STUDY AREA
The study area, Ooty town (Udhagamandalam town) is located in the Nilgiri District (11°24'N & 76°44'E) in the state of Tamil Nadu in the Southern end of India. The Nilgiri district forms the western extremity of Tamil Nadu. It is a hilly district made up of plateaus and landforms, with numerous perennial streams and an equitable climate. The district is the smallest and highest part of the state (average elevation 2000 mts) with an equitable climate. The district is divided into four taluks - Udhagamandalam, Gudalur, Coonoor and Kotagiri (Fig.3.1). Ooty town (Udhagamandalam town) is the headquarters town of the taluk and of the district.

3.1. ORIGIN OF OOTY TOWN

Ooty town is the largest hill station in South India and has the largest level surface. It is at an elevation of 2248 m and covers an area of 30.67 sq. kms.

The history of Ooty is well documented by Price (1908) Initial European expeditions into the Nilgiris occurred as early as 1602. But it was the glowing accounts of Wish and Kindersley, two customs officials on the track of smugglers in the Nilgiri plateau, that enticed John Sullivan, the collector of Coimbatore district to explore the region in 1819. The site of present day Ooty was discovered in 1822, and the first European house 'Stonehouse' was built. Between 1820-27, Sullivan made frequent pleas to the directors of the East India Company to develop Ooty as a sanatorium. In 1827, the township was designated as the official sanatorium for Madras Presidency. Thereafter the government followed a policy developing the roads leading to it and Ooty soon became the summer capital of the Madras Government. Ooty became a town in 1866 by a notification under the Madras Act X of 1865. Ooty Municipality was constituted in 1967. It was further upgraded as a special grade municipality in 1987. The municipal area of 30.67 Kms has remained constant since 1929.

3.1.1. ORIGIN OF THE NAME OOTY

There are different views on the origin of the name Ooty. Price (1908) in his monumental work 'Ootacamund - A History' offers a possible explanation. The first
European house 'Stonehouse' was built upon a level site occupied by a single Todahut. In the Toda language, 'Patkh' is a level spot and 'Mud' is home - the spot was called 'Patkh Mud'. This was mispronounced by the Badaga community as 'Whotaku Mund', 'Mund' being the 'Mud' equivalent in the Badaga language.

Others like Rev. P.K. Mulley (1993) opines that 'Pathkamund' is a Toda place name for the location of erected funerary stone. This was corrupted to 'Hothegemandu' by the Badagas, and eventually anglicised and corrupted to Ootacamund and finally shortened to Ooty. By a government order in 1979, the name was further changed to 'Udhagamandalam', and locally shortened to Udhagai. But the hill station continues to be referred to as Ooty by the vast majority of people and tourists. Hence the name Ooty is being retained in this study.

3.2. ENVIRONMENTAL SET UP OF OOTY

Ooty town area exhibits two landforms - Dodobetta landform and Ooty landform. The Dodabetta landform has many peaks, rocky escarpments, with or without soil cover around which radial drainage pattern is noticed. Dodabetta landforms are found in the North eastern part of the town. The Ooty landform occurs over the remaining area. Ooty landform shows gentle mounds with thick soil, meandering streams and gentle smoothing of hills.

Ooty is situated in an extensive open valley, almost in the exact centre of the hills. The valley is open to the west, but bounded by four hills in the north, east and south. These hills stretch over a distance of about 3 kms, in a north westerly direction, with the botanical gardens at one end and Ooty lake at the other.

In the east is Dodabetta (2592 m), the highest point in the Nilgiris. In the North is Snowdon (2514m), an almost perfect cone, named after the Welsh Peak which it resembles. Another hill in the north is club hill (2409 m) and in the south is Elk hill. The basin altogether looses its mountainous rim to the west, where the country is open. Here on the west is Wenlock downs, a wide expanse of undulating grass with wooded streams.
3.2.1. DRAINAGE:

At the bottom of the valley, enclosed by the natural theatre of these hills, flows a stream in a wide bog fed by numerous swamps. This stream originates from the Sholas in the Snowdon hill in the North. Numerous rivulets originate in Snowdon and run in a south westerly direction. Numerous rivulets originates in the Dodabetta hills in the East join this stream. These two main streams join near Kelso bridge, and flow south westward as the Ooty stream Fig.3.2. The stream has been divided into 6 reaches by 7 bridges spanning across the stream. The Ooty stream flows through the heart of the town. Tiny streams join it along its course. This stream has now been enclosed by a masonry channel-the Kodapmund channel.

3.2.1.1. OOTY LAKE

The waters of the Ooty stream were dammed to form a serpentine lake. In 1823, John Sullivan, the then collector of the Nilgiris created the lake by uniting the converging extremities of two hill ranges with a dam. A 40 yard embankment of mud and earth was built to form a long lake at an elevation of 2168 mts. The surplus water is drawn off by a sluice gate in the western end of the lake. The stream then continues its course to the north and drains into the Kamaraj Sagar constructed across the Sandynallah river. The lake is about 3 kms long and 630 mts broad.

The catchment area of this lake (12.18 sq. kms) forms the core of Ooty town (more than 60% of the municipal area). The original lake was a long serpentine lake. Repeated breaching and silting resulted in a reduction in size. Originally the lake extended almost to the fringe of Charring Cross. Now it is limited to the west of the bus stand.

The watershed area of this lake is the focal point of tourism related activity.

3.2.2. SOIL

The soils are lateritic in origin, derived from charnokites known as Nilgiri gneiss. Climatic conditions favour intense chemical weathering of minerals. The soil is yellowish brown or reddish brown. Sesachalam et al. (1982) note that the Nilgiri soils are non-erodable owing to their lateritic origin, low erosion rate and high percentage of water stable
aggregates. Not withstanding equitable rainfall distribution and non-erodability of soils, the erosion hazards are alarming due to poor agricultural practices and landuses. Land conversions for vegetable cultivation, cultivation on steep slopes, construction activity etc have caused landslides.

3.2.3. CLIMATE

Ooty has a temperate equitable climate. Fig.3.3. shows the climatic conditions occurring in Ooty Town.

The average summer temperature is 21°C and winter 10°C. The prevailing winds are Southwest and North East. Owing to the open aspect of the country to the west and southwest, the southwest monsoon breaks with greater fury over Ooty than any other station on the plateau. June to October is the monsoon season with high rainfall with high intensities. The average rainfall in Ooty town is about 900 mm and nearly 90% of it is spread over 5 months from June to October. Therefore erosion hazard is high because of the intensity of rainfall during this period.

3.2.4. NATURAL VEGETATION

The warm climate with plentiful rainfall has resulted in abundant plant growth in the Nilgiris. Botanically, there are 4 zones, deciduous forests of the slopes, moist ever green forests higher up, and Sholas and grasslands. The last two are climax vegetation types.
Sholas are wet temperate (montane) forests of tall rounded trees and several tiers of vegetation along with epiphytes and a dense undergrowth. They are found in the folds of converging slopes where moisture is higher. Sholas provide the perennial supply of water to the hill streams. The Dodabetta forests in the east and Snowdon in the north east have shola forests. In the rest of the valley slopes, degraded forests are found. Forest plantations of introduced plants like Australian Eucalyptus or blue gum and acacias are found in the upper slopes of Elkhill and other areas.

### 3.3. POPULATION

The population of Ooty in 1991 was 81,763 as per the 1991 census. The decadal population growth of Ooty town was 4.45%, while for the entire district the growth was 11.85%. The growth of population of Ooty town since 1971 is as follows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>63,310</td>
<td>26.27</td>
</tr>
<tr>
<td>1981</td>
<td>78,277</td>
<td>23.64</td>
</tr>
<tr>
<td>1991</td>
<td>81,720</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: Census of India.

This low growth of population of Ooty town does not correspond with the overall growth of population of the state. In the 1970s, the development of hydroelectric power generation units in the surroundings of Ooty, the development of plantations and the public sector film manufacturing unit HPF resulted in population inmigration. The decadal growth of population was thus larger in the 1970s. Since then growth rate has been low.

The density of population in 1991 was 2665 persons / sq. km. During the same time, the density of population in Ooty Taluk was 199 and of the district 278. This high density of population in Ooty town is because Ooty is the dominant urban centre of the district. The work force as per the 1981 census is as follows:
Table 3.2. Work force Ooty Town.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Sector</td>
<td>0.28%</td>
</tr>
<tr>
<td>Secondary Sector</td>
<td>0.62%</td>
</tr>
<tr>
<td>Tertiary Sector</td>
<td>98.52%</td>
</tr>
<tr>
<td>Marginal Workers</td>
<td>0.58%</td>
</tr>
</tbody>
</table>

Source: Master Plan. Town and Country Planning Organisation (TCPO)

The tertiary sector employment in Ooty is accounted for by employment in tourism related activities, in the Public Sector units of Hindustan Photo film and Needle Industries, educational institutions and government offices. Breakup of these was not available.

3.4. LAND USE

Land is put to four major categories of use in Ooty town - forest area, agricultural area, built up area and uncultivated area. The lake watershed area forms the core of tourism activity in Ooty. So details of this watershed are considered for the town's landuse. Fig.3.4. shows details of land use in Ooty town.

![Fig.3.4. Ooty Town - Land Use](image)

Source: TCPO and IHH

Thirty per cent of the area is built up. The agricultural landuse is the largest (39%). Forest including open jungle and forest plantations cover 23% and uncultivated land 8%. Agriculture is mainly confined to plantations of tea and small areas of vegetable cultivation. Agriculture is mainly monocultural tea or hill vegetables.
LAND USE AND LAKE WATERSHED

FIG. 3.5

KODAPPAMUND SWS

WEST SWS

RACE COURSE SWS

ELK HILL SWS

REFERENCE

- Builtup area
- Terraced area
- Forest area
- Uncultivated area

- Watershed boundary
- Sub Watershed boundary

FIG. 3.5
The lake watershed which is the core of the town is also the nucleus of tourism related activities. The entire lake watershed has been divided into four subwatersheds, based on landuse patterns. Fig.3.5. shows land use pattern in the four subwatersheds. The western corner of the lake watershed is the smallest subwatershed and surrounds the lake. Agriculture, is the dominant landuse, with cultivation of vegetables.

Race course subwatershed in the centre is the most densely populated and built up area. A third of the built up area is completely paved and well protected. This area is a labyrinth of hotels, shops, dirty winding roads and crowds. Tourism development is maximum in this area and development here has been at considerable cost to the ecological sanctity of Ooty. Agricultural coverage is only 22.9% and forest cover very meagre.

In the South East corner is the Elk hill subwatershed with steep hills. Agriculture is the dominant land use and built up area is minimum. Degraded forests cover a small portion. Numerous rivulets pass through the length and breadth of this watershed and plantation agriculture dominates.

In the north eastern corner is the Kodappamund subwatershed which is the largest. Only in this watershed do dense forests occur in Dodabetta reserve forest. Degraded forests occur elsewhere in this watershed. All lands besides forests lands are under cultivation.

![Fig.3.6. Ooty Town - Utilization of developed area](image_url)
FIG. 3.7

OOTY TOWN
ROAD ACCESSIBILITY
(NOT TO SCALE)

REFERENCE

- Ooty Town boundary
- State Highways
- Other Roads
- Railway line

To Calicut
To Mysore
Gudalur

FIG. 3.7
Thus it is seen that agriculture and built up area is the dominant land use of the town. Fig. 3.6. shows the utilisation of developed area in 1992. Of the built up area residential use is the predominant usage of the built up area. The share of transport and communications is also large because of scattered houses and the topography. The educational institutions, primarily schools are well established large schools, and Ooty has a country wide reputation for some of its famous schools. Commercial activities include, commercial firms, lodging houses, restaurants, theatres etc.

3.5. INFRASTRUCTURAL FACILITIES

Ooty is the prominent hill station in south India, developed as a sanatorium for the British. The town’s infrastructural development began during colonial times.

3.5.1. ROAD NETWORK / MOBILITY

Ooty is the centre of the road system in the Nilgiris and from it transport lines run to the various ghats leading off the plateau. Of these the most important is that from Mettupalayam to Coonoor, which was built in 1833 and realigned in 1871. Mettupalayam is a foothill town to the south east of Ooty. Fig. 3.7. shows the road networks connecting Ooty town to the other places. Ooty can be comfortably approached by road from Coimbatore, the nearest city in the plains (90 kms) through Mettupalayam and Coonoor. This ghat road from Kallar near the foothills, ascends forested ravines and graceful slopes and passes Burliar, the toll point. After Burliar, the road follows the deep gorges of the Coonoor and Kateri rivers. Beyond Coonoor the road passes ketty valley and at valley view, the road dips into the amphitheatre of Ooty.

From the north of Ooty, the Mysore Ooty road (160 kms) passes through the Mudhumalai wildlife sanctuary. This road reaches Theppakadu near Mudhumalai wildlife sanctuary. Theppakadu is at the junction of two roads to Ooty - one a short cut via the steep sigur ghats passes through Masinagudi and reaches Ooty. The other road takes an hour longer to reach Ooty via the foothill town of Gudalur. The Kotagiri ghat road from Mettupalayam (30 kms to Kotagiri) is an alternative route in the east.
Within Ooty town, the municipality has 141.59 kms of roads and there is an additional 28.28 kms of state highways within the municipal limits of Ooty. The town is well linked to the plains by a large number of government operated transport buses. Transport within the town though is woefully poor. Local transport within town is provided mainly by autos and taxis.

Ooty is also linked by the hill rack railway. The hill railway, called the Blue Mountain railway is the only railway line in India to have a rack bar system laid along the track to negotiate the steep gradient. This railway line has the steepest rail gradient among ghat lines in India measuring 1 : 12.88 ie a one foot climb for every 12.88 ft of rail length. The distance between Ooty and Mettupalayam is 46 Kms and the rack bar system has been laid along this track to a distance of 19 kms. Enroute the ghat section are 250 bridges, 16 tunnels and 205 curves. In April 1993, a remodeled diesel locomotive took over the proud place of the steam engine, on these tracks.

3.5.2. WATER SUPPLY

The town has a well established water supply scheme. In 1865 the first systematic water supply was established and water from the southern slopes of the Dodabetta range was brought by aqueduct over the Coonoor road. Table 3.3 shows the service reservoirs of Ooty town. All these reservoirs were built between 1870 to 1905. With growing population water supply was improved by providing additional reservoirs at Gorishola, Glenrock and Old Ooty.

Since the water was still insufficient, the Parson's valley scheme was completed in 1975. Presently 70% of the town's water supply comes from Parson's Valley and the rest from Other reservoirs. The existing Parson's Valley scheme caters to half of the town and the other half of the town is serviced by the other schemes.
Table 3.3. Ooty town - Water supply sources

<table>
<thead>
<tr>
<th>Name of Reservoir</th>
<th>Capacity in Million gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dodabetta – upper</td>
<td>4.500</td>
</tr>
<tr>
<td>Dodabetta – lower</td>
<td>0.500</td>
</tr>
<tr>
<td>Marlimund</td>
<td>54.500</td>
</tr>
<tr>
<td>Tiger Hill</td>
<td>30.500</td>
</tr>
<tr>
<td>Kodapmund - upper</td>
<td>1.500</td>
</tr>
<tr>
<td>Kodapmund - lower</td>
<td>0.117</td>
</tr>
<tr>
<td>Gorishola</td>
<td>15.000</td>
</tr>
<tr>
<td>Glen Rock</td>
<td>0.012</td>
</tr>
<tr>
<td>Old Ooty</td>
<td>0.096</td>
</tr>
</tbody>
</table>

Source: U.M.C

The water is pumped from the reservoirs to the churchhill storage point in the town from where it is distributed. There are two pumping stations and one water treatment plant. The total length of the water supply main is 84.04 Kms. There are 5770 house service connections covering 60% of the municipal area.

These water sources have a projected supply of 1 million gallons/day. At present only 0.35 mg is drawn. The town faces water storages. As water supply is inadequate, improvement schemes are being carried out from Parson's valley source at an estimated cost of 500 lakhs, which was later revised to 750 lakhs.

3.5.3. SEWERAGE SYSTEM

Ooty was provided with partial underground drainage system as early as 1908. This covers 12.94 sq.kms. of the total corporate area of 30.67 sq. Kms, with 5165 service connections. The remaining area is served by open drainage system. The outer slopes of Ooty are not covered by this system. Individual domestic septic tanks are usually used in the outer slopes. Fig. 3.8 shows the main sewer lines of Ooty town. Sewage is taken by gravity, through two principal 12 inch diameter main pipes to a sewage farm located at the south west end of town and down stream of Ooty lake. One 12 inch diameter main pipe drains the Bazar, Kodappamund, Old Ooty and government house areas. This is the Kodapmund main sewer line. The other, Kandal main drains the Gandhi Nagar, Sultanpet
areas and the area above the Westbury road. The branch main pipes are of 6 inches diameter. Both the sewers are let into the septic tank of 2 lakh gallon capacity. The effluents from the septic tank is disposed off into the 14 acre sewage farm being maintained by the municipality. The effluents ultimately join Sandynallah reservoir.

The sewage system is old, clogged and damaged and insufficient for the town. Under a restricted sewerage scheme to prevent pollution to Ooty lake, sewage pipes are being replaced at an estimated cost of 1260 lakhs.

3.5.4. SOLID WASTE MANAGEMENT

For the sanitation of the town, the municipal area has been divided into 6 sanitary divisions, with 283 sanitary workers including sweepers, drain cleaners, conservancy staff etc. The town compost yard is at Theetukal 9 kms away from town, along the Parson's valley road. The compost yard is on 4.5 acres of land leased from the forest department since 1972. The estimated solid waste generation is about 20 metric tons per day. Besides domestic wastes and vegetable wastes from the market, hotels and restaurants and other tourism related activities are major contributes to the solid waste.

3.6. ECONOMY

Ooty is primarily a resort town. Since its inception, it has been steadily growing. By the 1840s Ooty was a flourishing new town.

John Sullivan, the first collector of Ooty was directly responsible for agricultural changes that revolutionised the local economy. He introduced tea, potatoes and cabbages which till recently formed the backbone of this tiny district. Agriculture, mainly tea plantations and small plots of vegetable cultivation is carried on in over more than a quarter of the town area. As is seen earlier in section 3.3, Agriculture forms only a fraction of the total work force.

Tertiary sector activity predominates in Ooty. Ooty town has no dearth of electricity because of its proximity to the hydro-electric generation schemes of the Pykara, Moyar and Kundha to the west of town.
Tourism is the dominant industry that thrives year round with a distinct peaking in the summer vacation season. The activity is concentrated within the center of the Town.

The major industry located within the town limits is the Public sector enterprise - Hindustan Photo Film (HPF). The government of India in collaboration with the French Bauchet & Cie set up HPF in 1963 under India's third 5 year plan. All the requirements of Black and white cine positive film in the country is produced here. Medical X-ray film, Bromide paper, laser recording film, video and audio magnetic tapes etc. are manufactured here. Numerous subsidiary service industries surround this plant. HPF has been responsible for a flood of migrants from the plains to Ooty town upto the late 1970's. Rallis India Limited's protein products division, manufacturing Gelatin is another important industrial unit located in the outskirts of the town to its west. Besides film production, the other important manufactured commodity is Eucalyptus oil.

These activities are not as prominent as tourism which is one of the largest sources of revenue for the town.