

GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI,
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
RAJYA SABHA
UNSTARRED QUESTION NO. 87
ANSWERED ON 29.11.2021

GROUNDWATER RESERVES IN TAMIL NADU

87 SHRI M. MOHAMED ABDULLA

Will the Minister of JAL SHAKTI be pleased to state:

- (a) the status of groundwater reserves in the State of Tamil Nadu, district-wise;
- (b) the steps taken to mitigate the depletion of groundwater reserves, if not, the reasons therefor;
- (c) the impact of single use plastics on the groundwater table and the steps taken to mitigate such impact;
- (d) the status of groundwater contamination in the State of Tamil Nadu, district-wise; and
- (e) the steps taken to mitigate groundwater contamination and, if not, the reasons therefor?

ANSWER

MINISTER OF STATE FOR JAL SHAKTI

(SHRI BISHWESWAR TUDU)

(a) The Dynamic Ground Water Resources of the country are being periodically assessed jointly by Central Ground Water Board (CGWB) and State Governments. As per the 2020 assessment, in Tamilnadu, the Total Annual Ground Water Recharge is around 20 Billion Cubic Meter (BCM) and the Annual Extractable Ground Water Resource is around 18 BCM. The Annual Ground Water Extraction for all uses is around 15 BCM. The Stage of Ground Water Extraction, which is a measure of Annual Ground Water Extraction for all uses (irrigation, industrial and domestic uses) over Annual Extractable Ground Water Resource is around 83%. The district wise details are given in **Annexure – I**.

(b) Water being a State subject, initiatives on water management including mitigating the depletion of groundwater reserves in the Country is primarily States' responsibility. However, important measures taken by the Central Government for conservation, management of ground water and effective implementation of rain water harvesting in the country are available at the following [URL:http://jalshakti-dowr.gov.in/sites/default/files/Steps_to_control_water_depletion_Feb2021.pdf](http://jalshakti-dowr.gov.in/sites/default/files/Steps_to_control_water_depletion_Feb2021.pdf). Some of the important initiatives in this regard are listed in subsequent paras.

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Government of India launched Jal Shakti Abhiyan (JSA) in 2019, a time bound campaign with a mission mode approach intended to improve water availability including ground water conditions in the water stressed blocks of 256 districts in India including Tamil Nadu. In this regard, teams of officers from Central Government along-with technical officers from Ministry of Jal Shakti were deputed to visit water stressed districts and to work in close collaboration with district level officials to undertake suitable interventions.

In addition, Ministry of Jal Shakti has taken up the “Jal Shakti Abhiyan: Catch the Rain” (JSA:CTR) with the theme “Catch the Rain - Where it Falls When it Falls” to cover all the blocks of all districts (rural as well as urban areas) across the country during 22nd March 2021 to 30th November 2021. The campaign was launched by the Hon’ble Prime Minister on 22 March 2021.

Ministry of Jal Shakti, Department of Water Resources, RD & GR (DoWR, RD & GR) is implementing Atal Bhujal Yojana (Atal Jal), a Rs.6,000.00 crore Central Sector Scheme, for sustainable management of ground water resources with community participation. Atal Jal is being implemented in 81 water stressed districts and 8774 Gram Panchayats of seven States viz. Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.

CGWB in consultation with States/UTs has prepared ‘Master Plan for Artificial Recharge to Groundwater - 2020’, which is an improvement of the earlier Master Plan – 2013. The Master Plan – 2020 is basically a macro level plan indicating various structures for the different terrain conditions of the country including estimated cost. The Master Plan - 2020 envisages construction of about 1.42 crore Rain water harvesting and artificial recharge structures in the Country including Tamil Nadu to harness 185 Billion Cubic Metre (BCM) of monsoon rainfall with an estimated cost of about Rs. 1.33 Lakh Crores.

National Aquifer Mapping and Management program (NAQUIM) is being implemented by CGWB as part of Ground Water Management and Regulation (GWM & R) Scheme, a Central Sector scheme. NAQUIM envisages mapping of aquifers (water bearing formations), their characterization and development of Aquifer Management Plans to facilitate sustainable management of Ground Water Resources in the country including Tamil Nadu. NAQUIM outputs are shared with States/UTs for suitable interventions.

Central government generally supports artificial groundwater recharge/water harvesting works in the country through Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and Prime Minister Krishi Sinchayee Yojana - Watershed Development component (PMKSY-WDC), ‘Surface Minor Irrigation (SMI) and Repair, Renovation and Restoration (RRR) of Water Bodies schemes’ a component of PMKSY (launched in 2015-16).

In addition, a number of States have done notable work in the field of water conservation/harvesting. Of these, mention can be made of ‘Mukhyamantri Jal Swavlamban Abhiyan’ in Rajasthan, ‘Jalyukt Shibir’ in Maharashtra, ‘Sujalam Sufalam Abhiyan’ in Gujarat, ‘Mission Kakatiya’ in Telangana, Neeru Chettu’ in Andhra Pradesh, Jal Jeevan Hariyali in Bihar, ‘Jal Hi Jeevan’ in Haryana, Kudimaramath scheme in Tamil Nadu among others.

(c) CGWB has not conducted any study on ‘the impact of single use plastics in the groundwater table’. However CGWB generates ground water quality data of the country on a regional scale as part of its ground water quality monitoring program and various scientific studies. These studies indicate the occurrence of contaminants such as Fluoride, Arsenic, Nitrate, Iron and Heavy Metals beyond permissible limits in various States / UTs. The ground water contamination is mostly geogenic in nature and does not show significant change over the years. However, nitrate contamination is mostly anthropogenic and its spread has been noticed in some areas, particularly areas adjoining habitations. The efforts made by Governments for improving the groundwater reserves in the country have been given in para (b) above.

(d) CGWB generates ground water quality data of the country including Tamil Nadu on a regional scale as part of its ground water quality monitoring program and various scientific studies. These studies indicate the occurrence of contaminants such as Flouride, Arsenic, Nitrate, Iron and Heavy Metals beyond permissible limits (as per BIS) for human consumption in isolated pockets in parts of Tamil Nadu. District-wise details of contamination of ground water in Tamil Nadu are given at **Annexure - II**.

(e) Water being a State subject, initiatives on water management, including its quality is primarily States’s responsibility; however, various steps have been taken by the Central Government for controlling ground water contamination in the country.

Central Pollution Control Board (CPCB) in association with State Pollution Control Boards/Pollution Control Committees (SPCBs/PCCs) is implementing the provisions of the Water (Prevention & Control) Act, 1974 and the Environment (Protection) Act, 1986 to prevent and control pollution in water. CPCB has made a comprehensive programme on water pollution for controlling point sources by developing industry specific standards and general standards for discharge of effluents notified under the Environment (Protection) Act, 1986 for enforcement by SPCBs/PCCs. As per the directives of CPCB, Online Continuous Effluent Monitoring Systems (OCEMS) are installed by the industrial units in the country for getting real time information on the effluent quality and non-complying units are identified for follow-up inspections and actions.

Under the National Aquifer Mapping Programme (NAQUIM), special attention is being given to the aspect of ground water quality including contamination by toxic substances such as arsenic in ground water.

CGWB has constructed several exploratory and observation wells in the country tapping the arsenic safe deeper aquifer zones delineated through exploration aided detailed aquifer mapping under NAQUIM. Successful wells have been handed over to the State Governments for their utilization. Further, CGWB is providing technical assistance to the States by sharing the cement sealing technology for tapping contamination free aquifers in Gangetic flood plains.

The groundwater pollution owe its origin to contamination of surface water sources also which upon percolation pollute the groundwater aquifer system and therefore, various efforts have been made in the country to address this by installing Sewage Treatment Plants, Effluent Treatment Plants and better system of sewage networks etc. However, the adverse effects of the groundwater pollution can be addressed to a large extent if safe water is made available to public. With this aim, central Government in partnership with States, is implementing Jal Jeevan Mission (JJM) since August, 2019 to provide potable tap water supply of prescribed quality to every rural household in the country by 2024.

The Department of Water Resources, River Development and Ganga Rejuvenation has issued guidelines for control and regulation of groundwater extraction with pan-India applicability notified on 24 September 2020. The guidelines include suitable provisions on measures to be adopted to ensure groundwater free from pollution.

Annexure referred to in reply to part (a) of Unstarred Question No. 87 answered in Rajya Sabha on 29.11.2021 regarding “Groundwater Reserves in Tamil Nadu”.

District-wise Dynamic Ground Water Resources of Tamil Nadu (As per 2020 assessment)

S. No.	Name of District	Total Annual Ground Water Recharge	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction			Stage of Ground Water Extraction (%)
				Irrigation	Industrial& Domestic	Total	
1	Ariyalur	41549.14	37677.56	14318.00	972.91	15290.90	40.58
2	Chengalpattu	53257.09	48029.72	32704.52	1684.52	34389.02	71.60
3	Chennai	5236.67	4717.75	241.05	6515.70	6756.72	143.22
4	Coimbatore	48650.78	43907.51	44737.00	4898.55	49635.60	113.05
5	Cuddalore	86195.10	77679.42	57970.79	8731.22	66702.03	85.87
6	Dharmapuri	40621.70	36707.51	40988.15	3196.64	44184.81	120.37
7	Dindigul	54710.17	49239.10	57604.36	3898.04	61502.41	124.91
8	Erode	65703.92	59465.96	57899.30	6582.53	64481.82	108.43
9	Kallakurichi	68418.36	61699.39	51598.01	3170.48	54768.49	88.77
10	Kancheepuram	45839.09	41700.19	21698.52	2041.01	23739.53	56.93
11	Kanniyakumari	28186.79	25439.53	3961.60	1064.81	5026.37	19.76
12	Karur	30295.92	27313.74	27672.86	1223.27	28896.11	105.79
13	Krishnagiri	45542.91	41142.19	39233.20	5060.00	44293.19	107.66
14	Madurai	67345.39	60795.13	37692.26	4393.31	42085.52	69.23
15	Nagapattinam	12077.88	10870.09	14322.99	960.80	15283.78	140.60
16	Namakkal	42855.09	38569.53	50663.88	1608.35	52272.21	135.53
17	Perambalur	23872.93	21485.62	24733.40	657.75	25391.14	118.18
18	Pudukkottai	106611.81	96141.95	43627.36	1739.91	45367.30	47.19
19	Ramanathapuram	77559.07	69888.07	5938.64	1405.08	7343.72	10.51
20	Ranipet	32084.65	28876.17	24215.42	2291.47	26506.88	91.79
21	Salem	51354.58	46241.57	65802.06	4921.58	70723.54	152.94
22	Sivaganga	65504.94	59051.87	12751.48	2532.30	15283.77	25.88
23	Tenkasi	49264.97	44380.32	38217.43	2015.64	40233.08	90.66
24	Thanjavur	90655.41	81680.12	83201.68	2950.40	86152.07	105.47
25	The Nilgiris	9811.00	8829.91	595.00	1045.59	1640.57	18.58
26	Theni	38400.57	34560.51	24893.49	1282.86	26176.34	75.74
27	Thiruvallur	88595.67	80350.76	43350.32	8188.40	51538.74	64.14
28	Thiruvaur	27239.25	24515.31	20228.15	2005.66	22233.84	90.69
29	Thoothukkudi	53242.38	48172.91	20101.70	1580.66	21682.34	45.01
30	Tiruchirappalli	73975.90	66780.85	52797.68	5152.71	57950.38	86.78
31	Tirunelveli	66571.89	60140.03	27698.90	1033.00	28731.92	47.78
32	Tirupathur	12610.10	11349.10	11903.91	3578.08	15481.99	136.42
33	Tiruppur	56686.61	51296.45	52856.94	3131.53	55988.43	109.15
34	Tiruvannamalai	116576.53	106492.06	103985.34	3548.61	107533.93	100.98
35	Vellore	21405.23	19264.68	21968.21	3193.84	25162.05	130.61
36	Viluppuram	98475.60	88628.04	88617.45	3040.49	91657.98	103.42
37	Virudhunagar	62094.36	55926.65	31051.16	3811.32	34862.47	62.34
	Total (Ham)	1959078.96	1769006.83	1351842.21	115109.02	1466950.98	82.93
	Total (bcm)	19.59	17.69	13.52	1.15	14.67	82.93

ANNEXURE – II

Annexure referred to in reply to part (d) of Unstarred Question No. 87 answered in Rajya Sabha on 29.11.2021 regarding “Groundwater Reserves in Tamil Nadu”.

Details of Select Contaminants in Ground Water in parts of districts in Tamil Nadu

State	Salinity (EC above 3000 micro mhos/ cm) (EC: Electrical Conductivity)	Fluoride (above 1.5 mg/l)	Nitrate (above 45 mg/l)	Arsenic (above 0.01 mg/l)	Iron (above 1mg/l)	Heavy metals: Lead (above 0.01 mg/l) Cadmium (above 0.003 mg/l) Chromium (above 0.05 mg/l)
Tamil Nadu	Chennai, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Kancheepuram, Karur, Nagapattinam, Namakkal, Perambalur, Pudukkottai, Ramnathapuram, Salem, Sivaganga, Thanjavur, Theni, Thiruvallur, Tirunelveli, Tiruchirappalli, Tuticorin, Vellore, Villupuram, Virudhunagar, Erode, Krishnagiri, Tirupur, Tiruvannamalai	Coimbatore, Dharmapuri, Dindigul, Erode, Karur, Kancheepuram, Krishnagiri, Namakkal, Madurai, Puddukotai, Ramanathanpuram, Salem, Sivagangai, Theni, Thiruvannamalai, Tiruchirappalli, Tirunelveli, Tirupur, Vellore, Cuddalore, Perambalur, Thanjavur, Thiruvarur, Tuticorin, Virudhunagar	Chennai, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kancheepuram, Kanyakumari, Karur, Madurai, Namakkal, Nilgiris, Perambalur, Puddukotai, Ramanathanpuram, Salem, Sivagangai, Theni, Thiruvannamalai, Thanjavur, Tirunelveli, Thiruvallur, Trichy, Tuticorin, Vellore, Villupuram, Virudhunagar, Nagapattinam, Tripur	Ariyalur, Cuddalore, Nagapattinam, Ramnathapuram, Tiruvallur, Tirunelveli, Thiruvarur, Trichchirappalli, Tuticorin	Namakkal, Salem	Lead: Dindigul, Tiruvallur, Kancheepuram Cadmium: Tiruvallur Chromium: Cuddalore, Dindigul, Erode, Kanchipuram, Tiruvallur
