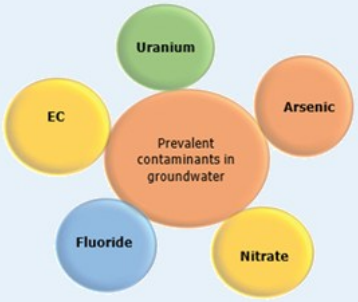
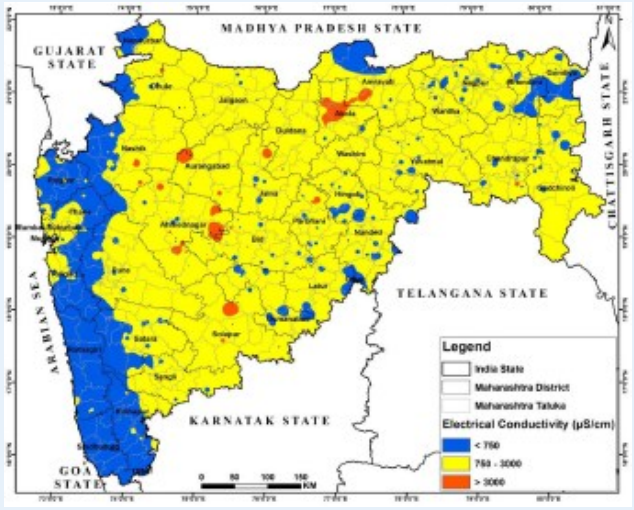
Groundwater Quality Scenario in Maharashtra

Parameters	No of samples	Permissible limit	No. of Samples above permissible limit	% Samples above permissible Limit
EC	1567	3000 µS/cm	56	3.57
Fluoride	1567	1.5 mg/L	30	1.91
Nitrate	1567	45 mg/L	560	35.74





Districts with anomalous values at sporadic locations

EC (3000 µS/cm)	Ahmednagar, Akola, Amravati, Aurangabad, Beed, Buldhana, Chandrapur, Jalgaon, Jalna, Nagpur, Nanded, Nandurbar, Nashik, Parbhani, Raigad, Ratnagiri, Sangli, Satara, Solapur, Thane, Wardha
Fluoride (F > 1.5 mg/L)	Akola, Bhandara, Buldhana, Chandrapur, Gadchiroli, Hingoli, Nandurbar, Osmanabad, Parbhani, Yavatmal
Nitrate (Nitrate > 45 mg/L)	Ahmednagar, Akola, Amravati, Aurangabad, Beed, Bhandara, Buldhana, Chandrapur, Dhule, Gadchiroli, Gondia, Hingoli, Jalgaon, Jalna, Kolhapur, Latur, Nagpur, Nanded, Nandurbar, Nashik, Osmanabad, Parbhani, Pune, Raigad, Sangli, Satara, Sindudurg, Solapur, Thane, Wardha, Washim, Yavatmal
Arsenic (As> 10 ppb)	Not Any
Uranium (U > 30 ppb)	Not Any

For Further Information, Contact to :
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Email: chmn-cgwb@nic.in

https://ingres.iith.ac.in
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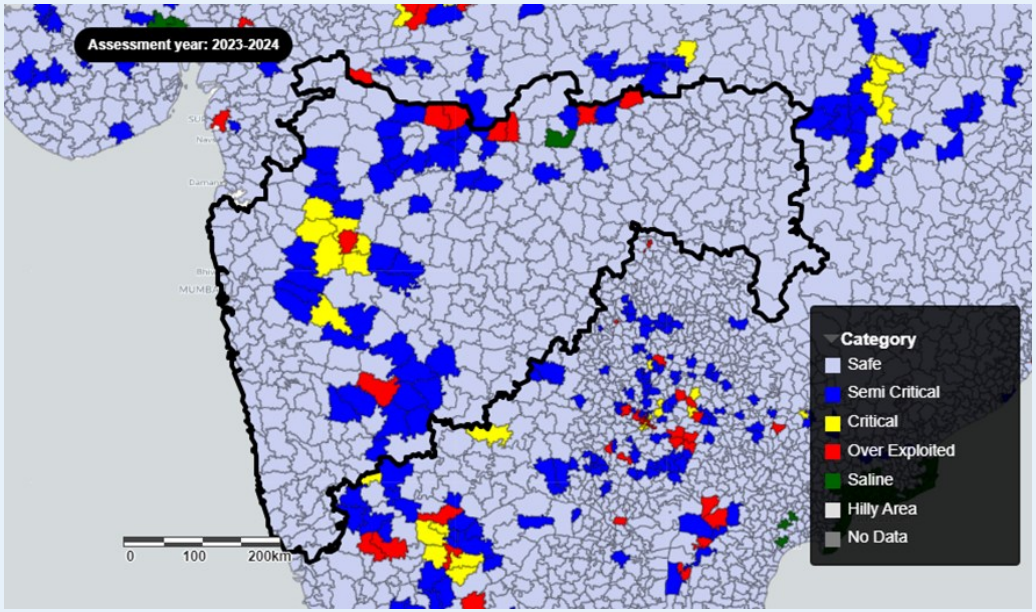
https://x.com/CGWB_CHQ

Central Ground Water Board
Department of Water Resources, RD & GR
Ministry of Jal Shakti, Government of India



Dynamic Ground Water Resources & Ground Water Quality of Maharashtra, 2024

December, 2024

Groundwater Resource Scenario in Maharashtra

- Ground Water Resources Assessment (GWRA)- jointly carried out by Central Ground Water Board and State Nodal/Ground Water Department periodically as per the Ground Water Resource Estimation Committee (GEC) methodology.
- Carried out under the guidance of the respective State/UT Level Committees (SLCs) and overall supervision of Central Level Expert Group (CLEG).
- As part of the assessment, 'Annual Extractable Ground Water Resource' as well as 'Annual Ground Water Extraction are assessed for each assessment unit (Block).
- The 'Stage of Ground Water Extraction' is computed as the ratio of 'Annual Ground Water Extraction' with respect to 'Annual Extractable Ground Water Resource' and is usually expressed in percentage. Based on the stage of extraction, the assessment units are categorized as Safe (<= 70 %), Semi-Critical (>70 % and <=90 %), Critical (>90 % and <=100%) and Over-Exploited (>100 %).
- GWRA-2024, 2023, 2022 and 2020 has been carried out through a software/web-based application "INDIA-GROUNDWATER RESOURCE ESTIMATION SYSTEM (IN-GRES)" developed by CGWB through IIT-Hyderabad.

Salient Features

1	Rainfall	1,027.94 mm
2	Hydrogeology	Mostly covered by Deccan Traps. Other geological formations occur in northeast parts and isolated patches in Sindhudurg and Ratnagiri districts.
3	Recharge Worthy Area of the State	2.60 Lakh Sq. Km
4	Assessment Unit (AU) Type / Number	Taluk / 359 Numbers
5	Average area of Assessment Unit	725.21 Sq. Km

Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	31.64	32.01	32.29	32.76	33.03
2	Annual Extractable Ground Water Resources (in bcm)	29.9	30.25	30.45	30.95	31.15
3	Annual Ground Water Extraction (in bcm)	16.33	16.63	16.65	16.66	16.50
4	Stage of Ground Water Extraction (in %)	54.62	54.99	54.68	53.83	52.99

bcm: Biliion Cubic Meters

Categorization of Assessment Units based on the 'Stage of Ground Water Extraction

Sl. No	Category	GWRA-2017		GWRA-2020		GWRA-2022		GWRA-2023		GWRA-2024	
		Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs
1	Safe	271	77	271	77	272	77	277	78.47	302	84.12
2	Semi-critical	61	17	63	18	62	18	57	16.15	41	11.42
3	Critical	9	3	8	2.26	7	2	9	2.55	7	1.95
4	Over-exploited	11	3	10	3	11	3	9	2.55	8	2.23
5	Saline	1	0.28	1	0.28	1	0.28	1	0.28	1	0.28
Total number of AUs		353		353		353		353		359	

Recommendations

* The State is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. The state is mostly covered by Deccan Traps. The other geological formations, older and younger than Deccan Traps, occur in the northeast and as isolated patches in the Sindhudurg and Ratnagiri districts.
* Groundwater resources have been assessed watershed-wise in the State and subsequently apportioned to the taluk level. For the current year, groundwater resource assessment has also been carried out for 6 urban areas, including Nagpur City (District Nagpur), Pune City (District Pune), Mumbai (District Mumbai), Andheri, Kurla, and Borivali (District Mumbai Suburban). This brings the total number of assessment units to 359 (Talukas). The Annual Ground water resources for State has been estimated as 33.03 bcm and Annual Extractable Ground Water Resources is 31.15 bcm. The Annual Ground Water Extraction is 16.50 bcm and Stage of Ground Water Extraction is 52.99%.
* Out of 359 assessment units (taluks), 8 units (2.2%) have been categorized as 'Over-exploited', 7 units (1.9 %) as 'Critical', 41 units (11.4 %) as 'Semi-critical' and remaining 302 assessment units (84.1 %) as 'Safe' and 1 unit (0.28 %) as 'Saline'.
* More numbers of Water Harvesting and Conservation Structures may be constructed to catch the rain as the State is blessed with more than 1100 mm annual rainfall. State may also effectively use "Master plan for Artificial Recharge" prepared by CGWB in consultation with State Government (**https://cgwb.gov.in/cgwbpnm/publication-detail/324**).
* National Aquifer Mapping & Management Programme (NAQUIM) Reports prepared by CGWB (https://cgwb.gov.in/cgwbpnm/) which are also being shared with State/District Authorities and Ground Water Year Book published by CGWB having water level & water quality data may be used in Ground water management.(**https://cgwb.gov.in/cgwbpnm/**).
* Increase in irrigation efficiency through adopting of micro—irrigation techniques in more areas.
* Creating awareness (Mass Awareness Campaign for public and farmers, slideshows, display boards on water conservation, Water Management Training Programme for personnel related with water sector, painting/essay competition for school students etc.) regarding water conservation etc may be organized at appropriate level.
* State may review their free/subsidized electricity policy to farmers (if applicable), bring suitable water pricing policy and may work further towards crop rotation/diversification/other initiatives to reduce overdependence on groundwater.
* Regulation & control of Ground water Extraction: Ministry of Jal Shakti has issued the guidelines for control and regulations of ground water extraction vide notification dated 24.09.2020 which has further been amended in March 2023. Concerned departments may ensure implementations of the guidelines.