District Profile

Chickmagalur is one of the district headquarters situated about 256 km from Bangalore, Karnataka state (South India). The taluk shares its boundaries with Tarikere taluk towards north, on the east by Kadur and Birur taluks, on the south by Belur and Mudigere taluks and on the west by Shringeri and Narasimharaja Pura taluks. The highest peak point of Karnataka, Mullaianagiri, which rises to 1926 mts above mean sea level is existing in this district. The major portion of the district consists of mountain regions of the Western Ghats. Bababudan range, which is the loftiest range of Karnataka table land, is situated in the Chickmagalur taluk.

The geological location of Chickmagalur city lies between the latitude of 13°25'45" north and longitude of 75°45'27" east. The mountain area is rich in forest wealth while plains contain rich agricultural fields. The Chickmagalur district consists of 7201 sq. kms of forest area, out of which 77,154 hectares lies in Chickmagalur taluk. Chickmagalur city has some small scale industries units like coffee curing works, rice mills, cement bricks, mud bricks, poultry farm. The existing type of the soil in the taluk is suitable for growing crops like coffee, cardamom, areca nut, pepper, coconut, paddy, jowar and ragi.

Chickmagalur is situated at an altitude of 592.85 m above mean sea level (MSL) and the city covers an area of 158 sq. km and has a total population of 2,95,565. In the taluk, majority of irrigation depends upon rainfall and water stored in tanks. About 65 to
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70% of its geographical area is used for agricultural purposes. The common fertilizers used in the study area are NPK complex, urea, copper sulphate, ammonium sulphate and di-ammonium sulphate. Insecticides and pesticides such as carbaryl, carbofuran, dialdrin, aldrin and BHC are extensively used to control insects and pests.

Meteorology

Climate

The climate of Chickmagalur taluk is semi arid and enjoys three well defined seasons.

a) Summer season: February to May and the hottest months being April and May.

b) Rainy season: June to October

c) Winter season: November to January

Temperature

Temperature varies from 13 to 32°C. The maximum temperature recorded so far is during the month of April (32°C). The lowest minimum temperature was recorded in the city is 13 during the month of December.

Humidity

The percentage of humidity varies from 40 to 86%. The relative humidity in the early morning throughout the year generally exceeds 76%. Similarly in the afternoon relative humidity generally exceeds 60%. While in the monsoon months, the relative humidity shows high and comparatively less in the other months. The driest part of the year recorded from January to March.
Rainfall

The average rainfall of the area is 1990 mm. The region receives rainfall mainly from south west monsoon and partly from Northeast monsoon with an annual rainfall season spreading over a period of 4 to 5 months. The south west monsoon occurs from June to September amounting to about 68% and Northeast monsoon during October to November constituting about 32% of the rainfall.

Geology of the district

Stratigraphically the study area comes under Bababudan belt of Dharwar Super group. Bababudan belt is well known for its iron ore (Horse shoe shape) with tapering tail to the South West is interpreted as a synclinorium plunging gently towards Northwest and west in the Central part of the belt and Southwest in the southern part containing hills rimming with densely wooded Jagar valley and thick succession of metabolic lava interbedded with current-bedded and ripple marked quartzite and phyllite leading to the main volcanic pile.

The ultramaphic shows, acid to intermediate lava and maphic sediments form part of the maphic plate form. It has basal quartz-pebble conglomerates and granite in the south. It is bounded on other sites by steep faults in contact with the peninsular gneiss basalments. The basement of peninsular gneiss represented by granite varieties (Trondhemitic to Granodiorite).

The lower formation varying in thickness from a few meters up to 2000 m MSL are dominated by amygdular and massive (locally pillowed) metal-basalts with local cross-bedded and ripple marked quartz arenites and minor phyllites. The basal quartz, pebble conglomerates uncomfortably over lies the peninsular gneiss basement. The
overlying formations have basal arenites and quartzites, banded iron formation (BIF) with associated phyllites and minor maphic, ultramaphic rocks. The laterally equivalent jagar formation consists of metabasalts and associated phyllites. The metabasalts are normal with associated dacitic volcanics, komatites and Magnesium rich basalts are rather rare. The formation thickens from west to east due to greater subsidence in east. Sedimentary facies suggest shallow intertidal two marine environments.

However, this belt predominantly consists of variably deformed, dark green metabasites. Mineral assemblages are dominated by quartz, epidot, green metabasites, variably altered plagioclase and carbonates. Carbonate and muscovite are locally abundant, as post tectonic poikiloblasts, amygdules with secondary quartz and chlorides are indicative of shallow intrusive and extrusive volcanism, concerning to the soil characteristics of the study area having clayey, clayey mixed, rocky land types of soil.

Vegetation and forest

Natural evergreen, semi-evergreen and deciduous forest with plantation species like teak, silver oak, watch wood, sandal wood and number of reserve forests are located in parts of Chickmagalur.

Study area

Ayyanakere is an ancient lake constructed by Rukumanda Raya, Chief of Sakrayapatna and renovated later in 1156 AD during the Hoysala times. The large lake situated at the eastern base of Baba Budan range, 18 Km north east of Chikamagalur town, provides irrigation facilities to more than 1,500 hectares land. On a hillock adjacent
to the lake, there is the Prassana Balleshwara shrine, Hoysal sculptures of Ganapathi, Surya, Krishna and Ambica.

Ayyanakere lake area possess evergreen to deciduous forest types. It is one of the most coffee and tea growing regions in India. The climate of the region is cool and dominated by many hillocks. The waterbody is completely surrounded by the small to larger hillocks with perennial streams.

The geographical location of this lake is 13° 14' 42" north latitude and 75° 04' 46" eastern longitude. The water from this lake along with some other small tributaries forms one of the streams of Vedavathi river, which ultimately joins Bay of Bengal. Many hillocks surrounded the lake which forms the natural reservoir. It is a shallow lake and has an area of 15 sq km facilitating to about 1,500 hectare land for irrigation. The embankment forms the natural earth and stones with 1,700 feet long and 300 feet high at the rear slopes. The maximum depth of the lake is 30 mt and an average depth is 20 mt.

**Station selected for the investigation**

Four stations were selected for the present investigation to get the overall ecological status of the lake. The stations selected are as follows.

**Station-I**

Is just adjacent to Sakrayapatna. The villagers, however, do not utilize the lake water for drinking purpose, but for cultivation of crops like paddy, arecanut, banana etc.

The station disturbed mostly during day time either by cattle or people washing clothes.
Macrophytic vegetation

*Pongamia glabra, Canthium parviflora, Dodonia viscose, Ipomea, Ficus bengalensis* are the macrophytes grow on this station.

**Station-II**

This station is situated about a kilometer away from the Station-I and is located along the bund. One can have spectacular view of the lake from this part. Just few yards away, is a temple dedicated to Lord Prassana Balleshwara, which is situated top of the hillock from where one can enjoy a panoramic view of the lake. The reason for selecting this station is that the water colour is quite different here as compared to the other stations. This could be attributed to fact that due to wind action the planktonic forms get carried away towards the bund side and impart colour to the water. The macrophytic vegetation comprises *Acacia aphylla, Pongamia pinnata* and *Samania samana*.

**Station-III**

This station is located about 1 km away from station-II is covered by hillocks. The macrophytic vegetation consists of *Pongamia pinnata* and *Acacia aphylla*.

**Station-IV**

This station is located at a village called Kenchinakere. Several crops like cotton, maize, banana, arecanut are cultivated on the bank of the lake. During rainy season the runoff from the agricultural field tend to bring some amount of fertilizers, chemicals and organic matter, which are seen around the lake. Fish farming is practiced in an area adjacent to the bund. The macrophytic vegetation consists of *Acacia aphylla, Euphorbia thiracalli, Dodonia viscosa, Pongamia pinnata* and *Ficus bengalensis*. 
Figure 1. Location map of the study area.
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Figure 2. Study area.
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Station-I
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Station-II
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Photograph showing crop cultivation near the lake

A panoramic view of the lake
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A view of the lake from a top of the hillock

An overview of the lake