



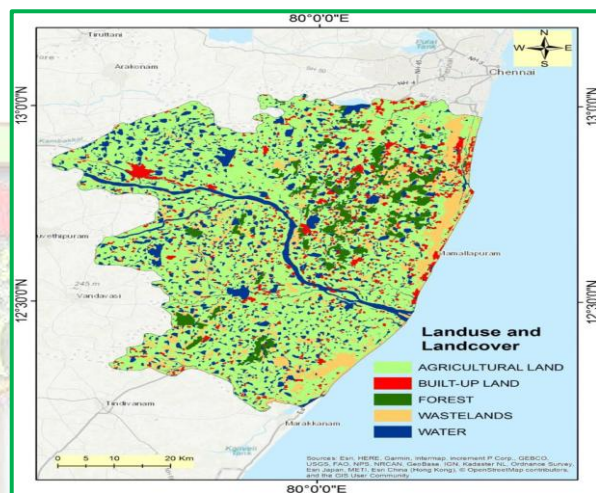
## Assessment of Ground Water Potential in Kanchipuram District, Tamil Nadu (\*Gomathi. D)

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### Abstract

Agriculture relies heavily on irrigation especially with groundwater which is a significant source in many places. Excessive use of groundwater can lead to a decrease in groundwater levels and cause scarcity of water. Irrigation requires good-quality water which is governed by dissolved ions. The groundwater quality is greatly influenced by global population growth, climate change and human activities including mining, agriculture, industrial effluents, seawater intrusion, household usage, etc.



**Keywords:** Groundwater quality, firkas, Kanchipuram district, groundwater depletion

### Introduction

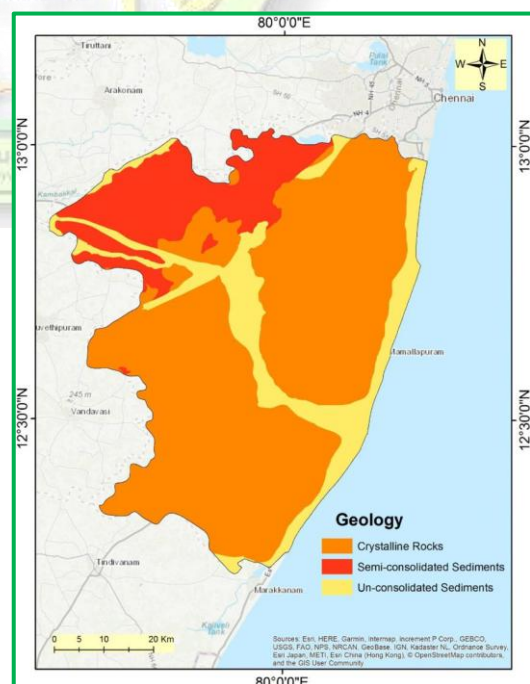
Kanchipuram Municipality is comprised with a total population of 2,32,816. The total area is 36.14 Square kilometers. The city is on the northeast side of Tamilnadu. The city is located in the banks of the river Vegavathi.

### Geology

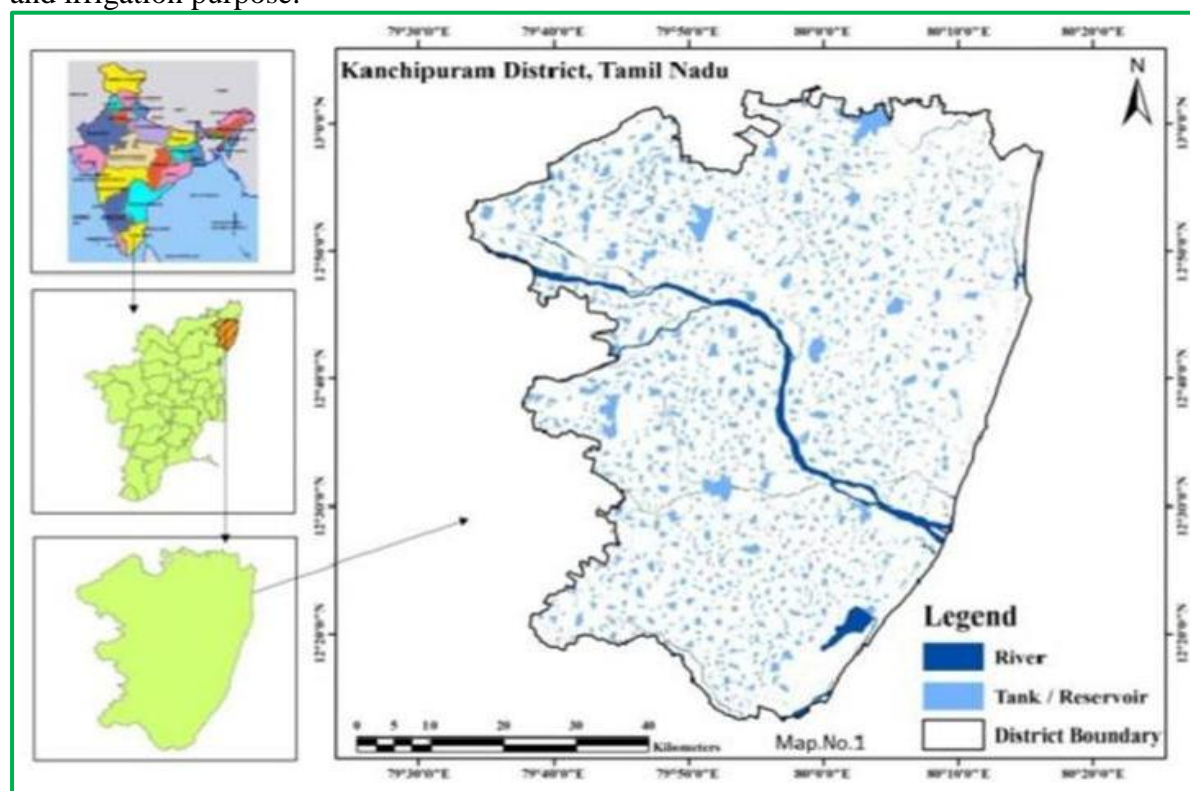
The Kancheepuram district is principally made up of hardrocks and sedimentary formations. These are overlain by laterites and alluvium. The study area is underlain by formations of Quarternary, tertiary and Mesozoic ages followed by the basement complex of crystalline rocks of Archaean age.

### Sources of Water

River Palar is a major river course, which drains this district originates from Western Ghats in Karnataka State. Cheyyar and Vegavathi are the small tributaries of Palar river. The seasonal rivers like Araniyar & Kosasthalaiyar and Thondiar drain in the northern and southern part of the district.



The Palar, Araniyar & Kosasthalaiyar and Thondi ar river basins which are used for drinking and irrigation purpose.



### Firka Categorization

The re-estimation of groundwater resources in the State as on March 2011 and as on March 2013, the assessing unit is Firka (Unit of Taluk) and categorized as OverExploited, Critical, Semi-Critical, Safe, and Saline Firkas.

| S.No  | Categorisation | No of Firkas |      |
|-------|----------------|--------------|------|
|       |                | 2011         | 2013 |
| 1     | Over Exploited | 6            | 5    |
| 2     | Critical       | 5            | 8    |
| 3     | Semi Critical  | 15           | 15   |
| 4     | Safe           | 35           | 39   |
| 5     | Saline         | Nil          | Nil  |
| TOTAL |                | 61           | 67   |

In the Kancheepuram District based on the Estimation of Ground Water Resources of Tamil Nadu state as on March 2013, Out of 1139 Firkas, 358 Firkas are categorized as “Over Exploited Firkas”, 105 Firkas are categorized as “Critical Firkas”, 212 Firkas are categorized as “Semi Critical Firkas”, 429 Firkas are categorized as “Safe Firkas” and 35 Firkas are categorized as “Saline Firkas”.

When compared to last assessment as on March 2011, the “Over exploited Firkas” comes down from 374 to 358 Firkas, the “Critical Firkas” increased from 48 to 105 Firkas, the “Semi Critical Firkas” comes down marginally from 235 to 212 Firkas, the “Safe Firkas” comes down marginally from 437 to 429 Firkas and the “Saline Firkas” remains same as 35 Firkas.

As on 2020, firka categorization is given here:

| Categorisation Based On Extraction (As On 2020) | No. Of Firkas | Firkas  |
|---|---------------|---|
| Over Exploited (>100%)                          | 3             | Arumpuliyur, Thirupulivanam, Walajabad.   |
| Critical (90%-100%)                             | 1             | Govindhavadi  |
| Semi Critical (70%-90%)                         | 6             | Kaliyampoondi, Kollapakkam, Kunnavakkam, Sirukaveripakkam, Thiruppukuzhi, Uthiramerur   |
| Safe (<70%)                                     | 15            | Chittiabakkam, Kancheepuram, Kunrathur, Maduramangalam, Maharal, Mangadu, Padappal, Parandur, Salavakkam, Serappanacheri, Sriperumpudur, Sunkuvarchatram, Thandalam, Thenneri, Vallam |
| Others (Poor & Saline)                          | 0             |   |
| <b>Total</b>                                    | <b>25</b>     |   |

## Groundwater

Ground Water is a water that exists underground in saturated zones beneath the land surface. Groundwater does not form underground rivers. It occupies all or part of the void spaces in soils or geologic strata.

## Causes of GW (Groundwater) Depletion

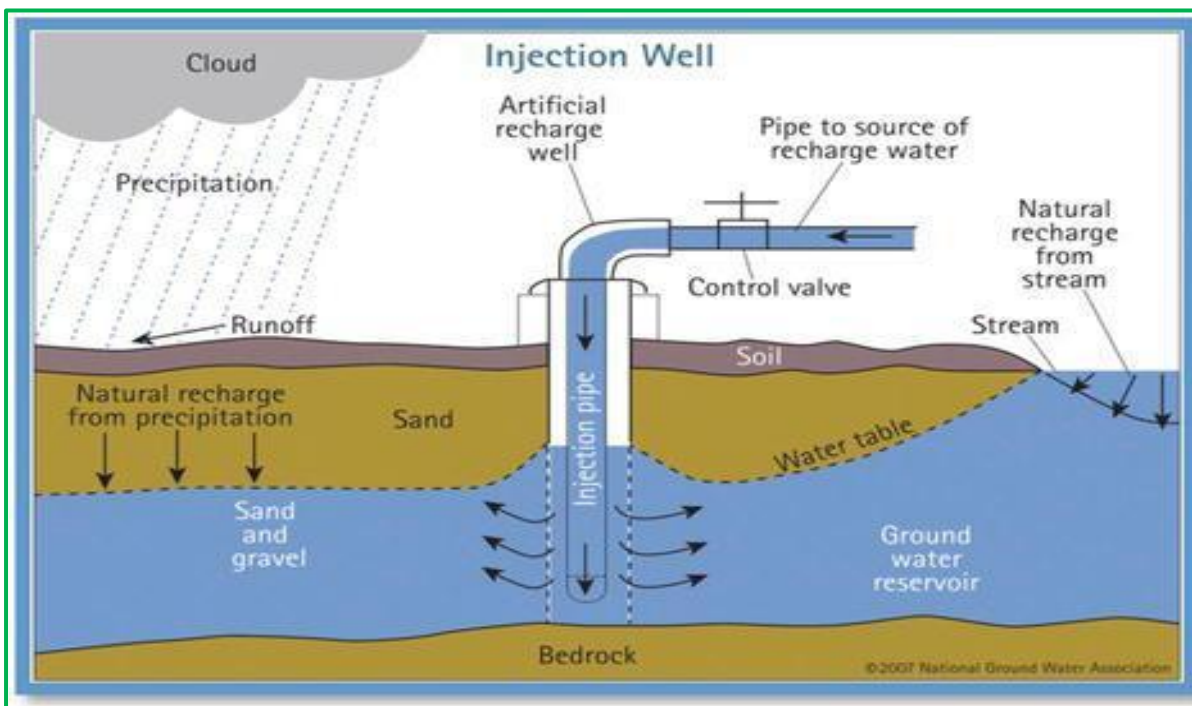
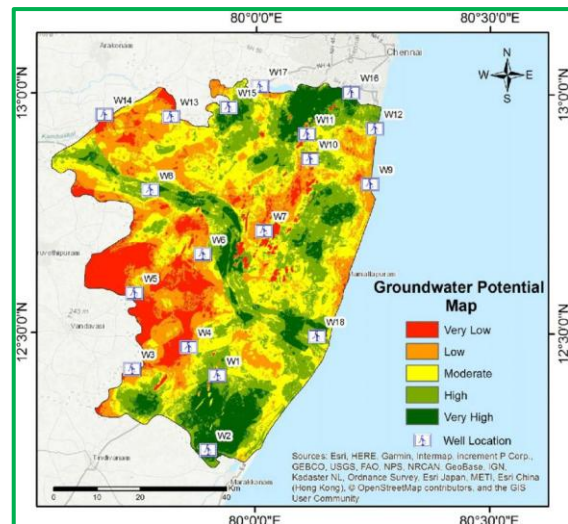
Nowadays, rainfall may more within the short period of duration. Due to this aspect, recharge is less and runoff will be more. The availability of groundwater is less due to over extraction than recharge. The percentage of OE/Critical Firkas increased due to this reason. Problems caused due to intensive groundwater extraction, intensive surface water irrigation, intensive mining activities, growing urban complexes and industrial establishments will lead to drastic depletion in groundwater resources.

## Solutions for GW Depletion

Increasing the artificial recharge structures in the proper areas may avoid the depletion of groundwater. Artificial Recharge structures such as Check Dams, Recharge Wells, Recharge shafts, percolation ponds etc., was constructed in the “Over Exploited Firkas” by various Departments.

## GW Recharge Methods

Groundwater can be artificially recharged by redirecting water across the land surface through canals, infiltration basins, or ponds, adding irrigation furrows or sprinkler systems, or simply injecting water directly into the subsurface through injection wells.



## Conclusion

The ground water quality is equally important as that of quantity. Ground water continues to be exploited at ever increasing rates, especially in the rapidly expanding urban areas of country. Water has become a scarce resource. All the water resources of earth can be classified as surface water and ground water. The total volume of ground water is only 0.65% of the total water availability of the globe. Ground water is the main source for the drinking, domestic and agriculture.

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