INDUSTRIES DEPARTMENT

MINES AND MINERALS

POLICY NOTE
2019 – 2020

DEMAND No.27

C.Ve. SHANMUGAM
MINISTER FOR LAW,
COURTS AND PRISONS

INDUSTRIES DEPARTMENT

MINES AND MINERALS

Policy Note

2019 – 2020

CONTENTS

INDUSTRIES DEPARTMENT

MINES AND MINERALS

POLICY NOTE

2019-2020

1. DEPARTMENT OF GEOLOGY AND MINING

Tamil Nadu is situated in the south eastern part of the Indian Peninsula. It is endowed with fossil fuels such as lignite, oil and natural gas, metalliferous minerals such as bauxite, iron ore, molybdenum, non-metallic and industrial minerals such as brick earth, blue metals, clay, dunite, feldspar, graphite, gravel, gypsum, heavy minerals, limestone, magnesite, quartz, silica sand, sand, vermiculite and decorative cum ornamental stones like black and multicoloured granites. The development of these mineral resources has resulted in rapid industrialization of the State.

Geomorphologically, Tamil Nadu is divided into three major regions, viz. i) hilly terrain in the north western and western regions ii) coastal plain and iii) plains between the hilly terrain and the coastal plain. Geologically, the hilly terrain and the plains between the hilly terrain and coastal plain contain crystalline hard rocks, such as charnockite, granite gneiss, khondalites, leptynites, metamorphic gneisses with detached occurrence of crystalline limestone, laterite, bauxite, iron ore, quartz feldspathic veins and basic intrusions such as dolerite and anorthosites. The coastal plains consist of sedimentary limestones, clay, laterites, heavy minerals and silica sand.

1.1 Vision and Mission

The vision of this department is "To consolidate the leadership position of Tamil Nadu in the management of mineral wealth" and the mission is "To undertake/facilitate scientific

exploration, optimal exploitation, judicious conservation and revenue maximization in industry, eco and a citizen friendly policy framework".

1.2 Objectives

(i) Adoption of modern technologies for exploration of new mineral deposits with due care for safeguarding our environment.

(ii) Augmenting revenue from the mineral resources through effective and efficient administration of mineral resources.

(iii) Creating ample employment opportunities.

(iv) Curbing illicit mining of minerals and its transportation by enforcement of stringent measures.

1.3 Functions

(i) The Department is coordinating with the Geological Survey of India (GSI),

Mineral Exploration Corporation Limited (MECL) and Kudremukh Iron Ore Corporation Limited (KIOCL) in exploration of new mineral resources in the State and its evaluation.

(ii) The minerals resources are administered by granting concessions to public sector undertakings, private companies and individuals for their development of the mineral resources in order to boost the economic development of our State. Royalty, seigniorage fee, dead rent, area assessment, surface right compensation, District Mineral Foundation Trust fund, National Mineral Exploration Trust fund and other payments are collected from the lessees.

(iii) The flying squads of this Department in Salem, Villupuram and Madurai regions are routinely checking the vehicles and those which are transporting minerals clandestinely are seized and penalties imposed.

(iv) Geotechnical cells are functioning in the Nilgiris district and Kodaikanal in Dindigul district. They are identifying and mapping weak zones in the hilly terrain. These weak zones are susceptible to land-slides triggered by monsoon causing huge damage to properties and life. The geotechnical cells recommend remedial measures to the district administration to mitigate this natural hazard. Besides, these cells provide geotechnical feasibility report for construction of buildings in the hilly areas.

1.4 Mineral Resources, Production and Revenue

A. Mineral Resources

(i) **Lignite**

Ariyalur – Puducherry sub-basin and Nagapattinam sub-basin of the Cauvery basin are the main repositories of lignite deposits. The total lignite reserve is estimated at 34,764 Million Tonnes (MT). Of which, the Neyveli lignite fields contain 8,665.93 MT, Mannargudi lignite fields contain 24,204 MT and Ramanathapuram lignite fields contain 1,896.05 MT. The Neyveli Lignite Corporation has been mining lignite in the lease hold areas.

(ii) **Bauxite**

It is the main ore for aluminium metal. It is also used in refractory, chemicals, cement and paint industries and in refining petroleum products. It occurs in Shervaroy hills in Salem district and Kollimalai in

Namakkal district. A total of 421 hectares were leased to 5 lessees for mining bauxite.

(iii) **Magnesite and Dunite**

They have industrial applications like refractories, flux in sintering, blast furnace, conditioners, ceramic filler and abrasives. These minerals occur in Chalk hill area in Salem district. The total resource of magnesite is estimated as 40.5 MT. Leases are granted to 20 lessees for mining magnesite and dunite spread over an area of 1513.02.0 hectares.

(iv) **Limestone**

It is one of the most important industrial minerals used in the manufacture of lime, cement, chemicals, fertilisers and in metallurgical industries. The limestones are of two types and are as follows:

(a) **Crystalline limestone:** It occurs in parts of Salem, Tiruchirapalli, Karur, Dindigul, Madurai,

Virudhunagar, Tirunelveli, Thoothukudi, Coimbatore and Kanniyakumari districts. The total reserve of crystalline limestone is 200 MT.

(b) **Non–crystalline limestone or fossiliferrous limestones:** It is found in parts of Tiruchirapalli, Ariyalur and Thoothukudi districts. The total estimated reserve of non crystalline limestone is 670 MT. There are 316 lessees mining limestone over a leasehold area of 6697.80.0 hectares.

(v) **Quartz and Feldspar**

They occur in Salem, Karur, Dindigul, Namakkal, Tiruppur and Dharmapuri districts. They are used in industries like glass, refractory, foundry, ceramic, electrical, abrasives and paint. The total reserve of quartz is estimated at 228.5 MT

and feldspar is estimated at 9.0 MT. There are 188 lessees mining quartz and feldspar over a leasehold area of 323.40.0 hectares.

(vi) **Silica Sand**

It occurs in Villupuram, Nagapattinam, Kanchipuram and Cuddalore districts. It is used in industries like glass, refractory, foundry, ceramics, electrical, abrasives and paint. Leases have been granted to 19 lessees for mining silica sand over a lease hold area of 38.21.5 hectares.

(vii) **Graphite**

It is also known as black lead. It is a soft crystalline form of naturally occurring carbon. Graphite crucible industry, insulator, electrode, atomic reactor, foundry units and carbon brushes are the major consumers of natural graphite. It occurs in Madurai and Sivaganga districts. Leases have been granted to 4 lessees for mining

graphite over a leasehold area of 269.79.0 hectares.

(viii) **Vermiculite**

They are yellow brown coloured micaceous minerals. They are used as insulators and vermitiles. It occurs in Vellore district. TAMIN has been mining vermiculite in the lease hold area covering an extent of 23.70.5 hectares.

(ix) **Heavy Minerals**

They consist of Garnet, Zircon, Illmenite, Rutile, Sillimanite and Monazite. They occur mainly in the beach sands of Kanniyakumari, Thoothukudi and Tirunelveli districts.

(x) **Soapstones**

It occurs in Salem and Namakkal districts. It is used in manufacturing of talcum powder and decorative articles. Leases have been granted to 4 lessees for

mining this mineral in the lease hold area of 14.13.0 hectares.

(xi) **Fireclay**

It occurs in Cuddalore and Ariyalur districts. It is used in refractory, ceramic articles and decorative tiles. Leases have been granted to 17 lessees for quarrying fireclay spread over an area of 71.79.0 hectares.

(xii) **Granite**

The hard crystalline rocks that are amenable to cutting and polishing are commercially called granite. These granites are cut into various dimensions and are used in the construction industry, manufacturing of tiles and decorative articles. Zebra white in Salem district, Kunnam black in Villupuram district, Paradisio in Krishnagiri district, Red wave in Dharmapuri district, Tiger skin and Kashmiri

white in Madurai district, Honey dew and Desert brown in Tiruvannamalai district are some of the granites that are exported to foreign countries. Leases have been granted to 870 lessees for quarrying granites spread over an area of 3092.08.0 hectares.

(xiii) **Gypsum**

It occurs in Coimbatore, Perambalur and Tiruppur districts. It is used in manufacturing of plaster of paris, fertiliser, pesticides and cement. Leases are granted to 9 lessees for quarrying gypsum over a leasehold area of 27.42.0 hectares.

(xiv) **Oil and Natural Gas**

They occur in Nagapattinam, Tiruvarur, Thanjavur, Cuddalore, Ramanathapuram and Pudukottai districts. They are used as fuel.

B. Mineral Production

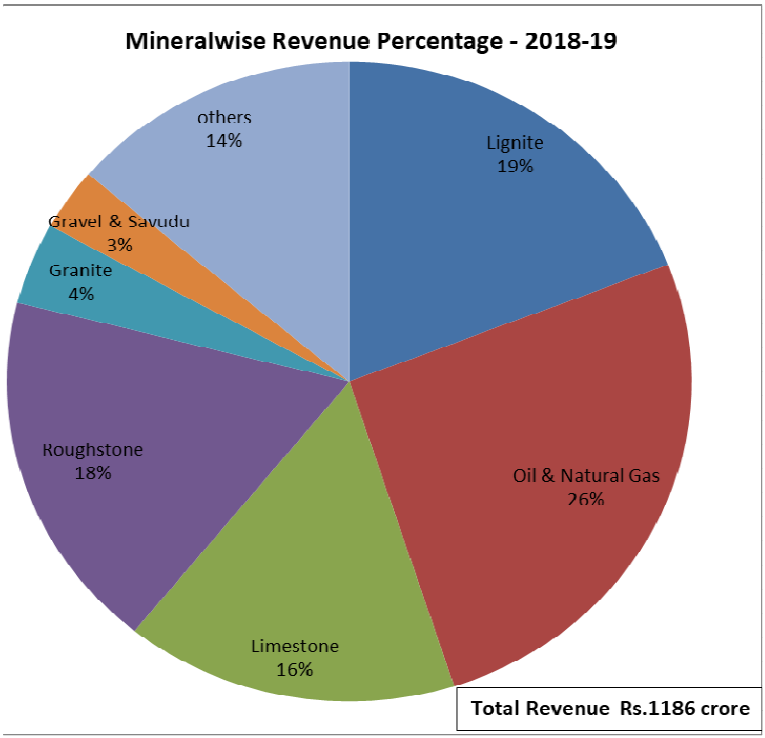
The production of some of the important minerals in the State during the year 2018-19 are given below:

S.No.	Mineral	Production
Major Minerals		
1	Natural Gas	1,16,77,58,168 cbm
2	Petroleum (Crude)	4,31,643 MT
3	Lignite	2,24,28,308 MT
4	Garnet	6,14,500 MT
5	Limestone	2,33,27,639 MT
6	Magnesite	40,192 MT
7	Vermicullite	957 MT
Minor Minerals		
1	Quartz & Feldspar	47,196 MT
2	Fire Clay	15,000 MT
3	Lime Kankar	2,95,920 MT
4	Quartzite	76,809 MT
5	Colour Granite	1,53,592 cbm
6	Black Granite	22,904 cbm
7	Roughstone	2,99,27,665 cbm
8	Earth/Gravel/ Savudu	83,31,986 cbm
9	Pebbles	1,78,933 cbm

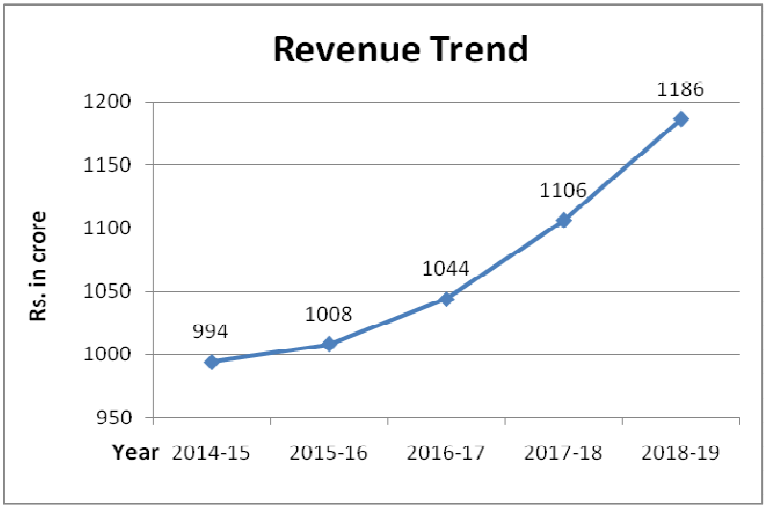
C. Mineral Revenue

The oil and natural gas, lignite, roughstone, limestone, granite, gravel and savudu are the major revenue generating mineral resources.

The percentage of the revenue realised from the minerals during the financial year 2018-2019 is shown in the pie chart below:



The revenue from the mineral resources has been showing increasing trend in the last five years and is shown in the graph below:



A total of 13,922 vehicles were seized during the financial year 2018-19. A sum of Rs.48.07 crore was imposed as penalty and collected from the persons involved in illicit mining of minerals. Besides, criminal cases have been filed against 11,862 persons and Goondas Act has been invoked against 20 persons who indulged in illicit mining.

1.5 District Mineral Foundation Trust

Under section 9-B of Mines and Minerals (Development & Regulation) Amendment Act, 2015, the District Mineral Foundation Trust (DMFT) was established in all the districts except districts of Nilgiris and Chennai in the year 2017.

The lessees who were granted mining leases before 12.01.2015 are contributing 30% on royalty or seigniorage fee and the lessees granted leases after this period are contributing 10% on royalty or seigniorage fee to DMFT. The District Mineral Foundation Fund (DMFF) is utilized for implemention of the Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) and other welfare schemes for areas and population affected by mining.

A total of 60% and above of the DMFF is being utilized for high priority sectors such as supply of drinking water, health care, education, welfare of women and children, welfare of aged

and disabled people, skill development, infrastructure, sanitation, environmental preservation and pollution control measures and the remaining percentage is being utilized for other priority sectors such as irrigation development, energy and watershed development and environment preservation and pollution control measures.

As on 31.03.2019, an amount of Rs.466.30 crore have been contributed by the lessees towards DMFT. Out of which, 1195 projects at a cost of Rs. 358.59 crore have been taken up so far. The details are given below:

1.5.1 Projects under High Priority Sectors

Sl. No.	Sectors	No. of Projects	Fund Utilization (Rs. in crore)
1	Infrastructure	446	172.41
2	Drinking Water	170	74.89
3	Education	271	15.06

4	Health	170	11.60
5	Skill Development	20	2.64
6	Environmental & Pollution Control and Ecology	30	2.22
7	Sanitation	30	1.54
8	Welfare for Women & Children	25	1.10
	Total	**1162**	**281.46**

1.5.2 Projects under Other Priority Sectors

Sl.No.	Sectors	No. of Projects	Fund Utilization (Rs. in crore)
1	Irrigation	24	71.95
2	Energy & Watershed Management	3	4.86
3	Others	6	0.32
	Total	**33**	**77.13**

1.6 National Mineral Exploration Trust

Section 9C was inserted in the Mines and Minerals (Development and Regulation) Act, through an amendment in 2015. As per this section, the Central Government established a Trust called National Mineral Exploration Trust (NMET). The mining lease and prospecting licence cum mining lease holders have been contributing 2% of royalty to the Trust since 12.01.2015.

The prime objective of the NMET is to boost regional and detailed exploration programme. It includes identification, exploration and extraction of mineral deposits by adopting advanced scientific technology on a sustainable basis. A sum of Rs.38.56 crore has been collected as on 31.03.2019.

The NMET has been providing funds for taking up detailed and regional exploration of minerals based on the investigation carried out by the GSI. The GSI has been supporting the Department of Geology and Mining in exploring the mineral potential of the State. They have given reports on iron ore, graphite, limestone, dunite, platinoid group of elements and molybdenum.

In the year 2017-18, the Ministry of Mines has sanctioned an amount of Rs. 86.67 crore under NMET for exploration of lignite, platinum group of minerals and iron ore in Tamil Nadu.

1.7 Molybdenum

Based on the investigation report of GSI, a detailed exploration for assessing the reserves of molybdenum was taken up by MECL in Dharmapuri and Krishnagiri districts under promotional schemes. The details of reserves are given below:

Reserves

Sl. No	Mineral Block	Status
1.	Mannadipatti central block in Krishnagiri district.	0.699 MT over an area of 0.60 Sq.Km.
2.	Marudipatti central block in Dharmapuri district.	2.094 MT over an area of 0.50 Sq.Km.
3.	Velampatti south block, in Dharmapuri district	3.128 MT over an area of 1.01 Sq.Km.
4.	Velampatti central block in Dharmapuri district.	3.148 MT over an area of 1.33 Sq.Km.

The molybdenum deposits in these areas are fit for commercial exploitation. Action is being taken to auction this mineral during this year.

1.8 New Initiatives

a) Mining Tenement System

Mining Tenement System (MTS) involves automation of major minerals except coal, fuel minerals and minor minerals starting from identification of minerals and ending with closure of the mine and linkages with various stakeholders for real time transfer of electronic data and files with GIS interface. This online computerized system will provide information in visual graphic form in GIS and textual form known as registry component.

To implement the MTS in Tamil Nadu, State Government has signed MOU with Regional Controller of Mines, Chennai.

M/s WIPRO Limited is the implementing agency for design, development, maintenance and operation of MTS.

In MTS, registration and PMKKKY scheme modules were developed and launched by Government of India and are in operation. The e-Permit module has been developed and it is under trial stage.

b) Mining Surveillance System

The Mining Surveillance System (MSS) is a satellite based monitoring system, which create triggers for any mining and quarry activity, within 500 metre radius from the existing mining lease boundaries. The MSS helps to identify and curb illegal mining and illegal quarrying activities in the mineral rich areas.

In the system, geo-referenced cadastral maps of mining lease areas are superimposed on the latest satellite imageries (CARTOSAT and USGS) which enable surveillance of an area within 500 meters radius from the existing mining lease boundaries.

If any unauthorised mining activities are noticed, the system will generate triggers. These triggers are studied at Remote Sensing Control Centre of Indian Bureau of Mines, Udaipur in Rajasthan. The data is then transferred to the Department of Geology and Mining for field verification. These triggers are verified through field visits and appropriate actions are being taken.

Supply of Drinking water to habitations in Edapadi and konganapuram blocks in Salem District at a cost of Rs.3.23 crore from District Mineral Foundation Trust Fund

Constructionof Check dam across Vellar River at a cost of Rs.22.50 crore from District Mineral Foundation Trust Fund in Cuddalore District

2. TAMIL NADU MINERALS LIMITED

Minerals are finite and exhaustible. TAMIN's endeavour is to exploit prudently the available natural resources and market the minerals profitably. The main objective of TAMIN is production and marketing of granite raw blocks, granite finished product, major minerals and mineral based products. Large deposits of black, colour granite blocks and major minerals like Graphite, Limestone and Vermiculite are being exploited by adopting scientific mining and are marketed in a transparent manner.

TAMIN sells its products as raw blocks as well as value added products in local and international markets.

2.1 Vision

To be number one in the mineral sector for value creation and conservation of natural resources.

2.2 Mission

- Continued search for new mineral deposits.
- Continuous updation of technology in safe mining operations, with state-of-art machineries, quality control measures, mineral processing and marketing.
- Export of granites and minerals with value addition for earning foreign exchange for the country.
- Generate gainful employment to people in rural and backward areas.

2.3 Lease Details

TAMIN has 96 leases to the extent of 1680.515 (Hects). The details are as below:-

Sl.No	Description	No. of Leases	Extent (in Hects)
1	Black Granite	48	750.905
2	Colour Granite	40	642.665
3	Minor Mineral	02	4.355
4	Major Mineral	06	282.590
	Total	**96**	1680.515

2.4 Employee Details

The total manpower in TAMIN is 846 and breakup details are as follows:-

Officers & Staff	390
Workers	456
Total	**846**

2.5 Achievements during the Year 2018-2019

- TAMIN has set up a modernized exfoliated Vermiculite plant at Sevathur village, Tirupattur Taluk, Vellore District which commenced its operation in October 2018.
- TAMIN had executed project orders to Chennai Metro Rail Limited (CMRL) worth Rs.11 Crore during the financial year 2018-19. Further, the company is continously pursuing to bag high value project orders from CMRL during 2019-20 also.
- TAMIN has received 27 safety awards from Tamil Nadu and Kerala Mines Safety Association for its quarries/mines for adopting systematic and scientific method of mining during the last financial year.

2.6 Action Plan 2019–2020

- ✓ TAMIN is pursuing with Ministry of Environment & Forests (MoEF) and State Environment Impact Assessment Authority (SEIAA) for obtaining Environmental Clearance (EC) for its quarries/mines. Two cases are in advanced stage for the grant of Environmental Clearance from MoEF, New Delhi. Terms of Reference (ToR) for 11 quarries/mines were obtained from SEIAA, Chennai and out of which public hearing for 7 cases has been completed. Final EIA (Environmental Impact Assessment) reports for 7 cases were uploaded in SEIAA portal and are awaiting grant of Environmental Clearance.
- ✓ At present, TAMIN is operating 10 mines/quarries. It is planned to scale

up the operation to 25 mines/quarries in the financial year 2019-20.

- ✓ TAMIN is streamlining its operations and taking efforts to cutdown the expenditure.
- ✓ Occurrence of Molybdenum ore is established in Harur belt of Dharmapuri District. As Molybdenum is a rare mineral and having economic value, TAMIN will explore the possibility of venturing into economic exploitation.
- ✓ TAMIN has planned to venture into Beach Placer minerals by joining hands with M/s.IREL (Indian Rare Earth Limited). Certain mineral rich areas in Sattankulam Taluk, Thoothukudi District have been identified and TAMIN has proposed to enter into MoU with IREL.
- ✓ TAMIN has made an innovative effort by introducing a software called Quarry

Management System (QMS). It is a holistic management tool for effective monitoring of quarries and mines. Now it has been upgraded as QMS Version 2 software which covers all activities of TAMIN. For optimizing operational efficiency, this software is being further fine tuned and entire organization activities is being integrated and will be monitored through QMS V2 software.

- ✓ TAMIN is pursuing to get leases for silica sand mines to supply Indian Standard Sand to all cement factories in India. TAMIN is taking steps to source raw silica sand from M/s.Neyveli Lignite Corporation (NLC) also.

TAMIN – Granite flooring work done by TAMIN in Chennai Central Metro Station

TAMIN – Mylarwada Black Granite Quarry
inThiruvallur District

3. TAMILNADU MAGNESITE LIMITED

Magnesite Ore, $MgCO_3$, which is used for making refractory materials are available in the states of Uttarakhand, Tamil Nadu, Rajasthan and Karnataka in India.

World's magnesite reserve is 780 crore MT of which 39.40 crore MT (5%) is available in India.

India ranks eleventh place by producing 2.99 lakh MT out of the World Magnesite production during the Year 2016-17. 75% of India's magnesite is produced in Tamil Nadu (2.23 lakh MT) and is superior in quality because of its specific cryptocrystalline structure and highly preferred by the Steel industries.

Tamilnadu Magnesite Limited (TANMAG), a Government of Tamil Nadu Undertaking was established during 1979 at Salem because of the rich ore reserves in the Chalk Hills of Salem district. TANMAG has one mine namely Arasu Magnesite Mine and two factories.

3.1 Vision

- to do scientific and safe mining of magnesite and associated minerals for optimal utilization of mineral.
- environmental friendly mining with maintenance of quality.
- building long term customer relationship in Refractory Industry adhering strict quality as per standards.
- providing gainful employment to the people in the rural and backward areas.

3.2 Divisions

A. Mining Division

Arasu Magnesite Mine is situated in Kurumbapatti Reserve Forest in Salem District over an extent of 96.34 ha. Raw Magnesite is mined by semi-mechanised open cast mining

method. Dunite, which is a co-existent mineral is obtained along with Magnesite. Raw Magnesite excavated is captively consumed at its two factories.

B. Rotary Kiln Division (RKD)

RKD factory is situated 4 km away from Arasu Magnesite Mines in TANMAG's own land. Here Dead Burnt Magnesite (DBM) is produced. The installed capacity is 30,000 MT per annum. DBM is produced by sintering method (heating up to 1750^{o}C in kiln to make the material inert and non-reactive). More than 75% of Magnesite ore is used for production of DBM in India. DBM is used for manufacturing refractory bricks , monolithics like ramming mass, fettling mass and gunning mass in steel industry.

C. Shaft Kiln Division (SKD)

Lightly Calcined Magnesite (LCM) is produced in Shaft Kiln Division. The installed capacity of 19,500 MT per annum. Lightly Calcined Magnesite is manufactured using calcination process (heating up to 1100^{o}C in kiln removing the volatile substances and the resultant material is reactive). LCM is mainly used for non-refractory purposes like making chakki stones, abrasive materials, fertilizers and in chemical industry.

3.3 Achievements

- TANMAG earned profit before tax of Rs.7.24 crore during the year 2018-19.
- The Company has paid its highest dividend of Rs.14.32 crore during the year 2018-19 to Government.

- TANMAG has contributed Rs.1.00 crore to CMPRF towards "GAJA" cyclone during the year 2018-19.

- TANMAG has spent Rs.98.91 Lakhs as Corporate Social Responsibility for Gaja cyclone affected districts viz., Nagapattinam, Tiruvarur, Thanjavur and Pudukottai by contributing relief materials.

C.Ve.SHANMUGAM
Minister for Law,
Courts and Prisons.