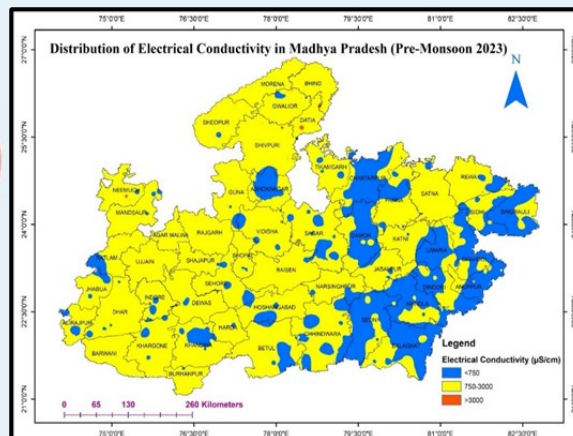


Groundwater Quality Scenario in Madhya Pradesh

Parameters	No of samples	Permissible limit	No. of Samples above permissible limit	% Samples above permissible Limit
EC	589	3000 $\mu\text{S}/\text{cm}$	7	1.19
Fluoride	589	1.5 mg/L	6	1.02
Nitrate	589	45 mg/L	133	22.58
Arsenic	1064	10 ppb	0	0
Uranium	1064	30 ppb	5	0.47



Districts with anomalous values at sporadic locations

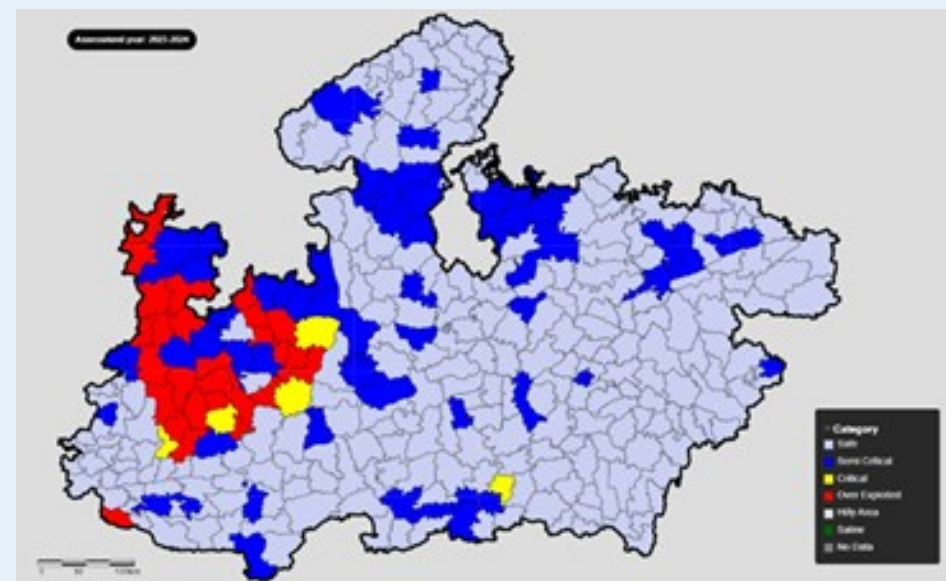
EC (3000 $\mu\text{S}/\text{cm}$)	Bhind, Datia, Gwalior, Neemuch, Shivpuri
Fluoride ($F > 1.5$ mg/L)	Alirajpur, Chhindwara, Dewas, Dhar, Katni, Mandla
Nitrate (Nitrate > 45 mg/L)	Agar malwa, Anuppur, Balaghat, Barwani, Bhind, Burhanpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Guna, Gwalior, Harda, Indore, Jabalpur, Jhabua, Katni, Khandwa, Khargone, Mandla, Mandsaur, Morena, Narsinghpur, Neemuch, Panna, Rajgarh, Ratlam, Rewa, Sagar, Satna, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Tikamgarh, Ujjain, Umaria
Arsenic ($As > 10$ ppb)	Not Any
Uranium ($U > 30$ ppb)	Chhatarpur, Datia, Gwalior

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 Madhya Pradesh, 2024

December, 2024

Groundwater Resource Scenario in Madhya Pradesh

- ◆ 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 ($\leq 70\%$), Semi-Critical ($>70\%$ and $\leq 90\%$), Critical ($>90\%$ and $\leq 100\%$) 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	1,101.79 mm
2	Hydrogeology	Hardrock formations occupy nearly 79 % area of the State (Archeans, Deccan basalt, Cuddapah and Vindhya etc.). Gondwana formations occupy 7 % and recent alluvium occupies 14 % of the geographical area of the State.
3	Recharge Worthy Area of the State	2.69 Lakh Sq. Km
4	Assessment Unit (AU) Type / Number	Block / 317 Numbers
5	Average area of Assessment Unit	849.63 Sq. Km

Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	36.42	36.16	35.23	35.47	35.90
2	Annual Extractable Ground Water Resources (in bcm)	34.47	33.38	32.58	32.85	33.99
3	Annual Ground Water Extraction (in bcm)	18.88	18.97	19.25	19.3	19.85
4	Stage of Ground Water Extraction (in %)	54.76	56.82	59.1	58.75	58.40

bcm: Billion 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	240	77	233	73	226	71	226	71.29	225	70.98
2	Semi-critical	44	14	50	16	60	19	60	18.93	61	19.24
3	Critical	7	2	8	3	5	2	5	1.58	5	1.58
4	Over-exploited	22	7	26	8	26	8	26	8.2	26	8.2
5	Saline										
Total number of AUs		313		317		317		317		317	

Recommendations

- * The State is underlain by various Geological formations ranging in age from the Archaean to the Recent. Hard rock areas cover more than 80% of total land area of the State. Total Annual Ground Water Recharge of the State has been assessed as 35.90 bcm and Annual Extractable Ground Water Resources is 33.99 bcm. The Annual Ground Water Extraction is 19.85 bcm and Stage of Ground Water Extraction is 58.40 %.
- * Out of 317 assessment units (313 blocks and 4 urban areas), 26 units (8.2 %) has been categorized as 'Over Exploited', 5 units (1.58 %) as 'Critical', 61 units (19.24 %) as 'Semi-Critical' and 225 units (70.98 %) 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 800 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/cgwbpm/publication-detail/324>).
- * Development of springs and their catchment in hilly areas for their sustainability.
- * Restoration 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/cgwbpm/>) 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/cgwbpm/>).
- * Increase in irrigation efficiency through adopting of micro-irrigation techniques in more areas.
- * In the safe category areas of Madhya Pradesh, 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%.
- * 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.