

No.DWD/312/2024/T1

Directorate of Groundwater Department,
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From,
The Director

To,
The Principal Secretary to Government
Water Resources (GW) Department
Thiruvananthapuram

Sir,

Sub:-Groundwater Department - New item appearing in
Hindustan Times dated : 26/10/2023 titled "UN predicts
groundwater level in India will reduce to low by 2025"
- Report forwarding of - reg

Ref:-Government Letter No. GW3/26/2024-WRD dated:
30/01/2024

Inviting attention to the reference cited, I am furnishing herewith the Status of Groundwater Resources of Kerala as per Groundwater Resources Estimation Committee Report March 2022 and action plans for Groundwater Management as per the directions in para number 5 of Suo Moto - OA No. 694/2023 before the Hon'ble National Green Tribunal. This is for favour of your information and necessary action.

Yours faithfully,

sd/-
DIRECTOR

Encl: As above

Status of Groundwater Resources Of Kerala as per Groundwater Resource Estimation Committee Report March 2022 and action plans for Groundwater Management as per the directions in para number 5 of Suo Moto - OA No - 694/2023 before the Hon'ble National Green Tribunal

Para - 5 Applicable to Kerala State

I. Groundwater Resource Assessment of the State:-

Groundwater is considered as a critical natural resource for the development and Planning of the State. Kerala State groundwater department is the nodal agency for the development and management of Ground water resources. Groundwater management in the State is being implemented on the basis of the periodical estimation of the Ground Water Resources Assessment jointly carried out by State Ground Water Department and Central Ground Water Board under the guidance of the respective State Level Committee on Ground Water Assessment at State Level and also under the overall supervision of the Central Level Expert Group.

The assessment units (Administrative Blocks) are categorized based on Stage of Groundwater Extraction, which are then validated with long-term water level trends. The categories are:-

Stage of Groundwater Extraction	Category
≤ 70%	Safe
> 70% and ≤ 90%	Semi Critical
>90% and ≤ 100%	Critical
>100%	Over - Exploited

Categorization of Ground Water Resources, Kerala March 2017 , 2020 & 2022 Reports			
Category	March 2017	March 2020	March 2022
Over Exploited Blocks	1	0	0
Critical Blocks	2	3	3
Semi - Critical Blocks	30	29	27
Safe Blocks	119	120	122
Total Number of Blocks	152	152	152

The table below gives an overall comparison of the present groundwater scenario of the State.

Particulars	March 2017	March 2020	March 2022
Annual Extractable Ground Water (BCM)	5.21	5.12	5.19
Existing Ground water extraction for all uses (BCM)	2.62	2.65	2.73
Stage of Ground water Extraction (%)	51.27	51.68	52.56

**Major findings reported in the Groundwater Resource Estimation
Committee Report March 2022**

a. As per the report, the following are the observed decadal (2012-2021) groundwater level trend for the State of Kerala.

Pre- Monsoon Ground Water level trend

Out of 1360 open wells, rising trend in water level observed in 53% wells, and declining trend in water level is observed in remaining 47% wells.

Post-Monsoon Ground Water level trend

Out of 1387 open wells, rising trend in water level is observed in 80.2% wells, and declining trend in water level is observed in remaining 19.8% wells.

b. Out of 27047.54 sq km recharge worthy area of the State, 777.38 sq km (2.87 %) area are under ‘Critical’, 3817.64 sq km (14.11 %) under ‘Semi-critical’. and 22452.5 sq km (83.01 %) area are under ‘Safe’ categories of assessment units.

As compared to 2020 assessment, Total Annual Ground Water Recharge of the State has increased from 5.65 to 5.73 BCM and Annual Extractable Ground Water Resources from 5.12 to 5.19 BCM. The Annual Ground Water Extraction has increased from 2.65 to 2.73 BCM and the Stage of Ground Water Extraction has increased from 51.68 % to 52.56 %. The number of Semi-critical blocks has decreased from 29 to 27. Two Semi- critical blocks i.e. Kanhangad and Karadka in Kasaragod District has improved to ‘Safe’ Category mainly due to increase in precipitation, increase in recharge from other sources and Increase in Surface Water supply Schemes implemented in the state by line departments

2. Rainfall of the Kerala State:-

The State of Kerala is blessed with abundant rainfall that amounts to an average of 3,000 mm, which is two times more than that of National average. The pattern in rainfall distribution indicates 69 % of the annual rainfall is received during the Southwest Monsoon (June to September) and 16 % received during Northeast Monsoon (October to December) and the

remaining is from the Summer Rains. During the last 5 years, the rainfall pattern has changed and the precipitation occurs in short spells lasting only few hours. Although there is no significant variation in the annual mean rainfall available in the State, the decrease in the intervals of rainy days is a manifestation of climate change. Rainfall is the major source of groundwater recharge but the extreme rainfall received in the short spell of time and the peculiar topography (average slope of the Kerala State is above 30⁰.) of the State disrupts the natural recharge of Groundwater.

Water resources of Kerala are completely dependent on rainfall. In this, surface water is mainly stored in dams and groundwater is stored in aquifers (water bearing geological formations). There are 44 rivers in Kerala. However, according to the national definition of rivers, only 4 rivers are included in the said category.

3. Geological Setting of Kerala:-

About 88% of the total geographic area of the State is underlined by Crystalline Rocks. The main aquifer in the State is laterite which forms the cap rock, acts as phreatic aquifer and is not appreciable enough to store entire rain fall. The average thickness of laterite aquifer in Kerala ranging from 12 to 30m. Due to this reason, the hilly areas often experience water scarcity immediately after the rainfall due to hydrogeological and other natural topographic complexities. Only 12% of the area has unconsolidated sand layers with high groundwater storage capacity.

It is possible to ensure sustainable ground water availability of aquifers only by adopting various groundwater recharge activities scientifically.

4. Groundwater Extraction in Kerala :-

As per the groundwater Resource estimation report 2022, Groundwater extraction in Kerala is mainly for domestic uses (1.55 BCM) and for irrigation (1.17 BCM). The stage of groundwater extraction for the Kerala State is calculated as 52.56 %. The stage of groundwater extraction is highest in Kasaragod District (72.16%) and is lowest in Wayanad District (24.95%).

5. Groundwater Management Plans being adopted in the State:-

➤ The Kerala State has enacted and implemented the **Kerala Groundwater (Control and Regulation) Act, 2002** for conservation of Groundwater and for the regulation and control of its extraction and use in the state of Kerala.

➤ As per the GEC – 2022 report, 777.38 Sq.Km (2.87 %) area falls under ‘Critical’ Category i.e. 3 blocks in Kerala (Chittoor and Malambuzha in Palakkad District and Kasaragod block in Kasaragod District. In the 2017 assessment, Chittoor block (314.68 Sq.Km) was in Over Exploited Category and 2020 onwards the block falls in Critical Category. Implementation of suitable water conservation activities of various agencies including groundwater department and mass awareness campaigns conducted on groundwater management in the Chittoor block (**Over- exploited block >20 years**) helped to reduce the stage of groundwater development in certain extent . **These 3 blocks are notified by Government of Kerala based on the recommendation of Kerala State Groundwater Authority. Permit from State Ground Water Authority is required for any type groundwater development in these blocks. No New Packaged Groundwater based Drinking Water Units are allowed in such category.**

➤ **Groundwater Recharge Measures :-**

The State Groundwater Department has been implementing a scheme for '**Groundwater Conservation and Recharge**' utilising plan fund in order to augment groundwater levels. The project components are roof top rainwater harvesting for groundwater recharge through dug wells, recharge pits, bore wells and recharge shafts and construction of subsurface dykes and small check dams in suitable micro water shed basis. Renovations of small open ponds are also included. The recharge schemes are being implemented as a long term measure to achieve sustainable groundwater development in the State. The Department is engaged in recharging groundwater through roof top rain water harvesting in public buildings, government and aided schools and giving priority to implement such structures in notified blocks. National Aquifer Management Plans and Master Plan of Artificial Recharge prepared by Central ground water Board acts as a scientific tool for preparing recharge proposals in technically feasible areas.

➤ During the last seven years Department has implemented 972 no of different groundwater conservation structures across the State.

➤ **Jal Shakti Abhiyan – Catch the rain Programme by Ministry of Jal Shakti , Government of India:-**

In Kerala, as per G.O.(Rt)No 432/2022/WRD dtd 20/05/2022, District officers of State Ground Water Department is entrusted as the nodal officers for vitalising the water conservation activities for Jal Shakti Abhiyan Programme under the leadership of the concerned District Collector. The State and Central funds are being utilised to implement different water harvesting structures in Kerala. Priority of implementation is being given to Water stressed blocks of the State. Pre and Post Monsoon activities of water conservation activities in the water stressed blocks of the State has monitored and evaluated by the Central Team designated by the Ministry of Jal Shakti .

The activities (Details taken from JSA portal) undertaken by various departments under JSA Programme are as follows:- (March 2023 to January 2024)

Sl no	Name of Activity	Works completed (in no)
1	Water Conservation and Rainwater Harvesting	25326
2	Renovation of Traditional and other Water bodies/Tanks	12551
3	Reuse and recharge Structures	26256
4	Watershed Development	82751
5	Intensive Afforestation	3,57,850

➤ **Mass Awareness Programmes:-**

The Groundwater Department has been conducting mass awareness programmes to public, students, people's representatives, Government officials, NGO's engaged in water conservation activities etc. on groundwater conservation and management in all Districts under the Plan Scheme "**Control and Regulation of Groundwater Exploitation**" for the effective groundwater management.

The mass awareness programmes being conducted by the department are highly effective and priority will be given to conduct classes on water stressed blocks of the State. The Department has conducted 340 nos of mass awareness programmes during the last 5 years and around 34600 no of participants attended the programmes.

➤ **Rig Registration Procedures:-**

Registration of private drilling agencies and private owned drilling rigs has been implemented in the State in order to control illegal bore well construction.

➤ **Amendment on Kerala Groundwater (control and regulation) Act 2002 :-**

In order to stringent the groundwater management activity in the State, Kerala Groundwater Department is in a position to draft the act amendment proposal. The proposal will be submitted to Government shortly.

The Groundwater Resource Assessment Report 2022 forms the basic document to plan strategies for sustainable groundwater management through scientific innovations. Scientific water conservation management plans to be prepared based on the Master Plan for Artificial recharge to ground water and participatory groundwater management plans at local levels would help to improve water stressed areas into a water surplus position.

DIRECTOR