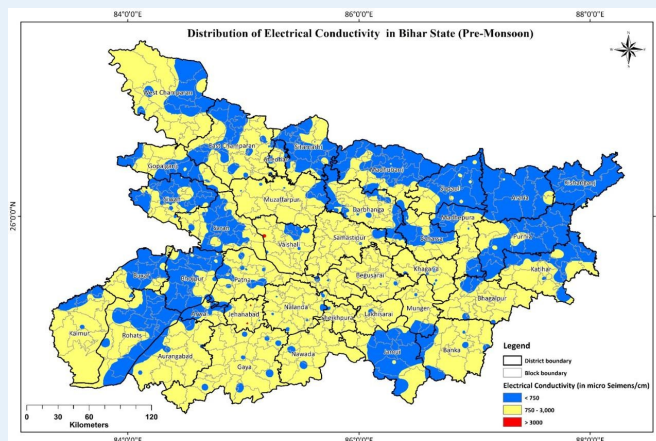
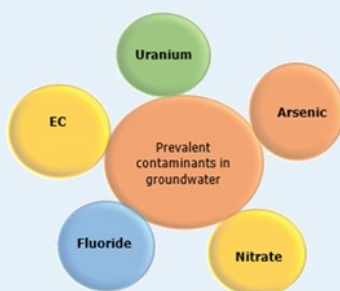


## Groundwater Quality Scenario in Bihar

Parameters	No of samples	Permissible limit	No. of Samples above permissible limit	% Samples above permissible Limit
EC	808	3000 $\mu\text{S}/\text{cm}$	7	0.87
Fluoride	808	1.5 mg/L	37	4.58
Nitrate	808	45 mg/L	19	2.35
Uranium	752	30 ppb	1	0.1



### Districts with anomalous values at sporadic locations

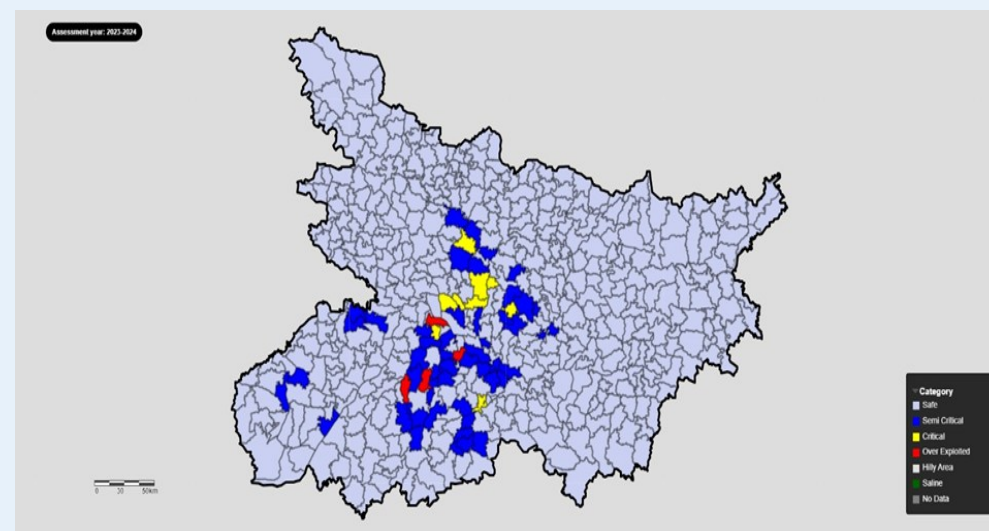
<b>EC (3000 <math>\mu\text{S}/\text{cm}</math>)</b>	Buxar, Jehanabad, Lakhisarai, Siwan, Vaishali
<b>Fluoride (<math>F &gt; 1.5</math> mg/L)</b>	Banka, Gaya, Jamui, Nalanda, Nawada, Seikhpura
<b>Nitrate (Nitrate <math>&gt; 45</math> mg/L)</b>	Arwal, Bhagalpur, Bhojpur, Buxar, Jehanabad, Kaimur, Katihar, Madhepura, Madhubani, Muzzafarpur, Patna, Saharsa, Samastipur, Sheohar, Sitamarhi, Araria, Begusarai, Bhagalpur, Bhojpur, Buxar, Darbhanga, E. Champaran, Gopalganj, Katihar, Khagaria, Kishanganj, Madhepura, Madhubani, Muzaffarpur, Samastipur, Saran, Sheohar, Sitamarhi, Supaul, W. Champaran
<b>Arsenic (<math>As &gt; 10</math> ppb)</b>	Not Any
<b>Uranium (<math>U &gt; 30</math> ppb)</b>	Siwan

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

<https://ingres.iitb.ac.in>  
<https://cgwb.gov.in>  
<https://www.facebook.com/cgwb.chq>  
<https://www.instagram.com/centralgroundwaterboard>  
[https://x.com/CGWB\\_CHQ](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 Bihar, 2024

December, 2024

## Groundwater Resource Scenario in Bihar

- ◆ 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	1,202.46 mm
2	Hydrogeology	More than 89 % of the State is covered by Gangetic Alluvium. The consolidated formations occupy fringes in the southern part of the State.
3	Recharge Worthy Area of the State	90.35 Thousand Sq. Km
4	Assessment Unit (AU) Type / Number	Block / 535 Numbers
5	Average area of Assessment Unit	168.88 Sq. Km

### Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	31.41	28.05	33.15	33.96	34.15
2	Annual Extractable Ground Water Resources (in bcm)	28.99	25.46	30.04	30.72	30.95
3	Annual Ground Water Extraction (in bcm)	13.26	13.02	13.5	13.75	14.10
4	Stage of Ground Water Extraction (in %)	45.76	51.14	44.94	44.76	45.54

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	432	81	471	88	469	88	467	87.29	473	88.41
2	Semi-critical	72	13	51	10	46	9	53	9.91	49	9.16
3	Critical	18	3	5	1	12	2	7	1.31	9	1.68
4	Over-exploited	12	2	7	1	8	2	8	1.5	4	0.75
5	Saline										
Total number of AUs		534		534		535		535		535	

### Recommendations

- \* The State is covered with Gangetic alluvium in more than 89 % of its geographical area. The consolidated formations occupy fringes in the southern parts of the state.
- \* The assessment of dynamic ground water resources has been carried out in 535 Assessment Units of the State. The Total Annual Ground Water Recharge has been worked out as 34.15 bcm with the Annual Extractable Ground Water Resources as 30.95 bcm. The Current Annual Ground Water Extraction for all uses has been estimated as 14.10 bcm and the Stage of Ground Water Extraction of the State is 45.54 %.
- \* Out of the total 535 assessment units (534 blocks plus Patna Urban), 4 units (0.75%) are categorized as 'Over-exploited,' 9 units (1.68%) as 'Critical,' 49 units (9.16%) as 'Semi-Critical,' and 473 units (88.41%) as 'Safe.' category.
- \* In the safe category areas of Bihar, 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%.
- \* Development of springs and their catchment in hilly areas for their sustainability.
- \* 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/>).
- \* 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.