**Unit -9**
**Geography of TamilNadu**

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## Unit – 6

## Physical Geography of Tamil Nadu

### Introduction

The study of one's own region is the first step to become a global citizen. The purpose of studying our local territory is to understand life in our environment. In the last five lessons, you have learnt about various geographical characterstics of our country. In this lesson and those that follow, we shall learn about the geography of Tamil Nadu. You will get to know about the etymology, history of formation, location, size, physical divisions, rivers, climate, soil and natural vegetation of Tamil Nadu in this chapter.

Our state Tamil Nadu has a hoary past with a variety of cultural practices and traditions. Its exquisite physiography and climate make sour state unique in India. It has long and sunny beaches, waterfalls, hills, forests and varied flora and fauna.

As per, the States Reorganisation Act, 1956, state boundaries were reorganised on some linguistic basis.

### Formation of Tamil Nadu

During Sangam age, the Tamizham was ruled by three great emperors – Cheras, Cholasand Pandyas – and virtuous kings ruling small kingdoms like Adhiyaman and Pari. For a short time, the Tamil country was ruled by the Kalabras, but not much about their time is recorded or known.

After the Kalabras, the Tamil country came under the control of the Pallavas, Cholas, Pandyas, Marathas, Mughals and Vijayanagara empires in succession until the British took administrative control over the entire country, starting from Madras.

During the British period, our country was divided into three presidencies, namely Madras, Bombay and Calcutta for political and military purposes. Tamil Nadu and parts of Andhra Pradesh, Kerala, Karnataka and Orissa (Odisha) constituted the Madras Presidency. After independence, following the linguisticdi vision of states, Telugu-speaking areas were bifurcated from the Madras state. After bifurcation, there were only 13 districts in Madras state. The Madras state was renamed as Tamil Nadu by C.N. Annadurai, former Chief
Minister of Tamil Nadu, on January 14, 1969.

**Location and Size**

Tamil Nadu is one of the 29 states of India, located in the southern most part of the country. This landmass extends from8°4'N to 13°35'N latitudes and from 76°18'Eto 80°20'E longitudes. Its eastern and western extremities are defined by the Point Calimere and the hills of Anaimalai respectively. The northern extremity of the state is marked by Pulicat lake and the southernmost point is Cape Comorin.

It covers an area of 1,30,058 sq.km and is the 11th largest state in India. It covers 4% of the area of our country.

**Boundaries and Neighbours**

Tamil Nadu is bounded by Bay of Bengal in the east, Kerala in the west, Andhra Pradesh in the north, Karnataka in the northwest and Indian Ocean in the south. Gulf of Mannar and Palk Strait separate Tamil Nadu from the Island of Sri Lanka, which lies to the southeast of India. The state has 1,076 km long coastline, the second-longest in India after Gujarat.

**Administrative Divisions**

Already we have learnt that the state of Tamil Nadu had only 13 districts at the time of its formation. After that, the state was reorganised several times for the purpose of administrative convenience. At present there are 35 districts in Tamil Nadu, including the newly created districts such as Kallakurichi, Tenkasi and Chengalpet. The administrative divisions of the state are given in the following table.

| Divisions | Numbers |
|---|---|
| Districts | 35 (32+3) |
| Revenue Divisions | 76 |
| Taluks | 226 |
| Firkas | 1,127 |
| Revenue Villages | 16,564 |

| | |
|---|---|
| Municipal Corporations | 15 |
| Municipalities | 125 |
| Panchayat Unions (Blocks) | 385 |
| Town Panchayats | 561 |
| Village Panchayats | 12,618 |
| Lok Sabha Constituencies | 39 |
| Assembly Constituencies | 234 |
| Source: maps of india.com 2019 | |

**Activity**

• Find out the coastal districts of Tamil Nadu with the help of a map.
• Group the districts of Tamil Nadu which share their boundary with thestates of Andhra Pradesh, Karnataka and Kerala separately.

**Physiographic Divisions**

We have learnt about end ogenetic and exogeniec processes in 9th std. Have you ever thought what kind of landforms on which you live? Have you ever noticed the land scapes, you come across while travelling from one place to another? Have you ever wondered how these landforms were formed? Let's seethe major physical features of Tamil Nadu and their characteristics.

Tamil Nadu is located on the Peninsular Plateau, known as Deccan Plateau. It is also a part of the ancient Gondwana land that broke away 135 million years ago during Cretaceous Period. Tamil Nadu has many unique land features which include high eroded mountains, shallow deep valleys and plains. The topography of the state slopes towards east. Based on the major differences in relief, Tamil Nadu is divided into the physical divisions of Western Ghats, Eastern Ghats, Plateaus, Coastal and Inland plains.

All districts of Tamil Nadu except the Chennai,The Nilgiris and Kanya kumariwere bifurcated at different points of time.

**Western Ghats**

Western Ghats extends from the Niligrisin the north to Marunthuvazh Malai at Swamithope in Kanyakumari district in the south. Height of the Western Ghats ranges from 2,000 to 3,000 metres. It covers an area of about 2,500 sq.km. Though the Western Ghats is a continuous range, it has some passes. The passes are Palghat, Shencottah, Aralvaimozhi, and Achankoil. The Niligris, Anaimalai, Palani hills, Cardamom hills,Varusanadu, Andipatti and Agasthiyar hills are the major hills of Western Ghats .

**Nilgiri Hills**

The Nilgiri hills is located in the North western part of Tamil Nadu. It consists of 24 peaks with more than 2,000 metresheight. Doddabetta is the highest peak (2,637metres) of this hills followed by Mukkuruthi(2,554 metres). Ooty and Coonoor are

the major hill stations located on this hills. Ithas more than 2,700 species of flowering plants and the state animal Nilgiri Tahr is found in this hill. Much of the Nilgiris natural montane grasslands and shrublands have been disturbed or destroyed by extensivetea plantations and cattle grazing.

**Anaimalai**

Anaimalai is located in the border of Tamil Nadu and Kerala. It is located to the south of Palghat Gap. Anaimalai Tiger Reserve, Aliyar Reserved Forest, Valparaihill station, Kadamparai hydroelectric Power Plant are located on this hills. Aliyar andTirumurthy dams are located at the foot hills of this range.

**Palani Hills**

Palani hills are the eastward extension of the Western Ghats. Except its western part, these hills are located in Dindigul district.Vandaravu (2,533 metres) is the highest peak in the Palani hills. Vembadi Shola (2,505metres) is its second highest peak. The hill station of Kodaikanal (2,150 metres) lies inthe south central portion of the range.

**Cardamom Hills**

These hills are also known as Yela Mala hills located in the south western part ofTamil Nadu. It acquires its name from the cardamom spice, which is commonly grownhere. Pepper and coffee are the other cropscultivated over the hills. They meet theAnaimalai hills in the northwest, the Palani hills in the northeast and Varusanadu andAndipatti hills in the southeast.

| Peaks in Western Ghats | Height(m) |
|---|---|
| Doddabetta | 2,637 |
| Mukkuruthi | 2,554 |
| Vembadisolai | 2,505 |
| Perumalmalai | 2,234 |
| Kottaimtalai | 2,019 |
| Pagasura | 1,918 |

**Varusanadu and Andipatti Hills**

Another eastward extension of WesternGhats is Varusanadu and Andipatti hills.Megamalai (the highway mountain),Kalugumalai, Kurangani hill station, and Suruliand Kumbakarai waterfalls are found on thesehills. Srivilliputhur Grizzled Squirrel Wild life Sanctuary is located in the southern slope ofthese hills in Virudhunagar district. Vaigai riverand its tributaries originate in this region.

**Pothigai Hills**

Its major part lies in Tirunelveli district with its southern slope in the Kanyakumaridistrict. Pothigai hills are called with different names such as the Shiva

Jothi Parvath, Agasthiyar hills and Southern Kailash.These hills feature richest biodiversity in theWestern Ghats. This area is known for itsrich evergreen forest, waterfalls and ancient temples. Kalakkad Mundanthurai Tiger Reserve is located in this region.

**Mahendragiri Hills**

This continous range is situated along theborder of Kanyakumari and Tirunelveli districts and is a part of the southern range of the Western Ghats. Its average height is 1,645 metres. ISRO
Propulsion Complex, a test facility for Indian Space Research Organisation's launch vehicles and satellite propulsion systems, is situated on the lower slopes of this mountain.

**The Eastern Ghats**

Unlike Western Ghats, Eastern Ghats is adiscontinuous and irregular one. It is dissected at many places by the rivers, which drain into the Bay of Bengal. Its height ranges from1,100 to 1,600 metres. These hills separate the plains from plateaus. Javadhu, Servarayan, the Kalrayan, Kollimalai and Pachaimalai are the major hills of the Eastern Ghats of Tamil Nadu and are located in northern districts of the state.

**Javadhu Hills**

Javadhu hills are an extension of theEastern Ghats spread across parts of Vellore and Tiruvannamalai districts and separates these two districts. Many peaks with the height of 1,100–1,150 metres are located in this range. Melpattu is its highest peak. The Vainu Bappu Observatory (VBO) Kavalur, which began operations in 1967, is located on these hills. Many parts of this range are covered with bluishgrey granites. It is noted for its fruit bearing trees, medicinal herbs and sandalwoods. Due to illegal logging, sandalwood trees are disappeared now.

**Kalvarayan Hills**

The name 'Kalvarayan' comes from theword 'Karalar', the ancient name of the presenttribes. It is another major range of hills in theEastern Ghats of Tamil Nadu. This range,along with the Pachaimalai, Aralvaimalai,Javadhu and Servarayan hills, separates theriver basins of Cauvery and Palar. The heightof this hill ranges from 600 to 1,220 metres.These hills have two sections. The northernsection is referred as the Chinna Kalvarayanand the southern one the Periya Kalvarayan.The average height of Chinna Kalvarayanis 825 metres and the Periya Kalvarayan is1,220 metres.

**Servarayan Hills**

It is a mountain range located near the Salem city with the height ranging from 1,200to 1,620 metres. The name of the range comes from a local deity, Servarayan. The highest peak in the southern part of the Eastern Ghatsis located in this range. The peak is Solaikaradu and its height is 1,620 metres. The hill station Yercaud, which is known as poor man's Ooty, islocated on this range. Servarayan temple is its highest point (1623 metres).

| **Peaks in Eastern Ghats** | **Height(m)** |
|---|---|
| Shervarayan temple | 1,623 |
| Mazhamalai | 1,500 |
| Urgamalai | 1,486 |
| Kuttirayan | 1,395 |
| Muganur | 1,279 |
| Valsamalai | 1,034 |

| **Districts** | **Hills** |
|---|---|
| Coimbatore | Maruthamalai, Velliangiriand Anaimalai |
| Dharmapuri | Th eertha malai, Chitteri andVathalmalai |
| Dindigul | Pazhamalai and Kodaikanal |
| Erode | Chenni hills and Sivan hills |
| Vellore | Javadhu, Yelagiri andRathinamalai hills |
| Namakkal | Kolli hills |
| Salem | Servarayan, Kanjamalai andChalk hills |
| Villupuram | Kalvarayan and Gingee hills |
| Perambalur | Pachaimalai |
| Kanyakumari | Marunthuvazhmalai |
| Tirunelveli | Mahendragiri andAgasthiyarmalai |
| Th e Nilgiris | Nilgiri hills |

**Kolli Hills**

It is a small mountain range located in Namakkal district. It covers an area of about2,800 sq.km. It rises up to 1300 metres. This is a mountain range that runs almost parallel to the east coast of South India. Arpaleeswarar temple located on this range is an import antpilgrim centre. It has the largest cover of evergreen or shola forest when compared to other parts of the Eastern Ghats. Several coffee plantations, fruits, flowers and silveroakestates are found in this region.

Why are mountain heightsmeasured from mean sea leveland not from ground level?

**Pachaimalai**

It is the lowest hill range, spreads overthe districts of Perambalur, Tiruchirapalli andSalem. In Tamil language, pachai means green.The vegetation in this range is greener

thanthe vegetative cover of the other hills in thisregion. Hence it is named as 'Pachai malai'.Jackfruit is a popular seasonal agriculturalproduct of this hills.

1. Name the hill resorts ofWestern Ghats and EasternGhats in Tamil Nadu.
2. Is Ooty located on WesternGhats?
3. Name the hill stations located inWestern and Eastern Ghats of
4. Tamil Nadu.
5. Why is the Nilgiri hills called as BlueMountains?
6. 5. What is the kind of landform onwhich you live and what is its height?

**Plateaus**

Plateaus of Tamil Nadu are locatedbetween the Western Ghats and the EasternGhats. It is roughly triangular in shape andcovers an area of about 60,000 sq.km. Its heightincreases from east to west. Its height rangesbetween 150 and 600 metres. This plateau isbroader in the north and very narrow in thesouth. It has many subdivisions.

Bharamahal plateau is a part of theMysore plateau situated in the northwesternpart of Tamil Nadu. Its height ranges from 350to 710 metres. Dharmapuri and Krishnagiridistricts are located in this region.

Coimbatore plateau lies between theNilgiris and Dharmapuri districts. Its heightvaries from 150 to 450 metres. This regionincludes Salem, Coimbatore and Erodedistricts. The area of this plateau is bout2,560 sq.km. Its height varies from 352 to 710metres. Moyar river separates this plateaufrom the Mysore plateau.

Rivers like Bhavani, Noyyal and Amaravathi, which originate from Western Ghats, form valleys in this region. Manyintermontane plateaus are found in the regionof the Nilgiris. Sigur plateau is one such plateau.

Madurai plateau found in Maduraidistrict extends up to the foothills of the Western Ghats. Vaigai and Thamirabaranibasins are located in this zone.

**Plains**

The plains of Tamil Nadu may be divided into two, namely inland plains and coastal plains. Inland plains are drained by the rivers Palar, Ponnaiyar, Cauvery and Thamirabarani. Cauvery plains is one of the most importantfertile plains of the state. The plains of Cauveryis found in Salem, Erode, Karur, Tiruchirapalli, Pudukottai, Thanjavur, Tiruvarur and Nagapattinam districts.

Coastal plains of Tamil Nadu are also called Coromandel or Cholamandalam (land of Cholas) plain, which extends from Chennai to Kanyakumari. It is formed by the rivers that flow towards east drain in the Bay of Bengal. Itis more than 80 kilometres wide at some places.Though it is an emerged coast, some partsare submerged into the sea. The sand dunesformed along the coast of Ramanathapuram and Thoothukudi districts are called Teri.Coral rocks are found at the head of Gulf of Mannar in the east coastal plain.

**Beaches**

The Coromandel Coast along the Bay of Bengal consists of many beautiful and exoticbeaches. The golden sands of Tamil Nadu beaches are scattered with palm and casuarinasgroves. Marina and Elliot beaches of Chennai, Kovalam and Silver beaches of Kanya kumariare some of the famous beaches in Tamil Nadu.

**Drainage**

Rivers of Tamil Nadu are its life line. Though it has many rivers, the rivers of Cauvery, Palar, Ponnaiyar, Vaigai and Thamirabarani are the notable ones. Most of the rivers of Tamil Nadu originate from Western Ghats and flow towards east and drain into the Bay of Bengal. All therivers of the state are non-perennial except Thamirabarani. It is perennial as it is fed by both the southwest and northeast monsoons.

**Cauvery**

The river Cauvery originates at Talacauveryin the Brahmagiri hills of Kodagu (coorg) district of Karnataka in the Western Ghats. About 416 km of its course falls in Tamil Nadu. It serves as the boundary between Karnatakaand Tamil Nadu for a distance of 64 km. It forms Hogenakkal waterfalls in Dharmapuridistrict. Mettur Dam, also called as the Stanley Reservoir, is located across this river in Salem district. A tributary called Bhavani joins Cauvery on the right bank about 45km from the Mettur Reservoir. Thereafter, it takes easterly course to enter into the plains of Tamil Nadu. Two more tributaries, Noyyal and Amaravathi, confluence the river on the right bank at Thirumukkudal 10 km from Karur. The river is wider in this region, where it is called as 'Agandra Cauvery'.

In Tiruchirappalli district, the river branches into two parts. The northern branch is called Coleroon or Kollidam and the southern branch remains Cauvery. From here, the Cauvery delta begins. After flowing for about 16 km, the two branches join again to form the 'Srirangam Island'. The Grand Anaicut, also called as Kallanai was built across the river Cauvery. After Kallanai, the river breaks into a large number of distributaries and forms a network all over the delta. The network of distributaries within the delta of Cauvery in the coast is called as the 'Garden of Southern India'. It merges into Bay of Bengal to the south of Cuddalore.

Pamban, Hare, Krusadai, Nallathanni Theevu, Pullivasal, Srirangam, Upputanni, Island Grounds, KattupalliIsl and, Quibble Island and Vivekananda Rock Memorial are some major islands of Tamil Nadu

**Palar**

The Palar river rises beyond Talagavara village in the Kolar district of Karnataka. The Palar drains an area of 17,871 sq.km, out of which nearly 57% lies in Tamil Nadu and

the rest in the states of Karnataka and Andhra Pradesh. Ponnai, Goundinya Nadhi, Malattar, Cheyyar and Kiliyar are its majortributaries. Its total length is 348 km, outof which 222 km of its course falls in TamilNadu. It flows through the districts of Vellore and Kancheepuram before entering into Bay of Bengal near Kuvattur.

**Then Pennaiyar/Then Ponnaiyar**

It originates from the eastern slope of Nandi Durga hills in eastern Karnataka. Itdrains an area of 16,019 sq.km, of which nearly 77% lies in Tamil Nadu. It flows for a distance of 247 km in the south easterly direction in the districts of Krishnagiri, Dharmapuri, Vellore,Tiruvannamalai, Cuddalore and Villupuram.It branches into two, viz. Gadilam and the Ponnaiyar near Tirukoilur Anaicut. Gadilamjoins the Bay of Bengal near Cuddalore and Ponnaiyar near the Union Territory of Puducherry. Chinnar, Markandanadhi, Vaniarand Pambar are its tributaries. Heavy rain atthe river's source cause sudden but short-lived floods. The river is extensively dammed forirrigation, especially in Tamil Nadu. There are reservoirs at Krishnagiri and Sathanur acrossthis river. The Ponnaiyar is considered sacredby Hindus and festivals are held during the Tamil month of Thai (January–February).

**Vaigai**

Vaigai river rises from the eastern slopes of the Varusanadu hills of Western Ghats of Tamil Nadu. It drains an area of 7,741 sq.km, which lies entirely in the state of Tamil Nadu. It flows through the districts of Madurai, Sivaganga and Ramanathapuram. Its length is 258 km. It discharges its water into the Ramnad Big Tankand some other small tanks. The surplus water from the tanks is finally discharged into Palk Strait near Ramanathapuram.

**Thamirabarani**

The name is interpreted as Thamiram (copper) and Varuni (streams of river). The water of this river gives a copper like appearance due to the presence of dissolved suspended red soil. It originates from a peak in Pothigai hill son the Western Ghats above Papanasam in the Ambasamudram taluk. The origin of the river is associated with Sage Agasthiyar. It courses through the districts of Tirunelveli and Thoothukudi and finally flow into the Bay of Bangal near Punnaikayal in Thoothukudi district. Karaiyar, Servalar, Manimuthar, Gadananathi, Pachaiyar, Chittar and Ramanathi are its main tributaries.

| District | Waterfalls |
|---|---|
| Dharmapuri | Hogenakkal |
| Thirunelveli | Kalyanatheertham,Courtallam |
| Theni | Kumbakkarai and Suruli |
| Namakkal | Agayagangai |
| Th e Nilgiri | Catherine and Pykara |
| Salem | Kiliyur |

| | |
|---|---|
| Virudhunagar | Ayyanar |
| Coimbatore | Vaideki, Sengupathi,Siruvani and Kovaikutralam |
| Tiruppur | Tirumurthy |
| Madurai | Kutladampatti |
| Kanyakumari | Tirparappu, Kaalikesam, Ulakkai and Vattaparai |

**Climate**

You have already learnt that the Tropic of Cancer divides India roughly into two equal parts and the state Tamil Nadu lies to the south of Tropic of Cancer, which is near the Equator. As it receives vertical sunrays, the temperature of the state is relatively high throughout the year. Though the state falls within the hot climatic zone, the east coast of Tamil Nadu enjoys tropical maritime climate. The Bay of Bengal and Indian Ocean influence the climate of the coastal regions. The annual temperature ranges from 18o to 43o and the annual rain fall is 958.5 mm.

While the east coast experiences tropical maritime climate, the western region of the state enjoys the mountainous climate. The is climate prevails over the Blue Mountains, Anaimalai and the Kodaikanal hills. Thick forests and high altitude make the climate of these areas cool and pleasant. The us stations in this region attract thousands of people during the summer season. Low altitude and distance from the sea are there a sons for high temperature and dry conditions in the central part of Tamil Nadu. The migration of vertical sun's rays leads to the formation of different seasons in Tamil Nadu as follows.

| **Seasons of Tamil Nadu** | |
|---|---|
| **Season** | **Period** |
| Winter Season | January-February |
| Summer Season | March- May |
| Southwest Monsoon | June-September |
| Northeast Monsoon | October –December |

**Winter Season**

During January and February, the vertical rays of the sun fall between the Tropic of Capricorn and the Equator. Hence, TamilNadu and India on the whole receive slanting rays from the sun. So, the weather is slightly cooler during these months. The difference between summer and winter temperature is not very high. Winter temperature in TamilNadu varies from 15°C to 25°C. However, in the hill stations, the winter temperature drops below 5°C occasionally. Some valleys in the Nilgiris record even 0°C. This drop intemperature leads to the formation of thick mist and frost. This season is practically dry.

**Summer Season**

The apparent migration of the sun towards north during March, April and May results in the reception of vertical sun's rays by South India. Thus there is a steady rise in temperature from the equator. Hence, TamilNadu located to the south of Tropic of Cancer, experiences high temperature. Generally the temperature varies from 30°C to more than 40°C. During this season particularly in the month of May, southern part of the state receives some rainfall from pre-monsoon showers (Mango/Blossom showers) and some parts experience convectional rainfall.

1. What is Agni Nakshatram?
2. Group the districts of TamilNadu into low, moderateand heavy rainfall regions.

**Southwest Monsoon**

The intense heating of the landmass of the north by the sun during March to May createsa well-developed low pressure in North India, which draws wind from the Indian Ocean. This results in the formation of south west monsoon. During this season, Tamil Nadu is located in the rain shadow region for the wind, which blows from the Arabian Sea. As a result, Tamil Nadu receives only a meagre rainfall from this monsoon. Rainfall during this season decreases from west to east. Coimbatore plateaureceives an average of 50 cm rain fall. However, the southern districts like Kanyakumari, Tirunelveli and The Nilgiris record 50–100cm rainfall during this period. The rainfall isscanty in the eastern part of the state.

**Coriolis Force:**

An apparent force acts as aresult of the earth's rotation defl ects moving objects (such as projectiles or air currents)to the right in the northern hemisphere andto the left in the southern hemisphere.

**Northeast Monsoon**

The northeast monsoon seasoncommences from the month of October andlasts till mid-December. The high pressurecreated over Central Asia and northern partof India becomes the source for the northeastmonsoon winds. The apparent migration ofthe sun from Tropic of Cancer to the Tropicof Capricorn causes a change in receivingtemperature and air pressure during thisseason. It makes the wind to blow towards Bayof Bengal from North India. After reaching Bayof Bengal, the wind gets deflected by Coriolisforce and takes the northeast direction. Henceit is known as northeast monsoon. As thenortheast monsoon is a part of returning ofsouthwest monsoon wind, it is also called asthe retreating monsoon. This is the main rainyseason for Tamil Nadu, accounting for its 48%of annual rainfall. Coastal districts of the stateget nearly 60% of their annual rainfall andthe interior districts get about 40–50% of theannual rainfall during this season.

Tropical cyclones are common during thisseason. Cyclone originating from the Bay ofBengal bring heavy rainfall to the east coastalregions of Tamil Nadu. More than 50% of thestate's rainfall is received from tropical cyclonesduring this period and east coastal regionreceives 100 to 200 cm of rainfall. The rainfallreceived by the central and northwestern partsis 50–100 cm. The cyclones sometimes disturbthe cultivation of crops and cause severedamage to life and property.

Chinnakallar near Valparaiis the 3rd wettest place inIndia and the wettest place inTamil Nadu.

**Soils of Tamil Nadu**

Soil is the loose material mainly formed bythe weathering and erosion of rocks. It forms animportant element of agriculture. It providesessential minerals and nutrients for the growthof vegetation. Soil is one of the importantnon-renewable resources in the world. It takes300–1,000 years to form two inches of soil.The soil of a place depends on the factors likeclimate, parent rocks and vegetative cover ofthe respective places. The soils in Tamil Naduare broadly classified into five types accordingto their characteristics. They are alluvial, black,red, laterite and saline soils.

**Alluvial Soil**

Alluvial soils are formed by the depositionof silt by the rivers. Alluvial soils are generallyfertile as they are rich in minerals such as
lime, potassium, magnesium, nitrogen andphosphoric acid. It is deficient in nitrogen andhumus. It is porous and loamy. Paddy, sugarcane,banana and turmeric are cultivated in this soil.It is found in the river valley regions and thecoastal plains of Tamil Nadu. Generally thistype of soil is found in the districts of Thanjavur,Tiruvarur, Nagapattinam, Villupuram,Cuddalore, Tirunelveli and Kanyakumari. Itis also found to a small extent along the rivervalleys in few interior districts.

**Black Soil**

Black soils are formed by the weathering of igneous rocks. It is also known as regur soil. As cotton grows well in this soil, it is also called as black cotton soil. This soil is developed over the Deccan lava granite region under semiarid conditions. It is fine textured and clayey innature. It is poor in phosphoric acid, nitrogen and organic matter. Chief minerals found in this soil are calcium, magnesium, carbonates, potashand lime. Cotton, sorghum, cumbu and foddercrops are the major crops cultivated in the black soil regions of Tamil Nadu. Black soils arefound extensively in the districts of Coimbatore, Madurai, Virudhunagar, Tirunelveli andThoothukudi.

**Red Soil**

Red soils cover over two-thirds of thetotal area of Tamil Nadu. They are foundparticularly in the central districts of thestate. This soil is sandy and loamy in texture.However, the characteristic features of the redsoil vary according to its formation and climaticcondition under which the soil was formed.Red soil is porous, friable and non-retentiveof moisture. The colour of the soil is due to thepresence of high content of iron oxides. This Soil is poor in nitrogen, phosphorus, acids andhumus. paddy, ragi, tobacco and vegetables are the chief crops grown in this soil. Almostall types of crops can be grown in this soilwith the application of manure and irrigationfacilities. It is dominantly found in Sivagangai and Ramanathapuram districts.

**Laterite Soil**

This soil is formed by the process ofintense leaching. Laterite soils are found insome parts of Kancheepuram, Tiruvallur andThanjavur districts and some patches overthe mountainous region in the Nilgiris. Cropsgrown in this soil are paddy, ginger, pepper andplantains. It is also suitable for the cultivationof tea and coffee plants.

**Saline Soil**

Saline soils in Tamil Nadu are confinedto the Coromandel coast. Vedaranyam has apocket of saline soil. However, the tsunamiwaves on December 26, 2004 brought a lotof sand and deposited it all along the eastcoast of Tamil Nadu. The tsunami made thecoastal areas unsuitable for cultivation to aconsiderable extent.

**Soil Erosion**

Soil is a non-renewable resource. It is verydifficult to replace the soil once it gets degraded.Deforestation, overgrazing, urbanisation andheavy rain are responsible for soil erosion inTamil Nadu. Soil erosion reduces the fertilityof soils, which in turn reduces agriculturalproductivity. So, it is necessary to take intensivecare to conserve the soil resources.

Desertification is oneof the major problems ofTamil Nadu. Accordingto the desertification atlasprepared by the ISRO. About12% of the total geographical area is underdesertification and land degradation. Theni,the Nilgiris and Kanyakumari are the worstaffected districts. About 12,000 hectares (120Sq.km) were affected by sand deposition inTheni and Rajapalayam.

**Natural Vegetation**

Natural vegetation refers to the forestcover. Landforms, nature of soil, temperatureand rainfall are the major factors that controlthe distribution of natural vegetation. As perNational Forest Policy, 1988, a minimum ofone-third of the total geographical area mustbe under forest cover. The total forest cover ofTamil Nadu is far

lower than this. Accordingto the Tamil Nadu State of Forest Report – 2017assessment, the area under forest in the stateis 26,281 sq.km, which constitutes 20.21% ofthe total area. Tamil Nadu constitutes 2.99%of India's forest cover. The forest types inthe state varies from wet evergreen to scrubforests. The Western Ghats, the longest hillrange in the state, is one of the 25 globalhotspots of bio-diversity and one of the threemega centres of endemism in India. Thefollowing table shows the categories of forestand their areal extent classified under theprovision of Indian Forest Act.

| Forest Type | Area(sq.km) |
|---|---|
| Reserved Forest | 19,459 |
| Protected Forest | 1,782 |
| Unclassified Forest | 1,266 |
| Total | 22,507 |
| Source: Tamil Nadu stastistical Handbook – 2016--- | |

**Forest Types**

The forest in the state is broadly dividedinto five types as follows

**Tropical Evergreen Forest**

This forest type is found in the regionsthat receive heavy rainfall. It is a dense, multi-layered forest. It is found in the upper slopes ofWestern Ghats of Tirunelveli, Kanyakumari,the Nilgiris and Coimbatore districts. Themajor tree species of this forest are cinnamon,Malabar ironwood, panasa, java plum/jamun,jack, kindal, ayani and crape myrtle. The semievergreentype of forest in the state is foundover the regions of sub-tropical climate overthe Eastern Ghats. The prominent regionsare Servarayan, Kollimalai and Pachaimalai.
Species of Indian mahogany, monkey teak,woolly cassia, jack and mango trees arecommon in this region.

**Montane Temperate Forest**

It is found in sheltered valleys ofAnaimalai, Nilgiris and Palani hills over a1000 metres altitude. They are known as'Sholas'. The trees in this forest are evergreenand usually short. Nilgiri champa, wights
litsea and rose apple are the common treesfound in this forest.

**Tropical Deciduous Forest**

This type of forest lies in the margin ofsemi-evergreen and evergreen forests. Thetrees in this forest shed their leaves duringthe dry season. The trees reach up to a heightof 30 metres. Some trees of this forest are silkcotton, kapok, kadamba, dog teak, woman'stounge, axlewood and siris. Bamboos are alsocommon in this type of forests. Some trees ofthis forest are economically important.

**Mangroves**

This type of forest is found in the coastalareas, river deltas, tails of islands and oversea faces where accretion is in progress. Thevegetation is typically evergreen, moderatein height and has leathery leaves. Thevegetation of this forest is adapted to survivein tidal mud and salt water. Asiatic mangrove,white mangrove, wild jasmine/Indian pivotetc. are some of the notable trees of thisforest. Pichavaram, Vedaranyam, Muthupet,Chatram and Thoothukudi are the placesin Tamil Nadu where the mangrove forest isfound to a considerable extent.

Role of Mangroves in Coastal Zone Management.Mangroves helps in the prevention of coastalerosion from waves and storms. It alsoprotects coral reefs and sea grass meadowsfrom being smothered in sediments.

Pichavaram mangroveforest is located nearChidambaram, Cuddaloredistrict. This is the secondlargest mangrove forest inthe world covering about 1,100 hectares(11 sq.km) of area. It is separated from theBay of Bengal by a sandbar. It consists ofspecies like Avicennia and Rhizophora. Italso supports the existence of rare varietiesof shell and fin fishes.

**Tropical Thorn Forest**

Thorn forest in Tamil Nadu is found wherethere is a little rainfall. These forests are foundfrom plains up to 400 meters altitude. Thecommon trees of this forest are rusty acacia,wheel, neem and palm. Shrubs are commonvegetation in this type of forest. This type offorest is found in the districts of Dharmapuri,Ramanathapuram, Virudhunagar and someparts of interior districts.

| **Districts with prominent forest cover in Tamil Nadu** | |
|---|---|
| **District** | **Area (sq km)** |
| Dharmapuri | 3,280 |
| Coimbatore | 2,627 |
| Erode | 2,427 |
| Vellore | 1,857 |
| The Nilgiris | 1,583 |
| Dindigul | 1,662 |

**Wild life**

Animals and birds live in forestsconstitute the wild life. Tamil Nadu has avariety of wild animals, birds and reptiles.hills are an ideal refuge for elephants, bisons,tigers, deer and monkeys.Several Wildlife sanctuaries and NationalParks have been set up to protect the animallife in the state. The hills of the state providean ideal condition for a variety of animals andplants life. The list of Wild lifeSanctuaries,National parks and Biosphere Reserves ofTamil Nadu are listed in the following tables.

| S. No | Wildlife Sanctuaries in Tamil Nadu | District | Year of Establishment |
|---|---|---|---|
| 1 | Mudumalai Wildlife Sanctuary | The Nilgiris | 1940 |
| 2 | Mundanthurai Wildlife Sanctuary | Tirunelveli | 1962 |
| 3 | Point Calimere Wildlife Sanctuary | Nagapattinam | 1967 |
| 4 | Indira Gandhi Wildlife Sanctuary | Coimbatore | 1976 |
| 5 | Kalakad Wildlife Sanctuary | Tirunelveli | 1976 |
| 6 | Vallanadu Black Buck Sanctuary | Thoothukudi | 1987 |
| 7 | Grizzled Giant Squirrel Wildlife Sanctuary | Virudhunagar | 1988 |
| 8 | Kanyakumari Wildlife Sanctuary | Kanyakumari | 2007 |
| 9 | Sathyamangalam Wildlife Sanctuary | Erode | 2008 |
| 10 | Megamalai Wildlife Sanctuary | Theni and Madurai | 2009 |
| 11 | Point Calimere Wildlife Sanctuary - Block A and Block B | Thanjavur and TiruvarurNagapattinam | 2013 |
| 12 | Kodaikanal Wildlife Sanctuary | Dindigul and Theni | 2013 |
| 13 | Gangaikondan Spotted Deer Sanctuary | Tirunelveli | 2013 |
| 14 | Cauvery North Wildlife Sanctuary | Dharmapuri and rishnagiri | 2014 |
| 15 | Nellai Wildlife Sanctuary | Tirunelveli | 2015 |

| S. No | **Bird Sanctuaries in Tamil Nadu** | **District** | **Year of Establishment** |
|---|---|---|---|
| 1 | Vettangudi Birds Sanctuary | Sivaganga | 1977 |
| 2 | Pulicat Lake Birds Sanctuary | Tiruvallur | 1980 |
| 3 | Karikili Birds Sanctuary | Kancheepuram | 1989 |
| 4 | Kanjirankulam Birds Sanctuary | Ramanathapuram | 1989 |
| 5 | Chitrangudi Birds Sanctuary | Ramanathapuram | 1989 |
| 6 | Koonthankulam-Kadankulam Birds Sanctuary | Tirunelveli | 1994 |
| 7 | Vellode Birds Sanctuary | Erode | 1997 |
| 8 | Vedanthangal Birds Sanctuary | Kancheepuram | 1998 |
| 9 | Udayamarthandapuram Birds Sanctuary | Tiruvarur | 1998 |
| 10 | Melaselvanur-Keelselvanur Birds Sanctuary | Ramanathapuram | 1998 |
| 11 | Vaduvoor Birds Sanctuary | Tiruvarur | 1999 |
| 12 | Karaivetti Birds Sanctuary | Ariyalur | 2000 |

| | | | |
|---|---|---|---|
| 13 | Theerthangal Bird Sanctury | Ramanathapuram | 2010 |
| 14 | Sakkarakottai Tank Birds Sanctuary | Ramanathapuram | 2012 |
| 15 | Oussudu Lake Birds Sanctuary | Villupuram | 2015 |

| S. No | Biosphere Reserves in Tamil Nadu |
|---|---|
| 1 | Nilgiri Biosphere Reserve |
| 2 | Gulf of Mannar Biosphere Reserve |
| 3 | Agasthiyarmalai Biosphere Reserve |

Tamil Nadu is a state with varied climate,landforms and resources. This makes ourstate a distinct one among the Indian states.In Tamil Nadu, If the available resources areutilised rationally, it may continue to be at topin the country. So, it is the duty of the everyindividual to strive towards achieving this goal.

**Natural Disasters in Tamil Nadu**

A sudden natural catastrophe thatcauses great damage or loss to lives andproperties is called as disaster. The alterationof natural environment by the technologyand developmental activities increase thefrequency of disasters all over the world.So, it is necessary to aware the measures tobe adopted during different types of naturaldisasters to reduce the risk caused by them.

According to United Nations officefor Disaster Risk Reduction, Disaster RiskReduction( UNDRR) is the concept and practiceof reducing disaster risks through systematicefforts to analyse and reduce the causal factorsof disasters. This includes reducing exposure tohazards, lessening the vulnerability of peopleand property, wise management of land andenvironment, and improving preparedness andearly warning for adverse events.

Here we will discuss about the naturaldisasters in Tamil Nadu and the measures to beadopted before, during and after different disasters.

**Landslide**

A collapse of a mass of earth or rock froma mountain or cliff is called landslide. Wateris the most common trigger of a landslide.Nilgiris in Tamil Nadu is identified as one ofthe most vulnerable districts in the country andlandslides pose a major threat in this area. Theother regions which are prone to land slides areCoimbatore and palani hill of Dindigul districtwhere Kodaikanal hill station is located.

**Risk Reduction Measures**

Before: Create awareness; stay alert and awake;monitor the news updates; make evacuationplan; listen for any unusual sounds that mightindicate moving debris such as trees cracking,boulders knocking and consider leaving theplace of landslide if it is safe to do so.

**During**

If indoors: Find cover in the section ofthe building that is farthest away from theapproaching landslide; take shelter under astrong table or bench. Hold on firmly andstay until all movement has ceased.

**If outdoors**

Move quickly away from its likely path,keeping clear of embankments, trees, powerlines and poles; avoid crossing roads andbridges and stay away from the landslidebecause the slope may experience additionalfailures for hours to days afterwards.

After- Stay away from the slide area; listen tolocal radio or television stations for the latestemergency information; watch for flooding,which may occur after a landslide or debrisflow; check for injured and trapped personsnear the slide, without entering the directslide area.

**Flood**

Flood is a common one in the coastaldistricts of Tamil Nadu during northeastmonsoon. The recent flood occurred in thestate was in 2015. The 2015 South Indianfloods resulted from heavy rainfall generatedby the annual northeast monsoon inNovember–December 2015. They affected theCoromandel Coast region of the South Indianstates of Tamil Nadu and Andhra Pradesh.More than 500 people were killed and over1.8 million people were displaced. With theestimates of damages and losses ranging fromnearly 200 billion, the floods were the costliestnatural disasters of the year 2015. Tamil Naduwas the worst affected state by this flood.Generally the districts of Kancheepuram,Tiruvallur, Cuddalore, Villupuram,Thanjavur, Tiruvarur, Nagapattinam,Pudukkottai, Ramanathapuram, Tirunelveli
and Kanyakumari are the most flood pronedistricts of the state.

**Risk Reduction Measures**

Before: Know about relief centres andevacuation routes; keep emergency phonenumbers and important information; foldand roll up things on to higher ground.During: Be quick, keep safe and ensure thatchildren and elderly are safe by leaving thehouse to a higher ground; turn off all electricalappliances and gas; leave the area before itsget too late; do not drive through the water;stay away from power lines or broken powertransmission cables and try to keep awayfrom flood water.

**After:** Make sure to get back inside yourhouse, keep all power and electrical appliancesoff before it is okay to put them on and wearappropriate dress before cleaning house whichis necessary to clean the contamination.

**Cyclone**

The coastal regions of Tamil Nadu are oftenhit by the tropical cyclones formed in Bay ofBengal during northeast monsoon. Occurrenceof flood, losses to lives and properties are therecurring one in the state. Based on the cyclonehit areas, the state of Tamil Nadu can be dividedinto five zones namely very high, high, medium,low and very low cyclone prone zones. Southernpart of Chennai, eastern part of kancheepuram,eastern part of Villupuram, northeastern part ofCuddalore and Union Territory of Puducherryfall under the very high cyclone prone zone.Nagapattinam, Tiruvallur, Tiruvarur (exceptnorthwestern part), southern part of Thanjavur,eastern part of Pudukkottai, eastern part ofCuddalore, middle portion of Villupuram,eastern part of Tiruvannamalai, western part ofkancheepuram, northeastern part of Vellore andnorthern part of Chennai districts are includedin the high cyclone prone zone.

**Risk Reduction Measures**

**Before:** Ignore rumours, stay calm, don't bepanic; Keep your mobile phones charged toensure connectivity; use sms; listen to radio;watch TV; read newspapers for weatherupdates. Keep your documents and valuables inwater proof containers; prepare an emergencykits with essential items for survival; secureyour house; carry out repairs; don't leave sharpobjects loose; untie cattle/animals for theirsafety. Fishermen should keep a radio set withextra batteries handy; keep boats and rafts tiedup safely and don't venture out in the sea.

**During:** Take care of the old and young, keepall family members inside the house; switchof all electrical appliances, stay in an emptyroom, movable items should be kept securelytied; try to help your neighbours but, don't goout during cyclone.

**After:** Those who shifted to the cyclonecentre must remain there till instructions arereceived; strictly avoid loose electrical wiresafter the cyclone; beware of snakes and otheranimals immediately after the cyclone; cleardebris and carcasses from/near the premiseafter the cyclone and report losses truthfullyand accurately to the authorities.

**Drought**

Tamil Nadu is water deficit state. It isalmost a regular one and not a seasonal one.It depends mostly on northeast monsoon forits rain. Its failure ends in disastrous. The totalassessed water resources in the state amount to1,587 TMC (Thousand million cubic feet) whilethe state government's demand estimate is1,894 TMC. Demand exceeds supply by 19.3%,this happens when rainfall is "normal".

The government classifies groundwaterblocks into different categories. Only 145of 385 such blocks are classified safe. Theothers are in various stages of depletion:over-exploited, critical and semi-critical.About 2% of the blocks are already saline.About 64% of the total area of the state isdrought prone. Coimbatore, Dharmapuri,Kanyakumari,

Madurai, Ramanathapuram,Salem, Tirunelveli, and Tiruchirappalli arethe districts which are more drought prone.

According to the desertification atlasprepared by the ISRO, about 12 percent of thetotal geographical area is under desertificationand land degradation. Theni, Virudhunagar,the Niligris and Kanyakumari are the worstaffected districts. To manage the water deficit,rain water harvesting and water conservationmethods have to be implemented strictly.

**Some methods of water conservation are:**

Protection of water from pollution;redistribution of water; rational useof groundwater; population control;renovation of traditional water sources; useof modern irrigation methods; increasingforest cover; changing crop pattern; floodmanagement and use of geothermal waterare some of the major water conservationmethods.

**Forest Fire**

Tamil Nadu is a tropicalstate. The high temperatureduring summer leads tooccasional forest fire indeciduous and thorn forests.
The recent fire accidentin the state took place in 2018. The tragedyhappened on March 11 when 37 people fromChennai and Erode regions were returningafter a trekking trip to the Kurangani hills in
Theni district. The groups were struck in themiddle of a forest fire, which ultimately killed23 people. In the aftermath of the Kuranganiforest fire, Tamil Nadu government hasbanned trekking in the state for two monthsevery year (February15 to April 15).

**Risk Reduction Measures**

**Before:** Create defensible space to separateyour home from flammable vegetationand materials (30 feet); follow all localfire and building codes; keep all trees andshrubs trimmed. Use approved fire resistantmaterials; make evacuation plans with familymembers which include several options withan outside meeting place.

**During:** Listen to radio; watch tv; readnewspapers for updates; if adequate water areavailable fill buckets with water. turn a lighton a room in case of smoke; turn off gas andelectrical appliances and be ready to evacuateall family members.

**After:** Check with fire officials beforeattempting to return to your home; usecaution when re-entering a burned area -flare ups can occur; check grounds for hotspots and check the roof and exterior areasfor sparks and embers.

**Tsunami**

Though Tsunami is not a common onein India, its incident in 2004 alerted Indiaand the state of Tamil Nadu on this aspect.Almost all the countries situated around theBay of Bengal were affected by the tsunamiwaves in the morning hours of 26 December2004 (between 09:00 and 10:30 hrs IST). Thekiller waves were triggered by an earthquakemeasuring 8.9 on the Richter scale that hadan epicentre near the west coast of Sumatrain Indonesia. Waves rose up to 6-10 metresand the impact was felt up to the East Africancoast affecting Somalia, Tanzania and Kenya.

**Tremors and Tidal Waves in South India**

Tremors and Tidal waves hit South Indiaand Large Scale devastation was reported. Overa thousand people have been killed in tidal wavesin Tamil Nadu, Andhra Pradesh, and Andamanand Nicobar Islands. Tamil Nadu was the "worstaffected" state of India in this incident.

More than 1,500 people have been killedin the state. Casualties reported were veryhigh in Nagapattinam (700), Kanyakumari(250) and Cuddalore (200) districts. Around125 deaths have been recorded in the statecapital of chennai. Earlier, the tsunami wasreported in India in 1881 and 1941.

**Risk Reduction Measures**

**Before:** if you live in a coastal area, knowabout tsunami risk and local warningarrangements; develop household emergencyplan; know where the nearest high ground isand how you will reach it.

**During:** Take your get away kit, don't travelareas at risk; move immediately nearest highground; if you can't escape tsunami, go to anupper storey of the building or climb onto a roofor tree or grab a floating objects; never go to theshore to watch tsunami and listen to local radiostations as emergency management.

**After:** Continue to listen to the radio; don'treturn to the evacuation zone until authoritieshave given all clear; check yourself for injuriesand get first aid and help others.

**Earthquakes**

India is a vast country whichexperiences many earthquakes at differentperiods. Generally high risk zones of thecountry are located in the north and centralparts. The state of Tamil Nadu is located inthe moderately low risk zone.

**Earthquakes in Tamil Nadu**

**26 September 2001:** A moderate quakeoccurred in the Bay of Bengal, off the coast ofthe Union Territory of Puducherry, resultingin three deaths and minor damage to propertyin Puducherry and coastal Tamil Nadu. It hada magnitude of 5.6 on Richter scale.

**7 June 2008:** A mild earthquake occurred inthe Palar Valley region in Tamil Nadu. It hada magnitude of 3.8 on Richter scale and wasfelt in many parts of Vellore district.

**12 August 2011:** A mild earthquake occurredin the Cauvery basin in Ariyalur district. Ithad a magnitude of 3.5 on Richter scale andwas felt in several districts in southern TamilNadu. It resulted in one death and causedminor damages in the districts of Cuddalore,
Villupuram, Perambalur and Tiruchirappalli.

**In 2012**, Chennai experienced a mild tremorwith its epicentre in the Indian Ocean.

**Risk Reduction Measures**

**During:** Take cover under a strong table orany other piece of furniture and remain undercover until the shaking stops.

**After:** Proceed cautiously once the earthquakehas stopped and always avoid roads, bridges thatmight have been damaged by the earthquake.

## Unit – 7

## Human Geography of Tamil Nadu

**Learning Objectives**

- To understand the agricultural factors, major crops and theirdistribution in Tamil Nadu
- To learn about the water resources of Tamil Nadu
- To study the mineral and industrial resources of Tamil Nadu
- To analyze the population and its composition in Tamil Nadu
- To learn about the man made disasters in Tamil Nadu

### Introduction

Human geography refers to the study ofways of development of human societies andtheir operation in relation to their physicalenvironment. This chapter focuses on thedistribution, characteristics and utilisation ofdifferent resources in Tamil Nadu. We havestudied earlier that the earth is endowedwith a variety of natural resources such aslandforms, rivers, soil, natural vegetation,water and wildlife. These resources are usefulonly when they are utilised. Human beingsuse these resources using their intelligenceand skill. Thus, the human beings are themost significant resource on the earth surface.They turn all these natural resources intouseful products with their skills and abilities.

### Agriculture

The word "agriculture" is derived from theLatin words "ager and cultura", which meansfield and growing. Agriculture is a practice offarming that includes the cultivation of crops,rearing of animals, birds, forestry, fisheriesand other related activities. Agriculture is themajor occupation in Tamil Nadu. Agriculturehas been the mainstay of the state's economysince independence with more than 65% of thepopulation depends upon this sector for theirliving. Agriculture provides employment forrural people on a large scale. There is a stronglink between agriculture and economic growth.Agriculture constitutes about 21% of the state'seconomy. However, it fluctuates from one yearto another. Paddy, millets and pulses are theprincipal food crops of the state. Sugarcane,cotton, sunflower, coconut, cashew, chillies,gingelly, groundnut, tea, coffee, cardamom andrubber are the major commercial crops.

### Geographical determinants of Agriculture

Landform, climate, soil and irrigationare the factors that determine the growth ofagriculture.

**Landform**

Tamil Nadu is a land of diverse landscapecomprising of hills, plateaus and plains.Among them the plains are most suitablefor agriculture. The plains with alluvial soilenhances agricultural productivity. Example:Plains of cauvery. Agriculture in the plateau ismoderate and is poor on the hills.

**Climate**

Tamil Nadu is situated in the tropicalzone, which is nearer to the equator. The stateexperiences a tropical climate. Hence, thetemperature in Tamil Nadu is relatively highalmost throughout the year. So, only the tropicalcrops are cultivated. Water is another limitingfactor of agriculture. Northeast monsoon isthe major source of rainfall for Tamil Nadu.Therefore, the major cropping season beginswith this season. The rainfall in this season andthe irrigation facilities affect agriculture to alarge extent.

**Soil**

Soil is one of the most essential elementsof agriculture. It provides essential minerals ornutrients for the growth of crops and vegetation.The regions of river valleys and the coastal plainsare the most agriculturally productive regions of thestate as they are covered with fertile alluvial soil.

**Types and regions of Agriculture Practices in Tamil Nadu**

| **Farming type** | **Area practiced** |
|---|---|
| Subsistenceintensiveagriculture | Practiced all overTamil Nadu with fewexceptions. |
| PlantationAgriculture | Hill slopes of Easternand Western Ghats. |
| Mixed farming | Banks of RiverCauvery andThenpennai. |

**Irrigation**

Monsoon rainfall in the state is highlyirregular. Further it is seasonal. Hence,irrigation becomes necessary for successfulcultivation of crops in the state. In the dryregions, rain-fed crops are cultivated.

The Tamil Nadu RiceResearch Institute (TRRI) is anIndian research institute workingin the field of rice under TamilNadu Agricultural University(TNAU).It is situated at Aduthurai, in Thanjavurdistrict, it was established in April, 1985 in TNAUto meet the research requirements of the regionwith the help of existing Agricultural Collegesand Research centres and perform lead functionfor rice and rice based cropping system research.

**Cropping Seasons in Tamil Nadu**

Farmers select different crops fordifferent seasons of cultivation. It is based onthe temperature and availability of moisturein the soil. Accordingly, the state has thefollowing cropping seasons.

| Name | Sowing | Harvesting | Major crops |
|---|---|---|---|
| Sornavari (chittirai pattam ) | April-May | August- September | Millets and cotton |
| Samba (Adipattam) | July-August | January- February | Paddy and sugarcane |
| Navarai | November - December | February-March | Fruits, vegetables, cucumber and watermelon |

**Distribution of major crops in Tamil Nadu**
**Paddy**

Paddy is the most important staple foodcrop of Tamil Nadu. Ponni and kichadi sambaare the major varieties of paddy grown inTamil Nadu. About 3 million hectares of thestate is under rice cultivation. Though it iscultivated all over Tamil Nadu, its cultivationis highly concentrated in Thanjavur, Tiruvarur,Tiruvallur, Kancheepuram, Villupuram,Cuddalore and Tirunelveli districts. It ranksthird in the production of rice among the statesof India. The deltaic region of river cauvery(the undivided Thanjavur district) is the majorrice-producing region of Tamil Nadu. So, thisregion is rightly called as the "Granary ofTamil Nadu."

**Millets**

Millets form staple food of nearly onethirdof human population of Tamil Nadu.Sorghum/jowar (cholam), ragi (kezhvaragu)and bajra (kambu) are the major millets. Theseare grown not only in drier areas but also inthe coastal plains. Sorghum is grown in theCoimbatore plateau and Kambam valley. Ragi isgrown in Coimbatore, Dharmapuri, Vellore andCuddalore districts. Bajra is mostly cultivatedin Ramanathapuram, Tirunelveli, Karur,Perambalur and Salem districts.

India observed 2018 asnational year of millets. FAOhas decided to observe 2023 asthe International year of millets.

**Pulses**

Pulses are the major source of protein.Bengal gram, black gram, green gram, cowpeaand horse gram are the important pulses grownin Tamil Nadu. Pulses are grown in a wide rangeof climatic conditions mostly in drier regionswith or without irrigation. Mild cool climateand a low to moderate rainfall are best suitedfor these crops. Pulses serve as excellent fodder.Pulses are grown in almost all districts in thestate except Chennai, Nilgiris and Kanyakumari.Coimbatore leads in the production of Bengalgram. Vellore and Kanyakumari districtsproduce red gram.

To promote organicfarming a central scheme named'National Project on OrganicFarming' was launched Apartfrom general things (creatingawareness, promoting organic fertilizers,training, capacity building etc.), the schemeprovides financial assistance

through CapitalInvestment Subsidy Scheme for agro-wastecompost production units, bio-fertilizers/bio-pesticides production units, developmentand implementation of quality controlregime, human resource development etc.

Tiruvarur, Nagapattinam and Thoothukudidistricts are the principal producers of greengram and black gram. Horse gram is widelycultivated in Dharmapuri and Krishnagiridistricts.

**Oil Seeds**

Groundnut, gingelly castor, coconut,sunflower and mustard are some of the oilseedsthat are grown in Tamil Nadu. Apart from itsuse in food preparation, it is used in industriesas a lubricant, in the manufacture of varnish,soaps, candles, cosmetics and pharmaceuticals.Groundnut is the major oilseed of the state. Thecultivation of groundnut is mostly concentratedin Vellore, Tiruvannamalai, Villupuram, Salemand Pudukottai districts. It is also grown to someextent in Dharmapuri, Cuddalore, Perambalurand Madurai. Erode, Ramanathapuram,Sivagangai and Virudhunagar districts areits minor producers. Coconut is grown inCoimbatore, Thanjavur and Kanyakumaridistricts.

**Sugarcane**

It is one of the major cash crops of thestate. It is an annual crop. It requires hightemperature and heavy rainfall. It grows well inthe tropical region. Major sugarcane-producingdistricts are Tiruvallur, Kancheepuram, Vellore,Cuddalore, Tiruchirapalli, Coimbatore, Erodeand Tirunelveli.

**Cotton**

Cotton is a fibre and cash crop. It requiresblack soil, long frost-free condition and warmand humid weather for its cultivation. Humidweather in the early stages and hot, dry weatherduring harvest period is suitable for this crop.It is predominantly cultivated in Coimbatoreplateau and Vaigai-Vaippar river basins. It isalso cultivated in Madurai, Ramanathapuram,Virudhunagar, Tirunelveli, Thoothukudi,Salem and Dharmapuri districts.

**Plantation crops**

Tea, coffee, cashew, rubber and cinchonaare the major plantation crops of the state.Tamil Nadu ranks second in area andproduction of tea in India next to Assam. Teaplantations are found in the hills of the Nilgirisand Coimbatore. The Nilgiris is the notableregions for tea plantations. Coffee plants aregrown in the hills of Western Ghats as wellas Eastern Ghats. It is also found in the hillyslopes of Dindigul, Madurai, Theni and Salemdistricts. Yercaud, Kolli Hills and Kodaikanalare notable for coffee plantations. Tamil Nadustands second in area and production ofcoffee next to Karnataka. Rubber plantationsare significant in Kanyakumari. Pepper isconfined to the warm and wet

slopes of Easternand Western Ghats of Tamil Nadu. Cashew isextensively cultivated in Cuddalore district.

Cinchona is planted at heights varyingfrom 1060 to 1280 metres in Anaimalai hills.Cardamom estates are located at few places inthe hills of Madurai region at an elevation of915 to 1525 metres.

TANTEA (TANTEATamilNadu Tea PlantationCorporation Limited) isone of the Biggest Black TeaProducers in India with highquality clonal tea. Its plantation spreadsover nearly 4500 hec.Tamil Nadu Dairy DevelopmentCorporation Ltd. was transformed into thenewly registered Tamil Nadu Co-operativeMilk Producers Federation LimitedPopularly known as "Aavin".

**Livestock/Animal Husbandry**

Livestock has remained an integral partof socio-economic fabric of rural people.The number of cattle found in Tamil Nadu is88,92,473. There are 47,86,680 sheep, 81,43,341goats and 11,73,48,894 poultry animals.

**Goat**

Goat is also known as 'poor man's cow'in India. It forms a very important componentin dry land farming system. In the marginal orundulating lands unsuitable for rearing of othertypes of cattle like cow or buffalo, goat is the bestalternative. With very low investments, goatrearing can be made into a profitable venturefor small and marginal farmers.

**Sheep**

Sheep is used for multiple purposes likewool, meat, milk, skins and manure, andforms an important component of the ruraleconomy, particularly in the arid, semi-aridand mountainous areas of Tamil Nadu. Itprovides a dependable source of income tothe shepherds through the sale of wool andanimals.

A variety of cattle breeds are reared in thestate for the milk and forms a major componentof the rural economy. The poultry hub of
Tamil Nadu are Namakkal, Salem, Erode andCoimbatore districts.

**Fishing**

Since Tamil Nadu is a coastal state, fishingis one of the major occupations in the state.With widespread reservoirs and rivers, inlandfishing also is also seen to a considerableextent. There are about 2500 species of fishesfound in different aquatic environments.

**Marine Fishing**

The length of the coastline of TamilNadu is 1076 km (13% of the country'scoastline). The coastal region of the statecovers an area of 0.19 million sq.km. Anarea of 41,412 sq.km of continental shelvesof the state favours coastal fishing and TamilNadu is one of the leading states in marinefish production. Marine fishing is also calledinshore fish or neritic fishing, carried out inoceans and seas. Large mechanised boats areused for fishing. In ocean or seawaters, fishingwithin few kilometres from the shoreline iscalled inshore fishing and the fishing far fromthe shore typically 20–30 miles out in waterhundreds and thousands of feet deep is calledoff-shore fishing. The fish varieties caughtare sharks, flying fish, counch, catfish, silverbellies, and crabs. Chennai, Kanyakumari,Tirunelveli, Nagapattinam, Thanjavur andRamanathapuram districts contribute about40% to marine fish production in the state.Their coastal location favours fishing in theseregions. The state has three major fishingharbours, three medium fishing harboursand 363 fish landing centres. The export ofmarine products from the state during 2007–08 accounted for 72,644 metric tons.

**Inland Fishing**

Inland fishing is carried out in lakes,rivers, ponds, estuaries, backwaters andswamps. Oysters and prawns are culturedin original nurseries. Catamaran, dieselboats and floating nets are used in fishing.Tamil Nadu Fisheries Department hasintroduced several programmes forthe betterment of fishing. The majorprogrammes are aquaculture in farmponds and irrigation tanks, fish seed bank,fish seed rearing, ornamental fish cultureand the establishment of Fish FarmerDevelopment Agency. Vellore district leadsin the production of inland fish productionwith 10% of state's production. Cuddalore, Sivagangai and Virudhunagar districts standsecond with 9% of inland fish catch each.Fishing sector contributes 1.25% of state'seconomy.

**Second Green Revolution (Eco-Farming or Organic Farming)**

In organic farming synthetic fertilizers, pesticides, growth regulator and livestockfeed additives are not used. This type offarming rely on crop rotation, crop residues,animal manure, off-farm organic wastes and biological pest control to maintain soilproductivity. This farming method is being adopted by very few farmers in the state. Ithas to be increased in number.

**Water Resource**

Water is the precious gift of nature to human kind and millions of other speciesliving on the earth.

Tamil Nadu constitutes4% of India's land area and is inhabited by6% of India's population, but has only 2.5%percent of India's water resources. More than95% of the surface water and 80% of the ground water have already been put into use. Major uses of water include human/animal consumption, irrigation and industrial use. The state is

heavily dependent on monsoon rains. The annual average rainfall is around930 mm (47% during the northeast monsoon,35% during the southwest monsoon, 14% in summer and 4% in winter).

| **Surface Water Resources** | **Numbers** |
|---|---|
| River Basin | 17 |
| Reservoirs | 81 |
| Tanks | 41,127 |
| Tube wells and other wells | 4,98,644 |
| Open wells | 15,06,919 |
| Total (Million Cubic metres) | 2046788 MCM |
| **Source: Statistical handbook of Tamil Nadu – 2017** | |

**Multipurpose River Valley Projects**

Multipurpose river valley projects are basically designed for the development of irrigation for agriculture and hydro power generation. However, they are used for many other purposes as well.

**Mettur Dam**

The Mettur Dam was constructed ina gorge, where river Cauvery enters theplains. It is one of the oldest dam in India.It provides irrigation to Salem, Erode, Karur, Tiruchirappalli, Thanjavur, Tiruvarur and Nagapattinam districts for about 2,71,000acres of farmland. The dam, park, major hydroelectric power stations and hills on allsides make this dam an important tourist spot.

**Bhavani Sagar Dam**

The Bhavani Sagar Dam is located 80 kmaway from Coimbatore city in the district ofErode. It has been constructed across the riverBhavani. This dam is one of the biggest earthendams in the country.

**Amaravathi Dam**

The Amaravathi dam is situated 25 kmaway from Udumalpet in Tirupur district. Thedam has been constructed across the riverAmaravathi, a tributary of Cauvery. The damwas built primarily for irrigation and floodcontrol. A small hydropower station has alsobeen installed recently. This reservoir is notablefor the significant population of muggercrocodiles. It is also a familiar tourist spot.

**Krishnagiri Dam**

Krishnagiri dam is situated at a distance of7 km from Krishnagiri towards Dharmapuri.This dam drains an area of 5428 sq.km. This isa famous tourist spot too. This dam is floodedwith tourists during the weekends.

**Sathanur Dam**

Sathanur Dam was constructed acrossthe river Thenpennai in Chengam taluk. It isin the midst of Chennakesava hills. The waterholdingcapacity of the dam is 7321 millioncubic feet (full level: 119 feet). About 7183hectares of land is drained by the left bank canaland 905 hectares by the right bank canal of thisdam. It irrigates the land in Thandrampet andTiruvannamalai blocks. There is also a largecrocodile farm and a fish grotto. Parks aremaintained inside the dam for tourists and thegardens are used by the film industry.

**Mullaiperiyar Dam**

Mullaiperiyar dam was built by theBritish administration in 1895. It has beenconstructed on the Periyar river, whichoriginates from Thekkady hills of Kerala. Thedam was built mainly for watering the farmingland of Tamil Nadu, which is perenniallydrought-prone. Though the dam is located inthe state of Kerala, most of its water is usedto irrigate Tamil Nadu. The dam is 175 feet inheight and 1200 feet in length.

**Vaigai Dam**

This dam built across the river Vaigainear Andipatti. The dam with a height of 111feet can store water up to 71 feet. It is located 7km from Andipatti and 70 km from Madurai.This dam was opened on 21 January, 1959.The dam has a unique garden that deservesthe surname 'Little Brindavan'. It is a popularpicnic spot in Theni district.

**Manimuthar Dam**

Manimuthar dam is located about 47km from Tirunelveli. The gorgeous garden ofthe dam is located about 5 km from the damand is accessible through a zig-zag ghat road.Pleasure boating and waterfalls are additionaltourist attractions near the dam.

**The Papanasam Dam**

It is also known as Karaiyar dam and islocated about 49 km away from Tirunelveli.The dam is used to irrigate 34,861 hectares ofland in Tirunelveli and Thoothukudi districts.It generates 28 MW of hydro power.

**Parampikulam Aliyar Project**

It is a joint venture of Tamil Nadu andKerala states. It envisages the construction ofseven interconnected reservoirs by harnessingthe water of seven rivers, which include majorrivers of Parambikulam and Aliyar.

Parappalar project is located nearOttanchatram. Its storage capacity is 167million cubic feet of water. It is about 75 kmfrom Madurai and is in Palani taluk.

**Surface water Resources**

The total surface water potential of thestate is about 24,864 mcm (million cubicmetre). There are 17 major river basins inthe state with 81 reservoirs and about 41,262tanks. Most of the surface water has alreadybeen tapped, primarily for irrigation, wherewater use is largest. An area of 24 lakhhectares of the land are irrigated by surfacewater through major, medium and minorschemes.

**Ground Water Resources**

The utilizable groundwater resource ofthe state is 22,423 mcm. The current levelof utilization of water is about 13,558 mcmwhich is about 60 percent of the availablerecharge, while about 8875 mcm (40 percent)is the balance available for use.

**Water Resource Management**

Water resource management is theactivity of planning, developing, distributingand managing the optimum use of waterresources. The demand for water in TamilNadu is increasing at a fast rate both due toincreasing population and also due to largerper capita needs triggered by economicgrowth. The per capita availability of waterresources is just 900 cubic metres whencompared to the national average of 2,200cubic metres. Agriculture is the largestconsumer of water in the state using 75% ofthe state's water resources. Demands fromother sectors such as domestic and industrieshave been growing significantly. The state isheavily dependent on monsoon rains. Sincethe state is entirely dependent on rains forrecharging its water resources, monsoonfailures lead to acute water scarcity and severedroughts. So, it is important to save water forus and the future generation.

**Mineral Resources**

Tamil Nadu is the leading holder ofcountry's resources of vermiculite, magnetite,dunite, rutile, garnet, molybdenum andilmenite. The state accounts for the country's55.3% of lignite, 75% of vermiculite, 69% ofdunite, 59% of garnet, 52% of molybdenumand 30% of titanium mineral resources.

Important minerals are found inthe state are as follows: Neyveli has largelignite resources. Coal is also availableinRamanathapuram. Oil and gas are found inthe Cauvery basin.

Iron deposits are found in Kanjamalairegion in Salem district and Kalrayan Malairegion of Tiruvannamalai district. Magnesiteores are available near Salem. Bauxite is foundin Servarayan Hills, Kotagiri, Udagamandalam,Palani and Kollimalai areas. Gypsum is obtainedin Tiruchirappalli, Tirunelveli, Thoothukudiand Virudhunagar districts. Ilmenite andrutile are found in the sands of Kanyakumaribeach. Limestone is available in Coimbatore,Cuddalore, Dindigul, Kancheepuram, Karur,Madurai, Nagapattinam, Namakkal, Perambalur,Ramanathapuram, Salem and Tiruvallurdistricts. Magnesite is obtained in Coimbatore,Dharmapuri, Karur, Namakkal, the Nilgiris,Salem, Tiruchirapalli, Tirunelveli and Velloredistricts. Feldspar, quartz, copper and lead arealso found in some parts of the state.

**Industries**

Industries use rawmaterials and convert theminto usable product or goods.Textiles, sugar, paper, leather,cement, electrical equipment,automobiles, informationtechnology and tourism arethe major industries of Tamil Nadu.

**Textile Industry**

Textile industry is one of the traditionallywell-developed industries in Tamil Nadu. Thetextile mills are concentrated in Coimbatore,Tirupur, Salem, Palladam, Karur, Dindigul,Virudhunagar, Tirunelveli, Thoothukudi,Madurai and Erode. Tamil Nadu has about3,50,000 power looms manufacturing cottonfabrics and accounts for 30% of India's exportsof textiles products. Erode in Tamil Nadu iswell known for marketing of handloom, powerloom and readymade garments. Coimbatore isalso known as the 'Manchester of Tamil Nadu'.Coimbatore, Tirupur and Erode contributea major share to the state's economy throughtextiles. So, this region is referred as 'TextileValley of Tamil Nadu'. Karur is known as 'TheTextile capital of Tamil Nadu'.

**Silk Textiles**

Tamil Nadu occupies fourth position inthe country in silk production. Kancheepuramsilk is unique in its quality and is known for itstraditional value all over the world. The annualsilk production in Tamil Nadu is around1200 metric tons. Kancheepuram, Arani,Kumbakonam, Salem, Coimbatore, Maduraiand Tirunelveli are the important silk-weavingcentres in Tamil Nadu. Ramanathapuram hassome specialised areas for the manufacturingof synthetic silk clothes.

**Leather Industry**

Tamil Nadu accounts for 60% of leathertanning processes of India and 38% of all leatherfootwear, garments and components. Hundredsof leather tanneries are located

around Velloreand nearby towns, such as Ranipet, Ambur andVaniyambadi. The Vellore district is the topexporter of finished leather goods in the country.Vellore leather accounts for more than 37%of the country's export of leather and leatherrelatedproducts (such as finished leathers, shoes,garments and gloves). Central Leather ResearchInstitute (CLRI), a CSIR research laboratory, islocated in Chennai.

**GI Tag**

GI(Geographical Indication)is a name orsign used on products which corresponds toa specific geographical location. It providesrights and protection of holders.

Some important GI Tags of Tamil Nadu are:

| Place | Products |
|---|---|
| Aranl | Silk |
| Kancheepuram | Silk |
| Coimbatore | Wet Grinder and Coracotton |
| Thanjavur | Paintings, Art plate,Doll and veenai |
| Nagercoil | Temple Jewellery |
| Erode | Turmeric |
| Salem | Venpattu(salem silk) |
| Bhavani | Jamakkalam |
| Madurai | Sungudi |
| Swamimalai | Bronze Icons |
| Nachiarkovil | Kuthuvilakku |
| Pattamadai | Mat |
| Nilgiri | Orthodox Embroidery |
| Mahabalipuram | Stone sculpture |
| Sirumalai | Hill banana |
| Eathomozhi | Coconut |

**Paper Industry**

Many paper industries are located inthe state. Tamil Nadu Newsprint and PapersLimited (TNPL) is a government of TamilNadu enterprise producing newsprint andprinting and writing paper at its mill locatedat Kagithapuram in Karur district. It wasstarted in 1979 with an installed capacity of2.45 lakh MT of production per annum. TNPLis one of the most accomplished mills in theworld, producing different varieties paper ofacceptable quality primarily from bagasse andpulpwood. Other paper mills of the state arefound in Pukkathurai of Kancheepuram district,Bhavanisagar, Pallipalayam, Paramathi Vellore,Coimbatore, Udamalaipet, Thoppampatti,Nilakkotai and Cheranmahadevi.

**Cement Industry**

Cement production and consumptioncontinue to grow despite the general recession inthe economy. India is one of the largest cementproducers and ranked second in the world withan annual production capacity of 181 milliontons. Tamil Nadu Cements Corporation Limited(TANCEM) is one among the major cementproducers in Tamil

Nadu operating two cementunits: one at Ariyalur and another at Alangulam.Asbestos cement sheet plant at Alangulam andstoneware pipe unit at Virudhachalam are theother units of TANCEM. Sankar Cement, ZuariCement, Ultratech Cement, Madras Cementand Dalmia Cement are the major privatecement brands produced in Tamil Nadu.

**Information Technology**

According to National Association ofSoftware and Services Companies (NASSCOM),the southern states continue to account formore than half of the country's total exportof software. Tamil Nadu and Andhra Pradeshtogether account for 59.6% of India's totalsoftware exports. Tamil Nadu is the secondlargest software exporter in the country next toKarnataka.

A special economic zone (SEZ) is anarea in which the business and trade laws aredifferent from the rest of the country. SEZs arelocated within a country's national borders,and their aims include increased tradebalance, employment, increased investment,job creation and effective administration.

**Special Economic Zones**

Special economic zones (SEZs) providean internationally competitive and hasslefreeenvironment for exports. Units in SEZmanufacture goods and provide a range of services.SEZs are located in Nanguneri, Ennore, Hosurand Perambalur. IT & ITES SEZ named TIDEL-IIand TIDEL-III and Bio-Pharmaceuticals SEZ arelocated in Chennai and Coimbatore SEZ calledthe TIDEL Park–IV is located in the city.

**The list of IT parks in Tamil Nadu**

Tidel Park, Ascendas, Mahindra worldcity 4 IT & ITES SEZ TIDEL-II, IT & ITESSEZ TIDEL-III, Coimbatore SEZ - Tidel Park

**Manufacturing & Engineering Industry**

The manufacturing industry is one ofthe vibrant sectors of the state economy andcontributes significantly to the industrial output.
The manufacturing industry broadly coversmanufacture of machinery and equipment,motor vehicles, basic metal and alloy industries,metal products and repair of capital goods.Tamil Nadu's share of the industrial outputis around 11–12% of the country's output and15% of the country's exports excluding software.Tamil Nadu accounts for about 17% of India'ssoftware exports.

**Automobile Industries**

The share of Tamil Nadu in all-Indiaproduction of automobiles and heavy vehicles israther significant. Automobile industry plays acrucial role in the state's economy and has beenone of the key driving factors. Contributing8 percent to state GDP and giving directemployment to 2,20,000 people.

Tamil Nadu accounts for about 21% ofpassenger cars, 33% of commercial vehiclesand 35% of automobile components producedin India. Major automobile manufacturerslike Ford, Hyundai, HM-Mitsubishi, AshokLeyland, and TAFE have their manufacturingbase in Tamil Nadu.

**Chemical & Plastic Industry**

The chemical industry is one of the fastest growing sectors of industry and the economy. The sector contributes 13% to the state's GDP and constitutes 8% of the total exports of the country.

**Handlooms and Powerlooms**

The handloom sector in the state is the single largest cottage industry providinglivelihood to a large number of rural people and promoting export earnings. Thehandloom sector and its related economicactivities generate gainful employment formore than 4.29 lakh weaver householdsand 11.64 lakh weavers in the state. Thesesocieties mainly produce the cloth requiredfor the scheme of 'Free Supply of Uniformsto School Children and Free Distribution ofSarees and Dhotis Scheme'.

**Sugar Industry**

Sugar industry in Tamil Nadu is animportant agro-based industry. It plays avital role in the economic development ofthe state, particularly in rural areas. Thesugar industry provides large-scale directemployment to several thousands and indirectemployment to several lakhs of farmers andagricultural labourers in the rural areas whoare involved in cultivation of sugarcane,harvesting, transporting and other services.There are 34 sugar mills in Tamil Nadu, inwhich 16 are in the cooperative sector and18 in the private sector.

**Tourism Industry**

Tourism is considered as an industrybecause of its enormous potential in creatingemployment for a large number of people.In recent years, the state has emerged asone of the leading tourist destinations forboth domestic and foreign tourists. Tourismin Tamil Nadu is promoted by Tamil NaduTourism Development Corporation (TTDC).The state currently ranks the highest amongIndian states with about 25 crore arrivals(in 2013). The annual growth rate of thisindustry stood at 16%. Approximately 28 lakhforeign and 11 crore domestic tourists visitour state annually. The presence of ancientmonuments, pilgrim centres, hill stations, avariety of natural landscapes, long coastline,along with rich culture and heritage make
Tamil Nadu the best destination for tourists.

**Activity**

Plan a visit to a manufacturing unit inyour city. Find out how raw materials

areconverted into finished products. Talk to theworkers and manager to know more aboutthe industry.

Plan a field visit with your social scienceteacher to visit a variety of geographicalfeatures, pilgrim centres, monuments, hillstations and prepare a field visit report.

**Population**

The term 'population'refers to the number ofpeople living in a definedarea. The statistical studyof the characteristics ofhuman population is calleddemography. Demographersmake a deep and detailed study of thepopulation. The rapid increase of populationmay be responsible for retarding economicgrowth. Hence, overpopulation is one of themajor problems confronting our nation with allits evil effects.

**Growth of Population in Tamil Nadu**

The total population of Tamil Nadu is72,140,703 or 7.21 crores as per 2011 Census. Itspopulation was 6.24 crore in 2001 and registereda growth of nearly 1 crore population in a decade.The male and female population of the state in2011 is 36,137,975 and 36,009,055 respectivelyand it was 31,400,909 and 31,004,770 in 2001.It shows that the population of the state is sharedalmost 50% each by male and female. The growthrate of population in the decade 2001–2011was 15.61% while in the previous decade it was11.19%. The population of Tamil Nadu forms5.96% of country's total population as per 2011Census. In 2001, it was 6.07%.

**Distribution of Population**

Based on the actual size of population,Tamil Nadu is divided into the following regions.

**Regions of High Population**

Chennai has the highest urban populationwith 4.219 million people, but the city rankssecond in the district-wise count, next toCoimbatore district, which had 4.224 millionpeople as per 2011 Census. Coimbatore,Chennai, Tiruvallur, Kancheepuram,Villupuram, Dharmapuri, Salem, Madurai andTirunelveli are the most populous districts in thestate. Agriculture and industrial developmentare the main causes of high concentration ofpopulation of these districts.

**Regions of Moderate Population**

Tiruvannamalai, Cuddalore, Tiruchirapalliand Thanjavur districts have a population 30–35 lakh. Vellore, Dindugal, Virudhunagar andThoothukudi districts each have a population of15–20 lakh. Other than agriculture, small-scaleindustries and fishing along the coastal areas arethe major occupations of people in these districts.

**Regions of Sparse Population**

The coastal districts Nagapattinam,Tiruvarur, Pudukottai, Ramanathapuramand Sivagangai have a less than 15 lakh. TheNilgiris district has a population of less than10 lakh (764,826) population and it is the leastpopulated district as per 2011 Census.

**Population Density**

The density of population in Tamil Nadu is555 per sq.km as per the 2011 Census, while itwas 480 per sq.km in 2001. The state ranks 12thamong the Indian states in population density.The national average density of populationas per the 2011 Census is 382. Chennai is thedensest district with 26,903 persons per sq.kmfollowed by Kanyakumari (1106), Tiruvallur(1049), Kancheepuram (927), Madurai (823),Coimbatore (748), Cuddalore (702), Thanjavur(691), Nagapattinam (668), Salem (663), Vellore(646) and Tiruchirappalli (602). These are theregions with high density of population. Theleast density of population is recorded in theNilgiris (288 per sq.km) and the other districtshave moderate density of population.

**Religion**

Hinduism, Christianity and Islam arethe major religions in the state. The Hindusconstitute 87.58% of the population, followedby Christians (6.12%) and Muslims (5.86%).Jainism (0.12%), Sikhism (0.02%) and Buddhism(0.02%) also have a presence in the state.

People of other religions constitute 0.01%and the percentage of people with unstatedreligion is 0.26%.

**Urban and Rural Population**

As per 2011 Census, the urban populationof Tamil Nadu is 3,49,17,440, which constitutes48.40% of the total population of the state. Therural population of the state is 3,72,29,590, whichconstitutes 51.60% of the state population.

**Sex Ratio**

The sex ratio represents the number offemales per 1000 males. The sex ratio of thestate increased from 987 in 2001 to 995 in 2011.
The sex ratio in India is 940 in 2011 as against933 in 2001. It shows that the sex ratio is morefavourable in the state than the country.

As per 2011 Census, 15 out of 32 districtshave recorded the sex ratio of more than 1000and a similar trend was noticed in the 2001Census also. Only Sivagangai has recordedthe sex ratio of exactly 1000. It is noted that12 districts have the sex ratio of less than1000 and it ranges between 980 and 1000.The highest sex ratio is found in the

Nilgirisdistrict (1041) followed by Thanjavur district(1031). The lowest sex ratio is reported inDharmapuri district (946) followed by Salemdistrict (954).

**Literacy Rate**

The literacy rate of Tamil Nadu as per the2011 Census is 80.33%. It was 73.45% in 2001.The male literacy rate is 86.81% and the femaleliteracy rate is 73.86%. The correspondingrates in 2001 were 82.42% for males and64.43% for females. It may be observed thatmore than three-fourths of the population isliterate among males in all the districts (exceptDharmapuri), while more than two-thirdsof the population is literate among femalesin all but eight districts. The districts areDharmapuri (60.03%), Krishnagiri (64.86%),Tiruvannamalai (65.71%), Villupuram(63.51%), Salem (65.43%), Erode (65.07%),Perambalur (66.11%) and Ariyalur (62.22%).

The literacy rate for India as per 2011census is 74.04, of which the male literacyrate is 82.14 and the female literacy rateis 65.46. In 2001, the literacy rate of Indiastood at 64.8. It was 75.3 and 53.7 for malesand females, respectively. The district ofKanyakumari has reported the highest literacyrate (92.14%) while Dharmapuri district hasthe lowest rate (64.71%). A high level ofliteracy rate is also seen in Chennai (90.33%),Thoothukudi (86.52%), the Nilgiris (85.65%)and Kancheepuram (85.29%) districts.

**Transport and Communication**
**Roadways**

The State has a totalroad length of 167,000km, In which 60,628kmare maintained by stateHighways Department. Itranks second in India with a share of over 20%in total road projects under operation in thePublic-Private Partnership (PPP) model.

| Types of the Roads | Length (Km) |
|---|---|
| National Highways | 4994 |
| State Highways | 57291 |
| Corporation & Municipalities Road | 23350 |
| Panchayat Union | 147543 |
| Village Panchayat Union | 21049 |
| Others(Forest Roads) | 3348 |
| Commercial | 12.13 |
| Non commercial | 20.341 Lakhs |
| Source: Statistical handbook of Tamil Nadu -2017 | |

**Railways**

Tamil Nadu has a well-developed rail networkas part of Southern Railway, headquarteredat Chennai. The present Southern Railwaynetwork extends over a large area of India'ssouthern peninsula, covering Tamil Nadu, Kerala,Puducherry, minor portions of Karnataka andAndhra Pradesh. Tamil Nadu has a total railwaytrack length

of 6,693 km with 690 railway stationsin the state. The system connects it with most of themajor cities in India. Main rail junctions in the stateinclude Chennai, Coimbatore, Erode, Madurai,Salem, Tiruchirappalli and Tirunelveli. Chennaihas a well-established suburban railway network,a mass rapid transport system(MRTS) and iscurrently developing a Metro system, with its firstunderground stretch in operation since May 2017.

**Airways**

Tamil Nadu has four major internationalairports. Chennai International Airport iscurrently the third largest airport in Indiaafter Mumbai and Delhi. Other internationalairports in Tamil Nadu include Coimbatore,Madurai and Tiruchirapalli airports. It alsohas domestic airports at Tuticorin and Salemconnecting several parts of the country.Increased industrial activity has given riseto an increase in passenger traffic as well asfreight movement, which has been growing atover 18% per year.

NH - 44 is the longest national highway in Tamil Nadu which runs from Hosur to Kanniyakumari (627.2 km) Via Dharmapuri-Salem-Karur- Dindigul-Madurai-Tirunelveli.

NH - 785 is the shortest nationalhighway in Tamil Nadu which runs fromMadurai to Natham (38 km).

**Waterways**

Tamil Nadu has three major ports. Theyare in Chennai, Ennore and Tuticorin. It hasan intermediate port at Nagapattinam and15 minor ports. The ports are currently capableof handling over 73 million metric tonnes ofcargo annually (24% share of India). All theminor ports are managed by the Tamil NaduMaritime Board, Chennai Port. This is anartificial harbour and the second principal portin the country for handling containers. It iscurrently being upgraded to have a dedicatedterminal for cars capable of handling 4,00,000vehicles. Ennore intermediate port was recentlyconverted as a major port and handles the majorcoal and ore traffic in Tamil Nadu.

**Communication**

Communication is derived from the Latinword communicare, meaning 'to share'. Theact of conveying or exchanging information iscalled means of communication. They are masscommunication and personal communication.

**Postal Districts and Headquarters in Tamil Nadu**

| **Zone /districts** | **Head quarters** |
|---|---|
| Chennai | Chennai |
| Western | Coimbatore |
| Central | Thiruchirapalli |
| Southern | Madurai |

**Trade**

Export and import are the twocomponents of trade. Export means goodsand services sold for foreign currency. TamilNadu contributes 12.2% to the country'sexports. Import refers to goods and servicesare brought from overseas producers. TamilNadu imports many goods from outside. Thedifference between the values of export andimport is called the balance of trade.

| **Major Exports of Tamil Nadu** | |
|---|---|
| (i) Agricultural Products | tobacco, cereals, cotton, sugarcane, paddy, groundnut, spices and vegetables. |
| (ii) Leather Products | wallets, purses, pouches, handbags, belts, footwear and gloves |
| (iii) Gems and Jewellery | pearls, precious stones, gold jewellery, decorations and antiques |
| (iv) Chemicals and related products | paper, chemicals, rubber and glass. |

**Imports of Tamil Nadu**

Machineries like transport equipment, machine tools, non-electrical machinery, electrical machinery, pharmaceutical products, petroleum, fertilizers and newsprintare its major imports. The state contributes 10.94% to the country's trade through majorports.

The above discussion shows that TamilNadu is an important state of India in termsof size, population, resources and economicdevelopment. People in the state are wellsecured. The new schemes introduced by thestate government periodically have enablednotable progress in various fields.

**Man made Disasters in Tamil Nadu**

**Definition**

A disastrous events caused directlyor indirectly by human actions are calledas manmade disaster. Man-made disastercan include hazardous material spills, fires,groundwater contamination, transportationaccidents, structure failures, mining accidents,explosions and acts of terrorism.

**Industrial Disaster**

Disasters caused by industrialcompanies either by accident, negligence, orincompetence fall under industrial disasters.Electrical faults seem to be the major reasonfor industrial disasters in the country.Overheating, aging of the material and useof sub-standared quality of electrical gadgetshave been the main factors contributing tothe increasing fire accidents in industries.Electricity is not just a life line; It can also takeaway

life when handled improperly', Apartfrom these, explosions, leaking of poisonousgases, injuries and deaths caused by machinesare the other causes of industrial disasters.

Sivakasi, is considered the "fireworkscapital"of India. Series of industrial accidentscausing deaths are reporting frequently in theregions of Virudhunagar and Sivakasi wherea number of fireworks and match units arein operation. An explosion occurred on 5September, 2012 in a private firework company.In this incident 40 workers were killed and morethan 70 workers were injured. Various measuresare being taken by the Government to reduce thefire accidents and casualties caused by industries.In another industrial accident which took placeat Coimbatore on 2nd February 2016 in a tyremelting unit, six migrant workers were criticallyinjured.

**Stampede**

A situation in which a large numberof animals or people running in the samedirection in an uncontrolled way causinginjuries and deaths is called stampingOn 21st April, 2019 seven people werekilled and 10 injured in a stampede during alocal festival at a temple near Thuraiyur in TamilNadu. The incident took place when hundredsof devotees gathered at the Karuppasamy templein Muthiampalayam village for the 'padikasu'(temple coin) distribution ceremony.

**Mitigation**

Hazard mitigation refers to any sustainedaction taken to reduce or eliminate the longtermrisk to human life and property fromhazardous conditions.

- Regular maintenance of machines andwires may reduce the frequency ofaccidents,
- Creating awareness and training theworkers to be cautious during work hoursmay help them to reduce risk duringdisasters.
- Wearing specially designed dresses andother safety materials would help theworkers to protect themselves from anyserious injuries.
- Conducting periodical medical campswould help them to assess their healthstatus. The Provision of having lifeinsurance policies will secure their future.
- Besides these, the administration shouldbe employees friendly and ready toextend their help in case of any untowardincidents.
-

| Disaster emergency contact number<br><br>1077 - Control room of District Collector/Magistrate. |
|---|

**Road Accidents**

The road accidents in India is on veryhigh level. Tamil Nadu leads in the number ofroad accidents in the country. Increase in roadtraffic, high speed of vehicles and violation oftraffic rules are the causes of major of accidents.In 2013, 14504 accidents had taken place in thestate which resulted in 15563 deaths. In the tenyears from 2002-2012,

Tamil Nadu tops the listin number of road accidents among the statesof India. It is reported that about 15 percent ofaccidents of the country takes place in TamilNadu. The figure of 2017 also puts Tamil Naduon top with recording of 16157 deaths out of147913 deaths recorded in the country. Deathtoll came down rapidly in 2018 to 12213 deaths,a decline of 24.5 percent.

**Risk Reduction Measures**

**Before:** Avoid Speeding, Drunk and driving,use helmets and seat belts and follow trafficrules

**After:** Call police or ambulance; seek medicalattention; make an accurate record andexchange information.

**KNOW - RISK...!**
**NO - RISK...!**

**Basic Road Safety Rules**

- Aware of the road signals
- Stop, look and cross
- Listen and ensure whether a vehicle is approaching;
- Don't rush on roads;
- Cross roads in pedestrian crossings;
- Don't stretch hands while driving vehicles;
- Never cross road at bends and stay safe ina moving vehicle.

Accelerated changes in demographic andeconomic trends disturb the balance whichleads to increased frequency and the negativeimpact of disaster. At present the society facea challenging mix of demographic, ecologicaland technological condition which makepopulation more vulnerable to the impact ofthe calamities. Though the number of naturaldisasters are in decline than they were in thepast, the increasing level of magnitude posesa threat. Besides the various measures takenby the government and the public, educationon awareness regarding the disasters mayhelp in the reduction of risks during disasters.

For the management of disastersin the state, the following forces and organizations are in service.

I. State Disaster Management Authority(Chairman-Chief Minister)
II. Relief/ Disaster Management Department
III. Police
IV. Forest Department
V. Fire and Civil Defence Services
VI. Health Services
VII. Transport Department

VIII. Public Works Department
IX. Veterinary Services
X. Food & Civil Supplied Department.

**The Organizations at District Level**

(i) District Magistrate (Chairman-District Collector)
(ii) Revenue Department
(iii) Civil Administration,
(iv) Local Police,
(v) Civil Defence,
(vi) Fire & Emergency Services,
(vii) Home Guards (also LocalCommunity, Non-GovernmentalOrganisations, VoluntaryAgencies) etc.

# 12th Geography
# Unit 5 Cultural and Political Geography

**Introduction**

An interesting traditional Chinese custom says that a husband should carry his bride over a pan of burning coals before crossing the threshold of their home as husband and wife. According to tradition, the ritual ensures that the wife will have an easy and successful labour. Fire walking is also performed by some Chinese people as a means to prevent natural disaster'. 'In Cypriot culture, do not give white lilies as they are used at funerals. It is polite to finish everything on your plate. If you have not finished eating, cross your knife and fork on your plate with the fork over the knife'. It indicates you have finished eating by laying your knife and fork parallel across the right side of your plate'. Do you know some interesting custom practiced in our culture?

- Culture is the total way of life that characterizes a group of people. There are thousands of cultures existing today and each contributes to global diversity. There are so many ways that people can be culturally different. Specifically, a culture consists of numerous cultural components that vary from one culture group to the other. Some of the cultural parameters are religion, language, architecture, cuisine, technology, music, dress, gender roles, law, education, government, agriculture, economy, sport, values, and many more.

**Culture Region**

- A culture region is a portion of Earth that has common cultural elements and has distinct cultural authority from other regions. Any number of cultural components may be used to define culture regions. A map of world religions, for example, includes a shaded area in South Asia where Hinduism is dominant.

- Culture regions differ greatly in size. Some are exceedingly large, like the Islamic culture region that encompasses millions of square km of North Africa and Southwest Asia. Some are very small, like Spanish Harlem, which encompasses about three square km of Manhattan. Many others are of intermediate size, like the Corn Belt, which occupies a portion of the mid-western United States.

**Cultural Diffusion**

- Cultural diffusion is the spread of cultural beliefs and social activities from out group of people to another. Mixing of world culture through different ethnicities, religions and nationalities has only increases with advanced communication, transport and technology.

**Cultural Landscape**

- Cultural Landscapes have been defined by the World Heritage Committee as "cultural properties representing the combined works of nature and of man".

- The World Heritage Committee has identified and adopted three categories of cultural landscape. The three categories extracted from the Committee's Operational Guidelines, are as follows:

  (i) "A landscape designed and created intentionally by man".
  (ii) An "organically evolved landscape" which may be a "relict (or fossil) landscape" or a "continuing landscape";
  (iii) An "associative cultural landscape" which may be valued because of the "religious, artistic or cultural associations of the natural element".

**Cultural Interaction**

- Cultural interaction focuses on the relationships that often exist between cultural components that characterize a given community. Different factors interact with each other and give rise to prevalent trait.

- What language do you speak? What dress do you wear? What food do you like? What is the structure of the house you live in? For the above question by searching the answer we can learn the culture of a human society.

- Culture shapes our identity and influences our behaviours. Culture refers to the sharing language, beliefs, values, norms, behaviors and material objects, which are passed from one generation to the next generation. Cultural geography is the branch of human geography which deals about the areal organization of various cultural aspects in relation to total environment. Some of the cultural aspects are as follows:

**Language**

- Language plays great force in socialization and historical transmission, which is the primary instrument for transmitting culture. Human can bind any group of people through the network of interaction. Languages are in written or oral form. India (780) has the world's second highest number of languages, after Papua New Guinea (839).

**Customs**

- Custom in law is the established pattern of behavior that can be objectively verified within a particular social setting. A claim can be carried out in defense of what has always been done and accepted by law. It becomes characteristic of the group of people performing the act.

- Habit is a similar word which is adopted by an individual and it has been adopted by most of the people of the ethnic group or society.

**Norms**

- Norms refers to attitude and behaviours that are considered normal, typical or average within the group. Cultural norms are the standards we live by. They are the shared expectations and rules that guide behaviour of people within social groups. Cultural norms are learned and reinforced from parents, friends, teachers and others while growing up in a society. Norms often differ across cultures, contributing to cross-cultural misunderstandings.

**Values**

- Values refer to intangible quality or beliefs accepted and endorsed by a society. A culture's values are its ideas about what is good, right, fair, and just. Sociologists disagree, however, on how to conceptualize values. Conflict theory focuses on how values differ between groups within a culture, while functionalism focuses on the shared values within a culture.

**Cultural Heritage u**

- Cultural Heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions and values. Cultural Heritage is often expressed as either Intangible or Tangible Cultural Heritage. As part of human activity Cultural Heritage produces tangible representations of the value systems, beliefs, traditions and lifestyles. As an essential part of culture as a whole, Cultural Heritage, contains these visible and tangible traces form antiquity to the recent past.

**Cultural Heritage types**

- Cultural Heritage can be distinguished in: Built Environment (Buildings, Townscapes, and Archaeological remains), Natural Environment (Rural landscapes, Coasts and shorelines, agricultural heritage) and Artefacts (Books & Documents, Objects, and Pictures).

**Cultural diversity**

- Cultural diversity refers to having different cultures, respect to each other differences. Cultural diversity is important; because of work place and show increasingly consist of various cultural, racial and ethnic groups. We can learn from one another but first we must have a level of understanding. Cultural diversity exists in many countries around the world, but it can be challenging and, at times, problematic. Through this lesson, you will learn how to define cultural diversity and explore some of the ways in which it influences society.

**Cultural Traits**

- A cultural trait is a characteristic of human action that's acquired by people socially and transmitted via various modes of communication. Cultural traits are things that allow for a part of one culture to be transmitted to another. There are millions of culture traits, a trait can be an object, a technique, a belief or an attitude. Culture traits are interrelated with each other, their collective function forms culture complex.

**Cultural Realms of the World**

- Cultural realm refers to a type of cultural region. Cultural region is a continuous geographical area characterized by cultural homogeneity. It may be classified into three categories as macro, meso and micro region. Cultural realm is classified based on the attitude, religious belief, language, racial group, technological development, etc. There are twelve Cultural realms in the modern world. Let us discuss some of them briefly.

**Occidental Realm**

- Occidental culture is the culture of the European society. It is influenced, to a great extent, by Christianity. It has regional modifications on the basis of varying levels of industrialisation, political and economic thought, colonisation, commercialisation, urbanisation, and development of transport system, land development of social, political and economic institutions.
- In many parts of the occidental culture, the impact of non-religious factors, particularly the effect of modernisation, is so great that the religious values are sidelined. Post- industrial Europe is fast emerging as a society where traditional values are nearly abandoned. The occidental culture covers a vast area. It is further divided into six sub-regions considering the impact of regional environment.

(i) West European is the most industrialised and urbanised culture.

(ii) Continental European culture is influenced by different political and economic thoughts, while Christianity remains an important influence.

(iii) Mediterranean Europe includes countries lying to the south of the Alps. It is the region of dominance of Christianity.

(iv)Anglo-American and

(v) Australian cultural realms are practically the offspring's of west European culture. Both are inhabited by migrants from west Europe. There are only some regional differences.

(vi)Latin American culture is very similar to the Mediterranean culture. It is the only region of occidental culture which lies in the tropics and is underdeveloped. It became a part of the occidental culture as a result of conversion of tribes into Christianity. The colonial languages, Spanish and Portuguese, have become the state languages. Regional architecture has been influenced by the Spanish and Portuguese

styles. Practically all countries maintain economic, cultural and social ties with the Mediterranean countries.

**Islamic Cultural Realm**

- The Islamic Cultural Realm is influenced by Islamic values. It covers a vast geographical area from Morocco in the west to Pakistan in the east. The population is sparsely distributed due to inhospitable environment. The coasts, river basins and oases have been the cradles of Arabian culture in this realm. The British call it the Middle-East while the Germans call it a region of oriental culture. This cultural realm lies between the traditional Indian culture in the east and the modernised European culture in the west.

- Islamic culture is highly orthodox and based on traditional beliefs, the impact of which can be seen in high female illiteracy rates. These countries have very high per capita incomes, but the level of modernisation is very low.

**Indie Cultural Realm**

- Indie Cultural Realm is the culture of the Indian sub-continent. Baker called it a sub-continental culture, while D. Stamp used the term paddy culture. This cultural realm is well-defined; it lies between Himalayas in the north, Indian Ocean in the south and Hindukush Mountains in the west.

- This cultural realm is characterized by joint family, village community, caste system, semi-feudal land relations, subsistence agriculture, paddy farming, seasonal climate changes and agricultural season coming at the same time all over the region. The culture of this region is greatly influenced by Vedic values. Though the region is inhabited by various communities, the social system has the hidden impact of Vedic cultural values.

**East Asian Culture**

- This culture is basically a Buddhist culture with regional modifications. True Buddhist culture can be seen in South Korea and Japan. Even these two countries have felt the impact of industrialisation, urbanisation and modernisation. The culture of mainland China has modified the Buddhist system. This culture was adopted after the Second World War.

**South-East Asian Culture**

- It is a transitional culture lying at a place where different cultures have intermingled. Dominance of Buddhism can be seen in Myanmar, Thailand and Vietnam. Influence of Christianity can be seen in the Philippines and of Indie culture over islands of Indonesia. The Islamic influence is evident in Malaysia and the Indonesian islands. No other region has such peculiarities.

**Meso-African Culture**

- This culture is also known as the Negro culture. It principally includes tropical Africa. Similar cultural systems can be seen among the American Red Indians, Latin American tribes, Australian aboriginals and several tribes of Asia-Pacific region.

- Historian Toynbee has used the term 'marginalised culture' for these traditional culture units. Some geographers even include Eskimos under this cultural realm. Thus, it is a widely scattered cultural realm characterised by marginalised and relatively isolated communities.

**Major Culture Hearths**

- Areas from which important culture traits, including ideas, technology, and social structures, are originated.

**Folk Culture**

- Culture traits that are traditional, no longer widely practiced by a large number of people, and generally isolated in small, often rural, areas.

**Races**

- The race is a group of people with more or less permanent distinguishing characteristics. There are skin colour and hair colour to which persons concerned attach certain interpretations. Objectives and scientific classification are the division of mankind in to racial groups should be done on the basis of measurable physical features and qualities inherited from a common ancestor. The important features on the basis of which the races are identified and classified include skin colour, stature, shape of head, face, nose, eye, type of hair, and blood group. Human races are classified in to four broad groups:

  1. Negroid, 2. Caucasoid, 3.Mongoloid and 4.Australoid.

**HOTS**
If human being originated from one point, Africa and spread to rest of the world, how could they become different races?

**1. The Negroid**

- They are usually called as "black race". They have the darkest skin tone than other races, and other common characteristics are the slopped forehead, thick lips, wide nose, and dark hairs. They are living in Sub-Sahara Africa.

**2. The Mongoloid**

- They have the folding eye lids, almond shaped eyes, yellowish skin tone, and V shaped cheeks. Native Americans and Eskimo are also classified as Mongoloid. Compared to the other races, they have the least body hair, least body odour, and smallest limb ratio. Their facial structure is likely to adapt cold mild wind. They are living in East Asia.

**3. The Caucasoid**

- The Caucasoid is known as "white people" characterised by the pointy nose, vertical forehead, pinkish/orange skin tone, visible brow ridge, and colorful eyes/hair. Some believe that their light skin tone is meant to receive more sunlight due to Europe's climate. Some believe that their nose structure is meant to keep the nose moisture from getting dried by the wind. They are living in Europe and Middle East.

**4. Australoid Race**

- They have visible eye ridge, wide nose, curly hair, dark skin tone, and short in height. Some believe that their visible ridge helps them to eat stiff foods. They are living in Australia and Papua New Guinea.

**Characteristic of Major Races**

| Feature | Caucasoid | Monogoloid | Negroid |
|---|---|---|---|
| Skin colour | Pale reddish white to olive brown. | Saffron to yellow brown, reddish brown. | Brown to black brown yellow brown. |
| Stature | Medium to tall. | Medium tall to medium short | Tall to very short. |
| Face | Narrow to medium broad, tends to high no prognathism. | Medium broad to very broad malars high and flat tends to medium. | Medium broad to narrow tends to medium high strong prognathism. |
| Head form | Long-broad and short medium, high-very high | Medium height, predominantly broad. | Predominantly long low height. |
| Hair colour | Light blonde to dark brown, straight to wavy. | Brown to brown black, straight. | Brown black light curl and wooly. |
| Body build | Linear to lateral slender to refuge. | Tend to be lateral, some linearity evident. | Tend to be linear and muscular. |
| | Usually high, | Low to medium | Low, medium to |

| | | | |
|---|---|---|---|
| Nose | narrow to medium broad. | form, medium broad. | very broad. |
| Blood group | more A than B | High in B | High is Rh(D) |
| Eye | Colour: light blue to dark brown, lateral eye –fold occasional. | Colour: brown to dark brown, medial epicanthic fold very common. | Colour: brown to brown block, vertical eye-fold common. |

**Ethnicity**

- Ethnicity is a concept referring to a shared culture and a way of life. This can be reflected in language, religion, material culture such as clothing and cuisine, and cultural products such as music and art. Ethnicity is often a major source of social cohesion and social conflict. The world is home to thousands of different ethnic groups, from the Han Chinese (the largest ethnic group in the world) to the smallest indigenous groups, some of which include only a few dozen people. Almost all of these groups possess a shared history, language, religion, and culture, which provide group members with a common identity.

- India is a unique country with great diversity in ethnicities, race, religion, language, culture, cuisine and in every other aspect of the human society. Indian civilization is one of the oldest in the world and primarily consists of the Indo-Aryans of North India and the Dravidians of South India, the people of the Indus Valley Civilization while the former migrated to the country at about 1800 BC. As India has such a diverse cultural demographic, it makes sense that the country is also.

**Dravidians**

The Dravidian people are any native speakers of the Dravidian languages in the Indian Subcontinent. Almost all the Dravidians live in the southern part of India. The five major ethnic groups of Dravidian people in India are Tamil, Telugu, Kannada, Malayalam, and Tulu.

The ancient Indus Valley civilization in India was believed to have been of Dravidian origin in northern India, but then the Dravidian people were pushed south when the Indo- Aryans came in and the Kuru Kingdom in northern Indian arose. Later South India was dominated by the three Dravidian kingdoms of the Cheras, Cholas, and the Pandyas. These three kingdoms have been shown to sponsor the growth of literature, music, and the arts and to have done extensive trading. The three kingdoms also supported and were tolerant of Buddhism, Jainism, and Hinduism. The major languages spoken by the Dravidian people are Tamil, Telugu, Kannada, Malayalam, and Brahui.

**Do you know?**

Arabic script Brahui is the only Dravidian language which is not known to have been written in a Brahmi based script, instead, it has been written in the Arabic script since the second half of the 20th century in Iran Pakistan and Afghanistan.

## Religion

- Religion is not a vague fear or unknown powers not the child of terror, but rather a relation of all the members of a community to a power that has the good of the community at heart and protects its law and moral order. Religion produces a distinct attitude towards life which affects the further development of the society. Indeed most cultural situations show the mutual interaction between religion and socio-economic and politico-cultural factors.

## Classification of religion

- Religion may be classified based on the belief in god. Monotheistic: the followers of monotheism believe in a single god (Islam, Christianity). Polytheistic: the followers of polytheism believe in many gods (Hinduism). Another classification is on the basis of areas of origin such as Eastern religion, Western religion, far Eastern religion, African religion, Indian religion, etc. Geographers generally classify religions into following;

    - Universalizing religions – Christianity, Islam, and Buddhism.
    - Ethnic religions – Hinduism, Shintoism (Japan), Chinese faiths, Judaism.
    - Tribal or traditional religions – animism, shamanism, secular (non-religious and atheists).

## Major religions of the world

- Major religions of the world are classified based on the followers. They are Christianity, Islam, Hinduism, Buddhism, and Judaism. Other important religions include Chinese folk religions, Sikhism, Confucianism, Shintoism etc.

- Christianity is a universal religion which has the largest number of followers in the world. They are spread in Europe, Anglo America, Latin America, Africa, Asia and Oceania. Its sacred book is "Bible". Islam is the second largest religion of the world. The largest concentration of the Islam is in the South West Asia, Central Asia, South Asia and South East Asia Followed by the North Africa. Shia and Sunni are its two main sects. Its sacred book is Kuran.

- Hinduism is the oldest ethnic religion of the world which was founded about 3000 B.C (B.C.E) in India. Today it has over 8 million followers in the world but main concentration is in India and Nepal. Nearly 99 percent of the total Hindu population is concentrated in south Asia. Its sacred books include the Vedas, the Upanishads, the Epics, the Ramayana and Mahabharata, and the Bhagavad Gita. Buddhism is also one of the oldest religions of India which was founded by Lord Buddha around 525 B.C (B.C.E). Its spread in several Asian countries (China, Myanmar, India, Srilanka, japan, Mangolia, Korea and South East Asian countries) due to its liberal philosophy. Its two main sects are Hinayana and Mahayana.

- Judaism is the oldest Monotheistic faith which is regarded as the parent of Christianity. It originates 4000 years ago in the Middle East. At present it has about 14 million followers living in U.S.A, Europe and Asia. Chinese religions include two main beliefs called Confucianism and tao-ism. Confucianism was established by Confucious (551-479 B.C (BCE)). Taoism was established by Lao Tse (604-517 B.C (BCE)).

- Jainism is also born in India as a reaction to orthodox Hinduism. It was founded by Lord Mahavir who was a Contemporary of Lord Buddha. Its followers are mostly concentrated in India. It is an offshoot of Hinduism which was established in the 15th century by Guru Nanak. It remained confined to Punjab state and has accepted Gurumukhi as its language.

**Tribal Religions**

- Tribal religions are the special forms of ethnic religion. The tribal people are generally in the Neolithic stage of social development. Tribal people are strikingly different and diverse in their culture, social and economic life. They cherish their own distinct and have maintained a close relationship to the land and natural environment. Most of them live according to their traditions and are engaged in food gathering, hunting, fishing, primitive agriculture etc, there are about 300 million indigenous people worldwide, constituting about four percent of the total population of the world living in more than sixty countries.

Do you know?
The percentage of tribal to total population is as high as over 90 percent in Greenland, 66 percent in Bolivia and 40 percent in Peru. In India share of tribal people to total population is 8.2 percent.

- Sometimes the tribal people are being termed as the fourth world. The first – second and third world believed that "the land belongs to the people" whereas the fourth world believes that "the people belongs to the land

**Tribal Distribution in world**

- Sme major tribal group of the world particularly who are living and struggling

1. Equatorial Forest region: Pigmy, Semang, Sakai, Boro, Papuan, etc.

2. Grasslands: Masai, Kyrghizs, etc.

3. Tropical deserts: Bedowin, Bushman, Aborigines etc.

4. Mountainous region: Bhotia, gujjar, Naga etc.

5. Monsoon regions: Gonds, Santhals, Todas, Bhils, etc.

6. Arctic cold regions: Eskimo, Lapp, Alute, Chukchi etc.

**Pigmies**

- The pigmies are Negroid people and are also called Negrillos. They are the nearest approximation of human being to animal. They are short stature, flat nosed, wooly haired, long headed and black people. The average height of men and women are found 150cm. So they are also called dwarf. The pigmies are those who live in scattered parts of tropical Central Africa. They are found in many sub-groups in the equatorial forest region of Africa mainly in Congo basin $3^{o}$N and $3^{o}$S latitudes along both sides of the equator. In addition some groups of Pigmies are also found in the forests of Philippines and New Guinea.

**Masai**

- The Masai of east Africa belong to the pastoral society and are known as the best and most typical cattle herders not only of Africa but also of the world. Masai people are tall and slender with ling feet, hands and fingers. Their skin colour ranges from light chocolate to dark brown. They have high and long head, thin face and nose. Their lips are less thick than that of Negroid people. Masai occupy the interior plateau of the equatorial Africa. The territory of the Masai lies between $1^{o}$N and $6^{o}$S latitudes and covers all the rift valleys in this region.

**Bedouin**

- In Arabic, Bedouin means desert dwellers. The Bedouins are most important among the tribal of South West-Asia and North Africa. They are pastoral nomads and keep camel, sheep, goats, horse etc. The Bedouins occupy the desert areas of the Arabian Peninsula including Saudi Arabia, Yemen, Oman, Syria and Jordan. The Bedouins belongs to the mixture of Mediterranean and Armenian races. They are medium stature people with long narrow face, prominent nose, dark eyes and hair. Their complexion is wheatish to pale.

**Bushman**

- Bushman is the tribal people of Kalahari Desert in southern Africa who are still engaged in hunting and gathering economics. They are on constant run for both food and water. Their homeland Kalahari Desert lies in Botswana, Namibia and southern Angola. The bushman territory is a wide plateau about 2000 meters above the sea level with sub-tropical climate. The bushman are including in the Negroid stock. They are very short in stature and have long head, short and flat ears, and yellowish brown complexion. On the whole the Negroid characteristics prevail among the Bushman.

**Eskimos**

- Eskimos also called Inuits are tribes of tundra cold region in Canadian northland, Alaska, Greenland and north-eastern Siberian coastal region. The Eskimos are Mongoloid race. The main physical characteristics of the Eskimos are short stature, Flat narrow face, small snub nose, yellow –brown complexion and coarse straight black hair. Hunting and fishing are the main occupations of the Eskimos. They live in igloo and practice hunting way known as Maupak. The Eskimos wear clothes of caribous or reindeers skin and other furs.

- Eskimos are migratory by nature and construct ice houses called Igloos. For travelling on ice shield the Eskimos use sledge which is usually built either of whale bone or of wood whichever is available. It is drawn by two or more dogs, caribous or rain deer.

**Tribal in India**

- India is the home to large number of indigenous people, who are still untouched by the lifestyle of the modern world. With more than 84.4 million, India has the largest population of the tribal people in the world. These tribal people also known as the adivasis are the poorest in the country, which are still dependent on haunting, agriculture and fishing. Some of the major tribal groups in India include Gonds, Santhals, Khasis, Angamis, Bhils, Bhutias and Great Andamanese. All these tribal people have their own culture, tradition, language and lifestyle. There are more than 50 tribal groups in India. Most of the tribal belong basically to the Negrito, Australoid and Mongoloid racial stocks.

**Bhils**

- Bhils are popularly known as the bow men of Rajasthan. They are the most widely distributed tribal groups in India. They form the largest tribe of the whole South Asia. Bhils are mainly divided into two main groups the central or pure bills and eastern or Rajput Bhils.

**Gonds**

- The Gonds are the tribal community mostly found in the Gond forests of the central India. They are one of the largest tribal groups in the world. Gonds have been largely influenced by the Hindus and for the long time have been practicing the Hindus culture and traditions.

**Santhals**

- Santhals are the third largest tribe in India. They are mostly found in the states of West Bengal, Bihar, Odisha, Jharkhand and Assam. They belong to the pre- Aryan period and have been the great fighters from the time of the British.

**Munda**

- Munda tribe mainly inhabit in the region of Jharkhand, although they are well spread in the states of West Bengal, Chhattisgarh, Odisha and Bihar. Munda generally means headman of the village. Hunting is the main occupation of the Mundas tribe.

**Khasi**

- Khasi tribe is mainly found in the KhasiJaintia hills in Meghalaya and in the states of Punjab, Uttar Pradesh, Manipur, West Bengal and Jammu and Kashmir. They form the large part of the population in the state of Meghalaya.

**Angami**

- Angami tribe belongs to the extreme north eastern part of the country, in the state of Nagaland. The total population of the Angamis is around 12 million. They are quite popular for their woodcraft and artwork. Sekrenyi is the main festival celebrated among the Angamis in Nagaland.

**Bhutia**

- Bhutia tribes are of the Tibetan origin. They migrated to Sikkim around 16th century. In the northern part of the Sikkim they are known as the Lachenpas and Lachungpas. Bhutias forms 14% of the total population of Sikkim. Losar and Losoong are the main festivals celebrated among the Bhutia tribes.

**The Sentinelese tribe, the most dangerous tribe in the world!**

Located far into Andaman and Nicobar Islands, the Bay of Bengal in the Indian Ocean, North Sentinel Island is one of the most isolated places on earth. This remote island is home to the Sentinelese tribe, the most dangerous tribe in the world. The Sentinelese is hunter-gatherers, as agriculture is not known to them. Their diet consists mainly of coconuts and fish that can be found in the shallow waters around their shores. The Sentinelese would be described as Stone Age people. The women wear fibre strings tied around their waists, necks and heads. The men also wear necklaces and headbands, but with a thicker waist belt. The men carry spears, bows and arrows. Sometimes the Sentinelese appeared to make friendly gestures at others they would take the gifts into the forest and then fire arrows at the contact party. The population of North Sentinel Island is estimated at 250 individuals. The Sentinelese does not want help from outsiders.

**Chenchu**

- Chenchu inhabit in the Nallamalai hills, which have been the part of the Nagarjuna Segar Tiger Sanctuary for centuries in Andhra Pradesh, India. They are mainly found in the districts of Mahabubnagar, Nalgonda, Praksham, Guntur, and Kurnool.

**Great Andamanese**

- Great Andamanese is the Negrito tribe inhabitant in the Andaman group of Islands. They form the largest population among the other tribes found in these islands. According to the census the population of Great Andamanese is now limited to few individuals.

**Tribals in Tamil Nadu**

- Tribes of Tamil Nadu are concentrated mainly in the district of Nilgiris. Of all the distinct tribes, the Kodas, the Thodas, the Irulas, the Kurumbas and the Badagas form the larger groups, who mainly had a pastoral existence. Other tribes include, Kattunayakan and Paliyan amongst others.

- According to census 2011, tribal population in Tamil Nadu is 7, 94,697. There are around 38 tribes and sub-tribes in Tamil Nadu. The tribal people are predominantly farmers and cultivators and they are much dependent on the forest lands.

- Toda**:** Men from the family of the tribes are occupied in milking and grazing their large herds of buffaloes. Their settlements are known as 'Munds'. They do not worship any god and their consciousness is cosmic. They live in Nilgiris. Today, there are about a thousand Todas left.

- **Badaga**: The Badagas belong to the backward class and are not classified as tribal. They are an agricultural community, dwelling in the higher plateau of the Nilgiris district in the state of Tamil Nadu. They are engaged in tea cultivation and potato growing. They form the largest group of tribes and boast a rich oral tradition of Folk tales, songs and poetry. These tribes are Hindu and belong to the Shiva sect.

- **Kota:** The Kotas are mainly concentrated in the Tiruchigadi area in the Nilagiri hills. They are distinguished by their colorful Folk dances and are basically musicians, who play at Badaa funerals. They are mainly engaged in producing handicrafts. These tribes of Tamil Nadu are expert iron smiths, potters and carpenters. In order to maintain distance and status in society, the Kotas implement elaborate tattoos.

- **Kurumbas**: The Kurumbas tribes of this state inhabit the intermediate valleys and forests in Villages and were known for their black magic and witchcraft in the past. Their way of living today has changed from their original gathering and hunting existence to working in Coffee and Tea plantations as laborers. Kurumbas are perhaps the only main caste in southern India that has a specialized and distinctive Kurumbas Language.

- **Irula**: The Irula tribes of Tamil Nadu occupy the lower slopes and forests at the base of the Nilgiri Hills. They constitute the second largest group of tribes after the Badagas and are similar to the Kurumbas in many ways. This tribe produces honey,

fruits, herbs, roots, gum, dyes etc., and trades them with the people in the plains. In the recent times the Irulas help in catching snakes and collect the snake venom.

- **Paliyan:** They are of the food gathering communities of Tamil Nadu. It is believed that the Paliyan originally belonged to the Palani hills. They are distributed in the districts of Madurai, Tanjavour, Pudukkottai, Tirunelveli and Coimbatore.

**Language**

- Language is an identification mark for different cultures. Because language is essential to communication, it strongly influences the sort of political, social and economic we create. As a result, economic and religious system frequently follows patterns of language distribution and political borders quite often parallel linguistic boundaries. In modern times linguistic diffusion has been facilitated by trade, tourism, media and international organizations. It has helped in the development of the linguistic pluralism. The greatest linguistic diversity is attributed to heterogeneous societies.

**Do you know?**
Tamil is one of the longest-surviving classical languages in the world. The earliest period of Tamil literature, Sangam literature, is dated from 300 BC (BCE) – AD (CE) 300. It has the oldest extant literature among Dravidian languages.

**Major linguistic Families of the World**

- The classification of languages by origin and historical development is known as a genetic classification. The languages which are the descendants of common ancestral language are called proto – language.

- G.L. Trage has classified the languages of the world into 7 linguistic phylum and 30 linguistic families. Linguistic families are further classified in to sub families of languages, which denote major languages.

    - 1.Indo-European - a. Indo-Iranian, b. Latin or Romantic, c. Germanic, d. Balto – Slavic, e. Celtic, f. Hellenic
    - Sino-Tibetan - a. Chinese, b. Tibetan, c. Burman
    - Afro-Asiatic – a. Semitic, b. Egyptian, c. Cushitic, d. Chadic
    - African – a. Niger – Congo (Atlantic, Voltaic, Benu-Nagar)
      b. Sudanic (Chari-Nile, Saharan,)
      c. Click Languages (Khoisan)
    - Ural-Altaic - a. Finno-Igric, b. Turkic, c. Mangolic, d. Tunguzic
    - Dravidian- malayo – Polynesian- - a. Dravidian, b. Malayan, c. Melanesian, d. Micronesian, e. Polynesian, f. Austro- Asiatic.
    - Palaeo Asiatic- a.Yukaghir

**Do you know?**
As many as half of the world's 7,000 languages are expected to be extinct by the end of this century; it is estimated that one language dies out every 14 days.

**Major Languages of India**

- India has a rich Linguistic heritage and has heterogeneous ethnic and social groups, which have their own languages and dialects. According to census of India 1961, there were 187 languages spoken by various sections of Indian society. 23 major languages were spoken by about 97 percent population of the country. 22 languages excluding English are mentioned in the eighth schedule of the constitution of India as follows; Kashmiri, Punjabi, Hindi, Urdu, Bengali, Assamese, Guajarati, Marathi, Kannada, Tamil, Telugu, Malayalam, Sindhi, Sanskrit, Oriya, Nepali, Kongani, Manipuri, Bodo, Dogri, Maithili and Santali of these languages, 14 were initially included in the Constitution. Subsequently, Sindhi was added in 1967 by 21st constitutional amendment act; Konkani, Manipuri and Nepali were added in 1992 by 71st Constitutional Amendment Act; and Bodo, Dogri, Maithili and Santali were added in 2003 by 92nd Constitutional Amendment Act. Indian Languages belong mainly to four linguistic families

    - Austric – Munda, Mon-Khmer
    - Dravidan – Tamil, Telugu, Kannada, Malayalam, Gondi, kurukh, orean, etc.
    - Sino- Tibetan- Bodo, Karen, Manipuri, etc.
    - Indo - Aryan – Hindi, Urdu, Sans.

**Dialect**

- A distinct linguistic form peculiar to a region or social group but which nevertheless, can be understood by speakers of other forms of the same language. The two main types of dialects are the **geographic dialect,** spoken by the people of the same area or locality, and the **social dialect** used by people of the same social class, educational level or occupational group.

**Major** dialects **in India**

- More than 40 languages or dialects in India are considered to be endangered and are believed to be heading towards extinction as only a few thousand people speak them officials said.

- According to a report of the census Directorate, there are 22 scheduled languages and 100 non –scheduled languages in India. The scheduled languages are 11 from Andaman and Nicobar, Seven from Manipur and Four from Himachal Pradesh. There are 42 languages spoken by less than 10,000 people. Some other languages also are in endangered position in India.

**Major dialects in Tamil Nadu**

- Tamil is an interesting language with a range of native dialects. The language has several charming improvisations in different regions of the state. Many people are familiar with the old and familiar dialects of Tamil such as Chennai, Coimbatore, Madurai and Tirunelveli

**UNESCO'S five levels of language risk**:
Safe: Widely spoken
Vulnerable: Not spoken by children outside the home (600 languages)
Definitely endangered: Children not speaking (646 languages)
Severely endangered: Only spoken by oldest generations (527 languages)
Critically endangered: Spoken by only a few members of the oldest generation, often semi-speakers (577 languages)

**Political Geography - Concept of Nation and State**
**Nation**

- A nation is a group of people who see themselves as a cohesive and coherent unit based on shared cultural or historical criteria. Nations are socially constructed units, not given by nature. Their existence, definition, and members can change dramatically based on circumstances. Nations in some ways can be thought of as "imagined communities" that are bound together by notions of unity that can pivot around religion, ethnic identity, language, cultural practice and so forth.

**State**

- A State is an independent, sovereign government exercising control over a certain spatially defined and bounded area, whose borders are usually clearly defined and internationally recognized by other states.

**Do you know?**
**Vaishali** was established as a republic by the 6th century B.C (BCE), prior to the birth of Gautama Buddha in 563 B.C (BCE), making it the world's first republic.

**Nation-State**

- The nation state is a system of organization defined by geography, politics and culture. The nation is cultural identity that is shared by the people, and the state is the governing administration. A nation state must have a shared national identity, physical borders, and a single government.

- A nation-state is a political unit with a well-defined territory, inhabited by a people who are well-organised, possess sufficient powers and consider them to be a nation by virtue of certain binding factors which may be emotional and which are reflected in law and governance.

**Frontiers and Boundaries**

- **Frontiers:** International frontiers and boundaries separate land, rivers and lakes subject to different sovereignties. In 1900 frontiers had almost disappeared and had been replaced by boundaries that are lines. A Frontier is a politico geographical area, lying beyond defined borders of a political unit into which expansion could take place.

**Types of Boundaries**

- Boundaries can be classified according to their relationship with the cultural landscape. Some boundaries were established prior to the permanent occupation of areas by the present inhabitants. In some cases patterns of settlement were already developing so that the boundary ultimately established has a different relationship to the cultural realities of the area involved. This classification is known as the functional or genetic classification of boundaries.

**Different between Frontier and Boundary**

| Frontier | Boundary |
|---|---|
| 1. Natural | 1. Mostly Anthropogenic. |
| 2. Areal Concept | 2. Linear Concept. |
| 3. Frontiers have no political dispute. | 3. Boundaries vary often disputable by the rival nations. |
| 4. Frontiers generally have mountainous area, desert, marshes, etc. Thus, inhabitable. | 4. But boundaries have no such criteria. |
| 5. Frontiers are dynamic. | 5. Boundaries are static because once fixed, they hardly change. |

**Boundaries:** A boundary is a line demarcating the recognised limit of an established political unit, administrative region or geographical region e. g a state, country or district.

**Do you know?**
China has the maximum number of neighbors touching its border. The 14 countries touching its border are: India, Pakistan, Afghanistan, Tajikistan, Kyrgyzstan, Kazakhstan, Mongolia, Russia, North Korea, Vietnam, Laos, Myanmar, Bhutan and Nepal

**Do you know?**
Canada, the world's second largest country, shares the longest international land border with the United States. The Canada- US land border is 8,893 km long.

**Genetic Classification of the boundaries**

**1. Antecedent Boundaries**
The boundaries drawn before the cultural-political realm.

Such boundaries were non-contentious.
E .g, N. Africa and the state boundaries of USA.

**2. The Subsequent Boundaries**
When the cultural realms are fully developed & political boundaries are contentious.

Such boundaries are irregular or amorphic boundaries.
E.g. the countries of Europe.

**3. Superimposed Boundaries**

When a political boundary divides a homogenous cultural region and across the boundary the people with similar ethnicity are found.
E.g. Pok

**4. Relict Boundaries**

Historical boundaries which only exist in the books.

E .g. Persia, the boundary between east & West Germany.

**Geopolitics: Global Strategic views**

- The study of the way a country's size, position, etc, influence its power and its relationships with other countries. Political activity is influenced by the physical features of a country or area of the world. Geo politics is concerned with how geographical factors including territory, population, strategic location, and natural resources endowments as modified by economics and technology affect the relations between states and the struggle forward domination. It is battle between land power and sea power which is going to lead the world continents by one.

- Mackinder described the political history of the world as continuous struggle between land and sea powers. According to him, the Columbian era of sea powers, which gave Europe its pivotal position for four centuries is coming to an end. And in the struggle between land and sea powers, the ultimate victory is going to be of one possessing land powers. He divided the earth into 3 tiers.

**1) The Heartland** - area of interior and Arctic drainage in the Eastern Europe, covered by mountains on three sides and Arctic in north. This is a natural fortress on earth, inaccessible to sea powers.

**2) The Inner or Marginal Crescent** - area of Europe and Asia adjoining the Heartland and Africa, north of Sahara.

**3) The Outer or Insular Crescent** - It includes North and South America, Africa (south of Sahara) and Australia. Besides, it also includes the Great Britain and Japan because of their insularity from Eurasia.

- According to Mackinder, one with control over Heartland will be in an unstoppable position to rule the world. Heartland, with its agricultural and industrial resources would conquer the inner crescent and Outer crescent would follow later. He conceptualized his theory as:

Who rules East Europe commands the Heartland.

Who rules Heartland commands World Island.

Who rules World Island commands the World.

- Mackinder later argued that key to control Heartland lays in Eastern Europe, reflecting a powerful strand of pre and post- Versailles geographical thinking concerning the news to separate the powerful states of Germany and Russia by the creation of 'buffer states'.

- Influence - His theory was put to test during the World War II when the Heartland could become the power center of the world if either Germany unites with Russia or China or Japan thrashes Russia. But the shattering defeat of Germany turned Heartland into a power vacuum.

- The area highlighted in red is the heartland, blue is rim land and the encircled area is the world island.

- The heartland is inaccessible from top because North Sea, Norwegian Sea, Barents Sea, Kara Sea, Laptev Sea, East Siberian Sea are all frozen throughout the year. The hearland is inaccessible from the bottom because of Middle Eastern desert, Iranian Plateau, Himalayas, Plateau's of Tibet and Siberian mountains. This makes heartland immune to any conquests from any other side than Eastern Europe.

- The only gateway to the heartland is through Eastern Europe. So, protecting one gateway would be far easier than protecting the whole land. Moreover, the heartland was self-sufficient with most of the resources and wasn't dependent on trade from outside world.

- So, Mackinder believed that the one who controls the heartland would be able to control the Rimland and as a result the world-Island, and the one, who rules the world Island, would rule the world. Although this theory made sense at that time

(1904), when there was no significant aviation and naval power, it does not make much sense now.

**Century Geopolitics of the multipolar world order**

- To put it succinctly, the unipolar world is characterized by the US' predominant hegemony in a wide variety of spheres, whether exercised directly through unilateral initiatives or indirectly ("Lead From Behind") through its regional and institutional partners. The Multipolar forces in the world are working to replace the US-led international order with a diversified array of multiple stakeholders in order to bring balance to International Affairs. Importantly, they seek to do this through progressively reforming international institutions such as the UN, IMF, World Bank, and others, as well as creating their own counterparts to some of them like the BRICS New Development Bank or outright forming entirely new and unprecedented organizations like the SCO.

- One of the latest proposals has been to broaden the BRICS format through what has now been called the "BRICS-Plus" strategy, which essentially seeks to have each of the five member states encourage multilateral cooperation between each other's respective regional integration organizations. As Russian Valdai Club expert YaroslavLissovolik describes it, this could see Mercosur, the SADC, and the Eurasian Economic Union, SCO, SAARC, and ASEAN all cooperating with one another in changing the world order.

**Missile Defense Shield, Prompt Global Strike, and the Naval Race**

- The basis of American control over the world is through economic means as enforced by military ones. In certain cases, though, the US is unable to directly attack its rivals such as Russia and China without suffering unacceptable damage through a nuclear second strike, ergo why Washington is pushing to build anti-missile installations all around Eurasia in order to ring in these Great Powers and diminish their most credible deterrent capability. Complementary with this are the US' space weapons, whether based in this theatre (X37-B and the policy of "Prompt Global Strike") or directed towards it (anti-satellite weapons, whether kinetic such as missiles or non-kinetic like lasers).

- Neither the US' missile shields nor its space-related weaponry are sufficient enough for ensuring that the country is defended from submarine-launched ballistic missiles, which form a crucial component of any country's nuclear triad. This explains why there's an ongoing naval race across the world as the US seeks to ensure its dominance in the high seas in the face of rising competition from Russia, China, and others. The global ocean is also important for another reason as well, and this one relates back to the economic basis of American dominance over the world. China depends on the international waterways for the vast majority of its trade, which makes it inordinately vulnerable to any US efforts to block certain chokepoints such as the Strait of Malacca and Suez Canal.

**OBOR's Global Reorganization**

- Understanding the sudden systemic-shaking consequences that any hostile action like this could inflict for China's domestic socio-economic stability, the People's Republic prudently foresaw the need to pioneer ambitious trans-continental trade routes to its crucial European partner, as well as secure the Sea Lines Of Communication (SLOC) along its existing maritime ones in order to safeguard its access to the growing economics of Africa. The latter are exceptionally important nowadays because their growth is expected to allow Beijing to relieve itself of its industrial overproduction so long as it can succeed in building up these marketplaces and stabilizing them. As for the Western Hemisphere, China wants to increase its soft presence here as a means of competing with the US and asymmetrically countering America's moves in the South China Sea.

- Altogether, the above stratagem explains the essence of China's One Belt One Road (OBOR) global vision of New Silk Road connectivity, which is designed to transform the world's trading networks so as to facilitate the transition from a unipolar American-led international order to a diversified Multipolar one safeguarded by a host of Great Powers. It also, however, provides the blueprint for how the US will oppose the greatest threat thus far to its worldwide hegemony, as all that Washington has to do is encourage identity-centric Hybrid Wars in the geostrategic transit states along these corridors in order to disrupt, control, or influence them in ways which remove their Multipolar game-changing impact.

**Geopolitics and the New World Order**

- The global elite–leading academics, intellectuals, foreign policy analysts, foundation heads and corporate power brokers, as well as many Western leaders–may largely have forgotten about it. But what we're witnessing now is geography's revenge in the East-West struggle for control of the buffer state of Ukraine, in the post–Arab Spring fracturing of artificial Middle Eastern states into ethnic and sectarian fiefs and in the unprecedented arms race being undertaken by East Asian states as they dispute potentially resource-rich waters. Technology hasn't negated geography it has only made it more precious and claustrophobic.

- Whereas the West has come to think about international relations in terms of laws and multinational agreements, most of the rest of the world still thinks in terms of deserts, mountain ranges, all-weather ports and tracts of land and water. The world is back to the maps of elementary school as a starting point for an understanding of history, culture, religion and ethnicity–not to mention power struggles over trade routes and natural resources.

- Europe's modern era is supposed to be about the European Union triumphing over the bonds of blood and ethnicity, building a system of laws from Iberia to the Black Sea–and eventually from Lisbon to Moscow. But the E.U.'s long financial crisis has

weakened its political influence in Central and Eastern Europe. And while its democratic ideals have been appealing to many in Ukraine, the dictates of geography make it nearly impossible for that nation to reorient itself entirely toward the West.

- Russia is still big, and Russia is still autocratic after all it remains a sprawling and insecure land power that has enjoyed no cartographic impediments to invasion from French, Germans, Swedes, Lithuanians and Poles over the course of its history. The southern Crimean Peninsula is still heavily ethnic Russian, and it is the home of Russia's Black Sea fleet, providing Russia's only outlet to the Mediterranean.

- In short, Russia will use every geographical and linguistic advantage to weaken Ukraine as a state. Ukraine is simply located too far east, and is too spatially exposed to Russia, for it ever to be in the interests of any government in Moscow–democratic or not–to allow Ukraine's complete alignment with the West.

- To live in a world where geography is respected and not ignored is to understand the constraints. Many obstacles simply cannot be overcome. That is why the greatest statesmen work near the edges of what is possible. Geography establishes the broad parameters– only within its bounds doe's human agency have a chance to succeed.

- While our foreign policy must be morally based, the analysis behind it must be cold-blooded, with geography as its starting point. In geopolitics, the past never dies and there is no modern world.