THOOTHUKUDI DISTRICT

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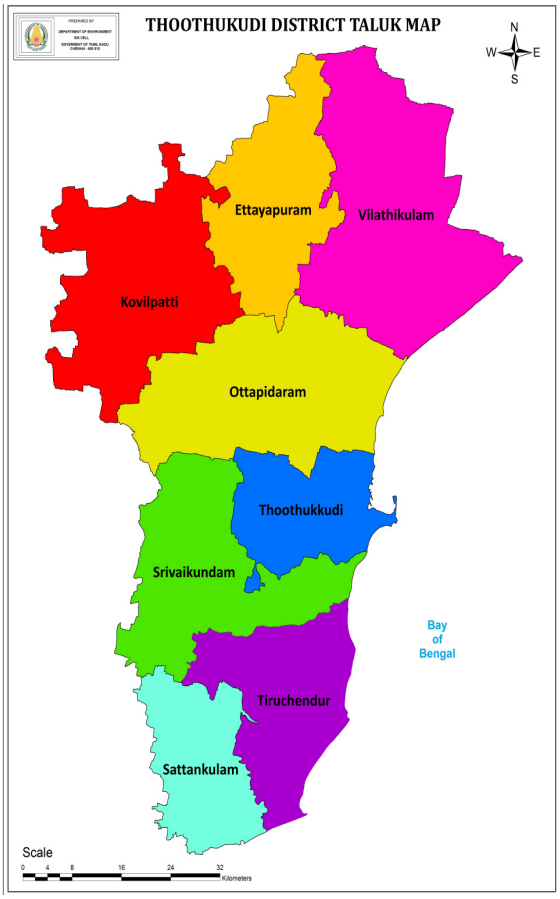
1. Introduction

i) Geographical location of the district

Traditionally known as "Pearl City" on account of the prevailing Pearl fish in the past in the area, Thoothukudi has a fascinating history. On 20th October 1986 a new district, carved out of the erstwhile Tirunelveli district was born in Tamil Nadu and named after V.O.Chidambaranar, a great National leader.

Since 1997 as in the case of other districts of Tamil Nadu, this district has also been named after its headquarters town Thoothukudi. Thoothukudi district is situated in between latitude 0.8° and 45° and longitude 78 ° and 11° with an area of 4,621 sq.km.



ii) Administrative profile

The details on taluks, blocks, village panchayats and town panchayats are illustrated below:

I	Taluks	:	Tiruchendur, Srivaikundam, Sathankulam, Ottapidaram, Thoothukudi, Kovilpatti, Vilathikulam & Ettayapuram
II	Blocks	:	Thoothukudi, Ottapidaram, Srivaikundam, Karungulam, Tiruchendur, Alwarthirunagari, Udangudi, Sathankulam, Kovilpatti, Kayathar, Vilathikulam & Pudur
III	Revenue villages	:	480
IV	Village panchayats	:	408
V	Town panchayats	:	19

iii) Meteorological information

Its maximum temperature is 41°C and the minimum is 26°C. The climate is conducive for agriculture and horticulture. Thoothukudi comes under low rainfall region. The normal rainfall of the district is 662.2 mm. South west monsoon accounts for 9%, north east monsoon for 65%, winter being 9% and summer being 17% of total rainfall. Thoothukudi depends mainly on north east monsoon rains, which are brought by the troughs of low pressure developing in south Bay of Bengal between October and December.

2. Resources-availability

i) Land resources

The major soil types found in the district include montmorillonitic, Vertisols, Alfisols, Inceptisols and kaolinitic. Deep fine, montmorillonitic, vertisols occupies a major area of 1,14,817.11 ha The types of soil and the area are listed in Table, below.

Common soils types and locations in Thoothukudi district

Sl. No.	Type of Soil	Places in District
1.	Red loam	Udangudi, Kayatar, Sattankulam
2.	Lateritic soil	Srivaikundam, Tiruchendur
3.	Black soil	Kovilpatti, Kayatar, Vilathikulam, Thoothkudi, Ottapidaram
4.	Sandy coastal alluviam	Tiruchendur
5.	Red sandy soil	Udangudi, Sattankulam, Srivaikundam, Karungulam, Ottapidaram, Vembar

ii) Agriculture and horticulture

Agriculture is the main occupation on which 70% of the people depend on .The main food crop in this district is paddy. Out of the total area of 4,70,724 ha, 1,78,623 ha are brought under the cultivation of different crops which is nearly 38% of total area of the district. The important food crops in the district are paddy, cholam, cumbu, ragi, varagu, samai and commercial crops like cotton, chilly, sugarcane and groundnut.

a. Total Cultivated Area ha : 1,83,075

b. Net area sown (ha) : 1,78,623

c. Area sown more than once (ha): 4,452

d. Area and production of area (ha) (2011- 2012)

Production	principal crops	area
i. Paddy	20,278	89.44
ii. Millets and other cereals	52,850	187.19
iii. Pulses	62,274	12.91
iv. Groundnut	1,183	1.15
v. Gingelly	1,905	0.30

e. Agricultural Land Holdings (2010-11)

i. Holdings : 1, 95, 435
ii. Area ha : 2, 33,688.8
iii. Average size of holdings (ha): 1.19

iii) Forest resources

Total forest area of the district is 11,010 ha

A. Forest		Area (ha)
a. Reserved forests	:	7,121
b. Reserved lands	:	3,889

Vallanadu Blackbuck Sanctuary is located in Vallanadu village of Srivaikundam taluk on Tirunelveli – Thoothukudi road at a distance of 18km from Tirunelveli. The Vallanadu Blackbuck sanctuary is located in an isolated hillock with scrub forest.

Islands of Tuticorin region

Four of the 21 islands of Gulf of Mannar occur along Tuticorin coast. These islands are surrounded by a thick coral and seagrass cover. Erosion has been severe in these islands because of coral mining activities which happened before 2004 Indian Ocean tsunami.

Van island

Van island is locally called as Church Island. The island forms part of Keela Arasanadi village of Ottapidaram taluk. The area of the island was 16 ha and 56 acres but it has currently shrunk to 5.7 ha according to the new reports. Moreover, island has split into two parts because of a narrow channel in between. The erosion in the island is attributed to rampant coral mining which happened in this region until 2004 tsunami. This island is situated at a distance of 6 km from the shore.

Kasuwar island

It is also called as Kasuwar island. It is located at a distance of 7km from Tharuvaikulam village of Ottapidaram taluk. Its area is 19.5 ha according to the 1986 report. It is included in Tharuvaikulam of Ottapidaram taluk.

Karaichalli island

This island is located 10 km off the shore of Pattanamarudur village of Ottapidaram taluk. This island is the most diverse island among the four islands.

Vilanguchalli island

This is the farthest island from the shore in the district. It forms part of Pattanamarudur village and is located at the distance of 12 km off the shore of the village. This island got submerged under the water because of severe coral mining activities.

i) Mineral resources

Rock types found in the area belong to the Khondalite and Charnockite groups and Migmatite Complex of Eastern Ghats Super group, which are unconformably overlain by Tertiary and Quaternary sediments. Garnet-biotite-sillimanite gneiss, quartzite, calc-granulite and limestone of Khondalite group with epidiorite, occurring as narrow linear bands. Charnockite group is represented by acid variants. These rock types occur as xenoliths within the Migmatite Complex occupying a major part of the area, comprising medium grained hornblende-biotite gneiss and garnet-biotite gneiss. Grey and pink granite represent the last phase of granitic activity and occur as concordant intrusive bodies.

Fine grained marine, calcareous sandstone and limestone and gritty sandstone intercalated with a pebble bed of Mio-Pliocene (Cuddalore sandstone) unconformably overlies the Archaean. The pebble bed generally marks the contact between the sandstone and gneiss. An interesting assemblage of fossils such as lamellibranches, gastropods, corals and foraminifera is found in the sedimentary rocks. The beds are more or less horizontal or dip gently towards the east.

Quaternary sediments occur along the river valley and the east coast. They are grouped into fluvial-marine, Aeolian and marine. Calcareous sandstone and siliceous limestone of Quaternary age uncomfortably overlies the Tertiary sediments marked by a conglomerate. The calcareous sandstone is interbedded with limestone. The rocks are coarse grained, poorly consolidated and friable with recent marine shells of which *Ostrea sp*. is the most common. A conglomerate bed is noticed at the base of these sediments in contact with Archaeans. Kankar and tuffaceous occur in number of detached outcrops. The rocks occur as

massive beds of sheet tufa resulting from segregation of lime bleached out of the underlying garnet gneiss. Thick alluvium occurs along the banks of Tamirabarani and Vaippar rivers and along the coast. Red 'teri' sands represent Aeolian deposits. They occur as small dunes and cappings.

Ilmenite-garnet sand

It occurs the mouth of Vaippar and Kallar rivers. they extend over a length of 3.2 to 48 km and a width of 122m. Red garnet sands occur between the south of Ovari and Mavaladi. The proportion of garnet is 75% in the rich Kodambakkam tank, Tiruchendur taluk. Good purchase of ilmenite sand occurs at Thiruvaikunlam, which extend over 3.2km The belt containing good concentrates varies from 1.5 to 30.5m in width.

Lime Shell

Lime shell with 50-55% CaO is known from the coastal tracks of Thoothukudi and Srivaikundam taluks.

Gypsum and Salt

Gypsum associated with Kankar has been reported from a few localities. Gypsum is a by-product in the salt pans, located along the east coast between Veppalodai and Ayyanapuram.

Salt pan

Mica

ENE of Kovilpatti, Pegmatite shows incidence of mica. The limestone is available in the following areas:

1. Arasur, in Sattankulam taluk
2. Semma Pudur in Ettaiyapuram taluk
3. Usilankulam in Kovilpatti taluk
4. Sivalarpatti, Meenakshipuram, K.Kumara reddiyarpuram in Vilathikulam taluk.
5. Kankar deposit is available in Maniyakkaranpatti, Vilathikulam taluk in Thoothukudi district.

Minor minerals

Rough stone, jelly, sand, gravel, clay, earth and granite are the minor minerals and leases are granted for quarrying of the said minerals in Thoothukudi District. Rough stone, jelly is used for construction of buildings, road, etc. Clay and earth are used for manufacturing bricks and filling materials. Gravel is used to form the road and filling purpose.

v) Water resources

Tamiraparani river which rises in Agasthiyamalai of the western ghats, flows through Srivaikundam and Thiruchendur taluks and joins the sea at Punnakayl in Srivaikundam taluks. Pambayar and Manimuthar are the chief tributaries of Tamiraparani, which pass through the district. The Malattar and Uppodai flowing in Kovilpatti taluk are drainage courses. Tamiraparani and Manimutharu are the catchment areas of river basins, which have their place of origin in the Pothigaimalai. The former has a length of 120 km and the latter has a length of 98 km Pabanasam dam, Manimutharu dam and Eppodumvernam dam are built in the district.

vi) Fisheries production

a. Length of coastal line (km) : 163.5

b. No. of coastal blocks : 8

c. No. of coastal centre's : 24

d. Marine fish production (tone) : 39,170

e. Inland fish production (tone) : 1,276

The fishermen of Thoothukudi are mostly using gillnets and trawl nets in the motorized country craft and trawl boats, respectively. The trawling method of fishing over the years has led to the depletion of the fishing resources and destruction of the sea bed. In Thoothukudi all FRP/wooden vallams and catamarans are motorized and totally there are about 4,200 traditional crafts altogether. The fishing methods followed is mostly gill netting only. Thoothukudi being a major export hub consists of one major port and fishing harbour. The fish landings consists of important fishes like seer fish, lobsters, prawns, snappers, groupers etc., which are considered to be export varieties.

vii) Heritage resources

Thiruchendur

Thiruchendur is one of the major pilgrim centres of South India. This Temple is situated at a distance of 40 km from Thoothukkudi. The sea-shore temple dedicated to Lord Muruga is one of the six abodes of Lord Muruga. (Arupadi Veedu).The nine storied temple tower of 157 ft. belongs to 17th century AD. Visiting Valli Cave, taking sea-bath, and bathing in Nazhikkinaru are treated as holy ones. It is well connected by bus service from all over TamilNadu and train services are there from Tirunelveli and Chennai.

Manapadu

Manapadu is a coastal village situated at a distance a distance of 70 km from Tirunelveli and 18 km south of Tiruchendur. This place was visited by St. Francis Xavier in 1542. The Holy Cross church built on a cliff attracts thousands of pilgrims throughout the year and during the month of festival (1st September to 14th September) number of tourists assemble here.

Manapadu village

Kulasekaranpattinam

Kulasekaranpattinam is situated on the way to Kanyakumari from Tiruchendur. It is 20 km from Tiruchendur and 65 km from Kanyakumari. This village is famous for the Mutharamman temple, which is located on the shore of Bay of Bengal. This temple is nearly 150 years old. The Dhasara Festival is celebrated in a grand scale every year during October. Folk dance artists from throughout Tamil Nadu perform variety of programmes.

Kazhugumalai

Kazhugumalai Jain temple is situated at a distance 60 km from Tirunelveli and 21 km from Kovilpatti. In this temple we can see the images of Adinatha, Neminatha Mahaveera Parvanatha, Bahubali. There is also a monolithic temple called Vettuvan Kovil. This is the only one of the monolithic Pandya temple that still survives.

Meignanapuram

It is 13 km from Tiruchendur and is an ancient village. The Pari Pauvlin church here was built in 1847. It is 110 ft long, 55 ft wide with steeple in the front soaring into the sky for a height of 192 ft This is one of the biggest churches with the tallest steeple in India.

Sinthalakkarai

Sinthalakkarai is a pilgrim centre where Goddess Sri Vetkaliamman of 42 ft height blesses the devotees. It is situated on the road from the Thoothukudi to Madurai. The Statue of Mahavishnu of 72 ft length with Rajasayanam on the snake in Thiruparkadal is also there.

Vanathirupathi

This temple is about 45km from Tirunelveli and around 20 km from Tiruchendur. The nearest railway station is Kachanavilai on the Tiruchendur to Tirunelveli section.

viii) Biodiversity

It is a historical fact that even before Christian era, the pearls and chanks obtained from Gulf of Mannar coast enjoyed a position among the import and export commodities to various parts of the world. Since Tuticorin was famous for pearl fishing it is called Pearl City. The Gulf of Mannar Marine National Park area of Thoothukudi district includes estuaries, mudflats, beaches and forests of the near shore environment. It also includes marine components such as coral reefs, seaweed beds, sea grasses, salt marshes and mangroves. Mangroves occur in Tuticorin mainland, Vaipar, Pazhayakayal and Punnakayal areas. The diverse nature of ecosystems in the Gulf of Mannar supports a wide variety of significant species including 117 species of corals, 13 species of seagrasses, 641 species of crustaceans, 731 species of molluscs, 441 species of finfishes and 147 species of seaweeds apart from the seasonally migrating marine mammals like whales, dolphins, porpoises and turtles.

3. Impacts

i) Urbanization

Among the urban areas, Thoothukudi municipal town accounts for a greater share of urban population when compared to the other urban areas within the district. Surface water is the major source for protected water supply both in municipalities and in town panchayats. The estimated sewage generation is 155 lakh litres among municipalities and 84 lakh litres among town panchayats. The municipalities and the town panchayats have complete open drainage system. The solid waste generation of municipalities and town panchayats is to the tune of 35.10 tonnes and 23.45 tonnes respectively. The solid waste collection in municipalities and town panchayats is claimed to be 82.5%. It was observed that 10% of rubber and leather, 11% of plastics, 52% of compostable matter, 6% of wooden

matter, 9% of glasses, 6% each metal and bricks & stones are the composition of municipal solid waste in the district.

ii) Industrial development

The industries found in this district can be classified under three categories viz. household industries, small scale, and medium and large-scale industries. Safety matches, mat weaving & processing and manufacture of palm fibre and articles from palm trees are the main household industries. Safety matches are manufactured mainly in Kovilpatti taluk. Manufacture of articles from palm tree is mainly found in Thiruchendur, Srivaikundam and Sattankulam taluks where larger areas are covered by palmyrah trees.

There are many small-scale industries in this district, which are mostly engaged in manufacturing of chemical products, and food products. The items produced by large-scale industries are salt, cotton yarn/textiles, chemical and chemical products. The spinning mills are located in Thoothukudi taluk. There are many major rice mills for production of rice from paddy. Salt manufacturing is one of the very important industries found in this district. There have been 17 Red category industries and 9 Orange category industries under large-scale industries in the district. However all the industries of the district are found to be having the emission rates well under the set standards.

Air pollution is the major component of atmospheric pollution, which instantaneously affects human health and thus is an environmental hazard. As far as the urban air quality status is concerned, the average SPM values and average NO_x values of commercial and industrial categories seem to be within the standards. However, the maximum value of these indicators is far beyond the set standards causing concern.

iii) Thermal power generation

There has been an improvement in the power generation sector. Non conventional and renewable energy sources of utilisation are not very much identified. Thermal power station at 5 km from Thoothukudi town and DCW Ltd and heavy water plant are the red category industries. Effluent discharge happens from these industries into the land and sea respectively.

iv) Natural hazards

Erosion has been severe along the coastline of Thoothukudi district. The boundary of the sea keeps increasing and entering in to the land gradually. Sea level rise is a global problem as it occurs in the Thoothukudi coast of Gulf of Mannar. One of the four islands of Gulf of Mannar has submerged because of the combined effect of rampant coral mining and sea level rise. Another island, Van, is also on the verge of submergence as it has decreased in area considerably and recently split into two parts by a narrow channel in between. Sea surface temperature is also increasing as a consequence of global climate change. Corals in the Gulf of Mannar are facing annual bleaching because of the elevated sea surface temperature.

v) Natural disaster prone areas

It has been ascertained from the available information that 3 taluks were affected by flood during 1992 - 1993 years. No significant drought and cyclone in the district have been recorded in the recent years. The banks along the Thamiraparani river are prone to occasional floods. 2004 Indian Ocean tsunami did not make huge damage in Thoothukudi district as the coastal zone is protected by natural resources like corals and seagrasses.

4. Government initiatives

i) Initiatives to improve fisher folk livelihood

Schemes Implemented In Thoothukudi District

- National Savings- cum- relief scheme for marine fishermen Savings- cum- relief scheme for marine fisherwomen
- Enhanced Financial Assistance of Rs.2000/- to marine fishermen families during fishing ban period.
- Special allowance of Rs.4000/- for fishermen families during non-fishing period.
- Conversion / Upgradation of fishing crafts into tuna liners @ 25% subsidy.
- Group accident insurance scheme for fisher-folk.
- Fishermen personal accident insurance scheme.
- Motorisation of traditional grafts.
- Cash awards to 10^{th} and +2 students belonging to fishermen community.
- Payment of daily relief to the missing fishermen family while conducting fishing into the sea.
- Fishermen welfare board schemes.
- Fishermen free housing scheme
- Scheme for creating employment opportunities to educated fishermen youth through up gradation of skills in Maritime Education and Nautical Sciences.

ii) Coastal protection initiatives

Islands of the Tuticorin region act as bio shields in this village along with the coral and seagrass beds. The impact of tsunami was comparatively less in this district. Moreover, manual protection by making sea walls has been done in several areas noticeably in Thirespuram.

iii) Awareness initiatives

One day workshop was conducted on tsunami at Government Polytechnic on 19.07.06. Quality testing of various types of materials used in construction and practical sessions were conducted. Various awareness programs on coastal resources and conservation have been conducted by various government and private sectors. Coral miners stopped coral mining after 2004 Indian Ocean tsunami due to increased awareness.

iv) Bio diversity

Successful coral restoration has been done by Suganthi Devadason Marine Research Institute around Tuticorin group of islands and in mainland Punnakayal patch reef. Very good results were obtained. Artificial reefs have also been deployed in various areas along Tuticorin coast. Initiatives have been taken to do the seagrass restoration also. Mangrove restoration has been done by the forest department near Punnakayal and Pazhayakayal areas.

5. Summary / Conclusion

- Thoothukudi district is situated in between latitude 8.8100°N, 78.1400°E with an area of 4621 sq.km
- The major soil types found in the district include montmorillonitic,

vertisols, alfisols, inceptisols and kaolinitic. Deep fine, montmor-illonitic and vertisols occupy a major area of 1,14,817.11 ha

- Agriculture is the main occupation and 70% of the people depend on it.

- Out of the total area of 470724 ha, 178623 ha are under the cultivation of different crops which is nearly 38% of total area of the district.

- The important food crops in the district are paddy, cholam, cumbu, ragi, varagu, samai and commercial crops like cotton, chilly, sugarcane and groundnut.

- Four of the 21 islands of Gulf of Mannar occur along Tuticorin coast. These islands are surrounded by a thick coral and seagrass cover which act as a bio shield.

- Erosion has been severe in these islands because of coral mining activities which happened before 2004 Indian Ocean tsunamialong with sea level rise.

- Tamiraparani, the only river of the district. It originates from rises in Agasthiyamalai of the Western Ghats, flows through Srivaikundam and Thiruchendur taluks and joins the sea at Punnakayl in Srivaikundam taluk.

- The district has a wide coastal length of 163.5 km

- The Gulf of Mannar Marine National Park area of Thoothukudi district includes estuaries, mudflats, beaches and forests of the near shore environment.

- Coral restoration, seagrass restoration and mangrove restoration activities are carried out successfully in this district.