallur.	w	Carborandum Universal Ltd, Tiruvottiyur.	NA
		Petroleum Refinery	
Kaushik Steel Industries Ltd, Pappen Kuppam Distt Thiruvallur.	60	CPCL, Manali, Distt Thiruvallur.	10500
		CPCL, Narimanam.	1000
Agni Steels Pvt Ltd, Olappalayam Road, Ingur, Distt Erode.	30	(G): Grinding unit. Note: Data, not available for fertilizer and of	cement Industries or
		respective website, is taken from Indian I	
	(C4-1)	F. 1.0	

(Contd)