

## 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	97	55	130	57	139	59	146	62.39
2	Semi-critical	26	15	35	15	35	15	32	13.68
3	Critical	8	5	10	4	11	5	12	5.13
4	Over-exploited	45	26	52	23	49	21	44	18.8
5	Saline								
<b>Total number of AUs</b>		176		227		234		234	

### Recommendations: -

Major portion of the State is covered by Peninsular Gneisses, Granites and Dharwar Schists of Archaean age. Substantial area in the northern part of Karnataka is underlain by basalts, which form a continuation of the Deccan Traps occurring in Maharashtra. The sedimentary formations comprising Bhima and Kaladgis occupy a small area in the northern districts. The recent alluvium is restricted to a narrow belt in the coastal area and along stream courses. The aquifer systems are classified into nine major groups depending upon their characteristics and are Banded Gneissic Complex (BGC), Basalt, Schists, Granites, Charnockites, Limestones, Laterites, Sandstones and alluvium. The Annual Ground Water Recharge has been assessed as 18.93BCM and the Annual Extractable Ground Water resource is 17.08BCM. The Current Annual Ground Water Extraction is 11.32BCM and the Stage of Ground Water Extraction is 66.26%. Out of the 234 assessment units (taluks), 44 units (18.8 %) have been categorized as 'Over exploited', 12 units (5.13 %) as 'Critical', 32 units (13.68 %) as 'Semi critical' and 146 units (62.39 %) have been categorized as 'Safe'.

More numbers of Water Harvesting and Conservation Structures may be constructed to catch the rain as the State is blessed with more than 1000 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. (<http://cgwb.gov.in/MasterPlan%20to%20GW%20Recharge%202020.pdf>)

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. (<http://cgwb.gov.in/documents/Manual%20on%20Artificial%20Recharge%20of%20Ground%20Water.pdf>).

National Aquifer Mapping & Management Programme (NAQIM) 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)).

Irrigation sector is consuming about 89% of ground water resources, hence micro-irrigation techniques needs to be adopted in more areas to increase the irrigation efficiency and reduce the load on ground water.

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 urban and industrial areas, 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.

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

### ADMINISTRATIVE MAP OF KARNATAKA



## Dynamic Ground Water Resources, 2023 Karnataka

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 (Taluk).
- ◆ 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

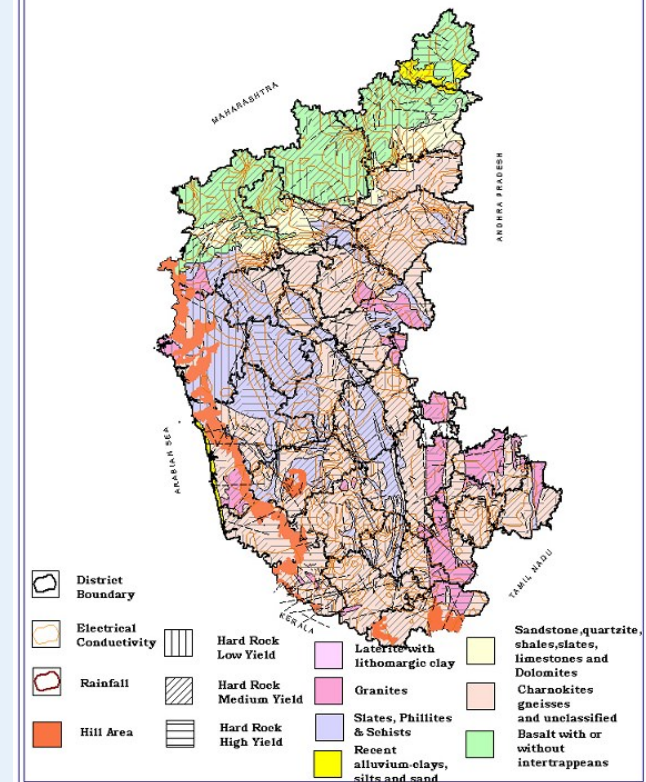
1	Average Annual Rainfall	1450.9 mm
2	Hydrogeology	Major parts of the State are occupied by hardrock of Archean age. Northern parts area occupied by Deccan basalts. Recent alluvium is restricted to a narrow belt in coastal areas and along stream courses.
3	Recharge Worthy Area of the State	170.46 Thousand Sq. Km
4	Assessment Unit (AU) Type / Number	Taluk / 234 Numbers
5	Average area of Assessment Unit	728 Sq. Km

## Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023
1	Total Annual Ground Water Recharge (in bcm)	16.84	18.16	17.74	18.93
2	Annual Extractable Ground Water Resources (in bcm)	14.79	16.4	16.04	17.08
3	Annual Ground Water Extraction (in bcm)	10.34	10.63	11.22	11.32
4	Stage of Ground Water Extraction (in %)	69.87	64.85	69.93	66.26

bcm: Billion Cubic Meters

## KARNATAKA STATE HYDROGEOLOGY



Assessment year: 2022-2023

## CATEGORIZATION MAP OF KARNATAKA

