INDUSTRIES, INVESTMENT PROMOTION AND COMMERCE DEPARTMENT

MINES AND MINERALS

POLICY NOTE
2023 - 2024

DEMAND No. 27

DURAIMURUGAN

MINISTER FOR WATER RESOURCES

INDUSTRIES, INVESTMENT PROMOTION AND COMMERCE DEPARTMENT

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POLICY NOTE

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1. DEPARTMENT OF GEOLOGY AND MINING

Minerals are involved in every sphere of human activity and they play a vital role in the economic development of a country. The minerals found on the surface of the earth are the basic resources for several important industries and contribute substantially to the economy and the industrial growth of the State. Tamil Nadu is known for its rich industrial minerals such as lignite, limestone, magnesite etc., and widely used minor minerals like Black and Multi Colour Granites. With depletion of mineral resources that cannot be replenished, it is necessary to conserve minerals and mine them with a systematic and

scientific approach with effective and sustainable mineral management.

The Department of Geology and Mining was established in the year 1983 with the prime objective of exploration of minerals by utilizing modern technologies and to generate revenue to Government through effective and efficient mineral administration, by regulating mining activities. The primary goal of the department is to increase the mineral revenue that accrues to the State exchequer by ensuring effective mineral administration with adoption of sustainable mining practices.

By taking consistent and systematic efforts, the revenue generated from mineral resources has increased from Rs.1047.01 crore in 2020-21 to Rs.1212.87 crore in 2021-22 and in 2022-23 to Rs.1572.84 crore.

The Government has established a District Mineral Foundation Trust Fund in all districts of the State except Nilgiris for the welfare of the people in the areas affected due to mining activities. Many projects have been implemented through the District Mineral Foundation Trust Fund in infrastructure, education, drinking water, health, sanitation, welfare of the aged and differently abled people, welfare of women and children, skill development, environment and pollution control and irrigation sectors. A total of 2709 projects have been taken up at a cost of Rs.845.75 crore up to February 2023.

Controlling the menace of illegal mining and transportation of minerals is a big challenge. To curb and control such unlawful activities, the State Government has deployed modern technologies such as Differential Global Positioning System (DGPS) and Drone Technology for volumetric assessment of the quarried

quantity in the quarries. The Government has also fixed monthly targets for District Collectors and Subordinate officials to undertake surprise inspection of quarries.

The process to bringing limestone blocks and composite license blocks to auction for the first time is under progress and the Government expects substantial revenue through the auction process.

The Government has conducted auctions for granite in Government poramboke lands and is keen to revive the granite industry.

1.1 Vision and Mission

The vision is "to establish the leadership position of Tamil Nadu in the management of the mineral wealth" and the mission is "To undertake / facilitate scientific exploration, optimal exploitation, judicious conservation and revenue

maximization in the industry, within an eco and citizen friendly policy framework."

1.2 Objectives

i. Carrying out explorations and exploitation of mineral resources on a sustainable basis by using modern technologies.

ii. Enhancing mineral revenue by effective and efficient mineral administration and regulation of the mineral concessions.

iii. Employment opportunities.

iv. Prevention of illegal mining and transportation of minerals by the use of new technologies (Drone, DGPS).

v. Ensuring economic extraction of minerals for sustainable use by protecting the environment.

vi. Implementation of projects for the welfare of the mining affected area and people, using the District Mineral Foundation Trust Fund.

1.3 Functions

i. The Department of Geology and Mining will carry the mineral exploration by utilizing funds allotted under NMET. So far, Rs.4.99 crore have been allotted by NMET for strengthening the exploration wing and lab facilities in the department. Tamil Nadu Cements Corporation Limited (TANCEM), Tamil Nadu Minerals Ltd (TAMIN) and Tamil Nadu Magnesite Limited (TANMAG) can also explore for minerals.

ii. Granting, regulating and monitoring of mineral concessions for augmenting revenue to the State exchequer by

collecting royalty / seigniorage fee, surface right compensation, dead rent, area assessment, annual brick mineral fee, DMFT fund, NMET fund, Green fund etc., from the lessees of major and minor minerals.

iii. Taking various enforcement measures for curbing illegal mining, transportation and storage of minerals.

iv. Identification of weak zones, susceptible to landslides in hilly districts and suggesting remedial measures to the district administration to mitigate the natural hazards and processing the applications for offering technical feasibility report for any construction activity in the hill areas through the office of Geology and Mining, Nilgiris district and Geotechnical Cells in Kodaikanal in Dindigul district.

1.4 Major / Minor Minerals Operating lease details

Sl. No	Mineral	Operating Leases	
		No. of leases	Extent in Ha
Major Minerals			
1	Lignite	1	25900.00.0
2	Oil and Natural Gas	12	23178.00.0
3	Limestone	64	3404.19.6
4	Magnesite	2	96.52.0
5	Graphite	1	237.39.5
6	Beach sand minerals	2	148.28.7
TOTAL		**82**	**52964.39.8**
Minor Minerals			
1	Rough stone	1308	2511.39.5
2	Multi-Colour Granite	67	185.69.7
3	Black Granite	32	199.18.0
4	Earth	61	998.15.6
5	Gravel/Red soil	66	150.61.8
6	Pebbles	2	3.39.0
7	Lime kankar	9	718.63.9
8	Quartz and Feldspar	19	36.76.7
9	Fireclay	6	19.83.6
10	Silica Sand	1	4.38.5
11	Calcite	1	1.94.5
TOTAL		**1572**	**4830.00.8**
GRAND TOTAL		**1654**	**57794.40.6**

1.5 Mineral Resources

Tamil Nadu is endowed with major minerals, oil and natural gas and minor minerals. These minerals are detailed below:

(A) Major minerals

(i) Lignite

The chemical composition of lignite is carbon. This is an energy mineral and it is found in three areas namely Neyveli, Mannargudi and Ramanathapuram. The Neyveli Lignite Corporation India Limited (NLCIL) has been mining Lignite in Neyveli over an extent of 25,900 hectares in Cuddalore district. The total reserves of Lignite in these areas is estimated at 34,764 million tonnes.

(ii) Petroleum and Natural Gas

It is a hydrocarbon mineral. The Oil and Natural Gas Corporation (ONGC) has been producing Oil and Natural Gas in the districts of Cuddalore, Thanjavur, Tiruvarur, Nagapattinam, Pudukottai, Mayiladuthurai, Ariyalur and Ramanathapuram.

(iii) Limestone

The chemical composition of Limestone is Calcium Carbonate ($CaCO_3$). It is utilized for manufacturing lime, cement, chemicals, fertilizers and in metallurgical industries. It is of two types,

(a) Crystalline Limestone

It is a type of limestone, made mostly of calcium carbonate (CaCO3) in the form of

calcite or aragonite. It mainly occurs in Salem, Tirunelveli, Thoothukudi, Karur, Dindigul, Madurai, Virudhunagar, Coimbatore and Kanniyakumari districts.

(b) Non-Crystalline Limestone or Fossiliferous Limestone

Fossiliferous limestone occurs predominantly in Ariyalur, Tiruchirapalli, Perambalur and Thoothukudi districts.

(iv) Marl

Marl are sedimentary rocks with mixed composition consisting of carbonate. It is a material, rich in carbonate minerals, clays and silt. It is used in manufacturing of Fertilizers and Cement. It occurs as a

sedimentary deposit in association with Fossiliferous Limestone in Ariyalur District.

(v) Magnesite

The chemical composition is $MgCo_3$, Magnesium Carbonate mineral. It finds wide use in refractories as flux in blast furnace, ceramic filters, sintering, conditioners and abrasives. Chalk hills of Salem districts have the world's best Magnesite.

(vi) Bauxite

The chemical composition of Bauxite is $Al_2O_3.H_2O$. The metal Aluminum is extracted from this ore. Bauxite is also used in refractory, cement, chemical and paint industries and in refining of petroleum products. The Kolli and Shervaroy hills in Namakkal and Salem district respectively contain good deposits of Bauxite.

(vii) Graphite

Graphite is a naturally occurring crystalline Carbon used in electrode, atomic reactors, crucible industry, insulators, and foundry units. Graphite occurs mainly in Madurai and Sivaganga districts.

(viii) Atomic Minerals

Atomic minerals such as Monazite, Garnet, Ilmenite, Rutile, Sillimanite, Zircon and Leucoxene are available in the beach sand in Tirunelveli, Thoothukudi and Kanniyakumari districts. They are used as abrasives, semi conductors, and in atomic reactors. The Indian Rare Earths (India) Limited has been mining these minerals in Kanniyakumari district. Garnet also occurs as placer deposit in Tiruchirapalli district and as rock forming deposits in Madurai district.

Garnet

Sillimanite

Rutile

Zircon

Monazite

Ilmenite

As per the Ministry of Mines, Government of India notification dated 01.03.2019 it was notified that the threshold value of monazite occurring in beach sand minerals and other placer deposits is fixed as 0.00%. Any mineral concession of beach sand minerals shall be granted only to a "Government Company or Corporation owned or controlled by the Government" under the provisions of the Atomic Minerals Concession Rules, 2016.

(ix) Vermiculite

It is found in Tirupattur district and it is brownish yellow in colour and it is a micaceous mineral. It is used for manufacture of vermitiles and is used as insulators.

(x) Molybdenum

Molybdenum is a chemical element with the symbol "Mo". Molybdenum mainly occurs in Dharmapuri and Krishnagiri Districts. It is used to make alloys to increase strength, hardness, electrical conductivity and resistance to corrosion and wear.

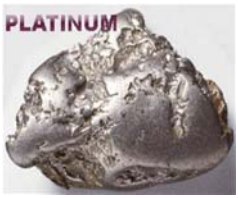
(xi) Tungsten

Tungsten is a chemical element with the symbol "W".

It is available in Madurai district. It is a rare metal found naturally on earth almost exclusively as compounds with other elements. Tungsten is commonly used in heavy metal alloys such as high speed steel from which cutting tools are manufactured. Tungsten is used as electrodes, heating elements and field emitters and as filaments in light bulbs and cathode ray tubes.

(xii) Platinum Group of Elements (PGE)

The Platinum group elements are Osmium, Iridium, Ruthenium, Rhodium, Platinum, and Palladium. Platinum group of elements occurs in Namakkal district. Platinum (Pt) is the most popular element of PGE. The Platinum group metals are a family of six structurally and chemically similar elements that are most valued for their wide range of industrial, medical, and electronic applications. Platinum is



probably the most recognized because of its use in jewellery, but its main application is in the manufacture of catalytic converters.

(B) Minor minerals

(i) Granite

The hard crystalline rocks that are amenable to cutting and polishing are called Granite. Tamil Nadu has rich deposits of Granite. The quarrying of Granite in India was pioneered by Tamil Nadu in 1970s. Granite produced in different sizes such as monuments and tiles has huge market in foreign countries, earning substantial foreign exchange. Granites of various shades occur in the districts of Krishnagiri, Madurai, Virudhunagar, Salem and Dindigul. Some of the most popular commercial varieties

quarried in Tamil Nadu are Kunnam black, Paradiso, Zebra white, Red wave, Tiger skin, Kashmir white and Desert brown. Black Granite occurs in the districts of Krishnagiri, Dharmapuri, Salem, Villupuram and Tiruvannamalai.

(ii) Quartz

The chemical composition of quartz is SiO_2. Salem, Karur, Tiruppur, Namakkal, Dindigul, and Dharmapuri districts have good deposits of Quartz. It is mainly used in glass, refractory, abrasives and electrical industries.

(iii) Feldspar

Feldspars are a group of rock-forming aluminium tecto silicate minerals, also containing other cations such as Sodium, Calcium, Potassium, or Barium. Salem, Dindigul, Karur, Tiruppur and Namakkal districts have good

deposits of Feldspar. It is mainly used in foundry, paint and ceramic industries.

(iv) Fire Clay

Fire clays are primarily hydrous Alumina Silicates with varying amounts of impurities such as Iron Oxides, Lime, Magnesia, alkali, and free Silica. The main use of fire clay is in refractory, cement industries, ceramic articles and as decorative tiles. It is found in the districts of Perambalur, Ariyalur and Cuddalore.

(v) Silica Sand

The chemical composition of silica sand is Silicon Dioxide. It is mainly used in glass industries and in foundries as moulding catalysts.

It is available in the districts of Nagapattinam, Villupuram, Cuddalore, Thiruvarur and Chengalpattu.

(vi) Gypsum

The chemical composition of Gypsum is $CaSO_4 \cdot 2H_2O$. Gypsum is used in the manufacture of Plaster of Paris and also in cement, fertilizer and pesticides industries. The mineral is available in Perambalur, Coimbatore and Tiruppur Districts.

(vii) Soapstone

Soapstone is formed by the metamorphism of ultramafic protoliths (e.g. Dunite or Serpentinite) and the metasomatism of Siliceous Dolomites. By mass, "pure" steatite roughly contains 63.37% silica, 31.88% magnesia and 4.74% water. It commonly contains

minor quantities of other oxides such as CaO or Al_2O_3.It occurs mainly in the districts of Salem and Namakkal. It is used in the manufacture of talcum powder and decorative articles.

1.6 Mineral Production

The details of production of major minerals including oil and natural gas and minor minerals in Tamil Nadu from April 2022 to March 2023 is as follows:

Production of Major Minerals 2022-23

Sl. No.	Mineral	Production (in Metric Tonne)	Revenue (Rs. in crore)
1	Lignite	21566089.87	278.23
2	Limestone	23388248.36	179.41
3	Magnesite	38100.00	0.58
4	Vermiculite	36.00	0.0005
5	Graphite	49018.64	0.13
6	Marl	2363191.68	30.47
7	Beach Sand Minerals	641985.00	5.30
		TOTAL	**494.12**

Production of Oil and Natural Gas 2022-23

Sl. No.	Mineral	Production	Revenue (Rs. in crore)
1	Crude Oil	313794.624 MT	263.63
2	Natural Gas	1065405612 CBM	223.23
		Total	**486.86**

Production of Minor Minerals 2022-23

Sl. No.	Mineral	Production	Revenue (Rs. in crore)
1	Multi-Colour Granite (cbm)	94388.20	22.01
2	Black Granite (cbm)	26210.431	11.38
3	Rough Stone (cbm)	43743334.467	261.58
4	Gravel (cbm)	6824825.864	37.06
5	Earth (cbm)	6354084.362	64.09
6	Pebbles (cbm)	5084.00	0.09
7	Quartz (MT)	25361.00	0.43

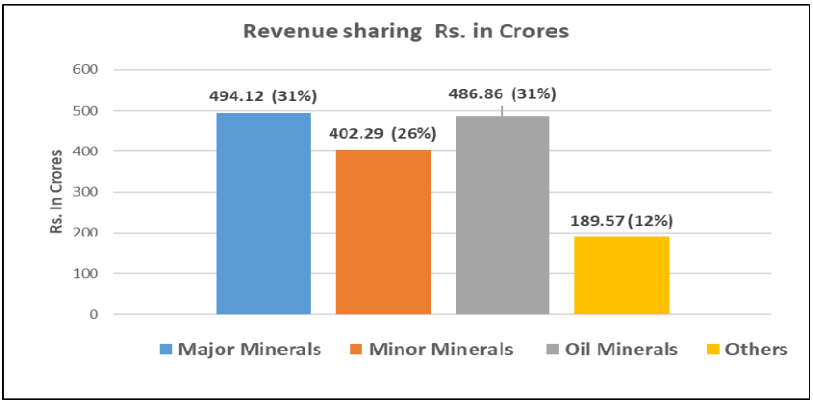
Sl. No.	Mineral	Production	Revenue (Rs. in crore)
8	Feldspar (MT)	112482.00	1.29
9	Silica Sand (MT)	670.00	0.01
10	Lime Kanker (MT)	437530.7	3.31
11	Fire clay (MT)	274688	0.89
12	Calcite (MT)	4000	0.03
13	Quartzite (MT)	4058	0.03
14	Clay(MT)	47000	0.09
		Total	**402.29**

1.7 Mineral Revenue

The revenue realized from the mineral resources for the last three years are as follows:-

Sl. No.	Financial year	Amount (Rs in crore)
1.	2020-21	1047.01
2.	2021-22	1212.87
3.	2022-23 (Tentative)	1572.84

The share of revenue from major minerals, minor minerals and oil minerals for the year 2022-23 is shown below:-



Due to effective enforcement, during this financial year till March 2023, 4799 vehicles transporting minerals without valid transport permits were seized. A penalty of Rs.41 crore was collected in comparison with Rs.1.13 crore collected during 2021-22. In addition, 3785 criminal cases/FIRs have been filed. Against 4 habitual offenders, Goondas Act has been invoked.

1.8 District Mineral Foundation Trust

The District Mineral Foundation Trust has been established in all the districts except Nilgiris since 2017. Public sector undertakings and private companies granted leases for mining and quarrying of minerals before 12.01.2015 have been contributing 30% of royalty or seigniorage fee and lessees granted leases after this period are contributing 10% of royalty (or) seigniorage fee to the Trust. This fund is utilized for the implementation of the Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) and other welfare schemes for the mine affected areas. A sum of Rs.1203.49 crore have been contributed by the lessees from the period of establishment of this Trust since 2017 till 28.02.2023.

A minimum of 60% of the fund is earmarked for taking up projects under high priority sectors such as health care, drinking water, education, welfare of women and children,

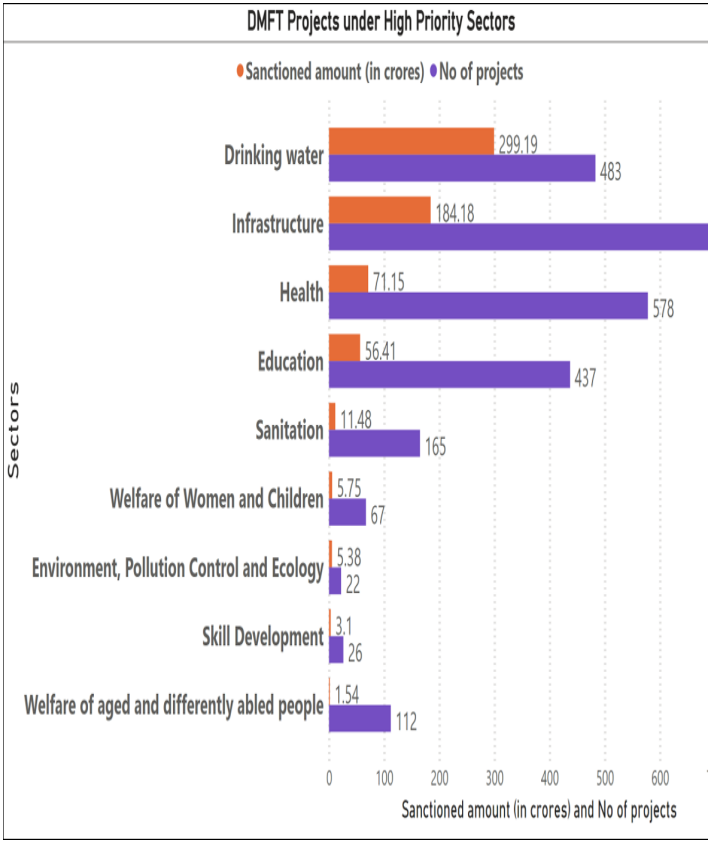
welfare of aged and differently abled, skill development, physical infrastructure, environmental preservation and measures to control pollution.

The remaining fund is used for projects that fall under priority sectors such as irrigation development, energy and watershed development, environmental preservation and pollution control measures.

A total of 2709 projects have been taken up upto 28.02.2023 at a cost of Rs.845.75 crore. Out of these projects, 1811 projects have been completed and put to beneficial use. The number and cost of projects that are taken up under high priority and other priority sectors are shown in the table below:-

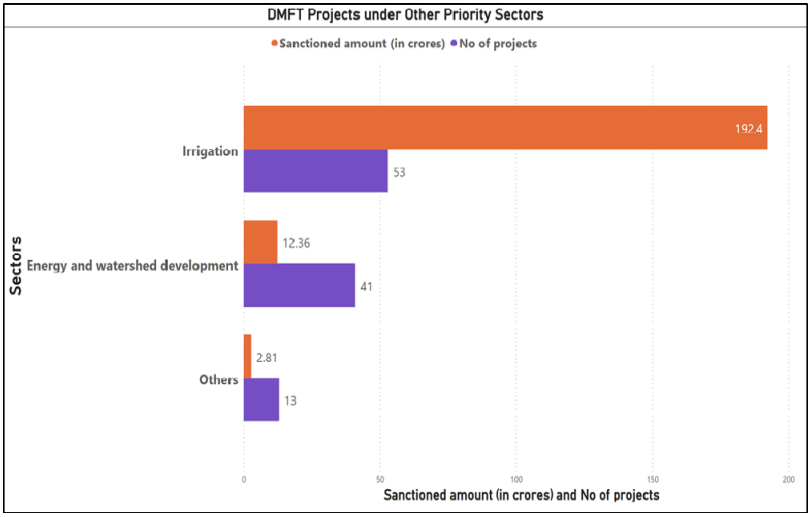
(i) DMFT Projects under High Priority Sectors

Sl. No	Sectors	No of projects	Sanctioned amount (Rs. in crore)
1	Drinking water	483	299.19
2	Infrastructure	712	184.18
3	Health	578	71.15
4	Education	437	56.41
5	Sanitation	165	11.48
6	Welfare of Women and Children	67	5.75
7	Environment, Pollution Control and Ecology	22	5.38
8	Skill Development	26	3.10
9	Welfare of aged and differently abled people	112	1.54
	Total	**2602**	**638.18**


DMFT Projects under High Priority Sectors
Sanctioned amount (in crores)
No of projects
Sectors
Drinking water
299.19
483
Infrastructure
184.18
Health
71.15
578
Education
56.41
437
Sanitation
11.48
165
Welfare of Women and Children
5.75
67
Environment, Pollution Control and Ecology
5.38
22
Skill Development
3.1
26
Welfare of aged and differently abled people
1.54
112
0
100
200
300
400
500
600
Sanctioned amount (in crores) and No of projects

(ii) DMFT Projects under Other Priority Sectors

Sl. No	Sectors	No of projects	Sanctioned amount (Rs. in crore)
1	Energy and watershed development	41	12.36
2	Irrigation	53	192.40
3	Others	13	2.81
	Total	**107**	**207.57**



1.9 National Mineral Exploration Trust

The National Mineral Exploration Trust was established in 2015. The lessees of major minerals have been contributing 2% of royalty to this Trust. A sum of Rs.72.466 crore has been contributed up to 31.12.2022 by the lessees of major minerals.

1.10 Initiatives

(i) Restoration of abandoned mines and quarries for public utility

As per the announcement of Hon'ble Water Resources Minister for the year 2021, the abandoned quarries in Tamil Nadu were brought to public utility such as rainwater harvesting structures, dumping yards for Construction and Demolition waste and aquaculture purposes.

The abandoned quarries in Sikkarayapuram village, Kanchipuram district are being utilized as rain water harvesting structures and served as a lifeline during the drinking water scarcity in Chennai city. The water stored in the quarries is treated by Chennai Metropolitan Water Supply and Sewerage Board and being supplied to Chennai city for drinking water purpose. Quarries in Kanyakumari are being used for aquaculture and in Virudhunagar and Dindigul for rain water harvesting. In Coimbatore, quarries are being used for solid waste management.

So far, Rs.45.27 crore has been collected as Green Fund as on 31.03.2023 and this fund is utilized for developing abandoned quarries for promoting afforestation and water harvesting activities in the abandoned quarry areas.

(ii) Differential Global Positioning System (DGPS)

DGPS which is a technique used to improve the accuracy of GPS (Global Positioning System) location measurements. GPS relies on signals from satellites to determine a user's position on the earth's surface accurately. 23 agencies have been empaneled for fixing the lease boundaries of existing and proposed mines and quarries. So far, DGPS survey has been completed in 599 quarries.

(iii) Drone Technology will be utilized to prevent illicit mining / quarrying. This project will be implemented at an estimated cost of Rs. 25 crore / annum

As per the announcement made during 2021-22, the existing mines and quarries are to be measured twice in a year by using drones to determine the exact quantum of minerals quarried and seigniorage fee will be collected for

the difference of quantity. For this purpose, the Government has sanctioned an amount of Rs. 25 crore per annum to implement the drone survey. Agencies have been empaneled for conducting drone survey. By conducting drone survey, illegal mining and quarrying will be identified and loss of revenue will be estimated and revenue loss will be realized by imposing penalty. Common Single software platform facility will also be created to monitor all the quarries.

(iv) MTS & e-Permit

Mining Tenement System for minor minerals involves automation of the entire mineral concessions, life cycle starting from application stage to closure of mines. The system will enable the applicants to track the status of the applications. To implement the online system for Mining Tenement System, the said work was entrusted to Tamil Nadu e-Governance Agency. Similarly, a software for e-Permit system for

issuing of transport permits for transporting minerals is being developed. e-permit is an application to provide online bulk permit and dispatch slips to transport the minerals and it will help to control illegal transportation of minerals and also to correctly assess the quantity of minerals quarried and transported from the lease premises, thereby improving revenue collection.

(v) Vehicle Tracking System

An announcement has been made on the floor of the Assembly for the year 2022-23 that "in order to control the illicit transportation of minerals, the vehicles transporting the minerals from mines and quarries will be monitored directly through online by installing GPS instruments". Hence, this will be made mandatory at the expense of the lessees and the lorry owners.

GPS installed Vehicle Tracking System is a continuation of the Mining Tenement System for

minor minerals and the e-Permit system. All the vehicles transporting minerals are to be registered with the Department of Geology and Mining and to install AIS-140 standard or higher standard of GPS. All the GPS mounted vehicles transporting minerals will be tracked to curtail illegal transportation. Necessary software for the Vehicle Tracking System is being developed for controlling the illicit transportation of minerals.

In this connection, necessary instructions have been issued to all District Collectors, and district officers of Department of Geology and Mining.

(vi) Geo-Park

The Geo-park is one of the best natural sites in the world to study the geological features which makes the place unique in Geological history. Fossil wood from Thiruvakkarai

refers to the petrified wood found in the village of Thiruvakkarai in Viluppuram district. The petrified wood is believed to have been formed during the Cretaceous period, around 100 million years ago, when the region was covered by forests. Petrified wood is formed when organic material such as wood is buried and then replaced by minerals over time, resulting in a fossilized form of the original material. The fossil wood from Thiruvakkarai is known for its unique patterns and colours, which are created by the different minerals that replace the original wood.

The region is also home to the Thiruvakkarai Fossil Wood Park, which showcases a variety of fossil wood specimens and provides

information on the geological history of the area. About twenty million years ago, these tree trunks would have been brought from the forest by the river and

deposited in the water bodies along with sediments. The ground water rich in dissolved solids flowed through the sediments replacing the original plant material with silica by retaining the original woody structures such as annular rings and tree trunk nodes.

In order to protect such natural heritage sites and to enable students and researchers to understand the past history of the earth, the Government had sanctioned an amount of Rs.5 crore for creation of Geo-park at Thiruvakkarai. The construction works have been assigned to the Public Works Department and a Fossil Wood Geo Park Museum is under construction.

(vii) Fossiliferous Geo-hotspots

Scientific study by several scientists in the fossil areas in Ariyalur and

Permbalur districts has revealed very useful information about the world which existed several million years ago. There is a National fossil-wood park and a national geo-heritage monument in Sattanur village in Perambalur district. Geological studies show that the fossil wood in the area is 12 crore years in age which were formed due to the burial of trees brought down by the rivers along with some of the trees which flourished on the coast and have petrified in course of time.

To protect this rare heritage, the Government have allotted a sum of Rs.8.52 crore for establishing Geo-Park in Perambalur District. An amount of Rs.7.89 crore has been transferred to the Public Works Department for construction and an amount of Rs.0.63 crore will be transferred to District Administration for land acquisition.

(viii) M-Sand Policy

Hon'ble Chief Minister of Tamil Nadu has released M-Sand Policy-2023 on 09.03.2023. The objectives of the Policy are:-

i. Prevent damage to river ecosystem by rationalizing the use of river sand in a conserved manner.

ii. Promote the usage of quality M-Sand / Crushed Sand having greater compressive strength adhering to BIS prescribed standard, as an easy and cost-effective alternate building material to river sand.

iii. Enable M-Sand / Crushed Sand manufacturing units in Tamil Nadu to become compliant of relevant statutes, rules and regulations and to formalize the sector.

iv. Standardize the procedure for approval of M-Sand / Crushed Sand manufacturing units.

v. Hand hold stand-alone crushing and manufacturing units which depend solely on the stone quarries for getting required raw material.

vi. Promote recycling of coarse and fine aggregates from construction and demolition waste of buildings and concrete structures and quarry waste in the State.

vii. Promote zero-waste mining and quarrying in the State.

Hon'ble Chief Minister released M-Sand Policy 2023 on 09.03.2023

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2. TAMIL NADU MINERALS LIMITED

Government of Tamil Nadu established the Tamil Nadu Minerals Limited popularly known as TAMIN during April 1978. TAMIN was setup to extract, process and market granite raw blocks, granite products, major and minor minerals and mineral based products.

TAMIN excavates and exports some of the best black granite in the world, in addition to various colour granites. TAMIN is also the largest producer of natural graphite flakes in India. TAMIN is the only authorized manufacturer of Indian Standard Sand popularly known as Ennore Sand which is used as a reference material for quality testing by every cement company in India. TAMIN additionally extracts limestone, quartz and vermiculite.

The sales turnover during the financial year 2022-2023 is Rs.92 crore (unaudited) compared

to the previous financial year 2021-2022 sales turnover of Rs.75 crore. However with a major turnaround, TAMIN expects significantly improved financial performance for the next financial year 2023-2024.

2.1 Vision

To be a model sustainable mining company in the sector.

2.2 Mission

- Continual search for new mineral deposits.
- Continuous updation of technology in safe mining operations, with state-of-the-art machinery, quality control measures and mineral processing & marketing.
- Generate gainful employment.
- Be a model for sustainable mining.

2.3 Granite

TAMIN produced 9084 CBM granite raw blocks during 2022-2023 against the last year its production of 4886 CBM which is a 86% increase over the previous year. Similarly, sales revenue of Rs.51.94 crore was achieved against the last financial year of Rs.39.91crore which is a 30% increase over last year performance. TAMIN has operated 17 quarries during 2022-2023 which is likely to increase to 30 quarries during 2023-2024.

2.4 Graphite

TAMIN produced 6177 MT of graphite flakes during financial year 2022-2023 compared to 5857 MT of 2021-2022. The graphite ore production has also increased

by 29% compared to the last financial year 2021-2022.

2.5 Beach Sand Minerals


Red sediments, Sattankulam, TN

Tamil Nadu has some of the best rare earth deposits. TAMIN has signed a MoU with IREL (India) Ltd on 09.01.2023 in the presence of Hon'ble Chief Minister of Tamil Nadu and Hon'ble Minister for Water Resources to setup a Joint Venture Company for extraction and processing of beach sand minerals.

2.6 Silica Sand

To meet industry demand, TAMIN will endeavour to double its production capacity by procuring silica sand from NLC to manufacture Indian Standard Sand. TAMIN is the only firm authorized by BIS to supply Indian Standard Sand to all cement factories in India.

2.7 Leases in Operation

Sl. No.	Minerals	No. of leases in operation	Extent (in hects.)
1	Black Granite	12	315.45.3
2	Colour Granite	02	25.35.5
3	Minor Minerals (other than Granite)	01	6.84.0
4	Major Minerals	02	246.79.3
	Total	**17**	**594.44.1**

2.8 Production & Sales Performance during the year 2022-2023 (unaudited)

Description		Production in Quantity	Sales in Quantity	Value (Rs. in Lakhs)
(I) GRANITE – RAW BLOCKS				
Black Granite	CBM	6,594.02	6,070.55	4,634.11
Multi Colour Granite	CBM	2,389.71	2,724.90	559.57
(II) GRANITE – FINISHED PRODUCTS				
Granite slabs	SQM	-	7,032.39	38.85

Description		Production in Quantity	Sales in Quantity	Value (Rs. in Lakhs)
(III) MINERALS – ORE				
Vermiculite, Silica Sand, Graphite ore.	MT	52,332.41	120.91	21.49
(IV) MINERALS– FINISHED PRODUCTS				
Graphite Flakes	MT	6,177.00	5,100.00	1,942.73
Indian Standard Sand, Exfoliated Vermiculite	MT	2,229.50	1,424.81	947.87
Limestone	MT	1,09,244.00	89,244.00	946.52
Others- Graphipavers, Sawn Blocks, Tailings waste and end bits.	Nos.	-	-	125.59
			Total	**9,216.73**

TAMIN targets to achieve a sales turnover of Rs. 207 crore in the financial year 2023-2024 and earn a profit of Rs. 21 crore.

2.9 Achievements and New Initiatives

- TAMIN has signed a MoU with IREL on 09.01.2023 for mining, processing and marketing of beach sand minerals in the august presence of Hon'ble Chief Minister of Tamil Nadu and Hon'ble Minister for Water Resources. TAMIN will form a Joint venture company with IREL and set up 2 mineral processing units which would eventually fetch a revenue of Rs.3,000 crore per annum.

- TAMIN plans to expand its graphite business by scaling up the production of Graphite flakes from current capacity of 6,000 MT to 25,000 MT at an estimated project cost of Rs.120 crore. Accordingly, TAMIN has engaged M/s. Price Waterhouse Coopers (PwC), Kolkata as its consultant to carry out a technical study on the graphite business and to identify technology

providers for the purification process to produce 99.99% purity graphite flakes and to convert into spherical graphite. The final report is expected by June 2023.

- TAMIN has approached NLC and collected raw silica sand samples which are excavated during their mining operation as an associate mineral. The tests were conducted in the National Council for Cement & Building Material (NCB) Lab, Haryana and the test results revealed that NLC silica sand is suitable for manufacture of Indian Standard Sand as per IS: 650-1991. The test results were sent to BIS for granting permission to source the raw silica sand from NLC. TAMIN has prepared and shared with NLC a draft MoU to be signed with NLC for procurement of raw silica sand.

- TAMIN operates fully on e-office since 21.03.2022 in TAMIN Head Office and from 19.05.2022 in all Divisional Offices and Factories.

- TAMIN's participation at MARMOMAC, Verona, Italy one of the World's largest stone fair – repositioned TAMIN in the international market.

- Mines Awards

TAMIN has been awarded 9 First prizes, 10 second prizes and one overall performance prize during the Mines Safety Week celebrations in the year 2022-2023 by the Director General of Mines Safety (DGMS) for various aspects like maintenance of safety, maintenance of pollution free, cleaner environment and scientific mining operations.

Sivaganga graphite mine bagged 8 prizes

- In its efforts to be a model sustainable mining company, TAMIN spent Rs.112 lakh towards Corporate Environment Responsibility activities in 2022-2023 and proposes to spend Rs.200 lakh in 2023-2024. Hon'ble Minister for Water Resources inaugurated TAMIN's mega plantation project on 28.09.2022 at Mahimandalam quarry to plant 5000 trees.

TAMIN and IREL(India) Ltd have signed a MoU on 09.01.2023 in the presence of Hon'ble Chief Minister to form a new JV company for exploiting beach placer minerals

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The Hon'ble Minister for Water Resources inaugurated TAMIN's mega plantation project on 28.09.2022 at Mahimandalam Quarry, Vellore district

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Mahimandalam Black Granite Quarry, Vellore District

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3. TAMIL NADU MAGNESITE LIMITED

Magnesite mineral ore is an essential raw material for manufacturing refractory materials used by the steel industry. India is ranked 9th among the Magnesite producing countries in the world. Tamil Nadu continued to be the major magnesite producing State with the highest share of 47% in total output during 2019-20. Salem Magnesite reserve is famous for its molecular structure and is suitable for manufacturing refractory bricks. Realising the necessity for preservation and exploitation of Magnesite, Government of Tamil Nadu formed TANMAG during January 1979.

The Company has obtained ISO 9001-2008 (Quality Management System) and ISO 14001-2004 (Environment Management System) Certificates.

3.1 Divisions

The Company has been functioning with three Divisions namely, Mines Division, Shaft Kiln Division (SKD) and Rotary Kiln Division (RKD).

3.2 Mining Division

The Magnesite mine located at Kurumbapatty Village, in Salem District is being operated under lease issued by the Environment and Forest Department on an extent of 96.34 Hect.(238 acre) for a period of 20 years from 12.08.2008 for the production of approximately 1,33,000 MT of Raw Magnesite and 1,07,377 MT of Dunite per year.

The process of mining Raw Magnesite involves selection and preparation of site, drilling, blasting, picking, dressing, sorting, stacking and removal of rejects to the spoil bank.

TANMAG has open cast and semi-mechanised mines. The recovery of Magnesite from blasted earth is about one in fifteen.

3.3 Rotary Kiln Division (RKD)

TANMAG manufactures Dead Burnt Magnesite (DBM) from Raw Magnesite in its Rotary Kiln Division using Furnace Oil as fuel. The installed capacity is 30,000 metric tons per annum. The Raw Magnesite is sintered at a high temperature of 1750^{o}c using Furnace Oil to produce Dead Burnt Magnesite. About 2.7 MT of Raw Magnesite and 220 litres of Furnace oil are required to produce one MT of DBM.

DBM is used for manufacturing Refractory Bricks as well as monolithics required for the steel industry.

3.4 Shaft Kiln Division (SKD)

TANMAG manufactures Lightly Calcined Magnesite (LCM) in its Shaft Kiln Division having

five vertical Shaft Kilns, from Raw Magnesite using Furnace oil as fuel. The installed capacity is 19,500 Metric tones per annum. Lightly Calcined Magnesite (LCM) is produced from Raw Magnesite in the Shaft Kiln at a temperature in the range of 1000^{o}c to 1100^{o}c. About 2.2 MT of Raw Magnesite and 140 litres of Furnace oil are required to produce one Mt LCM.

Lightly Calcined Magnesite (LCM) is used for manufacturing Chakki Stones used for wheat flour grinding, Magnesite chemicals, animal feeds, polish stones used for granite polishing, rayon and in the paper industry.

3.5 Share Capital

The authorized share capital of TANMAG is Rs.50 crore consisting of 50 lakh shares of Rs.100/- each and the paid up capital is 16,65,000 Shares of Rs.100/- each amounting to Rs.16.65 crore.

3.6 Action plan for the year 2022-23 & 2023-24

TANMAG has an exclusive captive mine namely "Arasu Magnesite Mines". Its mining operation was temporarily stopped in the year 2018 owing to lack of environmental clearance. During November 2021, EC has been obtained and mining operations were resumed. TANMAG has been a profit making organisation, consistently. The profit earned during the last year (2021-22) was Rs.16.67 crore. Similar quantum of profit is expected during 2022-23 also.

Since the mineable ore reserves are approximately 24.64 lakh MT of Magnesite and 22.57 lakh MT of Dunite, the mining operations could be carried out continuously for 20 years. The resumption of Mining operations is providing

livelihood for 319 employees directly and 2000 people indirectly. This has improved the local economy and also facilitated reduction in import of Magnesite.

TANMAG is striving to bring about greater efficiency in its operations by virtue of streamlining contracting and procurement. The earlier system of multiple contracts is sought to be replaced by a composite contract to enhance production and productivity.

Further, in order to increase revenue, segregation of Raw Magnesite and Dunite from the existing spoil banks is also planned, since it is expected that recovery will be approximately around 15%.

The tentative Production and Sales targets for the year 2022-23 and for the year 2023-24 are as detailed below:

Particulars	Revised Estimate 2022-23 (Qty in MT)		Budget Estimate 2023-24 (Qty in MT)	
	Production	**Sales**	**Production**	**Sales**
Raw Magnesite*	27,184	-	66,000	-
Dead Burnt Magnesite	5,984	5,927	21,000	21,000
Lightly Calcined Magnesite	3,855	3,897	9,570	9,500
Dunite	54,201	48,819	1,06,000	1,00,000

* Captive consumption

DURAIMURUGAN
MINISTER FOR WATER RESOURCES

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