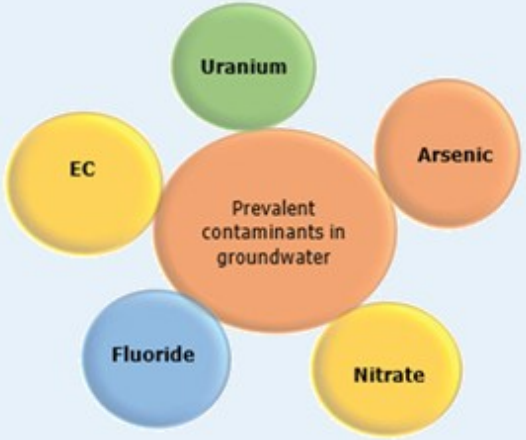
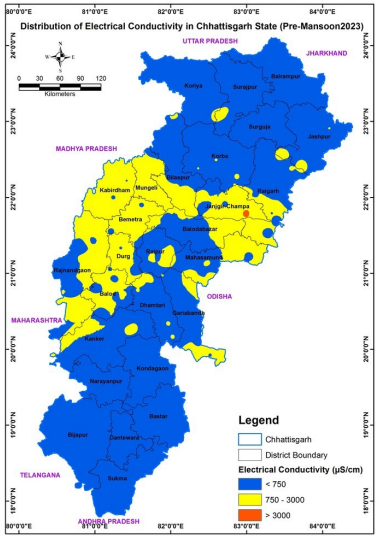
Groundwater Quality Scenario in Chhatisgarh

Parameters	No of samples	Permissible limit	Samples > permissible limit	% Samples > permissible Limit
EC	783	3000 µS/cm	2	0.26
Fluoride	783	1.5 mg/L	14	1.79
Nitrate	783	45 mg/L	90	11.49
Uranium	783	30 ppb	5	0.6





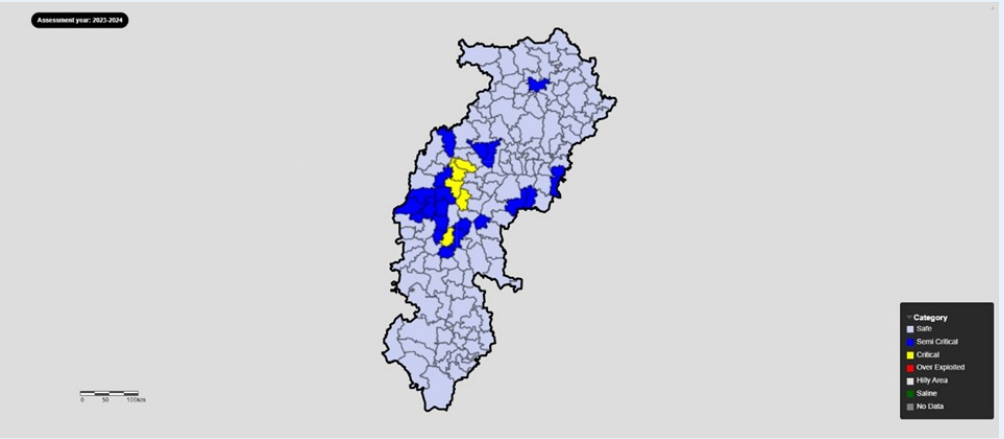
Districts with anomalous values at sporadic locations

EC (3000 µS/cm)	Bemetara, Mungeli
Fluoride (F > 1.5 mg/L)	Janjgir Champa, Kanker, Korba, Koriya, Mahasamund, Raigarh, Rajnandgaon, Surajpur
Nitrate (Nitrate > 45 mg/L)	Balod, Balodabazar, Bemetara, Bilaspur, Dhamtari, Durg, Gariyabandh, Janjgir Champa, Jashpur, Kanker, Kawardha, Korba, Koriya, Mahasamund, Mungeli, Raigarh, Raipur, Rajnandgaon, Surajpur, Surguja
Arsenic (As> 10 ppb)	Korba, Koriya, Raigarh (based of sample analysis for 2019)
Uranium (U > 30 ppb)	Korba, Koriya, Raigarh

For Further Information, Contact to :
Chairman, CGWB, Bhujal Bhawan,
NH IV Faridabad, Haryana - 121001
Email: chmn-cgwb@nic.in

https://ingres.iith.ac.in
https://cgwb.gov.in
https://www.facebook.com/cgwb.chq
https://www.instagram.com/centralgroundwaterboard
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 Chhatisgarh, 2024

December, 2024

Groundwater Resource Scenario in Chhatisgarh

- 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	1,338.55 mm
2	Hydrogeology	Nearly 87 % of the State is underlain by hard rocks. Rest of the State is underlain by semi-consolidated sedimentary formations.
3	Recharge Worthy Area of the State	1.06 Lakh Sq. Km
4	Assessment Unit (AU) Type / Number	Block / 146 Numbers
5	Average area of Assessment Unit	726.57 Sq. Km

Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	11.57	12.65	12.04	13.34	14.18
2	Annual Extractable Ground Water Resources (in bcm)	10.57	11.55	11.01	12.18	12.93
3	Annual Ground Water Extraction (in bcm)	4.7	5.35	5.46	5.75	6.12
4	Stage of Ground Water Extraction (in %)	44.43	46.34	49.58	47.17	47.32

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	122	84	110	75	116	80	119	81.51	120	82.19
2	Semi-critical	22	15	27	18	24	16	22	15.07	21	14.38
3	Critical	2	1	9	6	6	4	5	3.42	5	3.42
4	Over-exploited										
5	Saline										
Total number of AUs		146		146		146		146		146	

Recommendations

* The State is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. 87% area of the State is underlain by hard rock. The Total Annual Ground Water Recharge of the State has been assessed as 14.18 bcm and Annual Extractable Ground Water Resource is 12.93 bcm. The Total Current Annual Ground Water Extraction is 6.12 bcm and Stage of Ground Water Extraction is 47.32 %.
* Out of 146 assessment units (blocks), 5 units (3.42 %) as 'Critical', 21 units (14.38 %) have been categorized as 'Semi-critical' and 120 units (82.19 %) as 'Safe' categories of assessment units.
* More numbers of Water Harvesting and Conservation Structures may be constructed to catch the rain as the State is blessed with more than 1300 mm annual rainfall particularly in the hard rock terrain. 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**).
* Development of springs and their catchment in hilly areas for their sustainability.
* Restoration/rejuvenation of all the existing tanks should be taken up with the view of accommodating the available surface run off and thus augmentation of the ground water resources by artificial recharge. Periodical maintenance of these tanks is to be ensured. The "Manual on Artificial Recharge Techniques for augmentation of ground water" prepared by CGWB may be used for planning (https://cgwb.gov.in/sites/default/files/MainLinks/Manual-Artificial-Recharge.pdf).
* 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.
* In the safe category areas of Chhatisgarh, State Government can judiciously develop the ground water resource mainly for agricultural use, however, at no point of time the extraction level should exceed 70%.
* 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.
* 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/elocution competition for school students etc.) regarding water conservationetc. may be organized at appropriate level.
* 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.