Indian Minerals Yearbook 2019

(Part- I)

58th Edition

STATE REVIEWS (Kerala)

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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KERALA

Mineral Resources

Kerala is well-known for its deposits of excellent quality china clay and beach sands containing valuable minerals like ilmenite, rutile, sillimanite, zircon, garnet, leucoxene and monazite. The State is the principal producer of limeshell and sillimanite. The State also accounts for 23% china clay and 10% sillimanite of the country's resources. As per AMD of the Department of Atomic Energy, Kerala state accouts for 144.02 million tonnes of ilmenite, 7.83 million tonnes of rutile and 7.96 million tonnes of zircon resources.

Important mineral occurrences in the State are: **bauxite** in Kannur, Kasaragod, Kollam & Thiruvananthapuram districts; **china clay** in Alappuzha, Ernakulam, Kannur, Kasaragod, Kollam, Kottayam, Palakkad, Thiruvananthapuram & Thrissur districts; **limestone** in Alappuzha, Ernakulam, Kannur, Kollam, Kottayam, Kozhikode, Malappuram, Palakkad & Thrissur districts; **quartz/silica sand** in Alappuzha, Kasargod, Thiruvananthapuram & Wayanad districts; **sillimanite** in Kollam & Thiruvananthapuram districts; and **titanium minerals** in Kasaragod, Kollam, Pathanamthitta & Thiruvananthapuram districts.

Other minerals that occur in the State are **fire clay** in Alappuzha, Ernakulam, Kannur & Kollam districts; **garnet** in Kollam & Thiruvananthapuram districts; **gold** in Malappuram & Palakkad districts; **granite** in Palakkad & Thiruvananthapuram districts; **graphite** in Ernakulam, Idukki, Kollam, Kottayam & Thiruvananthapuram districts; **iron ore (magnetite)** in Kozhikode & Malappuram districts; **kyanite** in Kollam & Thiruvananthapuram districts; **lignite** in Kannur districts; **magnesite** in Palakkad district; and **steatite** in Kannur & Wayanad districts (Tables - 1 and 2).

Exploration & Development

GSI carried out exploration for gold and platinum group of minerals in Palakkad District during 2018-19. Details of exploration carried out by GSI and other agencies are furnished in Table-3.

Production

Limestone, limeshell and sillimanite are the important minerals produced in Kerala State. The value of minor mineral's production is estimated as ` 3,848 crores for the year 2018-19. There were 8 reporting mines in 2018-19 in case of MCDR of minerals (Table-4).

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 –2 : Reserves/Resources of Lignite as on 1.4.2019 : Kerala

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total/Kannur	**–**	**–**	**9.65**	**9.65**

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

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

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						
Bauxite	'000 tonnes	-	-	-	-	29	-	24	2037	9284	2722	-	14096	14096
China clay#	'000 tonnes	7097	200	725	8022	4573	463	4112	43930	20439	571644	20200	665360	673383
Fireclay#	'000 tonnes	-	-	-	-	-	-	-	8200	51	9929	-	18181	18181
Garnet	tonne	-	-	45797	45797	-	-	-	100874	-	52190	-	153064	198861
Gold					-									
Ore (Primary)	tonne	-	-	-	-	-	-	-	462280	96180	-	-	558460	558460
Metal (Primary)	tonne	-	-	-	-	-	-	-	0.17	0.03	-	-	0.2	0.2
Ore (Placer)	tonne	-	-	-	-	-	-	-	-	2552000	23569000	-	26121000	26121000
Metal (Placer)	tonne	-	-	-	-	-	-	-	-	2.29	3.57	-	5.86	5.86
Granite (Dim. Stone)##	'000 cu. m	140	-	-	140	-	-	-	-	99	2570	-	2669	2808
Graphite	tonne	-	-	16518	16518	-	8376	-	-	1088550	322606	-	1419532	1436050
Iron Ore (Magnetite)	'000 tonnes	-	-	-	-	-	-	-	-	59912	23523	-	83435	83435
Kyanite	tonne	-	-	-	-	-	-	-	192360	-	10000	-	202360	202360
Laterite#	'000 tonnes	-	-	1156	1156	953	-	-	-	-	-	16717	17670	18826
Limestone	'000 tonnes	11472	-	-	11472	123106	77	-	21161	2888	35228	-	182459	193931
Magnesite	'000 tonnes	-	-	-	-	-	-	-	2	-	38	-	40	40
Quartz-Silica Sand#	'000 tonnes	221	33	136	389	179	1985	3588	14611	30241	77489	-	128092	128481
Sillimanite	tonne	-	-	-	-	1015625	120000	-	2479816	160300	3369200	-	7144941	7144941
Talc/steatite/ soapstone#	'000 tonnes	-	-	-	-	-	-	-	-	-	14390	-	14390	14390

Figures rounded off.

 # Declared as Minor Minerals vide Gazette Notification dated 10.02.2015.

Minor Mineral before Gazette Notification dated 10.02.2015.

Table –3 : Details of Exploration Activities in Kerala, 2018-19

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
REE							
Idukki	Around Munnar area	1:12500	100	-	-	397	Large-Scale Mapping over an area 100 sq. km on 1:12,500 scale was carried out during reconnaissance survey for REE in granite around Munnar, Idukki district. Bedrock sampling, pit/ trench sampling, stream sediment sampling and soil (regolith) sampling were adopted for delineating the REE mineralised zones in the study area. A total of 120 bedrock samples, 76 pit/ trench samples, 100 stream sediment samples and 101 regolith samples were collected for chemical analysis to delineating the REE mineralised zones in the study area. A total of 28 granite bedrock samples showed total REE (La to Lu) values ranging from 118.20 ppm to 2,152.98 ppm with mean value of 961.40 ppm and 25 regolith samples showed total REE (La to Lu) values ranging from 185.07 ppm to 1,702.96 ppm with mean value of 588.64 ppm. Reconnaissance survey for REE was carried out in syenite and associated laterite in Angadimogar area covering 100 sq.km. Analytical results of 62 bedrock samples showed total REE (La to Lu) values ranging from 58.91 ppm to 3,964.61 ppm and 33 regolith samples showed total REE (La to Lu) values ranging from 65.79 ppm to 1,423.71 ppm.
Platinum Group of Metals (PGM)							
Palakkad	Elaichivazhi block, Attapadi Valley	1:1000	1.0	5	500	3	A preliminary exploration (G3) was taken up in Elaichivazhi block, Attapadi Valley, Palakkad district to delineate the sulphide-bearing zones in the ultramafic and mafic rocks and to evaluate their PGE potential. Detailed mapping on 1:1,000 scales was carried out for about 1.00 sq. km area in Elaichivazhi block. Sulphide mineralisation in the form of pyrite, chalcopyrite and

(contd)

Table – 3 (concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							pyrrhotite has been noticed mainly in metapyroxenite and at contact of metapyroxenite with metagabbro. A significant PGE mineralised zone was encountered in the northern part of Elaichivazhi block by surface exploration during field season 2018-19, for a strike length of 450 m with width varying from 2 to 5 m. Samples collected from three trenches yielded anomalous PGE values. Trench-2 analytical results yielded PGE value of 770 ppb Pt+Pd. In Trench-05, the total PGE values were found to range from 05 ppb to 591 ppb in the samples collected from metapyroxenite and at the contact of metapyroxenite and metagabbro. Trench-04 showed the total PGE values ranging from 19 ppb to 809 ppb. In Trench-6, the total PGE values were observed to range from 39 ppb to 538 ppb. A total of 500 m drilling were achieved. The drilling of the five boreholes: KPE-01 (100 m) below Trench-2, KPE-02 (80 m) below Trench-3, KPE-03 (100 below Trench-1, KPE-04 (100 m) below Trench-04 and KPE-06 (100 m) below Ch-10/ near Trench-06 were drilled to intersect the mineralised zone at 50 m vertical depth from surface. The important rock types intersected in boreholes were metagabbro, anorthositic gabbro and metapyroxenite with sulphide mineralisation.
MECL							
Gold							
Malappuram	Vettukathi Kotta block	1:12500	155	-	-	286	A G4 level exploration was taken up in Vettukathi Kotta block, Malappuram district. An area of 155.00 sqkm was mapped on 1:12,500 scale and collected about 286 samples for different types of study. The exploration activities were abandoned due to local problems.

Table-4: Mineral Production in Kerala, 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	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		**8**		**35366554**	**8**		**46682670**	**8**		**38809084**
Graphite (r.o.m.)	t	1	660	5280	1	240	1937	1	340	2720
Sillimanite	t	2	9254	87400	2	7538	74012	3	7327	82160
Limestone	'000t	1	376	325069	1	444	366075	1	325	229765
Limeshell	t	4	8341	26995	4	10228	38639	3	3996	17082
Sulphur #	t	-	33287	-	-	155695	-	-	225857	-
Minor Minerals		-	-	34921810	-	-	46202007	-	-	38477357

Note: *The number of mines excludes minor minerals.*
 # Recovered as by product from oil refinery.

Table – 5 : Principal Mineral-based Industries

Industry/Plant	Capacity ('000 tpy)
Abrasives	
Carborandum Universal Ltd, Ernakulam	NA
Carborandum Universal Ltd, Thrissur	NA
Carborandum Universal Ltd, Pathanamthitta	NA
Asbestos Products	
Hyderabad Industries Ltd (formerly, Malabar Building Products Ltd) Mulagunnathukavu, Distt Thrissur	84
Cement	
J K Tex Coats Nadama, Kanayannur	0.030 (Cerastone) 0.025 (Rock tiles) 0.35 (Others)
Malabar Cements, Walayar, Distt Palakkad	660
Malabar Cement, Cherthala, Distt Alappuzha (G)	200
The Travancore Cements Ltd, Nattakom, Distt Kottayam	81
Ceramic	
Kerala Ceramics Ltd, Kundara, Distt Kollam	18000
Tata Ceramics, Kozhikode	NA
FACR-RCF Building Product Ltd (FRBL), Kochi.	NA
Chemical	
Tecil Chemicals and Hydro Power Ltd, Chingavanam, Distt Kottayam	30 (calcium carbide) 2 (acetylene black) 7.5 (ferrosilicon)
Cochin Minerals and Rutile Ltd, Kadungalloor, Alwaye	50 (Synthetic Rutile) 82.5 (Ferrous cloride) 30 (Ferric cloride) 8 (Recovered Tio_2) 6 (Recovered Upgraded Ilmenite)

(contd)

Table – 5 (concld)

Industry/Plant	Capacity ('000 tpy)
Electrode	
Super Electrode, Patlla	0.6
Synthetic Rutile	
CMRL, Edayar, Distt Ernakulam	50
KMML, Chavara, Distt Kollam	50
TiO_2 Pigment	
TTPL, Kochuveli, Distt Thiruvananthapuram	1.8
KMML, Chavara, Distt Kollam	40
Fertilizer	
FACT Ltd, Udyogmandal, Distt Ernakulam	148.5 (Complex) 225 (AS)
FACT Ltd, Ambalamedu (Cochin II), Distt Ernakulam	485 (NP/NPKs)
Ferro-alloys	
INDSIL Electrosmelts Ltd, Pallatheri, Distt Palakkad.	14
The Silcal Metallurgic Ltd, Wayalur.	3.6
Foundry	
HMT Machine Tools Ltd, Bengaluru.	1500
Glass	
Excel Glass Ltd, Pathirapally, Distt Alappuzha.	72
Lead-Zinc	
BZL Zinc Ltd, Binanipuram. (Edayar Zinc Ltd)	38 (Zn ingot) 0.08 (Cd ingot) 50 (H_2SO_4)
Petroleum Refinery	
BPCL, Kochi.	12400

G; Grinding Unit
Note: *Data for Fertilizer Industries is taken from Indian Fertilizer Scenario, FAI Statistics.*