

STATE REVIEWS



# Indian Minerals Yearbook 2020

(Part- I)

59<sup>th</sup> Edition

STATE REVIEWS  
(Tamil Nadu)

(ADVANCE RELEASE)

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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% fire clay 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, Tiruvarur, Nagapattinam, Ramnad, 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, Tiruvarur, 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 Chengai-Anna 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 & silver** in Villupuram district; **corundum & 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.

### Exploration & Development

The details of exploration activities conducted by GSI & various agencies for lignite and other minerals during 2019-20 are furnished in Table - 3.

### Production

The principal minerals produced in the state were Lignite, Natural Gas (utilised), Petroleum (crude), Limestone, Magnesite and Vermiculite in 2019-20.

The value of minor minerals' production was estimated at Rs. 230 crore for the year 2019-20.

The number of reporting mines was 91 in 2019-20 in case of MCDR minerals (Table-4).

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

Mineral	Unit	Reserves					Remaining Resources					Total resources (A+B)		
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Apatite	tonne	-	-	-	-	-	-	-	-	240000	-	240000	240000	
Barytes	tonne	-	-	-	-	-	-	-	500	221919	-	222419	222419	
Bauxite	'000 tonnes	379	-	379	-	1141	3564	960	10084	8363	-	24112	24491	
Bentonite <sup>#</sup>	tonne	-	-	-	-	-	-	-	3725333	5818519	-	9543852	9543852	
Calcite <sup>#</sup>	tonne	-	-	-	-	-	-	-	-	116632	-	116632	116632	
China clay <sup>#</sup>	'000 tonnes	-	-	-	-	-	-	-	327	56570	-	56897	56897	
Chromite	'000 tonnes	-	-	-	-	-	-	7	-	276	-	282	282	
Copper														
Ore	'000 tonnes	-	-	-	-	-	-	200	590	-	-	790	790	
Metal	'000 tonnes	-	-	-	-	-	-	1.08	2.73	-	-	3.81	3.81	
Corundum	tonne	-	-	-	-	-	-	-	-	4000	-	4000	4000	
Dolomite <sup>#</sup>	'000 tonnes	-	-	-	-	-	-	2010	135	-	-	2145	2145	
Dunite <sup>#</sup>	'000 tonnes	7343	-	1450	8793	-	102190	-	-	5773	5044	113007	121800	
Felspar <sup>#</sup>	tonne	738656	23386	7134	769176	1896213	620530	18870	69822	5465465	-	9172741	9941916	
Fireclay <sup>#</sup>	'000 tonnes	2523	458	155	3136	3952	1842	1561	-	102202	-	113528	116663	
Garnet	tonne	225554	238067	1382194	1845815	21936	1342191	15000	1425996	19888574	-	25072194	26918009	
Gold														
Ore	(Primary) tonne	-	-	-	-	-	-	-	-	67000	-	67000	67000	
Metal														
(Primary) tonne										1.00	-	1.00	1.00	
Granite <sup>#</sup>														
(Dim. Stone)	'000 cum	-	1448	238	1686	-	45690	7	-	503818	-	557749	559435	
Graphite	tonne	2495188	-	810450	3305638	28708	39486	29136	647500	3866390	-	4613707	7919345	
Gypsum <sup>#</sup>	'000 tonnes	137	-	46	183	19	469	25	249	19540	10	27099	27282	
Iron ore														
(Magnetite)	'000 tonnes	-	-	-	-	-	-	-	169388	110728	226921	507037	507037	
Kyanite	tonne	-	-	-	-	-	-	-	167000	81359	-	248359	248359	
Lead-Zinc														
Ore	'000 tonnes	-	-	-	-	-	-	200	590	-	-	790	790	
Lead metal	'000 tonnes	-	-	-	-	-	-	2.26	5.48	-	-	7.74	7.74	
Zinc metal	'000 tonnes	-	-	-	-	-	-	11.76	24.76	-	-	36.52	36.52	
Limestone	'000 tonnes	334445	82892	56572	473909	209632	99882	92843	33440	598942	-	1126088	1599997	
Magnesite	'000 tonnes	73499	40	38	73577	499	6224	17	737	5643	-	24649	98226	

(contd)

Table -1 (concl'd)

Mineral	Unit	Reserves					Remaining Resources					Total resources (A+B)			
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance		Total (B)
			STD121	STD122			STD221	STD222					STD334	STD334	
Molybdenum															
Ore	tonne	-	-	-	-	1500000	-	36000	569304	7777694	167800	10050798	10050798	10050798	
Contained															
MoS <sub>2</sub>	tonne	-	-	-	-	1050	-	83	287	4459.33	50.34	5929.67	5929.67	5929.67	
Pyrite	'000 tonnes	-	-	-	-	-	-	-	-	24	-	24	24	24	
Quartz-															
Silica sand <sup>#</sup>	'000 tonnes	25086	3493	1199	29778	15176	28196	3387	95837	26931	-	171718	201496	201496	
Silver															
Ore	tonne	-	-	-	-	-	-	-	330000	460000	-	790000	790000	790000	
Metal	tonne	-	-	-	-	-	-	-	15.87	26.68	-	42.55	42.55	42.55	
Sillimanite	tonne	140184	-	-	140184	4000	4246	-	-	3612154	-	17320381	17460565	17460565	
Talc/steatite/ soapstone <sup>#</sup>	'000 tonnes	-	-	-	-	210	559	27	-	553	-	3110	3110	3110	
Tungsten															
Ore	tonne	-	-	-	-	-	-	-	-	-	-	250000	250000	250000	
Contained															
WO <sub>3</sub>	tonne	-	-	-	-	-	-	-	-	-	-	50	50	50	
Vermiculite	tonne	1522014	-	-	1522014	-	-	-	-	343051	-	343051	1865065	1865065	
Wollastonite	tonne	-	-	-	-	-	-	-	-	3533	-	3533	3533	3533	

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Figures rounded off

Note: The Proved and Indicated balance recoverable reserves of crude oil and natural gas in the State as on 1.4.2019 are 9.21 million tonnes and 38.00 billion cu. m, respectively.

# Declared as Minor Minerals vide Gazette Notification dated 10.02.2015

## Minor Minerals before Gazette Notification dated 10.02.2015

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**Table – 2 : Reserves/Resources of Lignite as on 1.4.2020 : Tamil Nadu**

(In million tonnes)

District	Proved	Indicated	Inferred	Total
<b>Total</b>	<b>4340.35</b>	<b>22496.63</b>	<b>9652.62</b>	<b>36489.60</b>
Cuddalore	3436.12	2111.860	1302.23	6850.21
Ariyalur	904.23	302.50	512.37	1719.10
Thanjavur & Thiruvarur	–	17248.06	3123.46	20371.52
Thanjavur	–	2306.17	156.33	2462.50
Thanjavur & Nagapattinam	–	359.21	926.62	1285.83
Thiruvarur & Nagapattinam	–	–	574.05	574.05
Ramanathapuram	–	168.83	2072.35	2241.18
Ramnad	-	-	964.97	964.97
Ramanathapuram & Sivaganga	–	–	20.24	20.24

*Source: Coal Directory of India, 2019-20***Table –3 : Details of Exploration Activities in Tamil Nadu, 2019-20**

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>GSI</b>							
<b>Gold</b>							
Tiruvanmalai	In and around Neerpathurai Rajapalayam and Kattamadavu areas	1:12,500	-	-	-	-	Reconnaissance survey (G4) was carried out for Gold and associated mineralisation in and around Neerpathurai – Rajapalayam and Kattamadavu areas, Tiruvanmalai district. Large Scale Mapping on 1:12,500 scale has brought out Banded Magnetite Quartzite (BMQ), pyroxene granulite, charnockite, granitic gneiss, quartzofeldspathic gneiss+garnet, epidote hornblende gneiss, meta-pyroxenites, quartz vein/silicified quartzites, gabbro dykes/ dolerite dykes and pegmatites associated with younger quartz vein. Stream sediment panning from first and second order streams has yielded 20 to 55 nos. of gold specks (<0.5 mm). About 70 to 100 nos of gold specks (<0.5 mm) and very fine gold dust were recovered from both the in-situ soil samples and termite mound samples. This has indicated the provenance/source rock for gold mineralisation in two different parts (North West and Eastern part) of the exploratory block.

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>Platinum group of Elements (PGE)</b>							
Sittampundi	T3 sector of Tasampalaiyam block	-	-	-	-	-	General exploration (G4) was carried out for Platinum group of elements (PGE) in T3 sector of Tasampalaiyam block in Sittampundi anorthosite complex. The Tasampalaiyam block exposes mainly anorthosite with thin bands and lenses of chromitite/chromiferous meta-pyroxenite, garnet-pyroxene granulite and coarse pyroxenite occurring within the hornblendebiotite gneiss/pink migmatite. Chromitite/chromiferous metapyroxenite bands are the host of PGE and they occur as detached lenses / boudins within anorthosite. The strike length of Segment-A and Segment-B of T3 sector is 550 m. The mineralisation in the area is confined to 04 chromitite / chromiferous metapyroxenite bands which exhibits pinch and swell structure both along strike as well as in dip direction. Drilling for first level (05 borehole), second level (04 boreholes) and 1 third level borehole was carried out at 50 m spacing in between the boreholes drilled during G-4 & G-3 stages as infilling to assess the PGE resource. Drilling in 9 boreholes intersected 4 mineralised zones and development of ruby is noticed within the chromitite band. In addition few minor bands were also intersected in the borehole. The thickness of the mineralised chromitite and meta-pyroxenite bands varies from 0.1 m to 1.22 m and from 0.1 m to 1.76 m, respectively. The investigation has proven the presence of mineralised band for a strike length of 500 m in segment A and B of T3 sector.

(contd)

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>Copper, Lead and Zinc</b>							
Villupuram and Thiruvanamalai	In extension area of Mamandur Polymetal Prospect	-	-	-	-	-	Reconnaissance survey (G4) was carried out for Cu, Pb, Zn in extension area of Mamandur Polymetal Prospect, Villupuram and Thiruvanamalai districts. The project involves LSM for 100 sq km, pitting and trenching of 100 cu. m with collection of 50 nos. of BRS/groove samples and 50 nos. of PTS samples. In addition, geophysical magnetic survey of 75 L km, IP survey of 10 L Km were also carried out. Charnockite and migmatite are the two major lithologies in the area. A number of oxidised/ limonitised zones. have been mapped in the pink and grey migmatite near Vadamamandur and SE of Suttamalai, which are along the NE extension of Mamandur prospect. The ore minerals like pyrite, chalcopyrite, malachite and arsenopyrite were observed in these zones. Malachite and azurite stains are observed near the Mamandur prospect and Kangiyanur. Based on the anomalies derived from Magnetic survey, IP survey was carried out in Porassapattu area, where two anomalous zones were identified.
<b>Rare Metals and REE</b>							
Vellore	in carbonatite of Koratti Syenitic Complex,	1:12000	2	-	-	10	Preliminary exploration (G4) was carried out for Rare Metals and REE in carbonatite of Koratti Syenitic Complex, Vellore district. Detailed Mapping in an area of 2 sq km on 1:2000 scale, 1000 m drilling, pitting and trenching of 100 cu m was carried out. In field, syenite is exposed in south of carbonatite, whereas pyroxenite is mapped in the north. The surface samples (82 BRS samples) and 20 PTS collected along borehole TNVK-2 show REE values ranging from 533 ppm to 2849 ppm with an average value of 1287 ppm. HREE varies from 77 to 127 ppm (average 65 m). Analytical result for the remaining

(contd)

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							BRS samples collected along other profiles (TNVK-1, TNVK-3 and TNVK-4). Besides REE, anomalous values for Ba and Sr were observed. Ba ranges from 967 to 2340 ppm with an average of 1382 ppm, whereas Sr is observed to a maximum of 10367 ppm. Apatite rich carbonatite shows the maximum 11% of P <sub>2</sub> O <sub>5</sub> . Significantly, carbonatite has less thorium which has also been confirmed with EPMA study. One borehole (TNVK-2) has been drilled to a depth of 191.5 m. Detailed core logging has been completed for this borehole and 227 core samples were collected.
<b>Rare Metals and REE</b>							
Theni	Kambammettu-Kambam and adjoining areas,	-	100	-	-	-	Reconnaissance survey (G4) was carried out for REE and RM mineralisation in the carbonatite and associated rocks in Kambammettu-Kambam and adjoining areas, Theni district. The project involves LSM for 100 sq km, pitting and trenching of 100 cu m. The mapped area exposes carbonatite, garnetcordierite gneiss, calc granulite, hornblendebiotite gneiss, granite, quartzite, charnockite and pegmatite. Three major carbonatite bodies with outcrop width varying from 375 to 900 m and strike length varying between 400 m and 1 km were delineated. Analytical results of 34 carbonatite samples (BRS) shows that REE values range from 335.98 to 6504.11 ppm with mean value of 2341.49 ppm. Chondrite normalised REE pattern (After Nakamura, 1974) of Kambam carbonatite reveals high LREE enrichment compared to HREE. In regolith samples, REE (La to Lu) ranges from 436.61 to 1198.53 ppm with mean value of 791.8 ppm. Chondrite normalised REE patterns of regolith samples reveal high LREE enrichment compared to

(contd)



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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							HREE. The chondrite normalized LREE/HREE (La N /Yb N) ratio of regolith samples range from 49.62 to 71.87. ICP-MS results of 13 BRS samples of calc granulite, alkali granite, pegmatite, pyroxenite and garnet cordierite gneiss has been received. Alkali granite of Kambam area shows a maximum value of REE 858.16 ppm. Pegmatite of Megamalai has £REE value of 162.5 ppm and cordierite gneiss and calc granulite have REE values of 206.91 ppm and 338.63 ppm respectively. In Kambam area small plugs of pyroxenites are sampled, out of which two samples have £REE value of 2029.71 ppm and 1597.53 ppm, respectively. Colluvial samples of two carbonatite samples in Kambam area have £REE value of 5075 and 11538.01 ppm. In the bed rock sample, Ba concentration ranges from 2682.63 to 19830.56 ppm with mean value of 9412.54 ppm. Sr concentration ranges from 3742.88 to 24654.25 ppm with mean value of 11609.44 ppm.
<b>Molybdenum</b>							
Krishnagiri	Vellakkal Central Block, Segment- A,	-	-	-	-	-	Preliminary exploration (G4) was carried out for molybdenum and associated mineralisation in Vellakkal Central Block, Segment- A, Harur - Utthangarai molybdenum belt, Krishnagiri district. In the block, sporadic occurrences of epidote-hornblende gneiss, quartz-feldspathic gneiss, metapyroxenite, meta-gabbro and quartz veins are present. A quartz reef runs continuously for 750 m along the shear zone in the form of an elevated ridge with an average width of around 20 m. The shear zone trends in NNE-SSW direction with dip amount varying between 45° to 60° towards SE and is marked by the emplacement of reef quartz,

(contd)

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							well developed shear planes and wall rock alteration. A total of 16 nos. of boreholes were proposed along 10 profiles with 100 m of borehole spacing for I, II and III levels and vertical intersection at 50, 100 and 150 m depth, respectively. Drilling for 1st level in 5 boreholes viz., TNKVCA-1, 2, 3, 4 & 7 have been completed and drilling for two boreholes (TNKVCA-5 and 7) were progressing up to 31.3.2020. In total, 623.2 m of drilling had been achieved. All the first level boreholes drilled have intersected the shear zone at anticipated depth and have brought out a primary shear zone with an average thickness of around 30 m. Mo mineralisation occurring as fine dissemination, specks and smears have been noticed in all the boreholes within a mineralised zone ranging up to 2.5 m in thickness. Beside molybdenite, other sulphides viz. chalcopyrite, pyrite, galena have also been encountered.
Krishnagiri	Nochchipatti block of Harur-Uttangarai molybdenum belt,	1:2000	1.5	-	-	47	Preliminary exploration(G3) was carried out for molybdenum and associated mineralisation in Nochchipatti block of Harur-Uttangarai molybdenum belt, Krishnagiri district. Detailed Mapping in an area of 1.50 sq km on 1:2000 scale was carried out. The mapped litho sequences are quartzofeldspathic gneiss, hornblende gneiss ± epidote with the enclaves of meta-gabbro and metapyroxenite. Quartz reefs occur within the sheared quartzofeldspathic gneiss in the south western part of the block. Quartz float occurring in the area have also been demarcated. Feldspathic and calcite (honey color) veins were noticed in all rock types. Two parallel shear zones were identified and demarcated. These shear zones

(contd)

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							were confirmed by laying trenches and by geophysical survey for induced polarisation for sulphide mineralisation in north-west shear zone. In total, 379.9 m of drilling is achieved from three boreholes TNKNP-1, TNKNP-3 and TNKNP-4. The mineralisation occurs in the form of dissemination, veins and along the fracture planes. The results received for 11 bed rock samples and 36 pitting and trench samples showing Mo ranges from 0.3 to 108.8 ppm, Cu ranges from 10 to 204 ppm, Pb vary from 10 to 611 ppm, Zn vary from 20 to 288 ppm and Ni value ranges from 10 to 98 ppm.
<b>Limestone</b>							
Madurai and Sivaganga, Thiruchirappalli and Karur	Piranmalai area Viralipatti area	1:12500	130	-	-	91	Reconnaissance survey(G4) was carried out for limestone in Piranmalai area of Madurai and Sivaganga districts, and Viralipatti area of Thiruchirappalli and Karur districts. The project involves LSM in an area of 130 sq km on 1:12,500 scale, pitting and trenching of 260 cu.m. The various litho-units brought out during the LSM were Charnockite with pyroxene granulite, calc-gneisses, hornblende biotite gneiss, pink migmatite, amphibolite, quartzite, laterite, granite and calc granulite. The general trend of foliation being NNW-SSE (swerves to NNE-SSW at places) with dip amount varying from 30° to 80° towards NE. The analytical values of CaO and MgO for 91 bedrock and pitting/ trenching samples of calc granulites from Piranmalai area range from 1.51-18% and 0.58-8.65%, respectively.
<b>Dunite</b>							
Thiruchirappalli and Namakkal	Thosur- Mettupalayam Block	1:12500	100	-	-	-	Preliminary exploration (G3) was carried out for flux grade dunite in Thosur-Mettupalayam block, Thiruchirappalli and Namakkal districts. The project involves LSM in an area of 100 sq km on 1: 12,500

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## STATE REVIEWS

Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							scale, DM in an area of 5.75 sq km on 1:4000 scale, drilling for 590.4 m, pitting and trenching of 100 cu m. The major rock types in the area is constituted by the Charnockite Group of rocks i.e., charnockites and pyroxene granulite ± garnets and hornblende biotite gneiss. The ultramafic rocks viz., dunite, peridotite and pyroxenite occur within the pyroxene granulite. Three major E-W trending dunite bands (Band 1, 2 & 3) and few disseminated bodies were delineated. A total of 15 nos. of vertical boreholes with an interval of 300 -500 m spacing were drilled to a depth of 40 m and established the strike length continuity of Band I & II for 6.25 km and 2.6 km, respectively. The BRS samples collected from the well dump shows MgO values varying from 3.84 to 39.8% with an average of 26.7%. The core samples are collected at 1 m interval from the drill cores and analysed for MgO and categorized into Grade I and Grade II based on its MgO% content- Grade I (32.44-41.12%) and Grade II (>41.12%). Out of 335 core samples analysed from Band I and II, the average MgO of weathered dunite is 29.19 & 19.291%, fresh dunite shows 40.27% & 38.12 % and pyroxenite shows 32.91% & 29.35% respectively. The Cr and Ni values of the ultramafic rocks vary between 2817 and 4390 ppm and 624 and 2900ppm, respectively. The dunite Band III in the area is highly covered with pediments of Kolli hills and if drilled, the fresh dunite is expected at higher depth than the Band I and II due to huge overburden.
<b>MECL</b>							
<b>Magnesite/Dunite, Nickel, Chromium</b>							
Namakkal & Tiruchirapalli	Namakkal block	1:12,500	251.00	3	558.00	1362	-

(contd)

## STATE REVIEWS

Table – 3 (concl'd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>Tamil Nadu Minerals Ltd.</b>							
<b>Graphite</b>							
Sivaganga	Senthiudauna- thapuram, Kumarpatti & Pudupatti village,s, Sivaganga taluka	-	-	-	-	-	-
<b>Limestone</b>							
Ariyalur	Periyagalur village, Ariyalur taluka	-	-	-	-	-	-
<b>Vermiculite</b>							
Tirupattur	Sevathur & Elavampatti villages, Tirupattur taluka	-	-	-	-	-	-

Table – 4 : Mineral Production in Tamil Nadu, 2017-18 to 2019-20  
(Excluding Atomic Minerals)

(Value in ₹ '000)										
Mineral	Unit	2017-18			2018-19			2019-20 (P)		
		No. of mines	Qty	Value <sup>\$</sup>	No. of mines	Qty	Value <sup>\$</sup>	No. of mines	Qty	Value <sup>\$</sup>
<b>All Minerals</b>		<b>129</b>		<b>8680469</b>	<b>104</b>		<b>9821067</b>	<b>91</b>		<b>8962257</b>
Lignite	'000t	-	23569	-	-	23041	-	-	23516	-
Natural Gas (ut.)	m c m	-	1207	-	-	1208	-	-	1097	-
Petroleum (crude)	'000t	-	345	-	-	395	-	-	415	-
Bauxite	t	3	-	-	-	-	-	-	-	-
Garnet (abrasive)	t	3	6813	73889	4	7341	109197	2	-	-
Graphite (r.o.m.) *	t	1	-	-	1	-	-	-	-	-
Limestone	'000t	116	20538	5994269	93	23864	6895558	82	24461	6370759
Magnesite	t	5	122430	444771	5	50644	198355	6	46276	198587
Marl %	t	-	98960	35922	-	95368	24700	-	502749	88948
Vermiculite	t	1	1264	4184	1	706	2337	1	584	1933
Minor Minerals		-	-	2127434	-	-	2590920	-	-	2302030

*Note: The number of mines excludes Fuel and Minor minerals.*

*\$ Excludes the value of Fuel minerals.*

*\* Only labour reported.*

*% Associated with Limestone.*

## STATE REVIEWS

**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 given in Table -5.

**Table – 5 : Principal Mineral-based Industries**

Industry/plant	Capacity ('000 tpy)
<b>Abrasives</b>	
Carborandum Universal Ltd, Chennai	NA
Cutfast Abrasives Tools Pvt. Ltd, Chennai	NA
<b>Asbestos Products</b>	
Hyderabad Industries Ltd, Kannigaiper	100
Ramco Industries Ltd, Arakkonam, Distt Vellore	NA
Southern Asbestos Cement Ltd, Arrakonam Distt Vellore	NA
Tamil Nadu Asbestos, Alangulam, Distt Virudhunagar	28.5
<b>Cement</b>	
ACC Ltd, Madukkarai, Distt Coimbatore	1000
Chettinad Cement Corpn. Ltd, Puliyaar, Distt Karur	1700
Chettinad Cement Corpn. Ltd, Karikalli Distt Dindigul	4500
Chettinad Cement Corpn. Ltd, Ariyalur	5500
Dalmia Cements, Dalmiapuram, Distt Tiruchirapalli	3400
Dalmia Cements, Ariyalur	3000
Dhandhapani Cement Pvt. Ltd Thathamangalam, Manachanallur	225
India Cements Ltd, Sankarnagar, Distt Tirunelveli	2050
India Cements Ltd, Sankaridurg, Distt Salem (G)	860
India Cements Ltd, Dalavoi, Distt Ariyalur	2160
India Cements Ltd, Vallur, Distt Chennai (G)	1100
India Cements Ltd, Panaiveedu, Thiruchengodu	1400
My Home Industries Ltd. Tuticor	1500
Ultra-Tech Cement Ltd, Reddipalayam, Distt Ariyalur	1400
Ultra-Tech Cement Works (ARCW), Arakkonam (G)	1100
Ramco Cement (formerly Madras Cement), R.S. Raja Nagar, Distt Virudhunagar	2000
Ramco Cement (formerly Madras Cement), Alathiyur Works, Distt Ariyalur	3050
Ramco Cement (formerly Madras Cement), Ariyalur Plant, Govindpuram, Distt Ariyalur	3500

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Ramco Cement (formerly Madras Cement), Chengalpet Grinding Unit, Uthiramerur, Distt Kanchipuram (G)	500
Ramco Cement (formerly Madras Cement), Valapady, Distt Salem (G)	1600
Tamil Nadu Cements, Alangulam, Distt Virudhunagar	290
Tamil Nadu Cements, Ariyalur, Distt Ariyalur	500
Tamil Nadu News -print & Paper Ltd. Kagithapuram, Manmangalam	328.5
Vijay Cements Trichy	75
Zuari Cements Ltd, Chennai Grinding Unit, Attipattu, Tiruvallur (G)	900
<b>Ceramics</b>	
Carborandum Universal Ltd, Hosur	NA
Murugappa Morgan Thermal Ceramics Ltd, Ranipet, Distt Vellore	5.44
Neycer India Ltd, Vadalur, Distt Cuddalore	9.0
Roca Bathroom Product Pvt Ltd, Ranipet, Distt Erode	12.6
Roca Bathroom Product Pvt Ltd, Perundurai, Distt Vellore	24
Spartek Ltd, Chennai	NA
<b>Copper Smelter</b>	
Sterlite Industries (I) Ltd, Thoothukudi	400 (Cu smelting) 205 (Cu cathode) 90 (wire rods) 1050 (H <sub>2</sub> SO <sub>4</sub> )
<b>Chemicals</b>	
Tanfac Industries Ltd, Cuddalore	16.5 (anhydrous HF), 16.5 (AlF <sub>3</sub> ) 67.5 (H <sub>2</sub> SO <sub>4</sub> ) 14 (Hydrofluoric acid) 3.4 (speciality fluorides)
Tuticorin Alkali Chemicals & Fertilizers Ltd, Thoothukudi	115 (soda ash) 105 (A/Cl)
Vaiyapuri Shanthi Ferric alum Sellipalayam, Namakkal	3.4 (Ferric alum)
<b>Electrode</b>	
AVR Electrodes, No1, SIDCO, Indl. Estate, Rajapalayam, Virudhnagar	250
<b>Fertilizer</b>	
Coimbatore Pioneer Fertilizer Ltd,	66 (SSP)
Muthugoundanpudur, Distt Coimbatore.	30 (H <sub>2</sub> SO <sub>4</sub> ) 3 (oleum)
Coramandal International Ltd, (Formerly EID Parry), Ranipet, Distt N. Arcot	132 (SSP) 33 (H <sub>2</sub> SO <sub>4</sub> )

(contd)

## STATE REVIEWS

Table -5 (contd)

Industry/plant	Capacity ('000 tpy)
Coramandal International Ltd, Ennore, Distt Thiruvallur.	330 (Complex)
Kothari Industrial Corp. Ltd, Ennore.	66 (SSP)
Madras Fertilizer Ltd, Manali, Distt Thiruvallur.	486.8 (Urea) 840 (NP/NPKs)
Greenstar Fertilizers Ltd, Guindy.	115 (SSP)
Southern Petrochemical Industries Corpn. Ltd), Thoothukudi.	620 (Urea)
<b>Ferroalloy</b>	
Electralloy Special Steel Casting Pvt. Ltd.	1.0 (alloy , Stainless steel casting)
<b>Synthetic Rutile</b>	
DCW Ltd, Sahupuram, Distt Thoothukudi.	48
<b>TiO<sub>2</sub> Pigment</b>	
VVTi Pigments (P) Ltd, (formerly, Kilburn Chemicals) Distt Thoothukudi	18 36 (Ferrous Sulphate Heptahydrate)
<b>Iron &amp; Steel</b>	
Salem Steel Plant (SAIL), Salem.	180 (Crude/Liquid steel)
JSW Steel Plant (acquired Southern Iron & Steel Co. Ltd), Salem.	1180 (sinter) 1000 (pig iron) 1000 (specialised alloy steel) 18000 (Crude/Liquid steel)
<b>Sponge Iron</b>	
Akshara Industries Ltd, Eguvarpalayam, Distt Thiruvallur.	100
Kaushik Steel Industries Ltd, Pappen Kuppam Distt Thiruvallur.	60

(contd)

Table -5 (concl'd)

Industry/plant	Capacity ('000 tpy)
Agni Steels Pvt Ltd, Olappalayam Road, Ingur, Distt Erode.	36
<b>Refractory</b>	
ABREF Pvt. Ltd, Gummidipoondi, Distt Thiruvallur.	1.3
Sharda Ceramics Pvt. Ltd, Ambattur, Chennai.	9.9
Shri Natraj Ceramic & Chemical Industries Ltd, Dalmiapuram, Distt Tiruchirapalli.	42
VRW Refractories, Vanagaram.	21.6
Zirconium Complex, Pazhakayal, Thoothukudi.	0.5 (Zr-Oxide) 0.25 (Zr sponge)
<b>DBM &amp; Calcined Magnesite</b>	
SAIL Refractory Co. Ltd (formerly Burn Standard Co. Ltd), Salem	13(calcined magnesite) 61 (DBM) 15 (refractory bricks ) 45( Dunite fracton)
Dalmia Magnesite Corpn., Chettichavadi Distt Salem.	72 (DBM)
Ramkrishna Magnesite Mines, Salem.	3 (calcined)
Tamil Nadu Magnesite Ltd, Kurumbapatty, Distt Salem.	19.5(calcined magnesite) 30(DBM)
Sri Pon Kumar Magnesite Ltd, Salem.	26.5 (DBM)
<b>Silicon Carbide</b>	
Carborandum Universal Ltd, Tiruvottiyur.	NA
<b>Petroleum Refinery</b>	
CPCL, Manali, Dist. Thiruvallur.	10500
CPCL, Narimanam.	1000

(G): Grinding unit.

**Note:** Data, souled from Indian Fertilizer Scenario, FAI Statistics, and Survey of Cement Industry & Directory, respectively.