

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

Sl. No	Category	GWRA-2017		GWRA-2020		GWRA-2022		GWRA-2023	
		Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs
1	Safe	540	65	541	65	557	67	559	66.87
2	Semi-critical	151	18	174	21	169	20	172	20.57
3	Critical	48	6	49	6	47	6	43	5.14
4	Over-exploited	91	11	66	8	63	8	62	7.42
5	Saline								
Total number of AUs		830		830		836		836	

Recommendations: - The State of Uttar Pradesh is categorized with five distinct hydrogeological units – Bhabar, Terai, Central Ganga Plains, Marginal Alluvial Plain, Southern Hardrock area. Bhabar is mainly the recharge zone having deeper water levels. Terai zone lies between Bhabar in the North and Central Ganga Plain in the South. It is characterized by fine grained sediments with occasional pebbles and boulders. Central Ganga Plain constitutes the most promising ground water repository characterized by multi-layered aquifer systems. Southern part mainly occupied by Hard rocks comprising of Granite/ Granitic Gneiss and Marginal Alluvium in Bundelkhand Region and Vindyan Sedimentary formations in Mirzapur and Sonbhadra Districts.

Total Annual Ground Water Recharge of the state has been assessed as 71.83bcm and Annual Extractable Ground Water Resource as 65.57 bcm. The Annual Ground Water Extraction is 46.4 bcm and average Stage of Ground Water Extraction of the State is 70.76%. Out of the 836 assessment units consisting 836 blocks, 62 units (7.42 %) have been categorized as 'Over- exploited', 43 units (5.14 %) as 'Critical', 172 units (20.57 %) as 'Semi-critical' and 559 units (66.87 %) as 'Safe'.

Promoting / Incentivizing change for change in cropping pattern from high water consuming crops like paddy to less water consuming crops in the western UP.

In the safe category areas of Uttar 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%.

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. he "Manual on Artificial Recharge Techniques for augmentation of ground water" prepared by CGWB may be used for planning. (<http://cgwb.gov.in/documents/Manual%20on%20Artificial%20Recharge%20of%20Ground%20Water.pdf>).

National Aquifer Mapping & Management Programme (NAQUIM) Reports prepared by CGWB (<http://cgwb.gov.in/AQM/AQM-Reports.html>) 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. ([http://cgwb.gov.in/Ground-Water/GW%20YEAR%20BOOK%202019-0%20ALL%20INDIA%20FINAL%20752021%20\(1\).pdf](http://cgwb.gov.in/Ground-Water/GW%20YEAR%20BOOK%202019-0%20ALL%20INDIA%20FINAL%20752021%20(1).pdf)).

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.

In Industrial areas of Uttar Pradesh, Disposal of industrial effluents, solid waste and urban sewerage should be disposed off safely after treatment, so that the phreatic aquifer does not get adversely polluted .

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.

For Further Information, Contact to :

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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, 2023 Uttar Pradesh

January, 2024

Background

- ◆ 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-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.

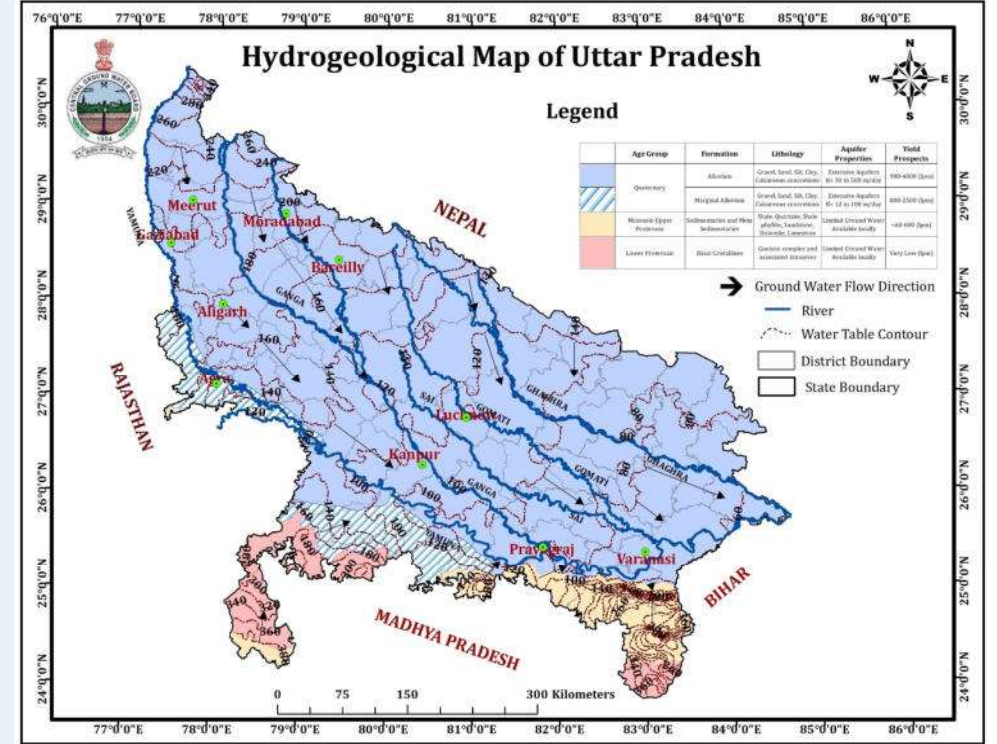
Salient Features

1	Average Annual Rainfall	946.1 mm
2	Hydrogeology	Five distinct hydrogeological units: 1. Bhabar, 2. Terai, 3. Central Ganga Plain-most promising and multiple aquifer system, 4. Marginal alluvial plain and 5. Southern hard rock terrain of Bundelkhand area.
3	Recharge Worthy Area of the State	229.55 Thousand Sq. Km
4	Assessment Unit (AU) Type / Number	Block / 836 Numbers
5	Average area of Assessment Unit	275 Sq. Km

Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023
1	Total Annual Ground Water Recharge (in bcm)	69.92	72.2	71.45	71.83
2	Annual Extractable Ground Water Resources (in bcm)	65.32	66.88	65.3	65.57
3	Annual Ground Water Extraction (in bcm)	45.84	46.03	46.14	46.4
4	Stage of Ground Water Extraction (in %)	70.18	68.83	70.66	70.76

bcm: Billion Cubic Meters



Categorization of Assessment Unit

