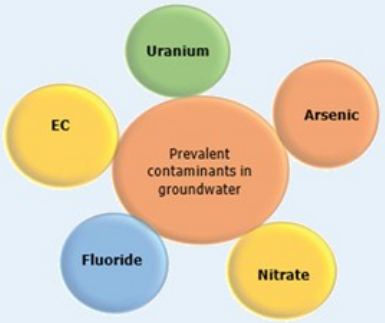
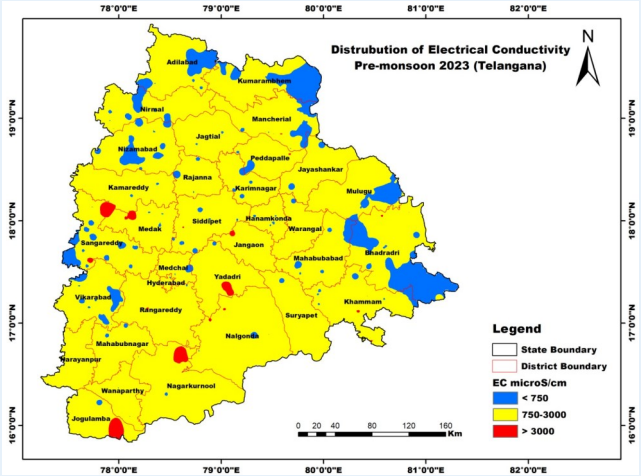
## Groundwater Quality Scenario in Telangana

| Parameters | No of samples | Permissible limit | No. of Samples above permissible limit | % Samples above permissible Limit |
|---|---|---|---|---|
| EC | 1150 | 3000 µS/cm | 34 | 2.96 |
| Fluoride | 1150 | 1.5 mg/L | 171 | 14.87 |
| Nitrate | 1150 | 45 mg/L | 316 | 26.48 |




### Districts with anomalous values at sporadic locations

| | |
|---|---|
| EC (3000 µS/cm) | B.Kothagudem, J.Bhupalapally, Jangaon, Jogulamba, Kb Asifabad, Khammam, Mancherial, Medak, Nagarkurnool, Nalgonda, Pedapalle, Rangareddy, Sangareddy, Siddipet, Warangal, Yadadri Bhuvanagiri |
| Fluoride (F > 1.5 mg/L) | Adilabad, B.Kothagudem, Hanamkonda, Hyderabad, Jagtial, Jangaon, Kamareddy, Karimnagar, Kb Asifabad, Khammam, Mahabubnagar, Mancherial, Medak, Medchal Malkanjgiri, Nagarkurnool, Nalgonda, Nirmal, Nizamabad, Pedapalle, R. Sircilla, Rangareddy, Sangareddy, Siddipet, Suryapet, Vikarabad, Wanaparthy, Warangal, Yadadri Bhuvanagiri |
| Nitrate (Nitrate > 45 mg/L) | Adilabad, B.Kothagudem, Hanamkonda, J.Bhupalapally, Jagtial, Jangaon, Jogulamba, Kamareddy, Karimnagar, Kb Asifabad, Khammam, Mahabubabad, Mahabubnagar, Mancherial, Medak, Medchal Malkanjgiri, Mulugu, Nagarkurnool, Nalgonda, Narayanpet, Nirmal, Nizamabad, Pedapalle, R. Sircilla, Rangareddy, Sangareddy, Siddipet, Suryapet, Vikarabad, Wanaparthy, Warangal, Yadadri Bhuvanagiri |
| Arsenic (As> 10 ppb) | Not Any |
| Uranium (U > 30 ppb) | Not Any |


For Further Information, Contact to :
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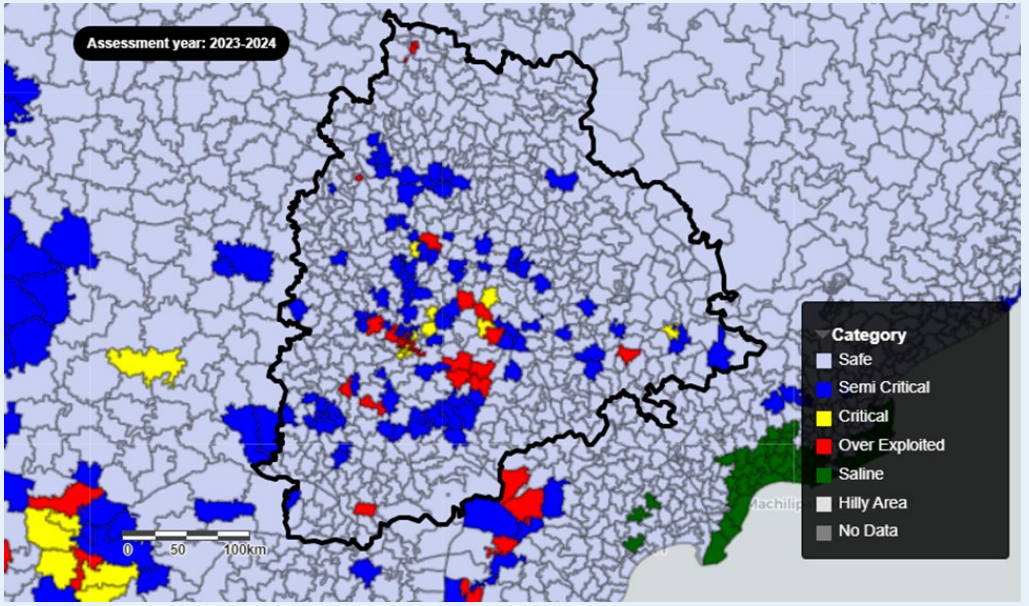
# Central Ground Water Board
## Department of Water Resources, RD & GR
## Ministry of Jal Shakti, Government of India




# Dynamic Ground Water Resources & Ground Water Quality of Telangana, 2024

**December, 2024**

# Groundwater Resource Scenario in Telangana

- 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 (<= 70 %), Semi-Critical (>70 % and <=90 %), Critical (>90 % and <=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 | 913.61 mm |
| 2 | Hydrogeology | Nearly 85 % of the State is underlain by hard rocks. Rest of the State is underlain by semi-consolidated formations and unconsolidated sediments. |
| 3 | Recharge Worthy Area of the State | 1.06 Lakh Sq. Km |
| 4 | Assessment Unit (AU) Type / Number | Mandal / 620 Numbers |
| 5 | Average area of Assessment Unit | 170.61 Sq. Km |

## Findings

| | Attribute | GWRA-2017 | GWRA-2020 | GWRA-2022 | GWRA-2023 | GWRA-2024 |
|---|---|---|---|---|---|---|
| 1 | Total Annual Ground Water Recharge (in bcm) | 13.62 | 16.63 | 21.27 | 23.14 | 20.40 |
| 2 | Annual Extractable Ground Water Resources (in bcm) | 12.37 | 15.03 | 19.25 | 20.92 | 18.44 |
| 3 | Annual Ground Water Extraction (in bcm) | 8.09 | 8.01 | 8 | 8.09 | 8.47 |
| 4 | Stage of Ground Water Extraction (in %) | 65.45 | 53.32 | 41.6 | 38.65 | 45.91 |

bcm: Biliion 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 | 278 | 48 | 321 | 55 | 494 | 83 | 530 | 86.60 | 490 | 79.03 |
| 2 | Semi-critical | 169 | 29 | 180 | 31 | 80 | 14 | 61 | 9.97 | 85 | 13.71 |
| 3 | Critical | 67 | 11 | 44 | 7 | 7 | 1 | 10 | 1.63 | 13 | 2.10 |
| 4 | Over-exploited | 70 | 12 | 44 | 7 | 13 | 2 | 11 | 1.80 | 32 | 5.16 |
| 5 | Saline | | | | | | | | | | |
| Total number of AUs | | 584 | | 589 | | 594 | | 612 | | 620 | |

## Recommendations

* Telangana state is characterized by wide range of geological formations from Archaean to Recent age. Nearly 85% of the state is underlain by hard rocks (consolidated formations) belonging to the Peninsular Gneissic Complex, Dharwar and Eastern Ghats of Archaean to Middle Proterozoic age, Pakhal Group of rocks belonging to Middle to Upper Proterozoic age and Deccan Traps. Remaining of the state is underlain by semi consolidated sedimentary formations encompassing Gondwanas, Tertiary group of formations and Sub-Recent to Recent unconsolidated sediments.
* The Ground water resources for the state have been assessed watershed-wise and apportioned to mandal-wise. Total Annual Groundwater recharge of the State has been assessed as 20.40 bcm and Annual extractable Ground Water resource as 18.44 bcm. The Annual Ground Water Extraction is 8.47 bcm and Stage of Ground Water Extraction is 45.91 %.
* Out of 620 assessment units (Mandals), 32 units (5.16 %) have been categorized as 'Over Exploited', 13 units (2.10 %) as 'Critical', 85 units (13.71 %) as 'Semi-Critical' and 490 units (79.03 %) 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 900 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/cgwbpnm/publication-detail/324**).
* 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. (https://cgwb.gov.in/sites/default/files/MainLinks/Manual-Artificial-Recharge.pdf).
* Increase in irrigation efficiency through adopting of micro—irrigation techniques in more areas.
* 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.
* In Industrial areas, Disposal of industrial effluents, solid waste and urban sewerage should be disposed offsafely 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.