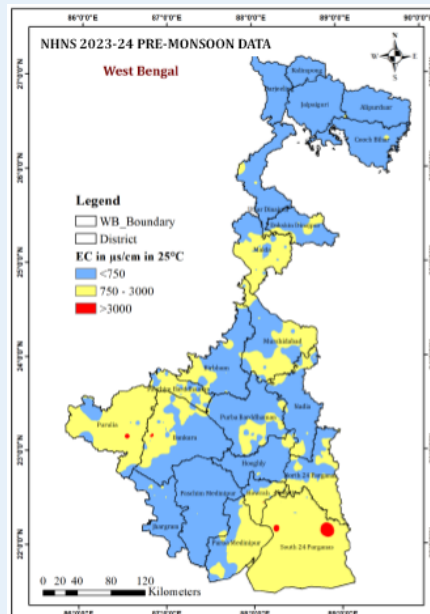
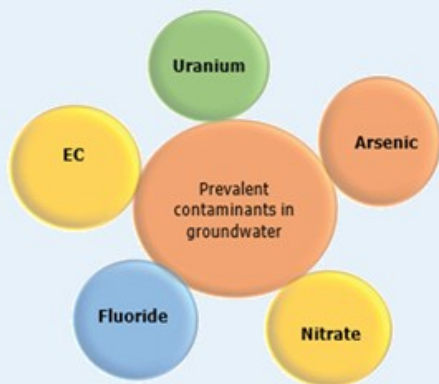


## Groundwater Quality Scenario in West Bengal

Parameters	No of samples	Permissible limit	No. of Samples above permissible limit	% Samples above permissible Limit
EC	959	3000 $\mu\text{S}/\text{cm}$	8	0.83
Fluoride	959	1.5 mg/L	7	0.73
Nitrate	959	45 mg/L	83	8.65
Arsenic	959	10 ppb	84	8.76



### Districts with anomalous values at sporadic locations

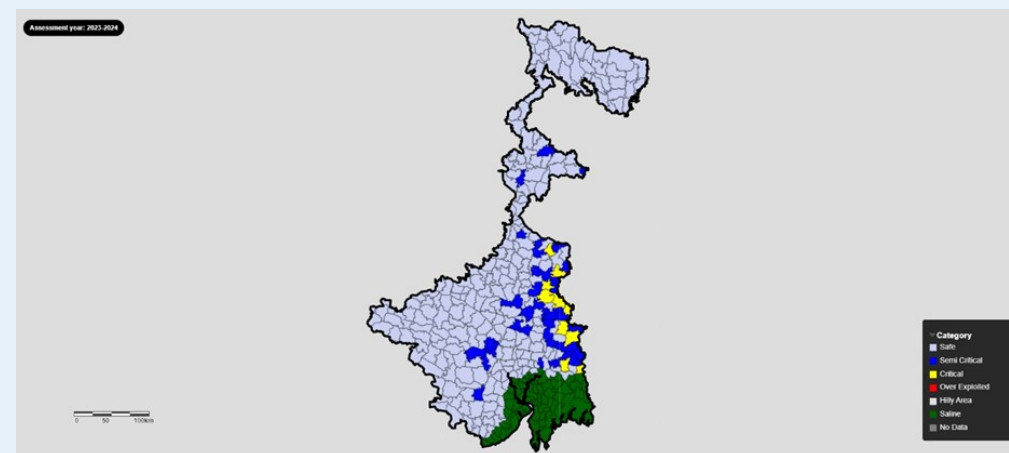
<b>EC (3000 <math>\mu\text{S}/\text{cm}</math>)</b>	Bankura, Howrah, Malda, Purulia, South 24 Parganas
<b>Fluoride (F &gt; 1.5 mg/L)</b>	Birbhum, Dakshin Dinajpur, Paschim Bardhaman
<b>Nitrate (Nitrate &gt; 45 mg/L)</b>	Alipurduar, Bankura, Birbhum, Cooch Behar, Dakshin Dinajpur, Darjeeling, Hooghly, Jalpaiguri, Jhargram, Malda, Murshidabad, Nadia, North 24 Parganas, Paschim Bardhaman, Paschim Medinipur, Purulia, South 24 Parganas, Uttar Dinajpur
<b>Arsenic (As &gt; 10 ppb)</b>	Howrah, Malda, Murshidabad, Nadia, North 24 Parganas, South 24 Parganas
<b>Uranium (U &gt; 30 ppb)</b>	Not Any

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**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 West Bengal, 2024**

**December, 2024**

## Groundwater Resource Scenario in West Bengal

- ◆ 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	1,738.03 mm
2	Hydrogeology	Nearly two third area of the state is occupied by unconsolidated sediments; the western part of the state is partly occupied by the hard rocks.
3	Recharge Worthy Area of the State	79.77 Thousand Sq. Km
4	Assessment Unit (AU) Type / Number	Block / 345 Numbers
5	Average area of Assessment Unit	231.21 Sq. Km

### Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	29.33	29.33	23.61	26.29	25.89
2	Annual Extractable Ground Water Resources (in bcm)	26.56	26.56	21.42	23.9	23.56
3	Annual Ground Water Extraction (in bcm)	11.84	11.84	10.07	10.71	10.75
4	Stage of Ground Water Extraction (in %)	44.59	44.60	47.01	44.81	45.63

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	191	71	19321	71.27	232	67.24	241	69.86	239	69.28
2	Semi-critical	76	28	76	28.36	31	8.98	32	9.28	36	10.43
3	Critical	1	0.37	1	0.37	22	6.37	12	3.48	10	2.9
4	Over-exploited										
5	Saline					60	17.39	60	17.39	60	17.39
Total number of AUs		268		268		345		345		345	

### Recommendations

- \* Nearly two third area of the state is occupied by unconsolidated sediments; the western part of the state is partly occupied by the hard rocks.
- \* The ground water resource assessment (in 2024) for the State of West Bengal has been carried out as per GEC 2015 guidelines through 'IN-GRES', with blocks as primary assessment units. All 344 blocks of the State of West Bengal and one (01) urban area as Kolkata Municipal Corporation is assessed. Total Annual Ground Water Recharge has been estimated at 25.89 bcm and Annual Extractable Ground Water Resource has been estimated at 23.56 bcm. Current Annual Ground Water Extraction for all uses has been estimated at 10.75 bcm, which translates into a Stage of Ground Water Extraction at 45.63 %. As per present assessment categorization scheme, out of 345 assessed units, 239 AUs are Safe, 36 AUs are Semi-Critical, 10 AUs are Critical and 60 AUs are of poor groundwater quality.
- \* In the safe category areas of West Bengal, 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%.
- \* 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/>).
- \* 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.