Current Scenario of Dynamic Water Resources in Tamil Nadu

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Abstract

Water is a gift of nature so it is very important to use it sparingly. Water is used for all purposes. Drinking water is important for human health so this is a detailed article about drinking water. Drinking water supply is an essential requirement of every household and thus specifies how it is available to all. India has the Jal Jeevan movement, which aims to provide tap drinking water to all states of India by 2024. The purpose of this study is to know the number of houses with drinking water facility in Tamil Nadu. To find out the percentage increase in pipeline provision in Tamil Nadu from 2019 to 2022. This article tells about the change in state wise dynamic ground water resource and how the Jal Jeevan scheme works in 38 districts of Tamil Nadu. Jal Jeevan Mission explains is providing the tap water supply for every household. As the JJM project is executed in all the districts of Tamil Nadu, but still there is a lacks in drinking tap water supply. It is revealed from the conclusion of the study that it is need of the hour to provide drinking water connection by finding exact demand from root level or village level which is essential to protect the health status of the concerned districts population. The scope for further research is to find the nexus between the water supply and health status from field survey.

***Keywords**: Ground Water, Tap Water, Jal Jeevan, Health Status.*

Introduction

Worldwide, water is essential for both endangered species. Water is essential for the people and the demand for drinking water has increased globally. Water is a basic thing for people, so clean water should be available to all people. All countries practice austerity in water use. Access to improved water and sanitation are fundamental human rights and basic to the health of every person, nonetheless many people around the world do not have access to these basic needs. People who are deprived of access to improved water and sanitation services face diminished opportunities to realize their potential. Unimproved drinking water and sanitation is the world's second biggest killer of children. Approximately 10,000 people die every day from water- and sanitation-related diseases, and thousands more suffer from a range of debilitating illnesses. India is very careful in its use of water. It is providing all kinds of assistance

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in drinking water supply. The government is making efforts to provide water supply to areas that do not have adequate water supply.

The first National Water Policy was in September 1987. The National Water Policy stipulates water allocation priorities broadly as follows: Drinking Water, Irrigation, Hydro-power, Navigation and Industrial and other uses. A new policy was adopted in 2002 with a few more provisions. Drinking water remains as a top priority in the new policy 2002. In January 2012, Ministry of Water Resources, Government of India, released the present National Water Policy, with continuity of drinking water facility as prime water resources.

The government has taken steps to provide drinking water to households in Tamil Nadu. Safe water is something that all people need so it is the duty of the government to provide safe water. There is still water scarcity in some districts of Tamil Nadu especially in rural areas. Access to improved water sources and improved sanitation significantly reduce water-borne diseases. There is still water scarcity in the villages of Tamil Nadu. The government is taking steps to provide drinking water to all households. There is a slight delay in getting water even though there is enough water in the house.

In 1972, the Central Government started assisting the States in rural water supply by introducing the Accelerated Rural Water Supply Scheme. In 2009, it was renamed as National Rural Drinking Water Program (NRDWP), a centrally funded program with funds shared by the central government and states. One of the NRDWP's goals is that "all households have access to and use of safe and adequate potable water within the premises." It is proposed to achieve the target by 2030 in line with the United Nations Sustainable Development Goals. However, it is now planned to achieve the target by 2024 through the Jal Jeevan Mission (JJM). It was in this context that the Central Government came up with Jal Jeevan Mission (JJM). The mission was launched in India on August 15, 2019. The project aims to provide 55 litters of water per person per day through functional household taps (FHTC) to every rural household in India by 2024. The scheme practically ensures the functioning of water systems and water supply systems and ensures water quality and testing and sustainable agriculture.

It works in augmentation of drinking water supply, drinking water distribution system, treatment of gray water and its reuse. Under the motto "No One Left Out", JJM seeks to provide a functional household pipeline to every rural household. Under the Centre's flagship JJM drive, three states -- Himachal Pradesh, Manipur and Meghalaya -- have used all their allocated funds to build water supply facilities in communities (JJM). 12 states have fully implemented the scheme. Three States and three Union Territories have achieved the 100% level. Himachal Pradesh, Bihar and Sikkim account for more than 90%. Jammu and Kashmir, Manipur, Arunachal Pradesh, Uttarakhand, Mizoram and Maharashtra scored 60-70 percent. It was developed under the **Jal Shakti Ministry. JJM focuses on water demand and water supply management at the village level. It explores the constraints of resource sustainability such as groundwater, domestic sewage and storm water harvesting and reuses management.** As on 10 June 2022, about 9.65 core households (50.38%) across the country are connected to tap water through the JJM scheme. At the state level, 100% piped connection to all households in Telangana, Goa and Haryana. Homes within the Union Territory of Andaman, Pondicherry and Dadra & Nagar Haveli, Nicobar Islands and Daman & Diu have 100% piped water connections. Provision of drinking water facility to households in all villages and provision of clean drinking water to meet basic needs. In Tamil Nadu Water Supply and Drainage Board (TWAD Board) has already been set up by Tamil Nadu Government. However, this JJM project is a bit different. Drinking water supply in Tamil Nadu has been slightly improved through JJM.

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Statement of the Problem

Within the United international locations' 2030 Sustainable development desires is goal #6, "make sure availability and control of water and sanitation for all." it's miles a shared attempt to keep lives now and pressure development transferring ahead. Collectively, governments, agencies, and communities are working to deliver sustainable, secure ingesting water to each person on the globe. Water scarcity takes place while water deliver is inadequate to meet water call for (FAO, 2012b). Persisted increase in water use for food manufacturing over the past a long time has exacerbated water shortage conditions in many regions around the world (e.g. North-eastern China, India, Pakistan, the center East and North Africa), wherein to be had floor water is constrained due to decrease precipitation and better evaporation quotes (Wada, 2016)

Basic ingesting water services are defined as consuming water from a progressed supply, provided series time isn't always more than half-hour for a round journey. Stepped forward water sources consist of piped water, boreholes or tubewells, covered dug wells, covered springs, and packaged or delivered water. While get admission to secure consuming water is described as the proportion of the population gaining access to and using stepped forward drinking water resources. Whilst easy water is assured, communities are healthier and greater resilient. Without smooth water, illnesses like diarrhea, intestinal parasites, and continual inflammation of the intestines are commonplace and can prevent children from absorbing key nutrients and make them greater at risk of other fitness troubles.

Clean drinking water is a basic human need. People are still drinking contaminated water and if this situation continues, water borne diseases will also increase. Drinking water should be very clean because children and adults are prone to diseases due to lack of hygienic water. Cholera, Diarrhoea, dysentery, hepatitis A, typhoid and polio are some of the diseases that can be spread due to contaminated water and poor sanitation. When water and sanitation services are unavailable, limited or improperly managed, people are exposed to health risks. Consequently , here is an strive made by means of the authors to study the availability , accessibility and utilisation water in Tamil Nadu from the secondary and primary assets of information. In addition with this article highlights how the Jal Jeevan scheme meets the water needs of Tamil Nadu.

Review of Literature

Roopesh Kaushik *et al*. (2019) examined the community Participation in Alwar, Rajasthan about the tripartite watershed management and found that agricultural production has increased despite receiving erratic rainfall, and the soil has developed the capability of retaining water resource. Parameshwaran Iyer (2019) suggested an integrated water management with the delivery of drinking water and sanitation as well as a trust towards the goal to provide safe and adequate piped water supply for all household. Sanchari Pal (2017) said that traditional systems are viable and cost-effective alternatives to rejuvenate Indian's depleted water resources and such as percolation tanks, injection wells, subsurface barriers could be the answer to Indian's abiding water problems. Durba Biswas and Priyanka Jamwal (2017) spelled about the waste water treatment in the Ramanagara and Doddaballapura, two small towns in periphery of Bangalore, the

untreated waste water is released local water bodies due to insufficient fund. Babu and Rajasekaran (2016) suggested that water resource for domestic usage is can reduced dramatically aimed to help the people to conserve water; it is done with the help of an embedded system that is reconfigurable

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depending on the number of persons in the family. Sarker (2016) analyzes about the contamination of surface and ground water,

And found that 70 per cent of the surface water and ground water contaminated.

Sankalp Chhabra (2010) studied about the drinking water supply in rural India and recommended that the evaluation of water supply schemes which will give the rate of progress of sanctions, release of funds and construction etc., but also the performance and success of these schemes.

Objective of the Study

1. To overview about the state wise dynamic ground water resource in India,
2. To identify the number of households with drinking water facility in Tamil Nadu.
3. To trace the trend in supply of tap connection in Tamil Nadu from 2019 to 2022.

Methodology

Tamil Nadu has been selected to study the implementation of this JJM project. Tamil Nadu is the sixth-largest state in terms of population and the tenth-largest state in India by area. Tamil Nadu has been facing drinking water problem for a long time. Demand for water is high in Tamil Nadu. Although rivers like Cauvery and Vaigai flow in Tamil Nadu, they are used for agriculture and other purposes. Necessary tap water connection is provided in Tamil Nadu Municipalities and Corporations. Even if water is available, more water is needed for needs like drinking water. This article highlights how many districts have drinking water facilities under this scheme and how water facilities are available in the districts under this scheme. In many villages, if there is not enough water, people have to walk a short distance to fetch water. Many places have wells and lakes, but tap water is sufficient for clean water. A person needs 135 litters of water per day. Of this, 15 litters of water is used for drinking and cooking, and the remaining water for bathing and breakfast. In the 1950s, the total population of Tamil Nadu was two and a half crore. Today there are about eight and a half million people. So the question is how many litters of water will be required for everything. Therefore, drinking water is essential for every household. The study was taken from various journals, articles, journals and Jal Jeevan reports.

At the time of the launch of Jal Jeevan Mission on August 15, 2019, only 21.65 lakh (17.06%) households had access to piped water. 18.70 lakh (14.74 per cent) households in the state have received piped water connections in the last 22 months. As a result, 86.53 lakh households in Tamil Nadu still do not have access to clean drinking water. At least drinking water is sufficient, but in some places that quantity does not even meet the demand. The scheme is still being implemented on a limited basis in some places. This article explains that through this project, which was launched in 2019, piped water connections have been increased to all districts in Tamil Nadu by 2022. Therefore, through this project, drinking water tap should be constructed for all families and the drinking water needs of all people

Result and Discussion

The explication about the objectives taken were in two parts , the first part attempted to tells about the dynamic fresh ground water resources and the second part explicate about the Jal Jeevan output in Tamil Nadu which attempts to solve the problem of drinking water supply.

The status of fresh ground water resource in India is given by the department of Dynamic fresh water resource. The following table is stated by researchers in their article about the availability of surface and

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ground water resources in India in the year 2007. In the following table the status of Tamil Nadu among the other states are clearly understood for the year 2007. Over the year the water resource is in Tamil Nadu is in zig zag nature due to rainfall, growing population, and the way of utilisation/

Table: 1 State-wise Dynamic Fresh Ground Water Resource of India (km3/Year)

S.No	States	Renewable Ground water Resource from normal natural recharge	Replenishment due to recharge augmentation from canal Irrigation should be met.	Total Renewable Ground Water Resources	% Contribution of augmentation to total Ground Water Resources
1.	Andhra Pradesh	20.03	15.26	35.29	43
2.	Arunachal Pradesh	1.44	0.00	1.44	0
3.	Assam	24.23	0.49	24.72	2
4.	Bihar	28.31	5. 21	33.52	16
5.	Goa	0.18	0.03	0.21	14
6.	Gujarat	16.38	4.00	20.38	20
7.	Haryana	4.73	3.80	8.53	45
8.	Himachal Pradesh	0.29	0.08	0.37	22
9.	Jammu & Kashmir	2.43	2.00	4.43	45
10.	Karnataka	14.18	2.01	16.19	12
11.	Kerala	6.63	1.27	7.90	16
12.	Madhya Pradesh	45.29	5.60	50.89	11
13.	Maharashtra	33.40	4.47	37.87	12
14.	Manipur	3.15	0.00	3.15	0
15.	Megahlaya	0.54	0.00	0.54	0
16.	Mizoram	Not assessed			
17.	Nagaland	0.72	0.00	0.72	0
18.	Orissa	16.49	3.52	20.01	18
19.	Punjab	9.47	9.19	16.66	49
20.	Rajasthan	10.98	1.72	12.70	14
21.	Sikkim	Not assessed			
22.	Tamil Nadu	18.91	7.48	26.39	28
23.	Tripura	0.57	0.10	0.67	15
24.	Uttar Pradesh	63.43	20.39	83.82	24
25.	West Bengal	20.30	2.79	23.09	12
26.	Union Territories	0.35	0.05	0.40	13
	Total	**342.43**	**89.46**	**431.89**	**21**

Source: Kumar, Rakesh & Sharma, K.D. & Jha, Ramakar. (2007). Availability and management of surface and ground water resources in India.

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The total renewable ground water resources in 2007 were 431.89, in that the states like Uttar Pradesh registered about 83.82 followed by Madhya Pradesh 50.89, Maharashtra 37.87, Andhra Pradesh 35.29, Tamil Nadu 26.39 and the lowest states are Goa 0.21, Himachal Pradesh 0.37, Union Territory 0.40, Meghalaya 0.54 respectively. Water augmentation means about that to increase availability and supply of water by replacement of the current reduced amount of water. In India the percentage contribution of augmentation of ground water resource, specifically Punjab state has found highest in the country it is about 49 per cent followed by Haryana and Jammu and Kashmir same proportion it is about 45 per cent, Andhra Pradesh 43 per cent Tamil Nadu 28 per cent Uttar Pradesh 28 per cent respectively. The lowest states are Assam 2 per cent, Madhya Pradesh 11 per cent, and West Bengal 12 per cent Maharashtra 12 per cent respectively. It is evident that renewable ground water resource from normal natural recharge is concerned, the state Uttar Pradesh has registered highest it was about 63.43 followed by Madhya Pradesh 45.29, Maharashtra 33.40 Bihar 28.31, Assam 24.23 respectively. In the case of lowest one is concerned Goa registered about 0.18 followed by Himachal Pradesh 0.29, Union Territory 0.35 and Meghalaya 0.54 respectively. In associated with Replenishment due to recharge augmentation from canal Irrigation the Uttar Pradesh is found to be the highest registered it was about 20.39 followed by Andhra Pradesh 15.26, Punjab 9.19, Tamil Nadu 7.48, Madhya Pradesh 5.60 respectively. The lower states are Goa 0.03, Union Territory 0.05, Himachal Pradesh 0.08, and Assam 0.49 in this respect.

Meanwhile a report published by Central Ground Water Board about the dynamic ground water resources in 2020 states that, out of the total 6965 assessment units (Blocks/ Mandals/ Talukas/Firkas) in the country, 1114 units in various States (16 %) have been categorized as 'Over-exploited' indicating ground water extraction exceeding the annually replenishable ground water recharge. In, 270 (4 %) assessment units the stage of groundwater extraction is between 90-100% and have been categorized as 'Çritical'. There are 1057 (15 %) "Semi-critical'' units, where the stage of ground water extraction is between 70 % and 90 % and 4427 (64 %) 'Safe 'units mean that, where the stage of Ground water extraction is less than 70 %. Apart from these, there are 97 (1%) assessment units, which have been categorised as 'Saline' as major part of the ground water in phreatic aquifers in these units is brackish or saline.

In addition, according to the report, Dynamic Ground Water Resources Assessment of India – 2020 (page no 133) 1166 Fircas were assessed in Tamil Nadu , among that 409 was safe it means that 35.08 percentage of assessed units were safe in dynamic ground water resources in the assessment 2020. There were 225 units and 63 units were semi-critical and critical respectively. In other words 19.30 percentages of units were semi critical while 5.40 percentages of units were critical in ground water resources. The over exploited unit were 435 or 37.31 percentages of units were over exploited in ground water resources. 34 ground water assessed units were Saline in Tamil Nadu (2.92 percentages).

From the same report (page number 160) district wise total number of assessed units details were stated. Researchers took the information for Theni district which is the research project study area, Theni is the study area selected from Tamil Nadu where highly using Indian medicine for their health needs. In that district, totally 17 units were assessed, among that 5 were safe means that 29.41percentages of units were safe. 8 units were semi critical means that to say 47.06 percentages of units assessed and 2 units were critical or 11.76 percentages of units among the assessed units were in critical condition. Further, it stated that 2 units were exploited means to say that 11.76 percentages of units were fully exploited and none of the assessed units were saline.

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Table: 2 Households with Drinking water in Tamil Nadu (%)

S.NO	District	% of Households with Drinking Tap Connections 2019	% of Households with Drinking Tap Connections 2022	Percentage of Increased Tap Connection (2022-2019) in %
1.	Ariyalur	27.67%	57.73	30.06%
2.	Chengalpattu	12.21%	54.85	42.64%
3.	Chennai	-	-	-
4.	Coimbatore	47.58%	62.03	14.45
5.	Cuddalore	12.70%	39.47	26.77%
6.	Dharmapuri	0.70%	11.58%	10.88%
7.	Dindigul	24.40%	51.56	27.18%
8.	Erode	15.44%	57.31	41.87%
9.	Kallakurichi	0.66%	30.75	30.09%
10.	Kanchipuram	27.04%	99.06	72.02%
11.	Kanyakumari	36.49%	65.70	29.21%
12.	Karur	19.31%	50.50	31.19%
13.	Krishnagiri	1.24%	19.47	18.23%
14.	Madurai	11.10	36.36	47.46%
15.	Mayiladuthrai	-	-	-
16.	Nagapattianm	10.87	5.43	-5.44%
17.	Namakkal	15.39	62.39	47%
18.	Nilgiris	3.55	32.45	28.9%
19.	Perambalur	15.15	39.53	24.38%
20.	Pudukkottai	12.92	30.69	17.77%
21.	Ramanathapuram	10.03	19.29	9.26%
22.	Ranipet	41.94	87.50	45.56%
23.	Salem	8.23	31.88	23.65%
24.	Sivaganga	14.82	20.58	5.76%
25.	Tenkasi	19.28	51.05	31.77%
26.	Thanjavur	30.81	57.76	26.95%
27.	Theni	26.48	62.86	36.38%
28.	Thoothukudi	9.10	42.50	33.4%
29.	Tiruchirappalli	33.45	67.30	33.85%
30.	Tirunelveli	13.24	40.77	27.53%
31.	Tirupathur	36.19	54.73	18.54%
32.	Tiruppur	34.41	30.69	3.72%
33.	Tiruvallur	11.77	38.01	26.24%
34.	Tiruvannamalai	15.04	49.26	34.22%
35.	Tiruvarur	20.47	46.68	26.21%
36.	Vellore	34.74	73.84	39.1%
37.	Villupuram	1.21	31.94	30.73%
38.	Viruthunagar	8.65	22.74	14.05%

Source: Jal Jeevan Mission 2022

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Table 2 shows the extent to which drinking water connections are provided in a total of 38 districts. The implementation of this project, which will provide drinking water in all districts, should be slightly increased. This plan covers how it has improved from 2019 to 2022. From this table no two if the data are compared to other districts,, piped water connections through Jal Jeevan Mission in Kanchipuram district increased by 72.02 per cent in 2022 over 2019. Other districts are slightly better. 47.46 per cent drinking water connection in Madurai district, 45.56 per cent drinking water connection in Ranipet district, 47 per cent drinking water connection in Namakkal and 42.64 per cent drinking tap water connection in Chengalpattu have been provided to the families under the JJM scheme. JJM scheme has been implemented in half of these districts.

Similarly, 39.1 percent in Vellore, 36.38 per cent in Theni district and 34.22 percent in Tiruvannamalai district have been provided drinking water pipe connections through this scheme in the last 4 years. 33.85 per cent drinking tap water connections in Trichy, 33.4 per cent in Tuticorin, 31.77 per cent in Tenkasi district and 31.19 per cent in Karur district have been provided to households through JJM scheme. 31.19 per cent in Karur district and 30.09 per cent in Kallakurichi district. 30.06 per cent of Ariyalur district and 28.9 per cent of Nilgiri district have been provided tap water connection through JJM scheme. Only one-fourth of the population of these districts have benefited from the scheme.

Also, 29.21 percent of Kanyakumari district and 26.95 per cent of Thanjavur district have been provided drinking water pipe connection. 27.53 per cent in Tirunelveli district and 27.18 per cent in Dindigul district have been provided drinking water connection from 2019 to 2022. . Under this scheme, 26.77 per cent drinking water connection has been provided in Cuddalore district. Through this JJM project, 26.21 per cent of people in Tiruvarur district and 24.38 per cent of people in Perambalur district have been provided drinking water pipe connections in 2022 as compared to 2019. There were 23.65 per cent in Salem district and 18.54 per cent in Tirupattur district have been connected through this scheme. Through this scheme, 23.65 per cent in Salem district and 18.54 per cent in Tirupattur district have been connected in the last 4 years. . 18.23 per cent people in Krishnagiri district and 17.77 per cent people in Pudukottai district were provided drinking water pipe connections by JJM. Under this scheme, 14.05 per cent of people in Coimbatore district and 14.05 per cent of people in Virudhunagar district have got drinking water connection in 2022 less than in 2019. Compared to these, all the districts next to this are the districts which have less water pipe connections. In Ramanathapuram district, 9.26 per cent drinking water connections have been provided and in Dharmapuri district 10.88 per cent drinking water connections have been provided. However, only 3.72 per cent in Tirupur district, -5.44 per cent in Nagapattinam district and 5.76 per cent in Sivagangai are being provided by JJM. These are the districts which have got the least drinking water connection in the last four years.

The scheme is not yet fully operational in Tamil Nadu districts. For example, in Tirupur district and Nagapattinam district, very few pipes have been provided. Out of the districts given in the table, two districts namely Chennai and Mayiladuthurai have no data on JJM scheme. As Mayiladuthurai is the last district formed in Tamil Nadu, information about this district is not given in the table. Similarly, since Chennai district is an urban area, there is no data for it. In the last 4 years, drinking water tap project was implemented in the districts of Tamil Nadu. However, in 2020, restrictions such as curfews and personal distancing were introduced around the world due to the spread of the coronavirus. As the same situation continued in Tamil Nadu, the works were not completed in many places. Although JJM has fully implemented the scheme by 2024, some districts of Tamil Nadu are yet to be provided with drinking water pipes. So the demand is to increase it a little more.

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Conclusion

The need for water is one of the most important fundamentals, for to have a health society. Due to the changing climate changes, the growing population and lifestyle will be more challenging in supplying the scarce resource of Water. The situation in Tamil Nadu revealed for to check whether society is comfort with their water supply. The number of tap water supply is not yet reached cent per cent in Tamil Nadu. Jal Jeevan Mission operation needs to be accelerated in Tamil Nadu. Drinking water is a one of livelihoods that every household should have access for their healthiness. Scientifically everyone knew that water is essential for every stage of human being. Hence, it is inevitable to concentrate on goal six of SDG in India and Tamil Nadu.

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