

BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI.

Execution Application No. – 35/2023 in Original Application No. 673/2018

In The Matter of : News item published in “The Hindu” authored by Shri Jacob Koshy
titled “More river stretches are now critically polluted: CPCB”

**ACTION TAKEN REPORT ON POLLUTED RIVER STRETCHES OF
JHARKHAND STATE IN COMPLIANCE OF THE HON’BLE NGT ORDER VIDE
E.A NO. 35/2023, DTD. 09.10.2023**

I, John Kerketta, son of Late Tej Kumar Kerketta, residing at Kokar, P.O- Sadar, P.S.-
Bariyatu, Ranchi do hereby solemnly and state as follows:

1. That I am posted as Officer on Special Duty in Department of Forest, Environment & Climate Change, Government of Jharkhand, Ranchi and as such I am well acquainted with the facts and circumstances of the present matter. I am duly authorized to file the present Action taken Report.
2. That the answering respondent craves leave before this Hon’ble Tribunal to file further affidavit as and when required and / or directed by the Hon’ble Tribunal.
3. That, in compliance with the directions issued by the Hon'ble NGT, the Additional Chief Secretary, Forest, Environment & Climate Change, GoJ has carried out meetings at regular intervals to review the progress of bridging the gap in the solid and liquid waste management scenario and the latest review meeting was held on 29.11.2023.

The status of solid waste and liquid waste management and handling in the state is been monitored directly by the Central Monitoring Committee (CMC) constituted under Ministry of Jal Shakti (MoJS) as per the direction issued by Hon’ble NGT in Original Application 673 of 2018.

i. Status of STPs in the State:

The total estimated sewage generation in the State is **452 MLD**. The available treatment capacity is of **123.74 MLD** while the utilised capacity of all existing Sewage Treatment Plants (STPs) is **92.805 MLD**.

There are a total of 35nos. STPs in the State out of which as per the information made available from State Urban Development Agency (SUDA), Government of Jharkhand, 35

nos. STPs are operational and are complying with the norms. The details of 35 nos. of operational STPs is presented below:

Table 1.1: Details of Operational STPs in the State

S.No.	Location	No. of STP	Capacity in MLD	Total A
1	Ranchi	7	10 MLD	25.5 MLD
2	Sahibganj	2	12 MLD	
3	Rajmahal	1	3.5 MLD	
4	Ranchi	3	4.8 MLD	98.24 MLD
5	Jamshedpur	3	60 MLD	
6	Bokaro	5	32.8 MLD	
7	Dhanbad	14	0.64 MLD	
Total B		35	123.74 MLD	123.74 MLD

The details of 06 nos. of STPs of which are under construction is presented below:

Table 1.2: Details of Under Construction STPs in the State:

No.	Location	Capacity of the plant in MLD	Physical Progress in %	Status of I&D or House sewer connections	Completion Timeline
STPs					
1	Adityapur MC	36 MLD	81%	-	March 2024
2	Ranchi MC	37 MLD	80%	-	March 2024
3	Ranchi Smart City Mission	16 MLD	98%	-	March 2024 <i>Ready for testing/ Commissioning)</i>
4	Phusro NP	14 MLD	-	-	September 2025
5	Ramgarh NP	40 MLD	-	-	LOA to be issued.
6	Dhanbad MC	192 MLD	-	-	Technical Bid evaluation is under progress

The details of 02 nos. of STPs which are proposed are presented below:

Table 1.3: Details of Proposed STPs/ Septage in the State:

No.	Location	Capacity of the STP proposed in MLD	Status of Project (at DPR Stage/ Under Tendering/ Work to be Awarded)
1	Ranchi	200 MLD	Inception report submitted/received for “Ranchi Sewerage and Drainage (2006) including integration of existing/ongoing sewerage schemes (Ranchi Sewerage Zone- 1).
2	Mango	43 MLD	DPR under preparation. DPR will be finalized after finalization of funding agency.

The details of 01 no. of Septage Management Scheme which is under operational and 03 nos. of Septage Management Scheme under construction within the State of Jharkhand is presented below:

Table 1.4: Details of Proposed Septage Management in the State:

Sl. No.	Location	Capacity of the plant in MLD	Capacity being Utilised		Utilization of treated sewage for secondary purpose
Septage					
1	Giridih Municipal Corporation	0.052 MLD	70%		Campus gardening
Sl. No.	Location	Capacity of the plant in MLD	Physical Progress in %	Status of I&D or House sewer connections	Completion Timeline
Under Construction Septage:					
1	Deogarh MC	0.101 MLD	78%	-	December 2023
2	Hazaribagh MC	0.064 MLD	73%	-	December 2023
3	Chas MC	0.089 MLD	-	-	Work awarded

In addition to the above, a detailed Action Plan has been drawn up by the State Government under the Swachh Bharat Mission 2.0 to further improve liquid waste management in terms of setting up of decentralized Sewage Treatment Plants (STP) and requisite proposal for the sanction of funds has already been submitted to the appropriate authority.

Apart from above, 2 nos. of FSTPs are operational at Bundu Nagar Panchayat and Chirkunda Nagar Parishad. Letter of Acceptance has been issued for construction of 27 nos. of FSSTPs in the state. Out of 27 nos. FSSTPs, construction of 05 FSTPs in 02 nos. of polluted stretches at Gumla NP, Simdega NP, Chakuliya NPN, Majhiaon NPN and Mango MC is under progress.

Table 1.5: Details of FSPTs in the State:

No.	Location	Existing STP Capacity	Capacity Being Utilized	Operational Status of STP	Compliance Status of STP
Operational FSTPs					
1	*Bundu Nagar Panchayat	0.006 MLD	13 %	Operational	Campus Gardening
2	*Chirkunda Nagar Parishad	0.012 MLD	16 %	Operational	Campus Gardening
No.	Location	Capacity of the plant in MLD	Physical Progress in %	Status of I&D or House sewer connections	Completion Timeline
Under Construction FSTPs					
1	Gumla NP	0.008 MLD	90%	-	December 2023
2	Simdega NP	0.006 MLD	85%	-	December 2023
3	Chakuliya NPN	0.006 MLD	05%	-	October 2024
4	Majhiaon NPN	0.006 MLD	-	-	Work Awarded
5	Mango MC	0.006 MLD	-	-	Work Awarded

The details relating to progress in Liquid (sewage) Waste Management in the State is enclosed herewith as **Annexure I** comprising various items of progress depicted in tabular forms summarizing the current status of liquid waste management in the State of Jharkhand (Table 1.1), Details of existing Liquid Waste Management facilities (Table 1.1), Liquid Waste Management facilities under construction (Table 1.2), STPs proposed with time line (Table 1.3) FSTPs existing /under construction/ proposed in various ULBs in the State (Table 1.5), and details of infrastructure proposed to be constructed for Liquid (Sewage) Waste Management in the State (Table 1.4).

In areas under various municipal bodies and awareness programs conducted to spread awareness about liquid waste and solid waste management are also enclosed as photographs within this **Annexure II**.

ii. Status on Waste Management:

(a) Solid Waste Management: The total number of Urban Local Bodies is 49 and their population is 58,25,413 (as per Census 2011). The current municipal solid waste generation is 2206MTPD. There are a total 08 plants with an installed capacity of 385 MTPD and utilization of these processing facilities is currently 33.76 percent. Out of 1053 nos. of Wards, 934 wards in the State have door-to-door collection service, and 848 nos. of wards practice segregation at source.

Table 2.1: Details of MSW treatment facilities proposed and under construction (no., capacity, and technology)

Under construction MSW processing facilities in MTPD

Number	Capacity	Technology
10	1105	Windrow & Bio methanation

Proposed MSW processing facilities in MTPD

Number	Capacity	Technology
25	839	Windrow & Bio methanation

Table 2.2: Status of ULB wise Management of Solid Waste

ULB	Total MSW generation in MTPD	Total MSW being processed in MTPD	Existing MSW facilities	Utilization Capacity of the existing MSW facilities	Total Proposed MSW Facilities & Completion Timeline
49	2206	1282	8	385 TPD	25 Nos, March 2024

(b) Plastic Waste Management:

- Total Plastic Waste generation: 43332 TPA
- Treatment/ Measures adopted for reduction or management of plastic waste: violations were registered, plastic carry bags were seized from traders and fine has been imposed on them; In Chas & Jamshedpur Road construction has been done by using plastic waste and reused by M/s ACC Limited Chaibasa Cement Works (registered with JSPCB) having facility of Co-processing plastic wastes. The State Govt. has decided to declare the entire area of the State of Jharkhand as the “Plastic Carry Bags Free Area”. **(Annexure-III)**

(c) Hazardous Waste Management: The total Hazardous Waste generation in the State is 672340.6028 MT/Annum. The no. of Industries generating Hazardous waste is 603. The available treatment Capacity of 01 nos. TSDFs is 0.5 Tonns/Hours while the avg. The quantity of Hazardous waste reaching the TSDFs and Treated is 48000 MT/Annum.

Table 1.5: Details of TSDFs in the State

Sl. No.	TSDF Details	Operator
1.	Adityapur Waste Management Pvt. Ltd, Dugni, Saraikela Kharsawan	(A Division of Ramky Enviro Engineers Ltd.) Saraikela Kharsawan with installed capacity of 3.5 lac MT is operational since April 2007. Two cell of TSDF has been capped and third is in operation. Approximately 33173.4264 MT of landfillable hazardous waste has been disposed of . The common facility, situated at Plot No.-43; Khata No.-529; Dugni Mouza; Dist- Saraikela - Kharswan ;Jharkhand -833220;spread across 24 acres of land provided by Adityapur Auto Cluster (AAC). The incinerator has capacity of 0.5 Tonns/ Hours

Table 2.3: Details of List of Authorized Recyclers / Utilizers /Pre-processors/ Co-processors of Hazardous Waste in the State

Sl. No.	Name and Address of the Facility	Type of Hazardous Waste authorized for	Authorized Recycling / Utilization / Co-Processing	Quantity Recycled/ Utilized/ Co-processed
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1424

		recycling	Capacity (MTA)	(MT)
1	M/s. Nilaynarayan Polychem LLP, At- Kandra Industrial Area, Govindpur, Dhanbad.	Recycling of Hazardous Waste	81600	8797.4
2	M/s. Prince Construction, C-2 P and C-3 P, Kandra Indl. Area, Dhanbad	Alternate Oil/ Transformer Oil/Chemical Oil	4860	Return not submitted
3	M/s. Samalia Hi- Tech Co., At- Sindri Industrial Area, Plot No- 1/B-7 1B-9, Domgarh, Sindri, Dist- Dhanbad	Used Oil	9000	Return not submitted
4	M/s Bolbum Petroleum, 3rd Phase, AIA, S. Kharsawan	Used Oil and Waste oil	4968	324.94
5	M/s Jamshedpur Lubricant, 6th phase, AIA, S. Kharsawan	Used Oil and Waste oil	3312	447.12
6	M/s Mangalam Lubricants Pvt. Ltd., At.-Ranchi Khunti Road, Po- Hardag, Dist.- Ranchi- 835221	Used Oil and Waste oil	Recycling Capacity Used Oil- 16650KL/annum (15152 MT). Waste Oil- 7400KL/annum (6734 MT).	3407.07

7	M/s Tirupati Chemicals and Industries, At.+ Po-Mahilong, Dist.-Ranchi.	Closed		
8	M/s Poddar Agrotech, At.- Tupudana Industrial Area, Po-Hatia, Dist.- Ranchi.	1. Processed Lead acid batteries 2. Lead Ash 3. Lead Metal from Scrap Battery	Processed Lead acid batteries- 7.80 T/day Lead Ash - 6.50 TPD Lead Metal from Scrap Battery - 600 T(02.0 TPD)	Nil
	Total		131575.5	12976.53

iii. Details of Industrial Pollution: ETPs and CETPs in the State:

As per the information provided by the Jharkhand State Pollution Control Board (JSPCB), the total no. of water polluting industries is 339. The Quantity of effluent generated from the 282.1634 industries is MLD (approx.) Out of 339 industries 225 have installed Effluent Treatment Plant(ETPs) and 114 units are connected with Common Effluent Treatment Plant (CETP) and are compliant of the prescribed standards. Details of CETPs in the state:

- Number of existing CETP: 03
- Capacity of CETP:4700.5 KLD
- No. of under construction CETP: NIL.

Table 3.1: Status of CETPs in the State

Town	Location of CETP	Existing CETP capacity	Whether Complying or not	Status of CETPs (existing, under construction & proposed)
Ranchi	Tupudana Industrial Cluster	3.5 MLD		Under Trail Run
Adityapur	Adityapur Auto Cluster	1200 KLD	Compliant	Existing
Ranchi	Silk Park Irba Area	0.5 KLD	Compliant	Existing

iv. (a) Maintenance of e-flow: The Water Resource Dept., GoJ has submitted regulation/maintenance of E-flow is not required as there is no dam/barrage constructed in river Ganga Up Stream side of Sahebganj within territorial boundary of Jharkhand State. Regarding the 7 said river stretches, an action Plan of Flood Prone Zone along Seven polluted river stretches (Garga-Along Taimuchu, Sankh-Kongserabasar to Bolba, Subernarekha-Hatia dam to Jamshedpur, Damodar - Phusro road BDG to Torio, Jumar-Kanke dam to Kadal, Konar- Along Tilaiya and Konar, Nalkari- Along Patratu) was under formulation by M/s P.K. Infra, Gaziabad. Due to unsatisfactory work, the agreement was rescinded. Regarding the preparation of DPR for regulation of environmental flow within the towns situated along these selected seven polluted stretches of river in the state of Jharkhand, the process of appointment of a new Consultant has been initiated. **(Details in Annexure IV)**

iv. (b) Demarcation of floodplain zone: As per the report submitted by Water Resource Department, GoJ, along 83 km stretch of river Ganga falling under Sahebganj district, there is inundation mostly in areas lying to the right of the river Ganga when its level rises during high flood. The total area which gets flooded has been worked out around 54.47 square km by the Consultant WAPCOS. The demarcation of flood plain zone has also been done by the Consultant based on recorded HFL of the river along the said stretches There is no report of any illegal encroachment over existing embankment of the river in the aforesaid stretch. **(Certificate along with Drawing is enclosed at Annexure-V).**

Along 146 km Stretch of river Damodar Falling under Dhanbad and Bokaro district, there is inundation mostly in areas laying to the right and left of the river Damodar when its level rises during high flood. The total area which gets flooded has been worked out around 34 square km. The demarcation of flood plain zone has been done On basis of HFL of the river along the said stretches There is no report of any illegal encroachment over existing embankment of the river in the aforesaid stretch. **(Certificate along with Drawing is enclosed at Annexure-V).**

The action plan for demarcation of Flood Prone Zone of other river stretches (Garga Along Taimuchu, Sankh- Kongserabasar to Bolba, Subernarekha-Hatia dam to Jamshedpur, Jumar-Kanke dam to Kadal, Konar- Along Tilaiya and Konar, Nalkari- Along Patratu) was under formulation by M/s P.K. Infra, Gaziabad. Due to unsatisfactory work, the agreement was rescinded. Regarding the preparation of DPR of protection & management of Flood Plain Zone within the towns situated along this

selected stretches of river in the state of Jharkhand, the process of appointment of new Consultant has been initiated. **(Details in Annexure IV)**

iv. (c) **Ground water regulation:** The Water Resource Department, GoJ have identified the contaminated hand pumps and sealed those hand pumps whose water is not fit for drinking. The contamination of the groundwater is caused mainly due to the presence of Fluoride in excess in few in identified blocks of 12 districts of Jharkhand (Ranchi, Gumla, Garwaha, Khunti, Palamu, Dhanbad, Bokaro, Giridih, Godda, Kodema, Pakur, Sahebganj). Portable water is supplied to the Communities in the identified critical blocks through water tanker owned by local bodies and log book is maintained. Periodic assessment of 24 districts and 263 blocks of Jharkhand for groundwater resources was conducted by Jharkhand in 2009, 2011, 2013 & 2017, 2020, 2022 and 2023 which also covers the area related to 7 polluted stretches and based on which a comparative statement of dynamic ground water resources as published in Dynamic Ground Water Resources Of India, 2023 which is attached as **Annexure VI**. As per the report of CGWA, Baliapur, Golmuri Cum Jugsalai Jamshedpur Urban, Chitarpurand Bermo are among the overexploited blocks, and Topchanchi, Dhanbad Urban, Jainagar, Ramgarh, Silli and Ranchi Urban are among critical blocks and Karon, Sarwan, Sonaraithadhi, Gobindpur, Dhanbad, Bhawanathpur, Giridih, Daru, Koderma, Khelar and Ormanjhiare among semi-critical blocks along the seven polluted river stretches. Groundwater quality monitoring shall be carried out at least twice in the year (winter: December-January and summer: May-June) at strategic locations to ascertain quality of groundwater.

As reported, 106 nos. Rain Water Harvesting (RWH) Structures is proposed to be taken up reference under the Ganga and Damodar basins. The present status of the Progress of various over-structures is enclosed in **Annexure –V**.

Restoration of 143 no. of water bodies is proposed to be taken up under the Ganga and Damodar basins. The present status of the Progress of various structures is enclosed at **Annexure-V**.

v. Action against identified polluters, law violators, and officers responsible for failure for vigorous monitoring: Environmental Compensation has been charged upon 5 units:

1. Bokaro Thermal Power Station, D.V.C.- Bokaro River
2. Chandrapura Thermal Power Station, D.V.C. – Damodar River
3. HIDALCO Muri- Swarnrekha River,
4. K.G Industries and Grasim Industry, Rehela: Koel River

5. Amrapali OCP- Damodar River.

vi. Plantation activities along the rivers and Development of biodiversity park:

The work has started to set up a Bio-diversity Park at Mehndipur, Sahebganj as per the guidelines of NGT and the fund is being Mobilised from CAMPA Jharkhand. The details about afforestation along the river stretches has been tabulated below:

Table No. 6.1: Afforestation along the river stretches.

Sl. No.	Name of the River	Total Distance Covered (Kms)	Total No. of Trees Planted
1.	Garga River	5	15000
2.	Damodar River	39	117000
3.	Konar River	11	33000
4.	Swarnrekha River	109	327000
5.	Nalkari River	5	15000
6.	Jumar River	35	105000
7.	Sankh River	12	36000

vii. Water Quality:

The results of river water analysis being conducted regularly under National Water Monitoring Program (NWMP) at the downstream of existing STPs are in compliance with the primary water quality criteria for bathing water notified by MoEF&CC under Environment Protection Rules, 1986. This monthly analysis report under NWMP is being regularly uploaded in CPCB's EWQDES portal.

The water quality data presented by the State of Jharkhand during the period from January 2023 up to October 2023 has been analysed and the same has been compared with the water quality data of the year 2020 (January – December), the same has been summarized in Table 7.1.

Table No. 7.1: Water Quality Data in Polluted River Stretches.

Sl. No.	Stretch	Range of BoD (mg/l) in the Year-2020	Range of BoD (mg/l) in the Year 2023 (Jan.- Oct.)
1.	Garga, Along Talmuchu, P-IV	3.7	3
2.	Sankh, Kongserabasar to Bolba, P-IV	8.4	2.4
3.	Swarnrekha, Hatia Dam to Jamshedpur, P-IV	3.4-10	2.4 - 5

4.	Damodar, Phusro Road Bdg to Turio, P-V	3.9	2.8
5.	Jumar, Kanke Dam to Kadal, P-V	2.1-3.3	1.2 - 3.9
6.	Konar, Along Tilaya and Komar, P-V	3.4-3.6	2.6
7.	Nalkari, Along Patratu, P-V	3.8	2.6

It is seen from the above table that following river polluted stretches have now been reporting Biochemical Oxygen Demand (BoD) levels which are conforming to bathing standard (i.e BoD. of 3 mg/1 or less of the water ensures reasonable freedom from oxygen demanding pollutants and prevent production of obnoxious gases.) The State is undertaking efforts to ensure that these stretches which reportedly fall under cleaner category shall continue to remain clean and should not slip back to polluted stretches. The water quality report for the month of Oct. 2023 is attached as

Annexure VII

4. That, it is most humbly submitted that from the facts stated above, it is evident that the Government has taken several steps for prevention and control of water pollution & its quality improvement by regularly monitoring the compliance and enforcement of the steps so taken through various committees constituted at all levels.
5. That, I have read the contents of the report and have understood the same and nothing material has been concealed there from.

John Kirpal
12/12/2023
DEPONENT

Govt. of Jharkhand
Urban Development & Housing Department
State Urban Development Agency

From,

Amit Kumar, IAS
Director,

To,

Addl. Secretary,
Department of Forest, Environment and Climate Change,
Nepal House, Doranda Ranchi,
Jharkhand -834002

Ranchi/Date..... 08/12/2023

Sub: Regarding Compliance to the Minutes of meeting held on 29.11.2023 for compliance of the directions of Hon'ble NGT in EA No. 35/2023.

Ref: Dept. of FE&CC, GOJ, MoM Memo No. 4511, dated 06.12.2023 and Letter No. 4398, Dated- 28.11.2023.

Dear Sir,

With reference to the above-mentioned subject for compliance of the directions issued by the Hon'ble NGT in EA No. 35/2023 dated 09.10.2023 which is related to the directions issued by Hon'ble NGT in OA No. 673/2018 dated 22.02.2021.

In this regard, a compliance report is hereby enclosed for further necessary compliances.

Enclosure: A/a

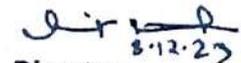
Yours faithfully,


8.12.23
(Amit Kumar)
Director.

Memo no. SMC/UD&DH/NGT/RRC/2019/12 (Part-1) 219

Ranchi/Dated..... 08/12/2023

Copy To: - PS to the Secretary, Urban Development and Housing Department (UD&HD), Jharkhand/
Member Secretary, Jharkhand State Pollution Control Board (JSPCB) for information.


8.12.23
Director.

Compliance report of the directions of Hon'ble NGT, Principal Bench, New Delhi, order dated 09.10.2023 in E.A. No. 35/2023 meeting held on 29.11.2023 (MoM Memo No. 4511 Dated 06.12.2023).

1. Preventing Discharge or dumping of liquid and solid waste.

1.1. Current total Municipal Solid Waste Generation- 2206 MTPD in 49-Urban Local Bodies (Population-58,25,413 as per Census 2011).

1.2. Details of Municipal Solid Waste (MSW) treatment facilities:

(a) Existing MSW processing facilities in MTPD

Number	Capacity	Technology
8	385	Bio methanation & Windrow

(b) Under construction MSW processing facilities in MTPD

Number	Capacity	Technology
10	1105	Windrow & Bio methanation

(c) Proposed MSW processing facilities in MTPD

Number	Capacity	Technology
25	839	Windrow & Bio methanation

A details status report on MSW projects is enclosed as **Annexure-1**.

1.3. No. and area (in acres) of legacy waste within 1km buffer of both side of the rivers. -Nil

1.4. No. of drains falling into rivers and no. of drains having floating racks/screens installed to prevent solid waste from falling into the rivers: 47 no of drains in 8 ULBs identified in O.A.673/2018. (**Annexure-2**)

1.5. Status of ULB wise Management of Solid Waste:

Total ULB	Total MSW generation in MTPD	Total MSW being processed in MTPD	Existing MSW facilities	Utilization Capacity of the existing MSW facilities	Total Proposed MSW Facilities & Completion Timeline
49	2206	1282	8	385 TPD	25 Nos, March 2024

2. Utilization of treated sewage for secondary purpose.

2.1. Details of each existing STPs/FSTPs/Septage in the State

Sl. No.	Location	Existing STP Capacity	Capacity Being Utilized	Utilization of treated sewage for secondary purpose
STPs				
1	Ranchi Municipal Corporation	10 MLD	100%	• Discharge into Harmu river.
2	Sahibganj Nagar Parishad	12 MLD	58%	• Discharge into river Ganga through Outfall structure as per specified norms.
3	Rajmahal Nagar Panchayat	3.5 MLD	32%	
FSTPs				
4	Bundu Nagar Panchayat	0.006 MLD	16%	• Campus Gardening

Sl. No.	Location	Existing STP Capacity	Capacity Being Utilized	Utilization of treated sewage for secondary purpose
5	Chirkunda Nagar Parishad	0.012 MLD	13%	• Campus Gardening
Septage				
6	Giridih Municipal Corporation	0.052 MLD	70%	• Campus Gardening

2.2. Details of under construction STPs/FSTPs/Septage in the State

No.	Location	Capacity of the plant in MLD	Physical Progress in %	Status of I&D or House sewer connections	Completion Timeline
STPs					
1	Adityapur MC	36 MLD	81%	-	March 2024
2	Ranchi MC	37 MLD	80%	-	March 2024
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4	Phusro NP	14 MLD	-	-	September 2025
5	Ramgarh NP	40 MLD	-	-	LOA issued
6	Dhanbad MC	192 MLD	-	-	Technical Bid evaluation is under progress
FSTPs					
7	Gumla NP	0.008 MLD	90%	-	December 2023
8	Simdega NP	0.006 MLD	85%	-	December 2023
9	Chakuliya NPn	0.006 MLD	05%	-	October 2024
10	Manjhiaon NPn	0.006 MLD	-	-	Work awarded
11	Mango MC	0.006 MLD	-	-	Work awarded
Septage					
12	Deoghar MC	0.101 MLD	78%	-	December 2023
13	Hazaribagh MC	0.064 MLD	73%	-	December 2023
14	Chas MC	0.089 MLD	-	-	Work awarded

2.3. Details of proposed STPs/FSTPs/Septage in the State

No.	Location	Capacity of the STP proposed in MLD	Status of Project (at DPR Stage/ Under Tendering/ Work to be Awarded)	Likely Date of Completion
STPs				
1	Ranchi	200 MLD	Inception report submitted/received for "Ranchi Sewerage and Drainage (2006) including integration of existing/ongoing sewerage schemes (Ranchi Sewerage Zone- 1).	-

No.	Location	Capacity of the STP proposed in MLD	Status of Project (at DPR Stage/ Under Tendering/ Work to be Awarded)	Likely Date of Completion
2	Mango	43 MLD	DPR under preparation. DPR will be finalized after finalization of funding agency.	-
FSTPs				
3	Khunti	0.014 MLD	Under Tendering Stage	-
4	Lohardaga	0.030 MLD		
5	Hussainabad	0.014 MLD		
6	Bishrampur	0.015 MLD		
7	Garhwa	0.020 MLD		
8	Jhumritiliya & Koderma	0.030 MLD		
9	Banshidhar	0.006 MLD		
10	Hariharganj	0.004 MLD		
11	Chatra	0.018 MLD	Under DPR Stage	-
12	Latehar	0.010 MLD		
13	Chhattarpur	0.010 MLD		
14	Domchanch	0.009 MLD		
15	Dhanwar	0.006 MLD		
16	Mahgahma	0.004 MLD		
17	Barkishariya	0.007 MLD		
18	Dhanbad	0.054 MLD		
19	Madhupur	-		
20	Pakur	-		
21	Basukinath	-		
22	Godda	-		
23	Sarikela	-		
24	Chaibasa	-		
25	Kapali	-		
26	Chakradharpur	-		
27	Barharwa	--		
28	Jamtara			
29	MihiJam	-		

3. Details of treatment plants in line with the River Stretches covered

River	Strech	ULB Located on Bank	Remarks
Garga	Along Talmuchu	Chas Nagar Nigam	<ul style="list-style-type: none"> Chas Septage under AMRUT Work Awarded. New land has been identified and under transfer process. (Annexure-3)
Subarnarekha	Hatia Dam to Jamshedpur	Ranchi Nagar Nigam Jamshedpur	<ul style="list-style-type: none"> Adityapur Sewerage AMRUT Under Execution 81% Work Completed. Mango Sewerage DPR work under progress 16 MLD STP under Ranchi Smart City is ready for trial and Commissioning by March 2024.
Damodar	Phusro Road Bridge to Turio	Ramgarh Phusro Dhanbad	<ul style="list-style-type: none"> 14 MLD Interception & Diversion (I&D) scheme for Phusro Nagar Parishad –Work Started and targeted to complete the work by September 2025 funded by Gol (National Mission for Clean Ganga). (Annexure-4) 40 MLD Interception & Diversion (I&D) scheme for Ramgarh Nagar Parishad – LOA issued work will be started by Feb 2024 and targeted to complete by March 2026 funded by Gol (National Mission for Clean Ganga). (Annexure-5) Dhanbad Towns construction work of 192 MLD Interception & Diversion scheme for is under tender HAM (Hybrid Annuity Model) work is expected to be awarded by March 2024 and target to complete by March 2027 funded by Gol (National Mission for Clean Ganga). (Annexure-6)
Jumar	Kanke Dam to Kadal	Ranchi Nagar Nigam	<ul style="list-style-type: none"> Ranchi Sewerage (Zone-1) Under Execution 80% work Completed state funded
Konar	Along Tilaya and Konar	Tilaya	<ul style="list-style-type: none"> State funded Jhumritiliya & Koderma 0.030 MLD FSTPs is under tendering. (Annexure-7)

SWM Status Report (Approved project)

S. No.	Name of ULB	Tender Status	Design Capacity of Plant	Processing Plant Progress Status
Existing SWM				
1	Deoghar	Work awarded	160 TPD	Completed and Functional
2	Giridih	Work awarded	50 TPD	Completed and Functional
3	Jhumritilaya &	Work awarded	50 TPD	Completed (Under Trial run).
4	Koderma			
5	Chakulia	Work awarded	25 TPD	Completed (Under Trial run).
6	Godda	Work awarded	25 TPD	Completed (Under Trial run).
7	Bundu	Work awarded	25 TPD	Completed (Under Trial run).
8	Pakur	Work awarded	25 TPD	Completed (Under Trial run).
9	Khunti	Work awarded	25 TPD	Completed.
Under Construction SWM				
10	Mihijam	Work awarded	25 TPD	Plant Construction Overall progress 95%.
11	Madhupur	Work awarded	25 TPD	Plant Construction Overall progress 70%.
12	Chirkunda	Work awarded	25 TPD	Plant Construction Overall progress 46%.
13	Rajmahal &	Work awarded	50 TPD	Plant construction Overall progress 45%.
14	Sahebganj			
15	Saraikeela	Work awarded	25 TPD	Plant Construction Overall progress 29% completed & Machine Procured. Due to local public hindrance on a new land identification and is under transfer process.
16	Latehar	Work awarded	15 TPD	Plant Construction Overall progress 23%.
17	Garhwa	Work awarded	50 TPD	Overall 5% work completed. Stopped due to non compliance of forest land.
18	Dhanbad	Work awarded	540 TPD	Boundary wall construction completed.
19	Chatra	Work awarded	50 TPD	Boundary wall construction completed.
20	Ranchi	Work awarded	300 TPD (150X2)	Plant construction has been started and expected to be functional by March 2024.
Proposed SWM				
21	Chas	Work awarded	150 TPD	A new land identified is under acquisition/procurement.
22	Chaibasa	Work awarded	25 TPD	A new land aquired and construction started.
23	Jamtara	Work awarded	25 TPD	Work not started due to public hindrance on land. New land identification is under process.
24	CKP	Work awarded	25 TPD	Land identification is under process.
25	Adityapur	Work awarded	300 TPD	Agreement done.
26	JNAC			
27	Mango			
28	Jugsalia			
29	Kapali			

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30	Simdega	Work awarded	25 TPD	Agreement done.
31	Phusro	Work awarded	34 TPD	
32	Hazaribagh	Under Tendering Process	95 TPD	
33	Lohardaga	Work awarded	60 TPD	LOA issued, Agreement and SPV formation is under process.
34	Medininagar	Under Administrative Approval (AA).	100 TPD	Project is under Administrative Approval (AA).

SWM Status Report (DPR Stage)

S. No.	Name of ULB	DPR Status
35	Gumla	Project is under Administrative Approval (AA).
36	Ramgarh	
37	Dumka	
38	Manjhiaon	
39	Bishrampur	
40	Bansidhar Nagar	
41	Basukinath	
42	Hussainabad	DPR under Technical Sanction (TS).
43	Barharwa	DPR under Preparation/revision.
44	Dhanwar	
45	Badkisariya	
46	Domachanch	Under Tender finalization for selection of DPR Consultant.
47	Mahagama	
48	Chhatarpur	Request for Proposal (RFP) is under approval for selection of DPR Consultant.
49	Hariharganj	

Sr. No.	Name of River	Name of ULBs	Name of Drains visited through which sewage directly discharged into the river	Approx. flow in drains (in MLD)
1	Damodar	Ramgarh Nagar Parishad	Drain near Argada village.	2
			Parsotia Nallah at Gola road Ramgarh	5
			Sahoo nallah Ramgarh	6
Total Flow				13
2	Damodar	Dhanbad Municipal Corporation	Jeetpur Nallah	30
			Jodiya Nallah	100
			Chas Nallah	15
			Domgarh Nallah	3
			ACC Jamdoba Nallah	1.5
			Sudamadih Nallah	2
			Matkuriya checkpoint Nallah (in city area ultimately discharged into Jodiya nallah)	60
			Wasseypur Nallah (in city area ultimately discharged into Jodiya nallah)	30
Total Flow				63.5 (for 4 drains)
3	Damodar	Phusro Nagar Parishad	Bermosi nallah	4
			Ghutiyatad nallah	1
			Dhorikhas nallah	2
			Joriya Pull nallah	12
Total Flow				5 (for 2 drains)

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4	Garga	Chas Municipal Corporation	Drains near Gai ghat on the banks of Garga River.	3
			Drain at Medicine Gali near bridge on Garga river	2.5
			Drains at Bhojpur colony near bridge	6
			Drains at Bharra colony near bridge	2
			Drain at Bharra colony (Niche muhalla)	0.7
			Drain at Chira Chas near Pandey bridge	2
			Singar joriya nallah	12
			Total Flow	28.2
5	Subernarekha	Adityapur Municipal Corporation	JRDCL Drain	4
			Nagina Puri Drain	6
			Ram Madaiya nallah	7
			Road No. 32 Drain	7
			Saldih Drain	2
			Baba Kuti Drain	2
			Total Flow	28
6	Subernarekha	Jamshedpur NAC	Drain near Chhaya nagar bus stand (near WTP):	10
			East Plant Basti Drain	30
			510 Number Basti/ Sithgoda Drain (near CSIR-NML)	5

			Drain near old Baridih Colony	3
			Kumariya Nallah	25
			Jublie Park drain	5
			Sonari drain near Domuhani	2
			Asiana drain opposite Mandakini enclave	2
Total Flow				82
7	Subernarekha	Mango Municipal Corporation	Daiguttu Nallah	8
			Dimna Nallah	10
			Mooncity Nallah	7
			Paras Nagar Nallah	6
			Gurudwara Basti Nallah	2
Total Flow				33 (for 5 nos. of drains)
8	Subernarekha	Ranchi Municipal Corporation	Drain at Tupudana Industrial area in Hatia	6
			Drain at Hatia town	1.5
			Drain at Dhurwa	4
			Drain at Patel Nagar (Ward no. 52)	8
			Drain at Hetu	6
			Ghaghra nallah	10
Total Flow				35.5

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Government of Jharkhand

Receipt of Online Payment of Stamp Duty

NON JUDICIAL

Receipt Number : 16bd569f77b621af24fd

Receipt Date : 03-Jul-2023 07:41:04 pm

Receipt Amount : 1000/-

Amount In Words : One Thousand Rupees Only

Document Type : Agreement or Memorandum of an Agreement

District Name : Ranchi

Stamp Duty Paid By : SOPHISTICATED INDUSTRIAL MATERIALS ANALYTIC LABS PVT LTD

Purpose of stamp duty paid : AGREEMENT

First Party Name : JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LTD

Second Party Name : SOPHISTICATED INDUSTRIAL MATERIALS ANALYTIC LABS PVT LTD

GRN Number : 2318052201

-: This stamp paper can be verified in the [jharnibandhan](#) site through receipt number :-



This Receipt is to be used as proof of payment of stamp duty only for one document. The use of the same receipt as proof of payment of stamp duty in another document through reprint, photo copy or other means is penal offence under section-62 of Indian Stamp Act, 1899

इस रसीद का उपयोग केवल एक ही दस्तावेज पर मुद्रांक शुल्क का भुगतान के प्रमाण हेतु ही किया जा सकता है। पुनः प्रिन्ट कर अथवा फोटो कॉपी आदि द्वारा इसी रसीद का दूसरे दस्तावेज पर मुद्रांक शुल्क का भुगतान के प्रमाण हेतु उपयोग भारतीय मुद्रांक अधिनियम, 1899 की धारा 62 अन्तर्गत दण्डनीय अपराध है।



Project Manager

AGREEMENT FOR THE PROJECT TITLE:

“Septage Management Scheme of Chas Town”

(NIT:- JUIDCO/NIT/Septage/Chas/correspondence/2628/494)

This Agreement made at Ranchi on this 11th day of July, 2023.

AGREEMENT NUMBER: 519 - - (JUIDCO)

BY AND BETWEEN

JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED (JUIDCO Ltd.), a company owned by Government of Jharkhand, incorporated under (Indian) Companies Act, 2013 having its registered office at **Room NO. 411, Urban, Development Department, Project Building, Dhurwa, Ranchi-834004** and presently operating from **JUIDCO Bhawan, Kutchery Chowk, Ranchi-1, Jharkhand**, (hereinafter called “the Employer” which expression shall unless repugnant to the context or meaning thereof, mean and include its successors in office and permitted assigns) through its authorized representative **MR. RADHAKANT SINGH, Project Manager** duly authorized by resolution passed by Board of Directors of JUIDCO/Employer of the **FIRST PART**;

AND

M/S Sophisticated Industrial Materials Analytic Labs Pvt. Ltd. having its registered office at **A-3/7, Mayapuri Industrial Area, Phase-2, New Delhi-110064, India** (Hereinafter called “the Contractor” which expression shall unless repugnant to the context or meaning thereof, mean and include its successors in office and permitted assigns) through its authorized representative **MR. RAM PRATAP SINGH, DGM-Finance** of the **SECOND PART**.

Whereas the Employer is desirous that the Contractor execute the work/Project as mentioned below: (NIT:- JUIDCO/NIT/Septage/Chas/correspondence/2628/494)



For & on behalf of JUIDCO Limited

[Handwritten Signature]
Project Manager

“Septage Management Scheme of Chas Town” (hereinafter called “the Works”) under Urban Development and Housing Department, Govt. of Jharkhand and the Employer has qualified the tender and accepted the Bid by the contractor for the execution and completion of such works and the remedying of any defects therein, at the cost of Rs. 44,05,45,517/- (Rupees Forty Four Crore five Lakh forty Five thousand Five Hundred Seventeen) Only (hereinafter called as “Contract Prices”) shall be inclusive of all duties & taxes i.e. GST etc.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract (attached with the document circulated by the Employer for the Project) hereinafter referred to and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity with all aspects with the provisions of this agreement and the Tender document.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein Contract Price or such other sum as may become payable under the provisions of this Agreement and the Tender document at the times and in the manner prescribed by the Contractor and approved by the Engineer-in-Charge.
4. Interest bearing Mobilization Advance @10% per annum interest on submission of unconditional Bank Guarantee of 110% of the advance payment. (to be drawn before the end of 20% of Contract period). **The provisions relating to Mobilization Advance shall be as per the guidelines issued by the Government of Jharkhand time to time.**
5. This shall be released in not less than two installments. The new/next installment will be paid after receipt of utilization certificate of the previous installment.
6. The Contractor will furnish part 'Bank Guarantees' (BGs) against the Mobilization advance shall be taken in as many numbers as the proposed milestones in Contract

For & on behalf of JUIDCO Limited


Project Manager



Data. Deduction of advance will commence after releasing of payment (Running Bill) equivalent to at least 20% of Contract price / Completion of 6 months from the date of payment of 1st installment of Mobilization Advance.

7. In case of non-achievement of milestone and accordingly non-production running bills and consequently non-recovery of Mobilization advance, the Part BG against the Mobilization advance to that extent shall be forfeited.
8. Submission of insurance paper is must before releasing of 1st Running Bill.

9. PROJECT COMMENCEMENT DATE AND COMPLETION DATE:

The Intended Completion Date for the whole of the Works is **12 months** [(9 months of construction) + (3 months of Defects Liability Period 'DLP' including 1 month of Trial run)] after start of work in accordance with the milestone.

10. PAYMENT TERMS:

As per the provisions of this Agreement and Tender Document.

Important Milestone and Key Time periods under Contract

Important milestone and key time periods as per the terms of Contract are given in below Table:

Sl. No.	Description of Item	% Payment	Timeline from Start of Contract
1	Completion of Survey and Basic Engineering Package (BEP) and preparation of Good for construction drawings	3%	2 Months
2	On completion of Site Clearance Boundary Wall, Fencing and Gate	3%	3 Months
3	On completion of SeTP - Civil Works	25%	7 Months
4	On completion of SeTP - Mechanical Works	32%	9 Months

For & on behalf of JUIDCO Limited

[Signature]
Project Manager



5	On completion of SeTP – Electrical and instrumentation Works	10%	9 Months
6	On commissioning of SeTP	5%	10 Months
7	On completion of Trial Run of SeTP	5%	
8	On completion of DLP of SeTP	5%	12 Months
9	Procurement of Equipments and Machineries for Collection System	12%	8 Months
	Total	100%	12 Months

11. The following documents shall be deemed to form and be ready and construed as part of this Agreement viz.

- (i) This Agreement;
- (ii) Performance Bank Guarantee & Confirmation (PBG);
- (iii) Letter of Acceptance vide no. 898, dated- 29.05.2023;
- (iv) Proceeding of Tender Committee, dated- 19.04.2023 (Financial);
- (v) Proceeding of Tender Committee, dated- 13.04.2023 (Financial);
- (vi) Proceeding of Tender Committee, dated-. 03.04.2023 (Technical);
- (vii) Proceeding of Tender Committee, dated- 14.12.2022 (Technical);
- (viii) Proceeding of Tender Committee, dated- 21.10.2022 (Technical);
- (ix) Copy of Corrigendum – 3, 2 & 1;
- (x) Copy of Invitation for Bids (IFB) National Competitive Bidding, dated- 16.08.2022;
- (xi) Copy of BOQ;
- (xii) Priced Bid (Financial Bid/Bill of Quantities) of the Contractor;
- (xiii) Contractors' Bid Documents (including form of Bid & Work Programme etc.);
- (xiv) SBD, 6th call, General & Special, Contract data, technical specifications and drawings etc.) and
- (xv) Any other document listed in the Contract Data as forming part of the Agreement.

12. TERMINATION

It shall be as per provisions contained in the Tender document.

For & on behalf of JUIDCO Limited

[Signature]
Project Manager



13. DISPUTE RESOLUTION

- I. The Employer and the Contractor shall make every effort to resolve amicably by direct negotiations, any disagreement or dispute, arising between them under agreement.
- II. If after thirty days from the commencement of such direct negotiation, the dispute is not resolved, it shall be referred to the appointed Expert Mediator of Jharkhand State Legal Services Authority (JHALSA) which will also be known as Dispute Review Expert.
- III. Pending the submission of and/or decision on a dispute, difference or claim or until the matter is decided by Expert Mediator of JHALSA, the Contractor shall continue to perform all its obligations under this agreement without prejudice of final adjustment in accordance with such award.
- IV. The Employer may terminate this Agreement, by giving a written notice of termination of minimum 60 (sixty) days to the Contractor, if the Contractor fails to comply with terms of settlement of Mediation of the Dispute Review Expert, i.e. the Expert Mediator of JHALSA.
- V. In the case of dispute arising upon or in relation to or in connection with the contract between the Employer and the Contractor, which has not been settled amicably either by direct negotiation or mediation, any party can refer the dispute for arbitration under the Arbitration and Conciliation Act 1996 and amended provisions thereof. The place of arbitration shall be Ranchi and language of arbitration shall be English.

14. LEGAL JURISDICTION

This agreement shall be subject to the exclusive jurisdiction of the Courts at **Ranchi, Jharkhand**.

15. GOVERNING LAW

This Contract shall be governed by and construed in accordance with the laws of India. Neither Client nor the Contractor shall have the right to transfer or assign their responsibilities resulting from this Agreement.

16. AMENDMENTS AND MODIFICATIONS

This Agreement constitutes the entire understanding between both the parties relating to the Works and it shall not be amended or modified except as agreed in writing by both the Parties.



For & on behalf of JUIDCO Limited
[Signature]
Project Manager

This Agreement contains 7 (Seven) pages in total and annexure thereof.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be signed and executed by its duly authorized officers and have set their hands as of the date first above written.

<p>FOR AND ON BEHALF OF</p> <p>Jharkhand Urban Infrastructure Development Company Limited (JUIDCO Ltd.)</p> <p>For & on behalf of JUIDCO Limited</p> <p><i>R. Singh</i> Project Manager</p> <p>MR. RADHAKANT SINGH, Project Manager</p> <p>Seal & Signature of the Employer</p> <p>WITNESSES:</p> <p>1. <i>[Signature]</i> (JUIDCO Ltd.)</p> <p>2. <i>[Signature]</i></p>	<p>FOR AND ON BEHALF OF</p> <p>M/S Sophisticated Industrial Materials Analytic Labs Pvt. Ltd.</p> <p></p> <p>MR. RAM PRATAP SINGH, DGM-Finance</p> <p>Seal & Signature of the Contractor</p> <p>WITNESSES:</p> <p>1. <i>[Signature]</i> (Ram Pratap Singh)</p> <p>2. <i>[Signature]</i></p>
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कार्यालय, चास नगर निगम, चास (बोकारो)

आईटीआई मोड, NH-32, चास, बोकारो, पिन-827013

E-mail:- chasmunicipalcouncil@gmail.com



पत्रांक - 3618

दिनांक 05/12/2023

प्रेषक,

प्रशासक-सह-अपर नगर आयुक्त,
चास नगर निगम।

सेवा में,

उपायुक्त,
बोकारो।

विषय :- चास नगर निगम क्षेत्रान्तर्गत अमृत योजना के तहत चास सेप्टेज प्रबंधन योजना का निर्माण कराने हेतु भूमि निःशुल्क हस्तांतरण करने के संबंध में।

महाशय,

उपरोक्त विषय के संदर्भ में कहना है कि चास नगर निगम क्षेत्रान्तर्गत अमृत योजना के तहत चास सेप्टेज प्रबंधन योजना के लिए मंत्री परिषद की बैठक 04.10.2016 के मद सं० 02 में लिए गये निर्णय के आलोक में STP निर्माण हेतु बोकारो जिला के अंचल चास मौजा - बेडानी, थाना सं० - 129, खाता सं०- 32, प्लांट सं०- 656, कुल रकवा - 2.20 एकड़ भूमि को नगर विकास एवं आवास विभाग, झारखण्ड सरकार, राँची को पत्रांक 420 दिनांक 14.02.2019 के द्वारा अंतरविभागीय निःशुल्क हस्तांतरित किया गया था। परंतु उक्त भूमि पर स्थानीय विवाद है। साथ ही अंचल अधिकारी, चास का पत्रांक 2763 दिनांक 27/10/2023 के द्वारा उक्त भूमि का बंदोवस्ती थोका में दर्ज होने से संबंधित प्रतिवेदित किया गया है (छायाप्रति संलग्न)। जिसके आधार पर उक्त स्थल पर चास सेप्टेज प्रबंधन योजना का कार्य किया जाना संभव प्रतीत नहीं होता है।

अंचल - चास, मौजा - पुपुनकी, थाना सं० - 24, खाता सं० - 223, नया खाता सं० - 982, प्लांट सं० - 1198, नया प्लांट सं० - 1022 कुल रकवा - 23 एकड़ 98 डिसमील जमीन का अंश 02 एकड़ भूमि चास सेप्टेज प्रबंधन योजना के लिए चिन्हित किया गया है। (छायाप्रति संलग्न)

अतः अनुरोध है कि चास सेप्टेज प्रबंधन योजना का सफल क्रियान्वयन कराने हेतु भूमि हस्तांतरण करने की कृपा की जाए।

अनु० - यथोक्त।

विश्वासभाजन


05.12.23

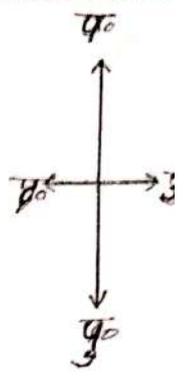
प्रशासक

-सह-

अपर नगर आयुक्त
चास नगर निगम।

जिला:- बीकानेर
मंडल:- चास
अंचल:- चास
मौजा:- पुपुनकी
थाना सं:- 24
पुराना खाता सं:- 223
पुराना प्लॉट:- 1198
नया खाता सं:- 982
नया प्लॉट सं:- 1022
कुल रकबा:- 23 ख. 98 डि.
प्रस्तावित रकबा:- 2 ख.

पतांक:-
दिनांक:-

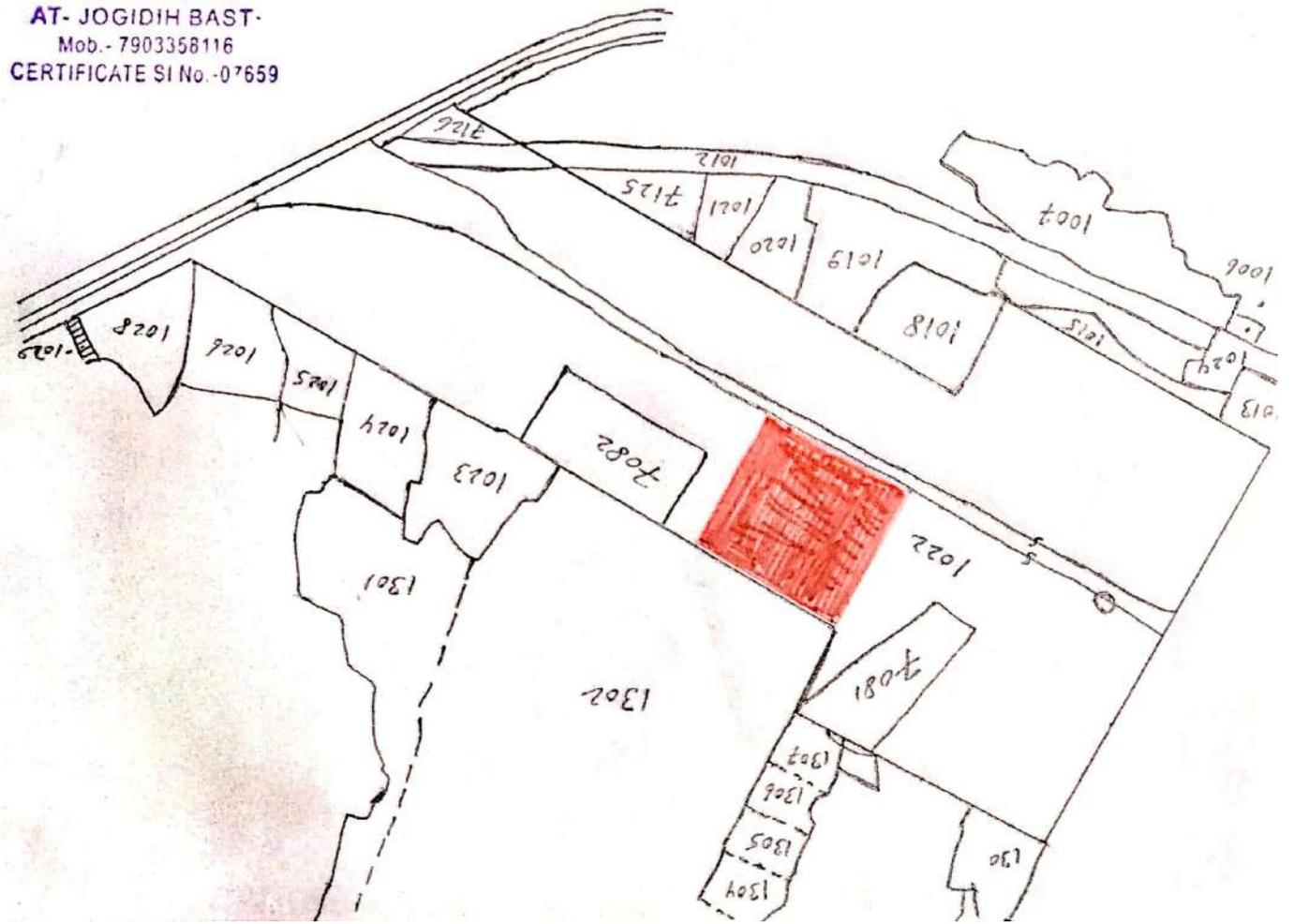


चौदही

पुं:- प्लॉट सं:- 1302A
पं:- PCC रोड।
उं:- W.T.P नगर निगम का।
दं:- सामुदायिक भवन पुपुनकी का।
Note:- प्रस्तावित भूखी लाल रंग से दर्शाया गया है।

(Signature)
01/12/2023

AMIN
RAJESH SAW
AT- JOGIDIH BAST.
Mob.- 7903358116
CERTIFICATE SI No.- 07659





झारखंड सरकार
राजस्व एवं भूमि सुधार विभाग
अधिकार अभिलेख

रेयत का नाम, अभिभावक का नाम, रिश्ता											
जिला परिषद, अज्ञात - , जाति- अज्ञात, निवासी-											
जिला का नाम	बोकारो	अंचल का नाम	चास	हलका का नाम	हल्का-03	मौजा का नाम	पुपुनकी	खाता का प्रकार	जिला परिषद		
खेवट नम्बर	खाता नम्बर 982		थाना का नाम	चास	थाना नम्बर 0024						
खाता नम्बर	खेसरा नम्बर	चौहद्दी उत्तर 3 चौहद्दी दक्खिन 4	किस्म जमीन	मिजान		कैफियत / अभ्युक्ति	हाकिम के तहकीकात मुताबिक लगान/सेस	लगान			खास शर्त
(1)	(2)	(3)	कियारी संख्या (5)			(8)	(9)	रौ (10)	आ (11)	पै (12)	(13)
982	4738	? अ ? अ	0	1 एकड़	31 डिसमील			0	0	0	
	4510	? अ ? अ	0	0 एकड़	7 डिसमील						
	1004	? अ ? अ	0	8 एकड़	18 डिसमील						
	1011	? अ ? अ	0	1 एकड़	48 डिसमील						
	1012	? अ ? अ	0	2 एकड़	43 डिसमील						
	1990	? अ ? अ	0	4 एकड़	82 डिसमील						
	1022	? अ ? अ	0	23 एकड़	98 डिसमील						
खाता मे कुल प्लोट संख्या	7	खाता का कुल मिजान (खतियान के अनुसार)	42	27	खाता का कुल लगान	0	0	0			

यह एक कंप्यूटर जनित प्रति है

12/1/2023

यह प्रपत्र केवल प्रार्थी की जानकारी के लिए है

इसका उपयोग किसी भी न्यायालय में साक्ष्य के रूप में नहीं किया जा सकता है।

किसी भी प्रकार की अशुद्धियों के लिए सम्बन्धित अंचलाधिकारी से संपर्क करें।



Form 1

Maintenance of records Form of Continuous Khatian to be maintained by the Anchal Adhikari under Section 3(1)

(See Rule 4)

Continuous Khatian(Plot

wise)

Anchal- चास Rev P.S- चास State of- झारखण्ड Police Station- चास R.T.No 0024

खाता नम्बर	रियत का नाम, पिता का नाम एवम जाति	प्लॉट संख्या	चौहद्दी	ए	डे	हे	लगान	कैफियत / अभ्युक्ति	भाग वर्तमान/ पृष्ठ संख्या
982	जिला परिषद, अज्ञात-, जाति- अज्ञात	1022		23 ऐ	98 डि	0 हे	0		1 / 984

12/1/2023

यह एक कंप्यूटर जनित प्रति है
यह प्रपत्र केवल प्रार्थी की जानकारी के लिए है
इसका उपयोग किसी भी न्यायालय में साक्ष्य के रूप में नहीं किया जा सकता है।
किसी भी प्रकार की अशुद्धियों के लिए सम्बन्धित अंचलाधिकारी से संपर्क करें।

अंचल अधिकारी का कार्यालय, चास (बोकारो)।

पत्रांक 2763 /

Concerned
city mgr

प्रेषक,
सेवा में,

Put up with the
concerned file

(16)
27/10

अंचल अधिकारी,
चास।

प्रशासक-सह-अपर नगर आयुक्त,
चास नगर निगम।

चास, दिनांक 27/10 / 2023

विषय :

मंत्री परिषद की बैठक दिनांक 04.10.2016 के मद सं0-02 में लिए गये निर्णय के आलोक में चास सैप्टेज प्रबंधन योजना STP निर्माण हेतु बोकारो जिला के अंचल, चास, ग्राम-बेड़ानी, थाना सं0-129, खाता नं0-32, प्लॉट नं0-656, रकवा-2.20 एकड़, गैर आबाद मालिक खाते की भूमि है, जिसका किस्म पुरातन पतित को नगर विकास एवं आवास विभाग, झारखण्ड, राँची को अन्तर्विभागीय निःशुल्क हस्तांतरण के संबंध में।

प्रसंग :
महाशय,

भवदीय कार्यालय पत्रांक 2225, दिनांक 18.07.2023

उपर्युक्त विषयक प्रासंगिक पत्र के आलोक में अधोहस्ताक्षरी एवं अंचल निरीक्षक की उपस्थिति में अंचल अमीन/संबंधित राजस्व उपनिरीक्षक से जाँच कराई गई।

अंचल अमीन/संबंधित राजस्व उपनिरीक्षक के द्वारा प्रतिवेदित किया गया है कि सैप्टेज प्रबंधन योजना STP निर्माण हेतु आवंटित भूमि मौजा-बेड़ानी, थाना नं0-129, खाता नं0-32, प्लॉट नं0-656, रकवा-2.20 ए0 गैरआबाद मालिक खाते की भूमि है। इस भूमि उक्त योजना का निर्माण में निम्नलिखित रैयतों द्वारा यह कह कर विरोध किया जा रहा है कि उक्त प्रश्नगत भूमि इनलोगों को सरकारी बन्दोबस्ती द्वारा प्राप्त भूमि है। जिसकी जमाबन्दी भी थोका में दर्ज है।

क्रमांक	नाम/पिता पति का नाम	रकवा	थोका सं0	
			भाग	पृष्ठ
1.	फटीक बाउरी, पिता-हरखु बाउरी	0.91 ए0	05	176
2.	अरुण बाउरी, पिता-बाबु बाउरी	0.91 ए0	05	177
3.	वेनी माधव महतो, पिता-ज्योति महतो	0.25 ए0	06	26
4.	अहिल्या देवी, पिता-हरिपद महतो रेणुका देवी, पिता-दशरथ महतो	0.08 ए0	06	27
5.	श्रीमति गन्धारी देवी, पिता-रघुनाथ बाउरी	0.20 ए0	06	24
6.	सगतुली महतो, पिता-रोशन महतो	0.12 ए0	06	25

पंजी II के आधार पर दर्ज उक्त जमाबन्दी भू-बन्दोबस्ती केश सं0 क्रमशः 83 (X)/88-89, 85(X)/88-89, दा0खा0 केश नं0-153(X)/88-89, दा0खा0 केश नं0- 152(X)/88-89, दा0खा0 केश नं0-148(X)/89-88, 151(X)/88-89 के आदेशानुसार दर्ज है।

अतः भवदीय को जाँच प्रतिवेदन की मूल प्रति अग्रतर कार्रवाई हेतु इस पत्र के साथ संलग्न कर भेजा जा रहा है।

अनु0 :- यथोक्त।

विश्वासमाजन

अंचल अधिकारी,

27/10/2023

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JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED

(Govt. of Jharkhand Undertaking)
JUIDCO BHAWAN, KUTCHERY ROAD, RANCHI, JHARKHAND
Ph. No.: +91-651-2225878, Mob. No.: +91 9471006062
e-mail Id-juidcolimited@gmail.com
CIN: U45200JH2013SGC001752,



Letter No.: JUIDCO Ltd./Tender/Phusro I&D/2763/2021/1305 Date: 28.06.2023

WORK ORDER

To,

M/s Annu Projects Pvt. Ltd. - M/s Noble Construction Co. (JV),
Plot No. 11, 1st Floor, LSC, Sector-B-1, Vasant Kunj,
New Delhi - 110070
e-mail: info@annuprojects.com/aicipl@gmail.com

Sub: i) Design and Build Sewage Treatment Plant of installed Capacity 4 MLD and 10 MLD and all appurtenant structures and allied works at Phusro Nagar Parishad, District Bokaro in the state of Jharkhand; (ii) Survey, Review the Designs, redesign where necessary, and construction of Interception & Diversion structures of Drains, Rising Main, Sewage Pumping Stations and all appurtenant structures and allied works controlled with SCADA and Operation & Maintenance of the complete works for a period of 15 years Phusro Nagar Parishad, District Bokaro in the state of Jharkhand

Ref: 1. NIT No.: JUIDCO/PHUSRO/I&D/STP/2022/489
2. Agreement No. 512-JUIDCO, Dated 16.06.2023

Sir,

With reference to the above, we are pleased to place this Work Order for the Project mentioned under Subject with Project Value (Contract Amount) of INR 52,81,52,498/- (INR Fifty Two Crore Eighty One Lakh Fifty Two Thousand Four Hundred and Ninety Eight Only). This Rate has been approved by the competent authority.

1. The approved rate is inclusive of all taxes, royalty, labour cess as per applicable laws.
2. You have to open a site office at the site within 15 days from the date of Contract and address of the site office has to be communicated to JUIDCO Ltd. Ranchi.
3. You have to deploy technical man power and others as mentioned in Bid Document and List of manpower to be deployed has to be submitted to JUIDCO Ltd. Ranchi.
4. Mobilization advance will be paid as per the terms mentioned in the bid document.
5. The work will be supervised and monitored by JUIDCO Ltd.
6. Payment for the work will be made by JUIDCO Ltd, Ranchi as per terms and payment schedule given in the Bid Document. The R/A bills have to be submitted by the Operator to Project-in- charge of the Work.
7. The total completion time for the entire work is 24 (Twenty Four) calendar months from the date of Contract and 15 (Fifteen) years Operation & Maintenance (O & M) period. After completion of O&M period the whole project will be handed over to the concerned ULB/ JUIDCO Ltd. as to be informed by the Employer.
8. The work will be carried out as per proposal/ Specification as mentioned in the tender document and clarified in pre- bid meeting by departmental tender committee. Progressive work has to be ascertained as per Bid Document.

✓

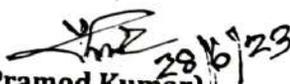
[Handwritten Signature]

9. The work is to be completed as per the approved terms, conditions and specifications. All the works has to be executed as per department specification, CPHEEO manual and relevant IS codes.
10. All the necessary designs and drawings which are in the scope of Operator are to be approved as per site conditions before execution of the work by JUIDCO, Ranchi. The design and drawing have to be submitted by the Operator to JUIDCO Ltd. The design and drawing will be checked by the concerned officials and will be finally approved by JUIDCO Ltd.
11. The Bid Document, Proceedings of pre-bid meetings and all other related tender documents shall be the part of the Contract.
12. Quality of work has to be ensured by the Operator.
13. Within 15 days from issue of Work Order, the Operator will have to submit a component wise work execution plan and the same will be approved by JUIDCO Ltd.
14. The expenditure should be restricted to the Contract value and in case any deviation is expected, the same should be brought to the notice of the undersigned.
15. You are required to construct 4 MLD and 10 MLD STPs, consisting of all the 13 components including MPS as referred in the Clause No. ITB 3.3(f)(2)(ii)(b) of Bid Data Sheet of the tender document within 2422.560 sqm and 4007.812 sqm respectively as quoted in your bid and any additional land required for the construction of the above STPs will attract additional cost in accordance with the Special Condition of the Contract Article 14, Clause 4.2

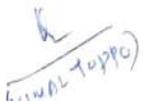
Please acknowledge receipt of this order with your confirmation of its acceptance and the additional copy enclosed may be returned with your signature in token of your acceptance.

Thank you.

Yours faithfully,


 (Pramod Kumar)
 General Manager (O&M)
 JUIDCO Ltd.


 (Pramod Kumar)


 (Vimal Toppe)
 JGM
 24/02/2023

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JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED

(Govt. of Jharkhand Undertaking)
JUIDCO Bhawan, Near Kutchery Chowk,
Ranchi-834001, Jharkhand.

Ph No.: +91-651-2225878
CIN: U45200JH2013SGC001752, e-mail Id- juidcolimited@gmail.com



Letter No.: JUIDCO/Tender/Ramgarh I & D/3266/2022 – 3|22

Dated: 22.11.23

LETTER OF ACCEPTANCE

To,

M/s Enviro Infra Engineers Ltd. – M/s Bhugan Infracon Pvt. Ltd. (JV)
201, 2nd Floor, RG Metro Arcade,
Rohini Sector 11, Delhi - 110085
E-mail : ho@eiepl.in

Sub: Interception & Diversion and STP works in Ramgarh Town, Jharkhand.

Sir,

This is to notify you that your Bid dated 09.05.2023 for execution of the “Interception & Diversion and STP works in Ramgarh Town, Jharkhand”; contract and identification number NIT No.: JUIDCO/NIT/Ramgarh I&D/527 for the Contract Price of **Rs. 205,35,22,577/- (Rupees Two Hundred Five Crore Thirty-Five Lakh Twenty-Two Thousand Five Hundred Seventy-Seven)** only (inclusive of all applicable taxes), as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted.

You are required to Design and Build Sewage Treatment Plant of installed capacity 17 MLD & 23 MLD and all appurtenant structures and allied works at Ramgarh Nagar Parishad, District Ramgarh in the state of Jharkhand; Survey, Review the designs, Redesign where necessary, and construction of interception & diversion structures of drains, interceptor sewer-gravity main, rising main, intermediate pumping stations, sewage pumping stations and all appurtenant structures and allied works controlled with SCADA and operation & maintenance of the complete works of sewage treatment plants, interception & diversion works, gravity main, rising main, intermediate pumping stations and all appurtenant structures etc. at Ramgarh Nagar Parishad, District Ramgarh in the state of Jharkhand for a period of 15 years; (A) Twenty One (21 nos.) Interception & Diversion structures, outfall drain structure, at Ramgarh Nagar Parishad, District Ramgarh in the state of Jharkhand; (B) Four (4 nos.) Intermediate Pumping Station for North zone and South zone (2 each), at Ramgarh Nagar Parishad, District Ramgarh in the state of Jharkhand; (C) Gravity Main of 27.703 KM, Rising Main 8.445 KM at Ramgarh Nagar Parishad, District Ramgarh in the state of Jharkhand and (D) Two STPs of 17 MLD STP and 23 MLD STP for North zone and South zone respectively, at Ramgarh Nagar Parishad, District Ramgarh in the state of Jharkhand.

You are hereby requested to furnish Performance Security of 4% [3% for Design & Built + 15 years of O & M) + 1% for Environmental, Social, Health and Safety (ESHS)] of the Total Contract Price including 15 years of O & M as per clause 6.5 of Section 6 of ITB for an amount equivalent to **Rs. 8,21,41,000/- (Rupees Eight Crore Twenty-One Lakh Forty-One Thousand)** only, plus an additional security for unbalanced Bids equivalent to an amount of **Rs. 2,58,00,000/- (Rupees Two Crore Fifty-Eight Lakh)** only in accordance to clause no. 6.5 (b) of Section 2, The Bidding Document, within 15 days of receipt of this Letter of Acceptance (LOA) in accordance with the Condition of Contract. Performance Security for

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Design and Build Part shall cover the period for design and build (i.e., 30 months) plus the first 3 years of O&M after completion of construction work. Performance Security for the O&M Part shall be in three years intervals to be extended/renewed up to the entire O&M period. Each O&M performance security shall be extended/renewed within 120 days prior to the expiry of the previous performance security.

Yours faithfully,



(Gopal Jee)

Project Director (Technical)

Visionary Urban Development



JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED

(A Government of Jharkhand Undertaking)

JUIDCO Bhawan, Kutchery Road, Ranchi-834001



E-Tender Notice

NIT No.- JUIDCO/NIT/Dhanbad I&D/550

Dated:27.06.2023

On behalf of the Managing Director, Jharkhand Urban Infrastructure Development Company Limited, undersigned invites online e-tender from eligible Bidders for the following work. Interested Bidders may view and download tender document and upload their tender, duly filled, online as given below.

1. Name of Work	<p>“Interception & Diversion and STP works in Dhanbad town, Jharkhand State, including Operation & Maintenance period of 15 years through Hybrid Annuity Based PPP Mode under Namami Gange Programme”.</p> <p>Sewage Treatment plant:</p> <ul style="list-style-type: none"> • Development of 18 MLD STP at River Katri • Development of 21 MLD STP at River Vasudev • Development of 75 MLD STP at Matkuria nala • Development of 60 MLD STP at Joriya nala • Development of 18 MLD STP at Govindpur Balia nala <p>Associated Infrastructure:</p> <ul style="list-style-type: none"> • Interception & Diversion structure -7 nos. • Interception & Diversion network laying- 14,243 m • Development of 3 pumping stations – (38.83 MLD, 6.81 MLD and 51.91 MLD) – 97.57 MLD • Effluent channel Disposal of treated effluent through pipeline of 1150 m • Rising main from IPS to STP- 13,300 m • Main Pumping Station- 5 nos. • IPS- 3 nos. • Staff Quarters – 5 nos. • Operation & Maintenance for 15 years.
2. Estimated Capital Works Cost/ Period of Construction	INR 392.72 Crores (tentative) / 30 Months for construction and 3 Months for the trial operations of new facilities.
3. Estimated Operation & Maintenance Cost/ Period of Operation	INR 377.18 Crores / 15 years from COD of Dhanbad facilities
4. Bid Security Declaration	Bid Security Declaration to be submitted along with proposal
5. Date & Time of availability of bid documents	From 03 rd July 2023
6. Site visit	Up to 13 th July 2023, 18.00 hours
7. Last date for receiving queries from Bidders	15 th July 2023, 16:00 hours
8. Pre-bid meeting details	24 th July 2023, at 14:00 hours Venue: JUIDCO Bhawan, Kutchery Road, Ranchi, Jharkhand 834001
9. Last date & time for receipt of bids (Bid Due Date)	07 th August 2023 at 15:00 hours
10. Submission of original Bank guarantee for bid security, Power of Attorney and Joint Bid agreement copy	07 th August 2023 upto 15:55 hrs.
11. Opening of Bids (Qualification Proposals)	07 th August 2023 at 16.00 hours
12. For any clarifications, please contact	Office of the Project Director -Technical, Jharkhand Urban Infrastructure Development Corporation Ltd., JUIDCO Bhawan, Kutchery Road, Ranchi, Jharkhand 834001, India Phone No. 0651-2225878 E-mail: juidcolimited@gmail.com
13. Bids must be submitted through e-procurement portal https://jharkhandtenders.gov.in before the date & time specified as per Bid Due Date. JUIDCO does not take any responsibility for the delay/non availability of internet connection, Network Traffic/Holidays or any other issues.	
14. Details of tender, corrigendum, updates on consultative/pre-bid meetings etc. may be obtained at website: https://jharkhandtenders.gov.in/ . For tender documents and electronic submission of bids: https://jharkhandtenders.gov.in/	

Jhumri Telaiya Nagar Parishad
Near Bazar Samiti, Koderma Block,

Reference No.-ULB/NIT/JHUMRI-TELAIYA SEPTAGE/TENDER/1910/2023/

Date:- 18.07.2023

Tender Notice (Ath Call)

IMPORTANT INFORMATION

1	Name of Work	Construction & Commissioning of Faecal Sludge Treatment Plant of Capacity 30 m ³ /day at Jhumri Telaiya (Jharkhand) and Operation and Maintenance for 5 years
2	Estimated Cost (INR)	Construction Cost: ₹ 4,60,47,370 Operation & Maintenance Cost: ₹1,83,39,514 Total:- ₹ 6,43,86,884
3	Bid Security (INR)	₹6,44,000/- (Rupees Six Lakhs Forty Three Thousands Only)
4	Cost of Bid Document (INR)	₹ 10,000/- (Rupees Ten Thousand Only); non-refundable
5	Time of Completion	1 year of construction which comprises 9 months of construction and 3 months of defect liability period including one month of trial run and 5 years of O&M post DLP
6	Date of e-publication of tender	<u>26.07.2023</u> , 17:00 Hrs
7	Document downloading start Date	<u>26.07.2023</u> , 17:00 Hrs
8	Start date for seeking clarification	<u>26.07.2023</u> , 17:00 Hrs
9	End date for seeking clarification	<u>14.08.2023</u> , 17:00 Hrs
10	Pre bid meeting date, Time & Venue	<u>08.08.2023</u> , 14:00 Hrs at Chamber of Office of Executive Officer, Nagar Parishad, Jhumri Telaiya Jharkhand – 826409.
11	Bid submission end date	<u>16.08.2023</u> , 17:00 Hrs
12	Last day for the submission of Bid Security, cost of bid document	<u>18.08.2023</u> , 17:00 Hrs
13	Bid opening date (online)	<u>21.08.2023</u> , 17:30 Hrs

Complete bid document is available on website <http://Jharkhandtenders.gov.in>

Other details can be seen in the bidding documents.

*Bid security 1% of Bid amount.

Letter no- 1108

Date- 18-07-2023


18-07-23
Administrator
Jhumri telaiya Nagar Parishad.

Copy to:- DPRO, Koderma for Publishing and necessary action.


18-07-23
Administrator
Jhumri telaiya Nagar Parishad

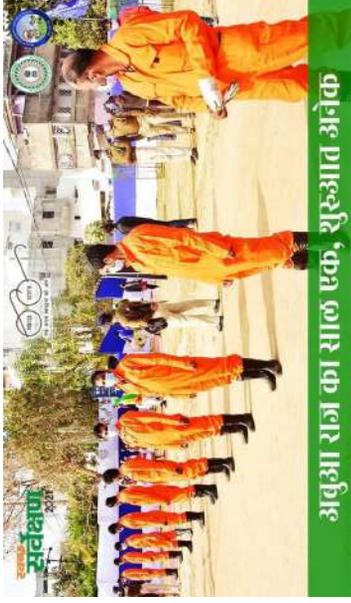
IEC Activities Under SBM(U)



अवुआ राज का साल एक, शुरुआत अनेक



अवुआ राज का साल एक, शुरुआत अनेक



अवुआ राज का साल एक, शुरुआत अनेक



धनबाद :- #पुराने_टायरों_से_बनी_कलाकृति
300 पुराने टायरों तथा दूसरे रथी सामानों से बना तथा लुबी सर्कुलर के किनारे स्थापित ये हाथी लोगों के बीच आकर्षण का केंद्र बन रहा है ।



1458



Annexure- II





THE
JHARKHAND GAZETTE
EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 777

25 Aashwin, 1938 (S)
Ranchi, Tuesday, 17th October, 2017

Department of Forest, Environment and Climate Change

NOTIFICATION

15 September, 2017

Notification No.- 3/PrayaPradu-52/2007/3900-- Whereas, plastic carry bags cause short-term and long-term environmental damage and health hazard;

And whereas, Article 48-A of the Constitution of India, inter alia, envisages that the State shall endeavour to protect and improve the environment;

And whereas, the Government of Jharkhand is of the opinion that, the use of plastic carry bags is causing grave and irreparable injury to the environment and the health of human beings as well as animals;

And whereas, it is observed that plastic carry bags are also causing blockage of gutters, sewers and drains resulting in serious environmental problems;

And whereas, with a view to prevent the occurrence of such problems, the State Government has decided to declare the entire area of the State of Jharkhand as the "**Plastic Carry Bags Free Area**";

Now therefore, in exercise of the powers conferred under Section 5 of the Environment (Protection) Act, 1986 (No. 29 of 1986) as delegated under Section 23 of the said Act by the Central Government vide Notification No. S.O. 352 (E) New Delhi, dated 18.04.2001, the State Government, by this notification, issues the following directions for the complete Ban of manufacture, import, storage, transportation, sale and usage of Plastic Carry bags in all parts of the state; namely,

1. No industry shall manufacture plastic carry bags and no person including a shopkeeper, vendor, wholesaler or retailer, trader, hawker or rehriwala etc., shall use

plastic carry bags for supply of goods and no person shall manufacture, store, import, sell or transport plastic carry bags in the State of Jharkhand with effect from the date of final publication of this Notification.

Provided that plastic carry bags manufactured exclusively for export purposes against any export order shall be exempted in terms of Rule 2(2) of the Plastic Waste Management Rules, 2016 from the application of this notification.

Explanation :- For the purpose of this Notification the words 'plastic' and 'carry bags' shall have the same meaning as defined under the Plastic Waste Management Rules, 2016. Containers used for packaging food material, milk and milk products and raising plants in nurseries shall not be deemed as carry bags.

2. Jharkhand State Pollution Control Board shall be responsible for enforcement in respect of the functions relevant to this notification and specified in clause (1) of Rule 12 of the Plastic Waste Management Rules, 2016, whereas the Urban Local Bodies and Gram Panchayats shall be responsible for enforcement under their jurisdictions in respect of the functions relevant to this notification and specified in clause (2) and (3) respectively of Rule 12 of the said Rules.

3. Officers as mentioned in Government of India's Notification No. S.O. 394 (E) dated 16 April, 1987 issued under Section 19 of the Environment (Protection) Act, 1986 shall be authorized to file complaints in the jurisdictional court of law against violation of directions contained in this notification.

4. From the date of final publication of this Notification, Notification No. 3/Parya.Pradush.-62/2007-3691 Van Parya., dated 11 September, 2013 shall be superseded except in respect of things done or omitted to be done before such supersession, to the extent that complaint cases filed under previous the Notification are pending.

By order of the Governor of Jharkhand,

Sunil Kumar,
Deputy Secretary to the Government.

146.1
अधीक्षण अभियंता का कार्यालय
योजना एव मोनिटरिंग अंचल-2
जल संसाधन विभाग, राँची

पत्रांक :-2/पी०एम०सी०/विविध/721/2019.....586

/राँची, दिनांक-30/11/2023

प्रेषक,

ई० प्रदीप कुमार गुप्ता,
अधीक्षण अभियंता

सेवा में,

श्री राजू रंजन राय,
सरकार के अपर सचिव
वन, पर्यावरण एवं जलवायु परिवर्तन विभाग,
नेपाल हाउस, राँची।

विषय :- माननीय N.G.T .नई दिल्ली में दायर वाद O.A. No.-673/2018 में पारित आदेशों के अनुपालन की अद्यतन स्थिति के संबंध में।

प्रसंग :- आपका पत्रांक-7/पर्या०प्रदू०(वाद)-02/2019-4420 दिनांक-29.11.2023

महाशय,

उपर्युक्त विषयक वाद के संदर्भ में निदेशानुसार माननीय N.G.T .नई दिल्ली में दायर वाद O.A. No.-673/2018 में पारित आदेशों में जल संसाधन विभाग से संबंधित बिन्दुओं का अद्यतन अनुपालन प्रतिवेदन आवश्यक कार्रवाई हेतु संलग्न कर प्रेषित की जा रही है।

अनु०:-यथोक्त।

विश्वासभाजन,

(प्रदीप कुमार गुप्ता)
अधीक्षण अभियंता

Compliance Report in the matter of Hon'ble N.G.T. Case O.A. No.- 673/2018

Department : Water Resources Department

Sl. No	Activity to be monitored	Update Status
(i)	Protection and management of flood plain zones along seven polluted stretches of rivers within the state of Jharkhand.	Action Plan of Flood Prone Zone along Seven polluted river stretches (Garga-Along Taimuchu, Sankh- Kongserabasar to Bolba, Subarnarekha-Hatia dam to Jamshedpur, Damodar – Phusro road BDG to Torio, Jumar-Kanke dam to Kadal, Konar- Along Tilaiya and Konar, Nalkari- Along Patratu) was under formulation by M/s P.K. Infra, Gaziabad. Due to unsatisfactory work, the agreement was rescind. Regarding Preparation of DPR of protection & management of Flood Plain Zone and assessment of ground water recharging/rainwater harvesting structure and regulation of environmental flow within the towns situated along this selected seven polluted stretches of river in the state of Jharkhand, the process of appointment of new Consultant has been initiated.
(ii)	Assessment & regulation of Environment Flow along seven polluted stretches of river within the state of Jharkhand.	Action Plan for maintenance of E- flow along the seven polluted river stretches Garga, Sankh, Damodar, Subarnarekha, Nalkari, Jumar and Konar will be completed by the same Consultant
(iii)	Completion of work related Ground Water Recharge/rain Water harvesting along seven polluted river stretches	Action Plan for Ground Water Recharge is simultaneously will be completed by the Consultant

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मुख्य अभियंता का कार्यालय
योजना मोनिटरिंग एवं आयोजन
जल संसाधन विभाग, राँची

पत्रांक -2/पी०एम०सी०/विविध/754/2019 (खण्ड-1).....460

/राँची, दिनांक 11/09/2023

प्रेषक,

ई० मोती लाल पिंगुआ
मुख्य अभियंता (मो०)।

सेवा में,

निदेशक
राज्य शहरी विकास अभिकरण
नगर विकास एवं आवास विभाग,
राँची।
E-mail-jhspmngngra@gmail.com

विषय :- माननीय N.G.T. के वाद संख्या-200/2014 में पारित आदेश के ससमय अनुपालन के संबंध में।

प्रसंग :- नगर विकास एवं आवास विभाग का पत्रांक-SUDA/UDHD/NGT/2019/17(Part-2)/44/2020-145 राँची दिनांक- 07.08.2023

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संदर्भ में निदेशानुसार वाद संख्या-200/2014 के संबंध में जल संसाधन विभाग से संबंधित बिन्दुओं का अद्यतन कार्य प्रगति प्रतिवेदन सूचनार्थ एवं आवश्यक कार्रवाई हेतु संलग्न की जाती है।

अनु :- यथोक्त।

विश्वासभाजन,
M. L. Pingu
(मोती लाल पिंगुआ)
मुख्य अभियंता (मो०)

Compliance Report in the matter of Hon'ble N.G.T. Case O.A. No.- 200/2014

Department : Water Resources Department

Sl. No	Activity to be monitored	Update Status
(i)	Demarcation of Flood Plain Regulation(Including prevention of encroachment)	<p>Along 83 km stretch of river Ganga falling under Sahebganj district, there is inundation mostly in areas lying to the right of the river Ganga when its level rises during high flood. The total area which gets flooded has been worked out around 54.47 square km by the Consultant WAPCOS. The demarcation of flood plain zone has also been done by the Consultant based on recorded HFL of the river along the said stretches There is no report of any illegal encroachment over existing embankment of the river in the aforesaid stretch. (Certificate along with Drawing is enclosed at Annexure-I).</p> <p>Along 146 km Stretch o river Damodar Falling under Dhanbad and Bokaro district, there is inundation mostly in areas laying to the right and left of the river Damodar when its level uses during high flood. The total area which gets flooded has been worked out around 34 square km. The demarcation of flood plain zone has been done .On basis of HFL of the river along the said stretches There is no report of any illegal encroachment over exiting embankment of the river in the aforesaid stretch. (Certificate along with Drawing is enclosed at Annexure-II).</p>
(ii)	E-Flow Maintenance	<p>No issue of regulation/maintenance of E-flow does exists as there is no dam/barrage constructed in river Ganga Up Stream side of Sahebganj within territorial boundary of Jharkhand State</p>

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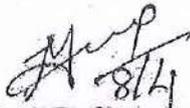
(iii)	Steps for conservation of ground water particularly with reference to critical, Semi critical or over-exploited areas.	106 nos. Rain Water Harvesting (RWH) Structures is proposed to be taken up under Ganga and Damodar basins. Present status of Progress of various structures is enclosed at Annexure – III.
(iv)	Restoration of water bodies	Restoration of 143 no. of water bodies is proposed to be taken up under Ganga and Damodar basins. Present status of Progress of various structures is enclosed at Annexure – IV.
(v)	Compliance on other various direction of the committee's 3 rd meeting held on 25.04.2022 (MoM No. 112 Dated 13.05.2022) in order to comply the Hon'ble NGT Court Order related to River Ganga & Its tributary river Damodar.	As per direction of 3 rd meeting the progress of 106 rain water harvesting (RWH) and 143 no. of water bodies proposed to be taken under Ganga and Damodar Basin has been enclosed at annexure III & IV respectively.

मुख्य अभियंता का कार्यालय
जल संसाधन विभाग
देवघर

पत्रांक :- 617 देवघर दिनांक :- 08.04.2022

Along 83 km stretch of river Ganga falling under Sahibganj district, there is inundation mostly in areas lying to the right of the river Ganga when its level rises during high flood. The total area which gets flooded has been worked out around 54.47 square km. The demarcation of flood plain zone has also been done by the consultant based on recorded HFL of the river along the said stretches (Drawing enclosed). There is no report of any illegal encroachment over existing embankment of the river in the aforesaid stretch.

It is to certify that the above 54.47 Square km is Flood Prone Zone.


मुख्य अभियंता
जल संसाधन विभाग
देवघर

INDEX MAP

Coordinate System: WGS 1984 UTM Zone 43
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: 75.0000
Scale Factor: 0.9996
Latitude Origin: 0.0000
Units: Meter



Source: Geo-Map of India (Bharat) Geographics (GNSS/Aerials) by ISRO, USGS, Aerials, etc. and the GIS User community

Legend

- Reach lines
- sahebganjVillage
- FPRB
- FP Reach 1
- FP Reach 3
- FP Reach 4
- FP Reach 5
- FP Reach 6
- FP Reach 7
- FP Reach 8
- FP Reach 9
- FP Reach 10
- FP Reach 11

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Reach	Chainage(km)	Right Bank Elevation	HFL	Area in Sq m	Area in Hec.
1	15.5	28.698	30.62	825591	82.5591
	16	27.278	30.62		
	16.5	29.003	30.62		
2					
3	27.5	25.118	30.24	441262	44.1262
	28	23.006	30.24		
	29	29.562	30.09		
4	31	27.388	30.09	728514	72.8514
	31.5	25.069	30.09		
	33	22.1	30.09		
5	38.5	27.665	29.74	2837496	283.7496
	39.5	22.935	29.74		
6	41	22.741	29.57	8096660	809.666
	42	26.005	29.57		
	42.5	26.766	29.57		
	43	25.797	29.57		
	43.5	26.392	29.57		
	44	26.148	29.57		
	44.5	26.783	29.57		
7	58	25.216	28.65	3212776	321.2776
	58.5	24.841	28.65		
	59.5	25.43	28.65		
	59	25.009	28.65		
8	63	25.719	28.65	3488151	348.8151
	64	24.979	28.28		
	64.5	24.148	28.28		
9	67.5	23.356	28	9509949	950.9949
	68	24.682	28		
	68.5	23.98	28		
	69	24.419	28		
	69.5	24.963	28		
	70	24.611	28		
10	66	22.107	28	15987503	1598.7503
	70.5	25.94	27.85		
	71	25.539	27.85		
	71.5	25.851	27.85		
	72	25.281	27.85		
	72.5	25.209	27.85		
	73	24.543	27.85		
	73.5	24.504	27.85		
11	74.5	23.611	27.85	9349883	934.9883
	75.5	24.526	27.85		
	78.5	23.729	27.09		
	79	24.079	27.09		
	79.5	23.833	27.09		
	80	23.683	27.09		
	80.5	23.189	27.09		
Total Area	81	22.595	27.09	54477785	5447.7785
	82	22.562	27.09		

मुख्य अभियंता का कार्यालय,
जल संसाधन विभाग,
हजारीबाग।

क्र.क :- 267

हजारीबाग, दिनांक :- 08/04/2022

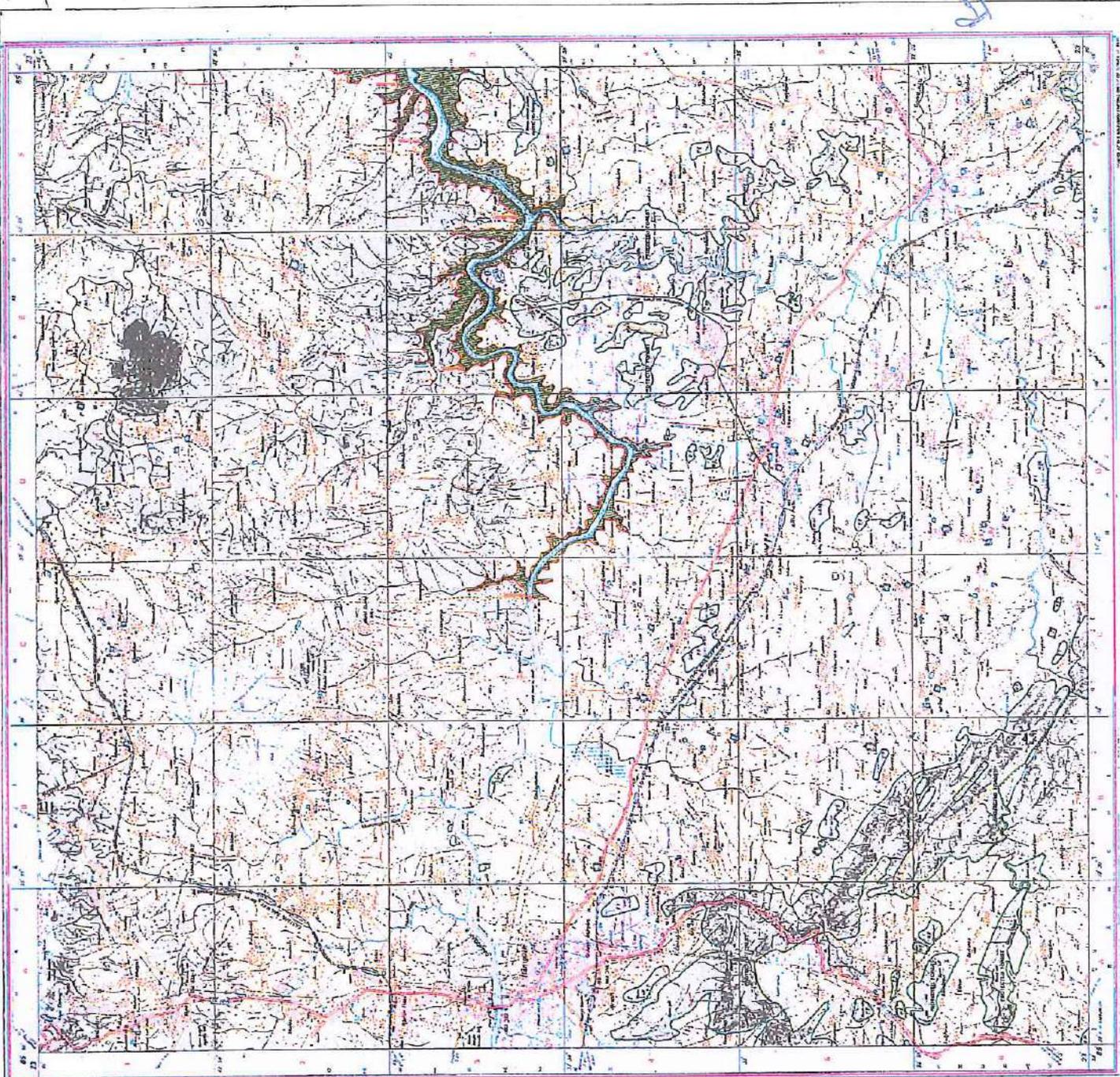
Along 146 km Stretch of river Damodar Falling under Dhanbad and Bokaro district, there is inundation mostly in areas laying to the right and left of the river Damodar when its level rises during high flood. The total area which gets flooded has been worked out around 34 square km. The demarcation of flood plain zone has been done. On basis of HFL of the river along the said stretches (Drawing enclosed). There is no report of any illegal encroachment over existing embankment of the river in the aforesaid stretch.

It is to certify that the above 34 Square km is Flood Prone Zone.

Rajj
8.4.22
कार्यपालक अभियन्ता
तेनुघाट बाँध प्रमंडल, तेनुघाट
(बोकारो)

(Signature)
8.4.2022
(Chief Engineer)
WRD, Hazaribag

Tanjungkat
Tanjungkawan
E. S. 1/2
1/2



No. F45B10

Scale 1:50,000

F45B05 1956	F45B06 1956	F45B07 1956	F45B08 1956
F45B09 1956	F45B10 1956	F45B11 1956	F45B12 1956

CONVENTIONAL SYMBOLS

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REMARKS

Produced by INSURAN
 Map No. F45B10
 Scale 1:50,000
 Date: 1956

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गंगा एवं दामोदर बेसीन अंतर्गत Rain Water Harvesting Structure की सूची :-

S.N	Name of Site	District	No. of Recharge Pit	Up to date progress	Remarks
	(क) गंगा बेसीन				
	3	5	6		15
1	Aadiwasi Kalyan Chhatrawas National School, Dumka	Dumka	1	Work in Progress	
2	Chief Engineer Office Minor Irrigation Dumka		1	Complited	
3	District Control Room, Dumka		1	Complited	
4	District High school, Dumka		1	Complited	
5	Engineering College Dumka		2	Complited	
6	Girls High School, Dumka		2	Work in Progress	
7	Muk Badhir Vidhyalaya, Dumka		2	Complited	
8	Polytechnic Colleege, Dumka		2	Complited	
9	Primary School Mahuadangal, Dumka		1	Complited	
10	SP College , Dumka		2	Complited	
11	SP Law College, Dumka		2	Complited	
12	SP Mahila College, Dumka		2	Complited	
13	Sri Ramkrishna Middle School dudhani, Dumka		1	Complited	
14	Kasturba vidyalaya Jama		2	Complited	
15	Middle School Jama		1	Complited	
16	BSNL Office, Godda	Godda	2	Work in Progress	
17	Circuit House, Godda		1	Work in Progress	
18	Community Building Cum Kalyan Mandap, Godda		1	Work in Progress	
19	District Agriculture Office, Godda		1	Work in Progress	
20	District Cow Development Office, Godda		1	Complited	
21	Godda College, Godda		1	Complited	
22	Govt. UMS Lukluki Dadhachak, Godda		1	Complited	
23	High School, Godda		1	Complited	

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24	High School Malini, Godda	Godda	2	Completed		
25	Women's College, Godda		1	Completed		
26	Girls High School, Pathargama		3	2 nos completed 1 nos in progress		
27	Primary Health Centre Rupuchak, Pathargama		3	Completed		
28	UMS Rupuchak, Pathargama		3	Completed		
29	AS College, Deoghar		Deoghar	2	Work in Progress	
30	Deoghar College, Deoghar			3	Work in Progress	
31	Girls ITI Basuadih, Deoghar			2	Work in Progress	
32	Government ITI, Deoghar	3		Work in Progress		
33	Jila Niyojanalay, Deoghar	1		Work in Progress		
34	Panchayat Traning Instute, Deoghar	1		Work in Progress		
35	R Mitra High School, Deoghar	2		Work in Progress		
36	Pariyojna Balika Uchh Vidyalaya, Koderma	Koderma	1	Work in Progress		
37	Govt. High School, Koderma		2	Work in Progress		
38	Govt. Polytechnic College, Koderma		2	Work in Progress		
39	Jagannath Jain Mahavidyalaya, Koderma		1	Work in Progress		
40	Zila School, Giridih	Giridih	1	Work in Progress		
41	Ram Krishn Vivekanand Mahavidyalaya, Bagodar		1	Work in Progress		
42	Kendriya Vidyalaya, Giridih		1	Work in Progress		
43	Sariya Inter College, Sariya,		1	Work in Progress		
44	Jawahar Navodya Vidyalaya, Gandey		1	Work in Progress		
45	Giridih Plus Two High School, Buxidih, Giridih		1	Work in Progress		
46	Balika Uchch Vidyalay, Saria		1	Work in Progress		
47	Plus Two High School, Bagodar		1	Work in Progress		
48	Sadar hospital, Giridih		1	Work in Progress		
49	Giridih College, Giridih		1	Work in Progress		
	Total:-		74			

(ख) दामोदर बेसीन				
1	Public High School Kujju, mandu	Ramgarh	1	Work in Progress
2	Minor Irrigation Division, Ramgarh		1	Work in Progress
3	Utkramit High School, Morangi, Mandu		1	Work in Progress
4	polytechnic college, Gola		2	Work in Progress
5	Ramgarh College, Ramgarh		2	Work in Progress
6	Samudayik Sawasthya Kendra, Gola		1	Work in Progress
7	Sadar Hospital, Ramgarh		1	Work in Progress
8	Van Bhawan, Ramgarh		1	Work in Progress
9	Samudayik Sawasthya Kendra, Mandu		1	Work in Progress
10	Indira Gandhi Girls School, Hazaribhag	Hazaribagh	1	Completed
11	Govt. Middle School, Silwar hazaribhag		1	Completed
12	Meru BSF Camp, Silwar Hazaribhag		1	Completed
13	High School, Tati Jhariya		1	Completed
14	Vinoba Bhave university, Hazaribhag		2	Completed
15	Saint Columbas College, Hazaribhag		1	Completed
16	Govt. ITI College, Hazaribhag		1	Completed
17	Irrigation Colony, Hazaribhag		1	Completed
18	KB Women's College, Hazaribhag		2	Completed
19	Plus 2 High School, Bishnugarh	1	Completed	
20	Bokaro Ispat Vidyalaya, Sector 12/A Bokaro, Chas	Bokaro	1	Work in Progress
21	Path Nirman Vibhag, Path Parmandal Bokaro, Chas		1	Work in Progress
22	10+2 High School, Sector 9/A Bokaro Chas		1	Work in Progress
23	Sub Division Hospital, Bermo		1	Work in Progress
24	Govt. Women's Polytechnic Khutri, Jaridih		1	Work in Progress
25	Govt. Polytechnic Khutri, Jaridih		1	Work in Progress
26	Bokaro Ishpat Senior Secondary School, BS City, Sector 3, Chas		1	Work in Progress

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27	BSL +2 High School Sector-12, BS City, Chas	1480	1	Work in Progress	
28	Plus Two High School, Petawar		1	Work in Progress	
	Total:-		32		
	Grand Total (Dumka+Godda+Deoghar+Koderma+Giridih+ Ramgarh+Hazaribhag+Bokaro)		106		



गंगा एवं दामोदर बेसीन अन्तर्गत Water Bodies के Restoration कार्य की सूची एवं अद्यतन प्रगति

क्र०	योजना का नाम	जिला	प्रखंड	भौतिक प्रगति	अभि०
	(क)- गंगा बेसीन				
1	उदयपुरा मध्यम सिंचाई योजना का जीर्णोद्धार	लातेहार	लातेहार	100%	
2	खुंटगड़ी बांध का जीर्णोद्धार	लातेहार	लातेहार	100%	
3	जमुनदाहा मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	हरिहरगंज	100%	
4	झखरीतरी मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	हरिहरगंज	100%	
5	नीम आहर का जीर्णोद्धार	पलामू	हैदरनगर	100%	
6	अहरी आहर का जीर्णोद्धार	पलामू	पांडू	100%	
7	मजुराहा मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	पांडू	100%	
8	मजदा आहर का जीर्णोद्धार	पलामू	तरहस्सी	100%	
9	कसमार मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	तरहस्सी	90%	
10	बनवारी आहर का जीर्णो०	पलामू	तरहस्सी	100%	
11	बबनकुरवा आहर का जीर्णोद्धार	पलामू	पांकी	100%	
12	सितवा आहर का जीर्णोद्धार	पलामू	पांकी	100%	
13	मुड़ामाँझी आहर का जीर्णो०	पलामू	पांकी	100%	
14	ग्राम-चन्द्रपुरा में बढकी आहर का जीर्णो०	पलामू	पांकी	100%	
15	सिधलेवा मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	लेरलीगंज	100%	
16	कोसियारा बांध का जीर्णोद्धार	पलामू	लेस्लीगंज	100%	
17	लाल बांध आहर का जीर्णो०	पलामू	तरहस्सी	100%	
18	बहेर बांध का जीर्णोद्धार	पलामू	चैनपुर	100%	
19	विवाखाड़ आहर का जीर्णोद्धार	पलामू	चैनपुर	100%	
20	तेतर मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	मनातु	100%	
21	डुमराहा मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	पड़वा	100%	
22	रनपुरी पहाड़ मध्यम सिंचाई योजना का जीर्णोद्धार	पलामू	सतवरवा	100%	
23	विरहा नाला मध्यम सिंचाई योजना का जीर्णोद्धार	गढ़वा	बरगड़	100%	
24	भलुही बांध का जीर्णोद्धार	गढ़वा	रंका	100%	
25	सुगही मध्यम सिंचाई योजना का जीर्णोद्धार	गढ़वा	गढ़वा	100%	
26	नावाडीह आहर का जीर्णोद्धार	कोडरमा	चन्दवारा	100%	
27	चेपकिया मध्यम सिंचाई योजना का जीर्णोद्धार	धनबाद	पूर्वी दुण्डी	100%	
28	रानी बांध तालाब का जीर्णोद्धार	धनबाद	तोपचौंची	100%	
29	तांतरी ठाकुर बांध (तालाब) का जीर्णोद्धार	धनबाद	तोपचौंची	100%	
30	बकसपुरा पुराना तालाब का जीर्णोद्धार	धनबाद	गोविन्दपुर	100%	

क्र०	योजना का नाम	जिला	प्रखंड	भौतिक प्रगति	अभि०
31	चकपुलैया मध्यम सिंचाई योजना का जीर्णोद्धार	धनबाद	गोविन्दपुर	100%	
32	पुराना बांध का जीर्णोद्धार	धनबाद	गोविन्दपुर	100%	
33	रहुलिया तालाब का जीर्णोद्धार	धनबाद	निरसा	100%	
34	सिजुआ बड़ा बांध तालाब का जीर्णोद्धार	धनबाद	निरसा	100%	
35	लखीपुर बांध का जीर्णो०	धनबाद	कलियासोल	100%	
36	तिलतोरिया बांध का जीर्णो०	धनबाद	अगरकुण्ड	100%	
37	बंदरचुआ आहर का जीर्णोद्धार	चतरा	पथलगढ़ा	100%	
38	चटनाही आहर का जीर्णोद्धार	चतरा	कुन्दा	100%	
39	बड़की आहर का जीर्णोद्धार	चतरा	लावालींग	100%	
40	डाडी आहर का जीर्णोद्धार	चतरा	लावालींग	100%	
41	बनहा आहर का जीर्णोद्धार	चतरा	कान्हाचट्टी	100%	
42	धोवे आहर का जीर्णोद्धार	चतरा	हंटरगंज	100%	
43	वलुरी म०सि०यो० के क्षतिग्रस्त एम्बाडकट एवं नहर का जीर्णो०	चतरा	हंटरगंज	85%	
44	सुखवाई आहर का जीर्णोद्धार	चतरा	प्रतापपुर	100%	
45	खास बांध गड़जोरा मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	देवघर	100%	
46	सेवाईजोर मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	सारठ	100%	
47	अराजोरी मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	सारठ	100%	
48	रिंगाटांड मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	पालोजोरी	100%	
49	कमलिया मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	करौं	100%	
50	दासडीह मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	करौं	100%	
51	नवाबांध मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	सारवाँ	100%	
52	लस्करडीह मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	सारवाँ	100%	
53	केन्दुआ मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	देवीपुर	100%	
54	महबदिया मध्यम सिंचाई योजना का जीर्णोद्धार	देवघर	देवीपुर	100%	
55	हथबंधा मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	करमाटांड	100%	
56	फुकबंदी मध्यम सिंचाई योजना का जीर्णो०	जामताड़ा	करमाटांड	100%	
57	साहेबबांध म०सि०यो० का जीर्णोद्धार	जामताड़ा	फतेहपुर	100%	
58	शंकरपुर मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	नारायणपुर	100%	
59	भैयाडीह मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	नारायणपुर	100%	
60	गायछान्द मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	जामताड़ा	100%	
61	पसोई मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	जामताड़ा	100%	
62	चुनुकोदार मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	नाला	100%	

क्र०	योजना का नाम	जिला	प्रखंड	भौतिक प्रगति	अभि०
63	शालदाह मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	कुण्डहित	100%	
64	गरजोरी मध्यम सिंचाई योजना का जीर्णोद्धार	जामताड़ा	कुण्डहित	100%	
65	मयुरकोला मध्यम सिंचाई योजना का जीर्णोद्धार	साहेबगंज	वरहवा	100%	
66	बड़ाब्यासी मध्यम सिंचाई योजना का जीर्णोद्धार	साहेबगंज	बोरियों	100%	
67	बीचपुरा मध्यम सिंचाई योजना का जीर्णोद्धार	साहेबगंज	बोरियों	100%	
68	सिमलादाब मध्यम सिंचाई योजना का जीर्णोद्धार	साहेबगंज	पतना	100%	
69	हीरबांध मध्यम सिंचाई योजना का जीर्णोद्धार	पाकुड़	पाकुड़	100%	
70	बन्नोग्राम मध्यम सिंचाई योजना का जीर्णोद्धार	पाकुड़	पादुझिया	100%	
71	बड़ा मोहलान मध्यम सिंचाई योजना का जीर्णोद्धार	पाकुड़	पाकुड़	100%	
72	साहेब बांध मध्यम सिंचाई योजना का जीर्णोद्धार	गोडड़ा	सुन्दरपहाड़ी	100%	
73	बड़हरा बांध का जीर्णोद्धार	गोडड़ा	पोड़ैयाहाट	100%	
74	मौजा देववन्धा में लपका पोखर का जीर्णोद्धार	गोडड़ा	पोड़ैयाहाट	100%	
75	मालीगोड़ा मध्यम सिंचाई योजना का जीर्णोद्धार	गोडड़ा	बोआरीजोर	100%	
76	चंदना बांध म०सि०यो० का जीर्णो०	गोडड़ा	बोआरीजोर	100%	
77	ग्राम टोलाटांड में विशुन आहर का जीर्णो०	गिरिडीह	देवरी	100%	
78	किसगो म०सि०यो० का जीर्णोद्धार	गिरिडीह	देवरी	100%	
79	छोटीटांड आहर का जीर्णोद्धार	गिरिडीह	धनवार	100%	
80	पुरना नगर ग्राम में दुलो आहर म०सि०यो० का जीर्णोद्धार	गिरिडीह	धनवार	100%	
81	धरगुली मध्यम सिंचाई योजना का जीर्णो०	गिरिडीह	बगोदर	65%	
82	चरगो म०सि०यो० का जीर्णोद्धार	गिरिडीह	बिरनी	100%	
83	चचमुर्गी म०सि०यो० का जीर्णोद्धार	गिरिडीह	बिरनी	100%	
84	मौजा-गान्डो में लोहरा आहर का जीर्णोद्धार	गिरिडीह	जमुआ	100%	
85	किरतनियाडीह आहर का जीर्णोद्धार	गिरिडीह	जमुआ	100%	
86	ग्राम चुगलो में बड़ा आहर का जीर्णो०	गिरिडीह	गिरिडीह	90%	
87	ग्राम प्रधानडीह में मेंजरा सिंधा आहर का जीर्णोद्धार	गिरिडीह	डुमरी	100%	
88	जीतकुंडी आहर का जीर्णोद्धार	गिरिडीह	डुमरी	100%	
89	उर्रा म०सि०यो० का जीर्णोद्धार	गिरिडीह	सरिया	70%	
90	चिचाकी म०सि०यो० का जीर्णोद्धार	गिरिडीह	सरिया	100%	
91	जमुआ आहर का जीर्णोद्धार	गिरिडीह	पीरटाड़	100%	
92	खुखरा ग्राम में बुड़वा आहर का जीर्णोद्धार	गिरिडीह	पीरटाड़	100%	
93	नायकडीह म०सि०यो० का जीर्णोद्धार	गिरिडीह	गाण्डेय	100%	
94	महुआर म०सि०यो० का जीर्णोद्धार	गिरिडीह	बेंगाबाद	100%	

क्र०	योजना का नाम	जिला	प्रखंड	भौतिक प्रगति	अभि०
95	बुढ़वा आहर का जीर्णोद्धार	गिरिडीह	गावों	100%	
96	भोगरायडीह म०सि०यो० का जीर्णोद्धार	गिरिडीह	गावों	100%	
97	सहारा बांध मध्यम सिंचाई योजना का जीर्णोद्धार	दुमका	जरमुण्डी	97%	
98	नावाडीह बांध मध्यम सिंचाई योजना का जीर्णो०	दुमका	जरमुण्डी	98%	
99	दुन्दुवा मध्यम सिंचाई योजना का जीर्णो०	दुमका	गोपीकान्दर	100%	
100	बड़ा पाथर म०सि० योजना का जीर्णो०	दुमका	गोपीकान्दर	100%	
101	लतबेदा म०सि० योजना का जीर्णो०	दुमका	शिकारीपाड़ा	100%	
102	असना म०सि० योजना का जीर्णो०	दुमका	शिकारीपाड़ा	35%	
103	त्रिशुलया बांध म०सि०यो० का जीर्णो०	दुमका	रामगढ़	100%	
104	भीखमपुर म०सि०यो० का जीर्णो०	दुमका	जामा	80%	
105	दुधानी मध्यम सिंचाई योजना का जीर्णो०	दुमका	जामा	93%	
106	नागवारकी बांध म०सि०यो० का जीर्णोद्धार	दुमका	सरैयाहाट	100%	
107	बैठा बांध म०सि०यो० का जीर्णोद्धार	दुमका	सरैयाहाट	94%	
108	धन्चे बांध का जीर्णोद्धार	दुमका	सरैयाहाट	100%	
109	बड़ा बांध म०सि० योजना का जीर्णो०	दुमका	मसलिया	100%	
110	मांझी बांध म०सि० योजना का जीर्णो०	दुमका	मसलिया	100%	
111	बड़ा काठीकुण्ड म०सि० योजना (नीम बांध) का जीर्णो०	दुमका	काठीकुण्ड	100%	
112	बड़ा बांध म०सि०यो० का जीर्णोद्धार	दुमका	दुमका	100%	
113	मदनगढ़िया बांध म०सि०यो० का जीर्णोद्धार	दुमका	दुमका	100%	
114	लाल पोखर म०सि० योजना का जीर्णो०	दुमका	रानेश्वर	98%	
115	नोना बांध म०सि० योजना का जीर्णो०	दुमका	रानेश्वर	100%	
	(ख) दामोदर बेसीन				
1	राम सागर मध्यम सिंचाई योजना का जीर्णोद्धार	हजारीबाग	ईचाक	100%	
2	जमुआरी डेम का जीर्णोद्धार	हजारीबाग	ईचाक	100%	
3	बेलकापी आहर का जीर्णोद्धार	हजारीबाग	बरकटदा	100%	
4	बुचई म०सि०यो० का जीर्णो०	हजारीबाग	बरकटदा	75%	
5	जोरदाग मध्यम सिंचाई योजना का जीर्णोद्धार	हजारीबाग	केरेडारी	100%	
6	जमुआ बेलतु आहर का जीर्णोद्धार	हजारीबाग	केरेडारी	100%	
7	सलगा नाला मध्यम सिंचाई योजना का जीर्णोद्धार	हजारीबाग	केरेडारी	100%	
8	श्रीनगर मध्यम सिंचाई योजना का जीर्णोद्धार	हजारीबाग	बरही	0%	
9	चेगडवा डेम का जीर्णोद्धार	हजारीबाग	बरही	65%	
10	पेटुला आहर का जीर्णोद्धार	हजारीबाग	चौपारण	100%	

क्र०	योजना का नाम	जिला	प्रखंड	भौतिक प्रगति	अभि०
11	चपरी आहर का जीर्णोद्धार	हजारीबाग	चौपारण	100%	
12	दोनई खुर्द मध्यम सिंचाई योजना का जीर्णोद्धार	हजारीबाग	पदमा	100%	
13	बड़की आहर का जीर्णोद्धार	हजारीबाग	कटकमसांडी	100%	
14	बाबु बलिया आहर का जीर्णोद्धार	हजारीबाग	बड़कागाँव	100%	
15	दुनदूगढ़ा आहर का जीर्णोद्धार	हजारीबाग	बड़कागाँव	100%	
16	फुटला आहर का जीर्णोद्धार	हजारीबाग	चलकुशा	100%	
17	धोवियाडीह आहर म०सि०यो० का जीर्णोद्धार	रामगढ़	गोला	100%	
18	कूसूमाकनारी आहर मध्यम सिंचाई योजना का जीर्णोद्धार	रामगढ़	गोला	90%	
19	केशरगढ़ा आहर का जीर्णोद्धार	रामगढ़	दुलमी	100%	
20	घाटघोरैया मध्यम सिंचाई योजना का जीर्णोद्धार	हजारीबाग	विशानुगढ़	100%	
21	ठाकुर बांध आहर मध्यम सिंचाई योजना का जीर्णोद्धार	रामगढ़	गोला	100%	
22	बेतुलकलाम ग्राम में सरकारी आहर का जीर्णोद्धार	रामगढ़	गोला	100%	
23	बांका गढ़ा आहर मध्यम सिंचाई योजना का जीर्णोद्धार	रामगढ़	गोला	100%	
24	राम सागर बांध मध्यम सिंचाई योजना का जीर्णोद्धार	बोकारो	नावाडीह	100%	
25	चिरुडीह बड़का बांध मध्यम सिंचाई योजना का जीर्णोद्धार	बोकारो	नावाडीह	100%	
26	बड़का बांध मध्यम सिंचाई योजना का जीर्णोद्धार	बोकारो	चन्द्रपुरा	100%	
27	काला पत्थर बड़ा बांध मध्यम सिंचाई योजना का जीर्णो०	बोकारो	चास	100%	
28	दयाल बांध का जीर्णोद्धार	बोकारो	चन्दनक्यारी	100%	




मुख्य अभियन्ता-सह-कार्यकारी निदेशक का कार्यालय

प्रोग्राम मैनेजमेंट यूनिट (राज्य जल एवं स्वच्छता मिशन)

Annexure - VI

पेयजल एवं स्वच्छता विभाग, झारखण्ड, राँची

डोरंडा बाजार (पानी टंकी परिसर, प्रथम तल) डोरंडा, राँची.-834002, फोन नं.: 0651-2480166

ईमेल: sws.m.jharkhand@gmail.com, वेबसाईट: dwsd.jharkhand.gov.in

पत्रांक: 8/विधि-18/2023 - 1384/SWSM

दिनांक:- 6/12/23

प्रेषक,

अनिल प्रसाद,

मुख्य अभियन्ता-सह-कार्यकारी निदेशक।

सेवा में,

श्री राजू रंजन राय,

सरकार के अपर सचिव,

वन, पर्यावरण एवं जलवायु परिवर्तन विभाग, झारखण्ड सरकार।

विषय:-माननीय NGT में दायर वाद O.A. No.-673/2018 में दिनांक- 22.02.2021 के पारित आदेश के अनुपालन के संबंध में।

प्रसंग:-आपका पत्रांक:- 4421 दिनांक:-29.11.2023

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संबंध में आपके द्वारा मांगी गई वांछित प्रतिवेदन निम्नवत है :-

SL. No.	Regulating ground water extraction and water conservation	Status
1	Status on contaminated sites and action taken reports	झारखण्ड राज्य के पाकुड़ जिला के महेशपुर प्रखण्ड के दो टोलों में fluoride contamination पाया गया था जिसका short term measures के तहत Community Water Purification Plant (CWPP) के द्वारा समाधान कर दिया गया है। Long Term में इस समस्या के समाधान हेतु पाकुड़ जिला के इन क्षेत्रों को Surface Water Based Multi-Village Scheme के तहत Pipe Water से आच्छादित किया जा रहा है जिसका निर्माण कार्य प्रगति में है।
2	Status on areas pertaining to the extraction of ground water	संबंधित विषय जल संसाधन विभाग से संबंधित है।

कृपया।

विश्वासभाजन

(अनिल प्रसाद)

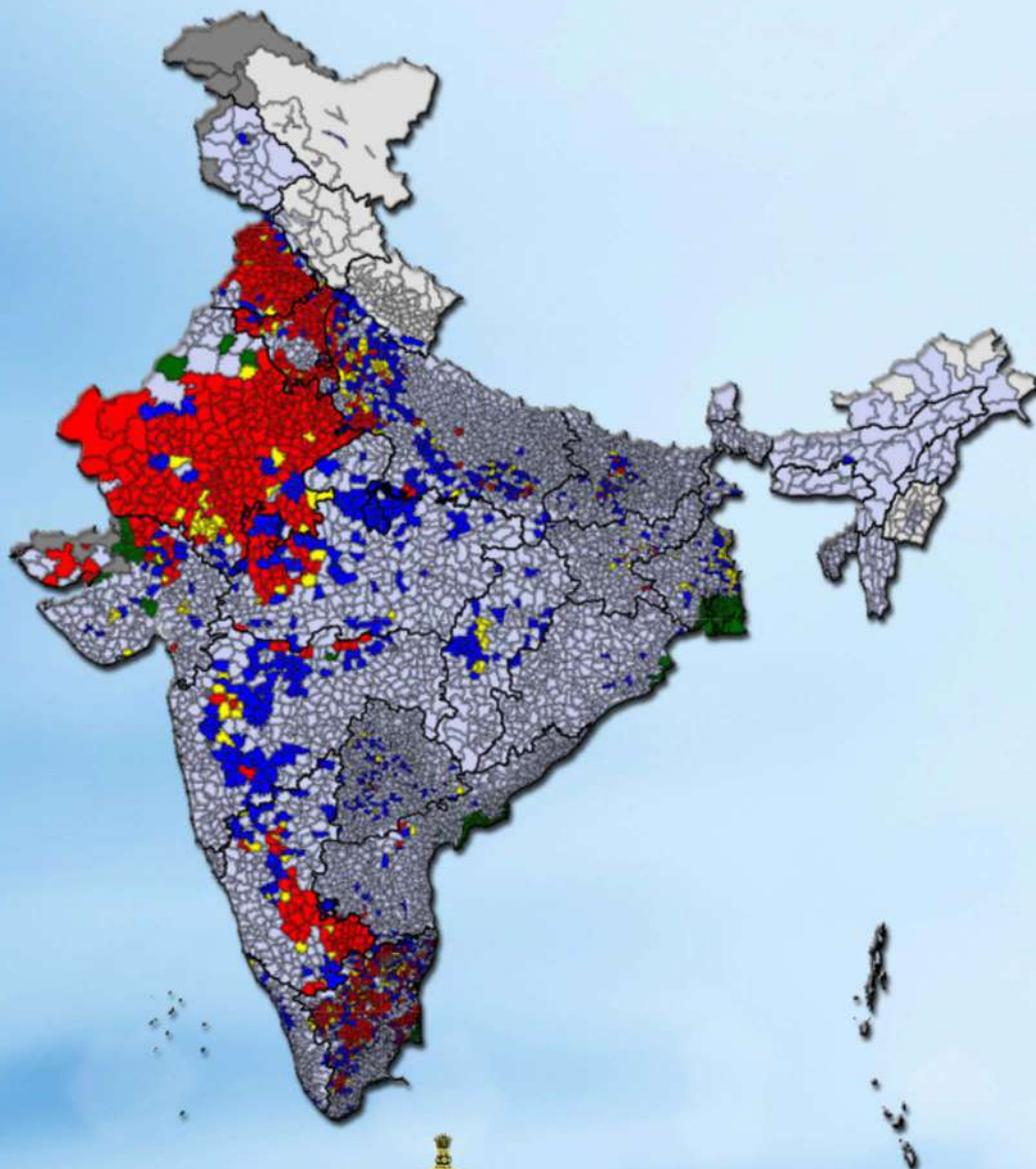
मुख्य अभियन्ता-सह-कार्यकारी निदेशक

1487



सत्यमेव जयते

National Compilation on DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023



Central Ground Water Board
Department of Water Resources,
River Development and Ganga Rejuvenation
Ministry of Jal Shakti,
Government of India
Faridabad

1489

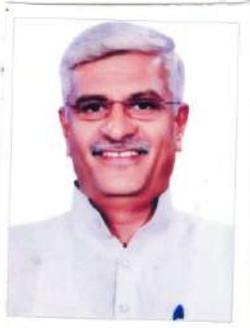
**National Compilation on
DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023**



**Central Ground Water Board
Department of Water Resources,
River Development & Ganga Rejuvenation
Ministry of Jal Shakti
Government of India**

**Faridabad
September, 2023**

गजेन्द्र सिंह शेखावत
Gajendra Singh Shekhawat



जल शक्ति मंत्री
भारत सरकार
Minister for Jal Shakti
Government of India



06 OCT 2023

MESSAGE

Water, a precious and scarce natural resource, lies at the core of life, sustenance, food security, and sustainable development. Groundwater, in particular, has emerged as the key resource for India's agricultural and drinking water security. However, the declining water levels resulting from groundwater extraction exceeding its annual replenishment rate have become a concerning trend in various regions of the country over the last few decades. Addressing this situation necessitates effective management of our Nation's groundwater resources to ensure their long-term sustainability. It is imperative that sound decisions for sustainable groundwater management be rooted in a realistic assessment of resource availability. Periodic estimation of Dynamic Groundwater Resources is pivotal in providing vital information concerning annual replenishment, utilization, and the overall accessibility of groundwater to various stakeholders across all assessment units in the country.

The Dynamic groundwater resources of India undergo assessment every year through a collaborative effort involving State Governments and the Central Ground Water Board. This assessment serves as the cornerstone for categorizing assessment units across the country into various classifications, including Safe, Semi-Critical, Critical, or Over Exploited, based on their groundwater extraction levels. These categorizations are instrumental in shaping policies aimed at achieving sustainable groundwater management throughout the Nation.

I am optimistic that the 'National Compilation on Dynamic Ground Water Resources of India, 2023' through its provision of credible information regarding groundwater resource availability in the country, will serve as a guiding light for policymakers and other stakeholders. It will aid in the formulation of decisions and strategies aimed at ensuring the sustainable management of this crucial natural resource. Additionally, I firmly believe that this compilation will enlighten stakeholders about the current state of groundwater availability, prompting them to take measures for its optimal utilization and thereby ensure a water-secure future for the nation.

(GAJENDRA SINGH SHEKHAWAT)



प्रहलाद सिंह पटेल
Prahlad Singh Patel

1493



जल शक्ति एवं खाद्य प्रसंस्करण उद्योग
राज्य मंत्री

भारत सरकार, नई दिल्ली
Minister of State for Jal Shakti and
Food Processing Industries
Government of India, New Delhi

Dated: 06-10-2023



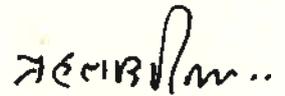
MESSAGE

India, encompassing a vast geographical area of nearly 33 lakh square kilometers, is home to approximately 16% of the world's population but possesses only 4% of its freshwater resources. Furthermore, there exists significant inequality in the distribution of water resources within the country. Ground water serves as a primary source of drinking water as well as plays a crucial role in irrigation and industrial processes. However, around 70% of the country's groundwater resources are concentrated in the Indo-Ganga-Brahmaputra plains, which constitute only 30% of the total geographical area. Given this situation, effective management and sustainable development of the limited groundwater resources is of immense significance.

Management of groundwater resources calls for a systematic approach that involves scientific assessment of the availability of the groundwater resource and its utilization. Periodic monitoring of water levels and quality forms the key scientific input needed for assessment of the groundwater resource in the country. On the basis of the availability of the groundwater resource and the existing utilization pattern, comprehensive management strategies are chalked out to ensure its long-term sustainability. A crucial milestone in this endeavor is the realistic assessment of dynamic groundwater resources.

Central Ground Water Board (CGWB), in collaboration with State Groundwater Departments, conducts regular assessments of groundwater resources across the entire country. These assessments serve as the foundational basis for planning various groundwater management interventions, which may include initiatives such as managed aquifer recharge and the regulation of groundwater usage. The 'National Compilation on Dynamic Groundwater Resources of India, 2023' represents the consolidation of findings from the most recent assessment in this ongoing effort.

I extend my heartfelt congratulations to the Central Ground Water Board and the State/UT Ground Water Departments for their dedicated efforts in producing this comprehensive report on such a vital subject. I hope that this report will stand as an invaluable source of information to guide the stakeholders towards sustainable groundwater management throughout the country.


(Prahlad Singh Patel)

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विश्वेश्वर टुडु
BISHWESWAR TUDU
ବିଶ୍ୱେଶ୍ୱର ତୁଡୁ



1495



जल शक्ति एवं
जनजातीय कार्य राज्य मंत्री
भारत सरकार
नई दिल्ली-110001
MINISTER OF STATE FOR
JAL SHAKTI & TRIBAL AFFAIRS
GOVERNMENT OF INDIA
NEW DELHI - 110001

Message

Water, a scarce natural resource, serves as the fundamental of life, livelihoods, food security, and sustainable development. Groundwater has emerged as the cornerstone of India's agricultural and drinking water security. However, groundwater levels are declining alarmingly due to excessive extraction. This predicament underscores the urgent need for prudent management of the country's groundwater resources to ensure their sustainability.

It is of paramount importance that decisions regarding groundwater management are grounded in scientific resource assessments. Dynamic groundwater resources serve as a measure of replenishable groundwater resources, encompassing their availability and utilization. Annually, State Governments, in collaboration with the Central Ground Water Board, assess India's dynamic groundwater resources. These assessments provide the foundation for categorizing various administrative units in the country into Safe, Semi-Critical, Critical, or Over Exploited categories, guiding the management and regulation of groundwater resources accordingly.

I am optimistic that this report will facilitate the responsible management of groundwater resources in the country and enlighten the general public and stakeholders by presenting scientific data on groundwater resources. This, in turn, may inspire everyone to make optimal use of this vital resource, ensuring a balanced present and a sustainable future.


(Bishweswar Tudu)

देवश्री मुखर्जी
DEBASHREE MUKHERJEE
सचिव
SECRETARY



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES
RIVER DEVELOPMENT & GANGA REJUVENATION

Message

Groundwater, in the Indian context, has emerged as a key resource for sustenance of life and sustainability of livelihood. The increasing reliance on groundwater as a dependable source of water has led to its extensive and sometimes unplanned exploitation in various regions of the country, often overlooking the crucial aspects of aquifer recharge and other environmental factors. This unchecked development in certain parts of the country threatens the long-term sustainability of this precious resource. Scientific assessment of the availability of groundwater resources and its utilization status in different parts of the country provides the basic input for planning sustainable management interventions.

The Dynamic Groundwater Resource Assessment, conducted annually by the Central Ground Water Board in conjunction with State Ground Water Nodal Departments, highlights the extent of stress imposed on groundwater resources across different regions of the country. This comprehensive assessment entails meticulous analysis of voluminous data generated by the Ground Water Departments at both the State and Central levels. Based on the findings of this groundwater assessment, administrative units are categorized into different levels of stress, ranging from 'safe', 'semi-critical', 'critical' and 'over-exploited'.

I extend my sincere appreciation to the Central Ground Water Board under the leadership of Chairman Shri Satish Kumar and the guidance provided by the team led by Shri Subodh Yadav, Joint Secretary (A, GW & IC), DoWR, RD & GR, for their commendable efforts in producing this publication on time. I am confident that this compilation will prove to be of immense value to administrators, planners, and all other stakeholders engaged in formulating strategies and interventions aimed at ensuring the long-term sustainability of groundwater.

(Debashree Mukherjee)

सतीश कुमार
अध्यक्ष
Satish Kumar
Chairman



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास और गंगा संरक्षण
विभाग
केंद्रीय भूमि जल बोर्ड

Government of India
Ministry of Jal Shakti
Department of Water Resources, River
Development and Ganga Rejuvenation
Central Ground Water Board

Foreword

Groundwater, the most abundant source of freshwater, plays a pivotal role in economic growth of the Nation and serves as a fundamental element of our ecological system. India's agricultural productivity, industrial outputs and drinking and domestic water requirements are heavily dependent on groundwater. However, the increasing demands for water has spurred excessive extraction of groundwater in various regions across India, surpassing its annual replenishment rate. A pragmatic assessment of this invaluable resource serves as the cornerstone for devising strategies aimed at the judicious and scientific management of groundwater resources. Since 2022, it has been decided to carry out the estimation of the Dynamic Groundwater Resources of the nation every year to provide the planners, decision makers and all stakeholders with reliable data/information for taking timely measures for sustainable management of groundwater resources

The assessment of India's dynamic groundwater resources is based on the Groundwater Estimation Methodology of 2015 (GEC-2015), which comprehensively factors in all relevant parameters contributing to groundwater recharge and extraction. The Dynamic Groundwater Resource Assessment of 2023 (GWRA-2023) for all States and Union Territories is a collaborative effort involving both the respective State/UT Ground Water Departments and the Central Ground Water Board, utilizing the INDIA-Ground Water Resource Estimation System (IN-GRES) Software.

I extend my sincere appreciation to the dedicated officers of CGWB, CHQ, who played a pivotal role in the meticulous work of compiling the data at the national level. I also extend my appreciation to the officers of CGWB and the State Ground Water Nodal Departments for their tireless efforts in conducting assessments for their respective States and Union Territories as per the planned schedule.

The invaluable contributions of the members of the CLEG and SLCs in refining the National Report are gratefully acknowledged. I hope that this comprehensive national compilation will prove to be an invaluable resource for the planners, decision makers and all concerned stakeholders in prioritizing actions that are needed for ensuring sustainability of groundwater resources in the country.


(Satish Kumar) 29/09/2023
Chairman

Faridabad
September, 2023

1500

सुबोध यादव
संयुक्त सचिव
Subodh Yadav
Joint Secretary



भारत सरकार
जलशक्ति मंत्रालय
जल संसाधन, नदी विकास और गंगा संरक्षण विभाग

Government of India
Ministry of Jal Shakti
Department of Water Resources, River
Development and Ganga Rejuvenation

Message

Groundwater has become a vital resource for the people of India over the years. In order to meet the ever-increasing water requirements while remaining committed to a sustainable future, it is imperative to manage groundwater resources on sound scientific principles. Sustainable management of groundwater resources assumes special significance in the Indian context as some parts of the country, especially in peninsular India and the arid regions of north-western India are experiencing increasing stress on their groundwater reserves. While at the same time opportunity for optimal utilization of the resource exists in other parts of the country, particularly in the eastern and northeastern states. The availability of information on the status of groundwater resources in the country is essential to facilitate effective management decisions by policy planners. Towards this end, assessment of the dynamic ground water resources of the country is an important exercise that is carried out jointly by CGWB and the concerned States/UTs.

Considering the importance of the assessment of ground water resources, the Ministry of Jal Shakti has decided to bring out the assessment report on a yearly basis from the year 2022, and a dedicated web based application "India-Groundwater Resource Estimation System (IN-GRES)" was developed for faster and accurate assessment process. The assessment of Ground Water Resources across the country is a cooperative and collaborative effort between the State/Union Territory and the Central Ground Water Board. This exercise holds paramount importance as it provides essential insights for stakeholders, enabling them to take effective measures for the optimal utilization and management of groundwater resources.

The report, titled 'National Compilation on Dynamic Ground Water Resources of India, 2023,' serves as a comprehensive summary of the assessment results. It primarily focuses on aspects such as resource availability, utilization, and the categorization of assessment units. It is heartening to know that Annual ground water recharge and annual extractable ground water resources have further improved in year 2023 from the previous assessment in 2022. The 'stage of ground water extraction' has declined from 60.08% in 2022 to 59.26% in 2023, indicating overall improvement in ground water resources.

The efforts put in by the officers of the Central Ground Water Board and the State Government Departments in bringing out 'National Compilation on Dynamic Groundwater Resources of India-2023' deserves special mention. I congratulate the entire team of officers from CGWB and the States/UTs for this report which will be of immense use to all the concerned stakeholders in chalking out the strategies for sustainable management of groundwater resources in the country.


(Subodh Yadav)
Joint Secretary

टी. एस. अनीता श्याम
सदस्य (दक्षिण)
T. S. Anitha Shyam
Member (South)



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास और गंगा संरक्षण विभाग
केंद्रीय भूमि जल बोर्ड
Government of India
Ministry of JalShakti
Department of Water Resources,
River Development and Ganga Rejuvenation
Central Ground Water Board

Preface

Groundwater is a crucial resource, meeting to the water needs of agriculture, households, and industries in our nation. Unfortunately, its development occurs haphazardly through individual entrepreneurs in an unscientific manner, leading to over-exploitation in certain regions. To guarantee the sustainability of this vital resource, prudent management is essential. Making sound groundwater management decisions requires accurate resource assessments. Dynamic assessments of groundwater resources offer insight into the extent of groundwater utilization, enabling more informed and effective management practices.

With this objective, dynamic groundwater resources of the Country is assessed annually using a well-established methodology known as the 'Ground Water Estimation Methodology' or GEC-15. The Dynamic Groundwater Resource Assessment of 2023 (GWRA-2023) for all States and Union Territories is a collaborative effort involving both the respective State/UT Ground Water Departments and the Central Ground Water Board, utilizing the INDIA-Ground Water Resource Estimation System (IN-GRES) Software.

The current assessment of India's groundwater resources reveals that the annual ground water recharge totals 449.08bcm, with an annual extractable ground water resource of 407.21 bcm. In 2023, the nation's annual groundwater extraction reaches 241.34 bcm, with an average stage of ground water extraction as 59.26%. Among 6,553 assessment units(Blocks/Mandals/Talukas), 736 units (11.23%) are 'Over-exploited,' extracting more than the annual recharge. 199 assessment units (3.04%) are 'Critical' with extraction levels between 90-100%, while 698 assessment units (10.65%) are 'Semi-critical' (70-90% stage of ground water extraction). The majority, 4,793 assessment units (73.14%), are 'Safe,' with stage of ground water extraction below 70%. Additionally, 127 assessment units (1.94%) are 'Saline' due to brackish or saline groundwater in phreatic aquifers.

I commend the dedicated officers of CGWB, CHQ for their pivotal role in compiling national-level data and the tireless efforts of CGWB' Regional, State Unit offices and State Ground Water Nodal Departments in conducting assessments. I appreciate the contributions of CLEG and SLC members in refining the National Report. This compilation will serve as a valuable resource for planners, decision-makers, and stakeholders in ensuring groundwater resource sustainability.

(T. S. Anitha Shyam)
Member (South) &
Member Secretary (CLEG)

**National Compilation on Dynamic Ground Water Resources of
India, 2023**

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**NATIONAL COMPILATION ON DYNAMIC GROUND WATER RESOURCES OF
INDIA, 2023**

AT A GLANCE

1.	Total Annual Ground Water Recharge	: 449.08 bcm
2.	Annual Extractable Ground Water Resources	: 407.21 bcm
3.	Annual Ground Water Extraction	: 241.34 bcm
4.	Stage of Ground Water Extraction	: 59.26%

CATEGORIZATION OF ASSESSMENT UNITS

(Blocks/ Mandals/ Taluks etc.)

Sl.No	Category	Number of Assessment Units		Recharge worthy Area		Annual Extractable Ground Water Resource	
		Number	%	in lakh sq. km	%	(in bcm)	%
1	Safe	4793	73	16.3	66.15	301.80	74.11
2	Semi Critical	698	11	2.92	11.85	47.37	11.63
3	Critical	199	3	0.86	3.49	12.91	3.17
4	Over-Exploited	736	11	4.18	16.95	45.12	11.08
5	Saline	127	2	0.38	1.55	NA	NA
	TOTAL	6553		24.67		407.21	

EXECUTIVE SUMMARY

Ground Water Resource Assessment is carried out at periodical intervals jointly by State Ground Water Departments and Central Ground Water Board under the guidance of the respective State Level Committee on Ground Water Assessment at State Levels and under the overall supervision of the Central Level Expert Group (CLEG). Such joint exercises have been taken up earlier in 1980, 1995, 2004, 2009, 2011, 2013, 2017, 2020 and 2022. From 2022, the exercise is being carried out annually.

The assessment involves computation of dynamic ground water resources or Annual Extractable Ground Water Resource, Total Current Annual Ground Water Extraction (utilization) and the percentage of utilization with respect to annual extractable resources (stage of Ground Water Extraction). The assessment units (Talukas/blocks/mandals) are categorized based on Stage of Ground Water Extraction, which are then validated with long-term water level trends. The assessment prior to that of year 2017 were carried out following Ground Water Estimation Committee (GEC) 97 Methodology, whereas from 2017 onwards assessment are based on norms and guidelines of the GEC 2015 Methodology.

The main source of replenishable ground water resources is recharge from rainfall, which contributes to nearly 60 % of the total annual ground water recharge. India receives about 119cm. of rain annually on an average, with high spatial variation. A major part of the country receives rainfall mainly during SW Monsoon season, spread over the months of June to September, except in Tamil Nadu, where the major contribution is from NE monsoon during the period October– December. There are also States such as Jammu and Kashmir, Himachal Pradesh and Uttarakhand which receive significant rainfall in all seasons.

Over 75% of the annual rainfall is received in the four rainy months from June to September only thereby leading to large variations on temporal scale. The average annual rainfall is 119 cm, but it has great spatial variations. The areas on Western Ghats, Sub-Himalyan areas in North East and Meghalaya Hills receive heavy rainfall over 250 cm annually, whereas the areas of Northern parts of Kashmir and Western Rajasthan receive rainfall less than 40 cm. A major part of the country including Northern, Central and Eastern parts receives annual normal rainfall between 75 and 150 cm. In general, rainfall decreases westwards in the northern part of the country, whereas it decreases eastwards and then increases toward the coast in Peninsular India.

Type of rock formations and their storage and transmissive characteristics have a significant influence on ground water recharge. Porous formations such as the alluvial formations in the Indo-Ganga-Brahmaputra basin generally have high specific yields and are good repositories of ground water. Ground water occurrence in the fissured formations occupying nearly two-thirds of the geographical area of the country, on the other hand, is mostly limited to the weathered, jointed and fractured portions of the rocks.

In the present assessment, the total annual groundwater recharge in the country has been assessed as 449.08 bcm. Keeping an allocation for natural discharge, the annual extractable ground water resource has been assessed as 407.21 bcm. The annual groundwater extraction (as in 2023) is 241.34 bcm. The average stage of groundwater extraction for the country as a whole works out to be about 59.26 %. Out of the total 6553 assessment units (Blocks/ Mandals/ Talukas) in the country, 736 units in various States/ UTs (11.23%) have been categorized as 'Over-exploited' indicating ground water

extraction exceeding the annually replenishable ground water recharge. In, 199 (3.04 %) assessment units the stage of groundwater extraction is between 90-100% and have been categorized as 'Critical'. There are 698 (10.65 %) "Semi-critical" units, where the stage of ground water extraction is between 70 % and 90 % and 4793 (73.14 %) 'Safe' units, where the stage of Ground water extraction is less than 70 %. Apart from these, there are 127 (1.94%) assessment units, which have been categorised as 'Saline' as major part of the ground water in phreatic aquifers in these units is brackish or saline.

Similarly out of 24.67 lakh sq km recharge worthy area of the country, 4.18 lakh sq km (17 %) are under 'Over-Exploited', 0.86 lakh sq km (3 %) are under 'Critical', 2.92 lakh sq km (12 %) are under 'Semi-Critical', 16.3 lakh sq km (66 %) are under 'Safe' and 0.38 lakh sq km (2 %) are under 'Saline' category assessment units. Out of 407.21 bcm of Total Annual Extractable Resources of the country, 45.12 bcm (11 %) are under 'Over-Exploited', 12.92 bcm (3 %) are under 'Critical', 47.38 bcm (12 %) are under 'Semi-Critical', 301.8 bcm (74 %) are under 'Safe' category assessment units.

In comparison to 2022 assessment, the total numbers of assessment units in the country have decreased from 7089 to 6553 with major contribution (in decrease) from the State of Tamil Nadu, Andaman & Nicobar Islands and Lakshadweep. Previously, resource estimations were made at the Firqa and island levels, but in this assessment, they have been estimated at the Taluk and Block levels respectively. Conversely, in Assam and Arunachal Pradesh, the assessment units have been changed from district level to block level in the present estimation. The total annual ground water recharge has increased from 437.6 bcm to 449.53 bcm, where major increase is noticed in the States of West Bengal, Assam, Telangana, Chhatisgarh, Karnataka, Gujarat and Bihar. The changes are attributed mainly to changes in recharge from 'Other Sources'. Accordingly, the annual extractable resource as per Ground Water Resource Assessment, 2023 in comparison to the Ground Water Resource Assessment, 2022 also shows an increase from 398.08 bcm to 407.21 bcm. The ground water extraction has marginally increased from 239.16bcm to 241.34 bcm. The overall stage of groundwater extraction has marginally decreased from 60.08 % to 59.26 %.

The over-exploited assessment units are mostly concentrated in :(i) the north western part of the country including parts of Punjab, Haryana, Delhi and Western Uttar Pradesh where even though the replenishable resources are abundant, there has been indiscriminate withdrawals of ground water leading to over-exploitation; (ii) the western part of the country, particularly in parts of Rajasthan and Gujarat, where due to arid climate, groundwater recharge itself is limited, leading to stress on the resource and (iii) the southern part of peninsular India including parts of Karnataka, Tamil Nadu, Telangana and Andhra Pradesh, where due to inherent characteristics of crystalline aquifers, the ground water availability is low. In some areas of the country, good continuous rainfall and management practices like ground water augmentation and conservation measures through government and private initiatives have resulted in improvement in ground water situation. Ground water resources assessment, like other fields of science, requires continuous refinements.

CHAPTER 1

1.0 INTRODUCTION

Water is a fundamental resource for life. Ground water has become an increasingly important natural resource catering to the fresh water requirements of various sectors in India. Sustainable development and efficient management of this scarce resource has become a challenge. Ground water has steadily emerged as the backbone of India's agriculture and drinking water security. Contribution of ground water is nearly 62% in irrigation, 85% in rural water supply and 50% in urban water supply. Ground water is an annually replenishable resource but its availability is non-uniform in space and time. Ground water available in the zone of water level fluctuation is replenished annually with rainfall being the dominant contributor. Hence, the sustainable utilization of ground water resources demands a realistic quantitative assessment of ground water availability in this zone based on reasonably valid scientific principles. National Water Policy, 2012 has laid emphasis on periodic assessment of ground water resources on scientific basis. The trends in water availability due to various factors including climate change must also be assessed and accounted for during water resources planning. To meet the increasing demands of water, it advocates direct use of rainfall, desalination and avoidance of inadvertent evapotranspiration for augmenting utilizable water resources. The National Water Policy 2012 also states that safe water for drinking and sanitation should be considered as pre-emptive needs followed by high priority allocation for other domestic needs (including needs of animals), achieving food security, supporting sustenance agriculture and minimum eco-system needs. Available water, after meeting the above needs should be allocated in a manner to promote its conservation and efficient use.

1.1 PREVIOUS ASSESSMENTS

Assessment of water resources of the country dates back to 1901 when the First Irrigation Commission assessed the Surface Water Resources as 144 million hectare meters (M.ham) (NABARD, 2006). In 1949, Dr. A. N. Khosla, based on empirical formulae, estimated the total average annual runoff of all the river systems of India including both surface and ground water resources as 167 M.ham (CGWB, 1995). Since then attempts have been made from time to time by various Working Groups/ Committees/Task Forces constituted by Govt. of India to estimate the ground water resources of the country based on available data and in response to developmental needs. In 1976, National Commission of Agriculture assessed the total ground water resources of the country as 67 M.ham and the utilizable ground water as 35 M.ham, out of which 26 M.ham was considered available for irrigation (CGWB, 1995).

The first systematic methodology to assess the ground water resources of the country was evolved by Ground Water Over-Exploitation Committee in 1979. The committee was constituted by Agriculture Refinance and Development Corporation (ARDC) and was headed by Chairman, CGWB with Members from State Ground Water Organizations and Financial Institutions. Based on the norms suggested by the committee, the country's Gross Ground Water Recharge was assessed as 47 M.ham and the Net Recharge as 32 M.ham (CGWB, 1995).

In 1982, Government of India constituted 'Ground Water Estimation Committee' (GEC) drawing Members from various States / Central organizations engaged in hydrogeological studies and groundwater development. The Committee submitted its recommendations in the year 1984 and suggested a methodology for assessment of dynamic groundwater resources, which is commonly referred to as GEC 1984. As per the recommendations of the GEC 1984, State Governments constituted Working Groups for assessment of ground water potential. The Working Groups were headed by Secretaries in-charge of Ground Water Developments and included Heads of Ground Water Departments, State Agriculture Departments, representatives from Agriculture Universities and NABARD as members. Director, CGWB was the convener of the group. The base year for the computation of the resource varied between 1991 and 1993 and a National report on Ground Water Resources of India was brought out in 1995 by compiling the data of all the States and Union Territories. As per the report, the Total Replenishable Ground Water in India was assessed as 432 billion cubic meter (bcm). The ground water resource available for irrigation purpose was about 361 bcm. The Net Ground Water Draft for Irrigation uses was about 115 bcm, there by arriving at the level of ground water development as 32 %. Utilizable Irrigation Potential from ground water of the country was worked out to be 64 million hectare meter (CGWB, 1995).

Increasing thrust on ground water and improved techniques for data acquisition led the Government of India to form another Committee in 1995 to review the existing methodology for ground water resource assessment and to suggest revisions, if necessary. The Committee submitted its report in 1997 wherein a revised and elaborate methodology for resource assessment was suggested, which was referred as GEC 1997. In view of the limitations of ground water assessment in hard rock terrain, another Committee on Ground Water Estimation Methodology in Hard Rock Terrain was formed in 2001 to review the existing methodology for resource estimation in such formations. The Committee made certain suggestions on the criteria for categorization of blocks to be adopted for the entire country irrespective of the terrain conditions. Based on GEC 1997, the dynamic ground water resources of India have been estimated for the entire country considering 2004, 2009, 2011 and 2013 as base years. The methodology underwent comprehensive revisions again in 2015 and a revised methodology, namely GEC 2015 methodology has been prescribed for ground water assessment. This methodology is being followed for assessment carried out from 2017 onwards.

In the present assessment, the total annual groundwater recharge in the country has been assessed as 449.08 bcm. Keeping an allocation for natural discharge, the annual extractable ground water resource has been assessed as 407.21 bcm. The annual groundwater extraction (as in 2023) is 241.34 bcm. The average stage of groundwater extraction for the country as a whole works out to be about 59.26 %. Out of the total 6553 assessment units (Blocks/ Mandals/ Talukas) in the country, 736 units in various States/ UTs (11.23%) have been categorized as 'Over-exploited' indicating ground water extraction exceeding the annually replenishable ground water recharge. In, 199 (3.04 %) assessment units the stage of groundwater extraction is between 90-100% and have been categorized as 'Critical'. There are 698 (10.65 %) "Semi-critical" units, where the stage of ground water extraction is between 70 % and 90 % and 4793 (73.14 %) 'Safe' units, where the stage of Ground water extraction is less than 70 %. Apart from these, there are 127 (1.94%) assessment units, which have been categorised as 'Saline' as major part of the ground water in phreatic aquifers in these units is brackish or saline. Salient details of status of ground water resources and categorization of assessment units in 2004, 2009, 2011, 2013, 2017, 2020, 2022 and 2023 are shown in **Table-1.1** and **Table-1.2** respectively.

Table-1.1: Ground water Resources assessment 2004 to 2023

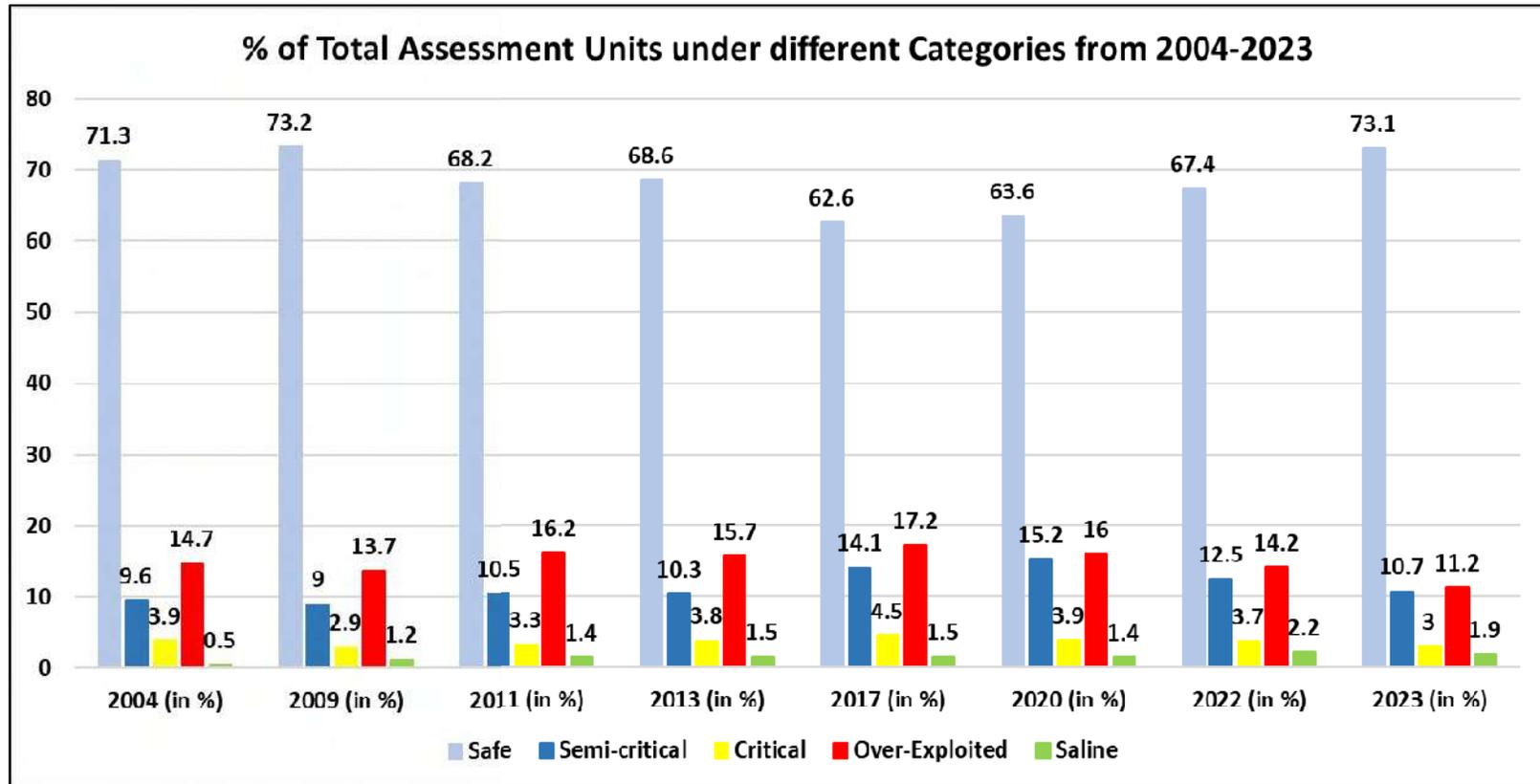
S. No.	Ground Water Resources Assessment	2004	2009	2011	2013	2017	2020	2022	2023
1	Annual Ground Water Recharge (bcm)	433	431	433	447	432	436	438	449
2	Annual Extractable Ground Water Resource (bcm)	399	396	398	411	393	398	398	407
3	Annual Ground Water Extraction for Irrigation, Domestic & Industrial uses (bcm)	231	243	245	253	249	245	239	241
4	Stage of Ground Water Extraction (%)	58 %	61 %	62 %	62 %	63 %	62 %	60%	59%

Table-1.2: Categorization of assessment units from 2004 to 2023

S. No.	Categorization of Assessment Units	2004		2009		2011		2013		2017		2020		2022		2023	
		No.	%														
1	Total Assessed units	5723		5842		6607		6584		6881		6965		7089		6553	
2	Safe	4078	71.3	4277	73.2	4503	68.2	4519	68.6	4310	62.6	4427	63.6	4780	67.4	4793	73.1
3	Semi-critical	550	9.6	523	9	697	10.5	681	10.3	972	14.1	1057	15.2	885	12.5	698	10.7
4	Critical	226	3.9	169	2.9	217	3.3	253	3.8	313	4.5	270	3.9	260	3.7	199	3
5	Over-Exploited	839	14.7	802	13.7	1071	16.2	1034	15.7	1186	17.2	1114	16	1006	14.2	736	11.2
6	Saline	30	0.5	71	1.2	92	1.4	96	1.5	100	1.5	97	1.4	158	2.2	127	1.9

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National Compilation on Dynamic Ground Water Resources of India, 2023



1.2 GROUND WATER ASSESSMENT AND MANAGEMENT INITIATIVES

The inferences drawn from the ground water resources assessment is utilized as an input by the planners and stakeholders for taking appropriate management measures for optimal utilization and sustainable development of the ground water resources. Several measures, primarily based on the findings of the resource assessment, have been taken up by the Government of India to replenish/augment ground water resources.

Initiatives by the Government of India in this regard includes constitution of Central Ground Water Authority for regulation of ground water development in the country and compilation of a conceptual document titled “Master Plan for Artificial Recharge to Ground water in India” by CGWB, which envisages implementation of nearly 11 million Rain Water Harvesting and Artificial Recharge structures to augment the ground water resources of the country. Ministry of Jal Shakti has also circulated a Model Bill to all States/UTs to enable them to enact suitable legislation for regulation of ground water development, which includes provision of rainwater harvesting. CGWB has taken up National Aquifer Mapping & Management Programme (NAQUIM), for mapping of major aquifers, their characterization and formulation of Aquifer Management Plans to ensure sustainability of the resources, prioritising Over-exploited, Critical and Semi-critical assessment units. Several State Governments are implementing watershed development programmes, in which, ground water conservation forms an integral part. Water conservation measures are also taken up as a part of the MGNREGA. Ministry of Jal Shakti has launched ‘Jal Kranti Abhiyan’, aimed at consolidating water conservation and management initiatives in the country through a holistic and integrated approach involving all stakeholders. Atal Bhujal Yojana, being implemented from April 2020, envisages improving ground water management in identified water-stressed areas in parts of seven States in the country with emphasis on demand management and community participation. In addition, schemes of the Government of India such as Pradhan Mantri Krishi Sinchai Yojana (PMKSY)-Har Khet Ko Pani (HKKP)- Ground Water Irrigation(GWI) envisages creation of irrigation potential from groundwater in assessment units where there is sufficient scope for further future ground water development. With a view to further promote water conservation in the country, Ministry of Jal Shakti, Government of India has embarked on the Jal Shakti Abhiyan in 2019. This initiative is characterized by the expeditious execution of five discerning interventions: water conservation and the harnessing of rainwater, revitalization of traditional and contemporary aquatic ecosystems, the recycling and replenishment of water, watershed development, and the deliberate augmentation of afforestation efforts. This ambitious undertaking was initially launched across 1,592 blocks, in 256 water-stressed districts across the nation. Subsequently, this pivotal campaign has been extended and reinforced during the years 2022 and 2023, accentuating the government's unwavering commitment to addressing the critical issues surrounding water conservation and resource management.

1.3 RE-ASSESSMENT OF GROUND WATER RESOURCES, 2023

Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation, constituted a permanent Central Level Expert Group (CLEG) for over-all supervision of the re-assessment of ground water resources in the entire country as in 2023. The terms of reference of the committee include supervision of assessment of annual replenishable ground water resources and

the status of utilization for reference year 2023 onwards. A copy of the Government Resolution is in **Appendix A**.

Groundwater resources assessment for reference year 2023 at the State/U.T Levels have been carried out jointly by State Ground Water Departments and Central Ground Water Board under the supervision of State Level Committees (**Appendix B**), with technical guidance from Central Level Expert Group. The assessment carried out was approved by the respective State Level Committee (**Appendix D**). For four States/UTs (Chhattisgarh, Haryana, Dadra & Nagar Haveli, Daman& Diu, Jammu & Kashmir.) the assessments are yet to be approved in State Level Committee. Based on the assessments provided by the respective State Level Committees and joint assessment made in the aforesaid States, the National Level Report titled “Dynamic Ground Water Resources of India-2023” has been compiled. The National compilation report provides summary and analysis of ground water resources in different States. The report was reviewed and deliberated upon during the meeting of CLEG held on 27.09.2023 and was approved as mentioned in **Appendix E**.

CHAPTER 2

2.0 GROUND WATER RESOURCES ESTIMATION METHODOLOGY

Ground water resource as in 2023 have been estimated following the guidelines mentioned in the GEC 2015 methodology using appropriate assumptions depending on data availability. The principal attributes of GEC 2015 methodology is given below:

The methodology recommends aquifer wise ground water resource assessment of both the Groundwater resources components, i.e., Replenishable ground water resources or Dynamic Ground Water Resources and In-storage Resources or Static Resources. Wherever the aquifer geometry has not been firmly established for the unconfined aquifer, the in-storage ground water resources have to be assessed in the alluvial areas down to the depth of bed rock or 300 m, whichever is less. In case of hard rock aquifers, the depth of assessment would be limited to 100 m. In case of confined aquifers, if it is known that groundwater extraction is being done from this aquifer, the dynamic as well as in-storage resources are to be estimated. If it is firmly established that there is no ground water extraction from this confined aquifer, then only in-storage resources of that aquifer has to be estimated. Until aquifer geometry is established on appropriate scale, the existing practice of using watershed in hard rock areas and blocks/mandals in soft rock areas may be continued.

It is also pertinent to add that as it is advisable to restrict the groundwater development as far as possible to annual replenishable resources, the categorization also takes into account the relation between the annual replenishment and groundwater development. An area devoid of ground water potential may not be considered for development and may remain safe whereas an area with good groundwater potential may be developed and may become over exploited over a period of time. Thus, water augmentation efforts can be successful in such areas, where the groundwater potential is high and there is scope for augmentation.

2.1. GROUND WATER ASSESSMENT OF UNCONFINED AQUIFER

Though the assessment of ground water resources includes assessment of dynamic and in-storage resources, the development planning should mainly focus on dynamic resource as it gets replenished on an annual basis. Changes in static or in-storage resources normally reflect long-term impacts of ground water mining. Such resources may not be replenishable annually and may be allowed to be extracted only during exigencies with proper planning for augmentation in the succeeding excess rainfall years.

2.1.1. Assessment of Annually Replenishable or Dynamic Ground Water Resources

The methodology for ground water resources estimation is based on the principle of water balance as given below –

$$\text{Inflow} - \text{Outflow} = \text{Change in Storage (of an aquifer)} \dots \dots \dots (1)$$

Equation (1) can be further elaborated as –

$$\Delta S = R_{RF} + R_{STR} + R_C + R_{SWI} + R_{GWI} + R_{TP} + R_{WCS} \pm VF \pm LF - GE - T - E - B \dots \dots \dots (2)$$

Where,

- ΔS - Change in storage
- R_{RF} - Rainfall recharge
- R_{STR} - Recharge from stream channels
- R_C - Recharge from canals
- R_{SWI} - Recharge from surface water irrigation
- R_{GWI} - Recharge from ground water irrigation
- R_{TP} - Recharge from Tanks & Ponds
- R_{WCS} - Recharge from water conservation structures
- VF - Vertical flow across the aquifer system
- LF - Lateral flow along the aquifer system (through flow)
- GE - Ground Water Extraction
- T - Transpiration
- E - Evaporation
- B - Base flow

It is preferred that all the components of water balance equation should be estimated in an assessment unit. Due to lack of data for all the components in most of the assessment units, it is proposed that at present the water budget may be restricted to the major components only, taking into consideration certain reasonable assumptions. The estimation is to be carried out using lumped parameter estimation approach keeping in mind that data from many more sources if available may be used for refining the assessment.

2.1.1.1. Rainfall Recharge

It is recommended that ground water recharge should be estimated on ground water level fluctuation and specific yield approach since this method takes into account the response of ground water levels to ground water input and output components. This, however, requires adequately spaced representative water level measurement for a sufficiently long period. It is proposed that there should be at least three spatially well distributed observation wells in the assessment unit, or one observation well per 100 sq. Km. Water level data should also be available for a minimum period of 5 years (preferably 10 years), along with corresponding rainfall data. Regarding frequency of water level data, two water level readings, during pre and post monsoon seasons, are the minimum requirement. It would be ideal to have monthly water level measurements to record the peak rise and maximum fall in the ground water levels. In units or subareas where adequate data on ground water level fluctuations are not available as specified above, ground water recharge may be estimated using rainfall infiltration factor method only. The rainfall recharge during non-monsoon season may be estimated using rainfall infiltration factor method only.

2.1.1.1.1. Ground Water Level Fluctuation Method

The ground water level fluctuation method is to be used for assessment of rainfall recharge in the monsoon season. The ground water balance equation in non-command areas is given by

$$\Delta S = R_{RF} + R_{STR} + R_{SWI} + R_{GWI} + R_{TP} + R_{WCS} \pm VF \pm LF - GE - T - E - B \dots \dots \dots (3)$$

Where,

- ΔS - Change in storage
- R_{RF} - Rainfall recharge
- R_{STR} - Recharge from stream channels
- R_{SWI} - Recharge from surface water irrigation
- R_{GWI} - Recharge from ground water irrigation
- R_{TP} - Recharge from Tanks & Ponds
- R_{WCS} - Recharge from water conservation structures
- VF - Vertical flow across the aquifer system
- LF - Lateral flow along the aquifer system (through flow)
- GE - Ground water extraction
- T - Transpiration
- E - Evaporation
- B - Base flow

Whereas the water balance equation in command area will have another term i.e., Recharge due to canals (R_C) and the equation will be as follows:

$$\Delta S = R_{RF} + R_{STR} + R_C + R_{SWI} + R_{GWI} + R_{TP} + R_{WCS} \pm VF \pm LF - GE - T - E - B \dots \dots \dots (4)$$

A couple of important observations in the context of water level measurement must be followed. It is important to bear in mind that while estimating the quantum of ground water extraction, the depth from which ground water is being extracted should be considered. One should consider only the draft from the same aquifer for which the resource is being estimated.

The change in storage can be estimated using the following equation:

$$\Delta S = \Delta h \times A \times S_Y \dots \dots \dots (5)$$

Where,

- ΔS - Change in storage
- Δh - rise in water level in the monsoon season
- A - Area for computation of recharge
- S_Y - Specific Yield

Substituting the expression in equation (5) for storage increase ΔS in terms of water level fluctuation and specific yield, the equations (3) & (4) becomes (6) & (7) for non-command and command sub-units,

$$R_{RF} = \Delta h \times A \times S_Y - R_{STR} - R_{SWI} - R_{GWI} - R_{TP} - R_{WCS} \pm VF \pm LF + GE + T + E + B \dots \dots \dots (6)$$

$$R_{RF} = \Delta h \times A \times S_Y - R_{STR} - R_C - R_{SWI} - R_{GWI} - R_{TP} - R_{WCS} \pm VF \pm LF + GE + T + E + B \dots \dots \dots (7)$$

Where base flow/ recharge to/from streams have not been estimated, the same is assumed to be zero. The rainfall recharge obtained by using equation (6) and (7) provides the recharge in any particular monsoon season for the associated monsoon season rainfall. This estimate is to be normalized for the normal monsoon season rainfall as per the procedure indicated below.

Normalization of Rainfall Recharge

Let R_i be the rainfall recharge and r_i be the associated rainfall. The subscript “ i ” takes values 1 to N where N is the number of years for which data is available. This should be at least 5. The rainfall recharge, R_i is obtained as per equation (6) & equation (7) depending on the sub-unit for which the normalization is being done.

After the pairs of data on R_i and r_i have been obtained as described above, a normalisation procedure is to be carried out for obtaining the rainfall recharge corresponding to the normal monsoon season rainfall. Let $r(\text{normal})$ be the normal monsoon season rainfall obtained as the average of recent 30 to 50 years of monsoon season rainfall. Two methods are possible for the normalisation procedure. The first method is based on a linear relationship between recharge and rainfall of the form

$$R = ar \dots \dots \dots (8)$$

Where,

- R = Rainfall recharge during monsoon season
- r = Monsoon season rainfall
- a = a constant

The computational procedure to be followed in the first method is as given below:

$$R_{RF}(\text{normal}) = \frac{\sum_{i=1}^N \left[R_i \frac{r(\text{normal})}{r_i} \right]}{N} \dots \dots \dots (9)$$

Where,

- $R_{RF}(\text{normal})$ - Normalized Rainfall Recharge in the monsoon season
- R_i - Rainfall Recharge in the monsoon season for the i^{th} year
- $r(\text{normal})$ - Normal monsoon season rainfall
- r_i - Rainfall in the monsoon season for the i^{th} year
- N - No. of years for which data is available

The second method is also based on a linear relation between recharge and rainfall. However, this linear relationship is of the form,

$$R_{RF}(\text{normal}) = a \times r(\text{normal}) + b \dots \dots \dots (10)$$

Where,

- $R_{RF}(\text{normal})$ - Normalized Rainfall Recharge in the monsoon season
- $r(\text{normal})$ - Normal monsoon season rainfall
- a and b - Constants.

The two constants ‘a’ and ‘b’ in the above equation are obtained through a linear regression analysis. The computational procedure to be followed in the second method is as given below:

$$a = \frac{NS_4 - S_1S_2}{NS_3 - S_1^2} \dots \dots \dots (11)$$

$$b = \frac{S_2 - aS_1}{N} \dots \dots \dots (12)$$

Where,

$$S_1 = \sum_{i=1}^N r_i, \quad S_2 = \sum_{i=1}^N R_i, \quad S_3 = \sum_{i=1}^N r_i^2, \quad S_4 = \sum_{i=1}^N R_i r_i$$

2.1.1.1.2. Rainfall Infiltration Factor Method

The rainfall recharge estimation based on Water level fluctuation method reflects actual field conditions since it takes into account the response of ground water level. However the ground water extraction estimation included in the computation of rainfall recharge using water level fluctuation approach is often subject to uncertainties. Therefore, it is recommended to compare the rainfall recharge obtained from water level fluctuation approach with that estimated using rainfall infiltration factor method. Recharge from rainfall is estimated by using the following relationship –

$$R_{RF} = RFIF \times A \times \frac{(R - a)}{1000} \dots \dots \dots (13)$$

Where,

- R_{RF} - Rainfall recharge in ham
- A - Area in hectares
- RFIF - Rainfall Infiltration Factor
- R- Rainfall in mm
- a - Minimum threshold value above which rainfall induces ground water recharge in mm

The threshold limit of minimum and maximum rainfall event which can induce recharge to the aquifer is to be considered while estimating ground water recharge using rainfall infiltration factor method. The minimum threshold limit is in accordance with the relation shown in equation (13) and the maximum threshold limit is based on the premise that after a certain limit, the rate of storm rain is too high to contribute to infiltration and they will only contribute to surface runoff. It is suggested that 10% of Normal annual rainfall may be taken as minimum rainfall threshold and 3000 mm as maximum rainfall limit. While computing the rainfall recharge, 10% of the normal annual rainfall is to be deducted from the monsoon rainfall and balance rainfall would be considered for computation of rainfall recharge. The same recharge factor may be used for both monsoon and non-monsoon rainfall, with the condition that the recharge due to non-monsoon rainfall may be taken as zero, if the normal rainfall during the non-monsoon season is less than 10% of normal annual rainfall. In using the method based on the specified norms, recharge due to both monsoon and non-monsoon rainfall may be estimated for normal rainfall, based on recent 30 to 50 years of data.

2.1.1.1.3. Percent Deviation

After computing the rainfall recharge for normal monsoon season rainfall using the ground water level fluctuation method and rainfall infiltration factor method these two estimates have to be compared with each other. A term, Percent Deviation (PD) which is the difference between the two expressed as a percentage of the later is computed as

$$PD = \frac{R_{RF}(\text{normal}, wtfm) - R_{RF}(\text{normal}, rifm)}{R_{RF}(\text{normal}, rifm)} \times 100 \dots \dots \dots (14)$$

Where,

$R_{RF}(\text{normal}, wtfm)$ = Rainfall recharge for normal monsoon season rainfall estimated by the ground water level fluctuation method

$R_{RF}(\text{normal}, rifm)$ = Rainfall recharge for normal monsoon season rainfall estimated by the rainfall infiltration factor method

The rainfall recharge for normal monsoon season rainfall is finally adopted as per the criteria given below:

- If PD is greater than or equal to -20%, and less than or equal to +20%, $R_{RF}(\text{normal})$ is taken as the value estimated by the ground water level fluctuation method.
- If PD is less than -20%, $R_{RF}(\text{normal})$ is taken as equal to 0.8 times the value estimated by the rainfall infiltration factor method.
- If PD is greater than +20%, $R_{RF}(\text{normal})$ is taken as equal to 1.2 times the value estimated by the rainfall infiltration factor method.

2.1.1.2. Recharge from Other Sources

Recharge from other sources constitutes recharges from canals, surface water irrigation, ground water irrigation, tanks & ponds and water conservation structures in command areas where as in non-command areas it constitutes the recharge due to surface water irrigation, ground water irrigation, tanks & ponds and water conservation structures. The methods of estimation of recharge from different sources are as follows.

Sl. No.	Source	Estimation Formula	Parameters
1	Recharge from Canals	$R_C = WA \times SF \times Days$	R_C = Recharge from Canals WA = Wetted Area SF = Seepage Factor Days = Number of Canal Running Days
2	Recharge from Surface Water Irrigation	$R_{SWI} = AD \times Days \times RFF$	R_{SWI} = Recharge due to applied surface water irrigation AD = Average Discharge Days = Number of days water is discharged to the Fields RFF = Return Flow Factor
3	Recharge from Ground Water Irrigation	$R_{GWI} = GE_{IRR} \times RFF$	R_{GWI} = Recharge due to applied ground water irrigation GE_{IRR} = Ground Water Extraction for Irrigation RFF = Return Flow Factor

Sl. No.	Source	Estimation Formula	Parameters
4	Recharge due to Tanks & Ponds	$R_{TP} = AWSA \times N \times RF$	R_{TP} = Recharge due to Tanks & Ponds AWSA = Average Water Spread Area N = Number of days Water is available in the Tank/Pond RF = Recharge Factor
5	Recharge due to Water Conservation Structures	$R_{WCS} = GS \times RF$	RWCS = Recharge due to Water Conservation Structures GS = Gross Storage = Storage Capacity multiplied by number of fillings. RF = Recharge Factor

2.1.1.3. Lateral Flow Along the Aquifer System (Through Flow)

In equations 6 & 7, if the area under consideration is a watershed, the lateral flow across boundaries can be considered as zero in case such estimates are not available. If there is inflow and outflow across the boundary, theoretically, the net inflow may be calculated using Darcy law, by delineating the inflow and outflow sections of the boundary. Besides such delineation, the calculation also requires estimate of transmissivity and hydraulic gradient across the inflow and outflow sections. These calculations are most conveniently done in a computer model. It is recommended to initiate regional scale modelling with well-defined flow boundaries. Once the modelling is complete, the lateral flows (LF) across boundaries for any assessment unit can be obtained from the model. In case Lateral Flow is calculated using computer model, the same should be included in the water balance equation.

2.1.1.4. Base Flow and Stream Recharge

If stream gauge stations are located in the assessment unit, the base flow and recharge from streams can be computed using Stream Hydrograph Separation method, Numerical Modelling and Analytical solutions. If the assessment unit is a watershed, a single stream monitoring station at the mouth of the watershed can provide the required data for the calculation of base flow. Any other information on local-level base flows such as those collected by research centres, educational institutes or NGOs may also be used to improve the estimates on base flows.

Base flow separation methods can be divided into two main types: non-tracer-based and tracer-based separation methods. Non-tracer methods include Stream hydrograph analysis, water balance method and numerical ground water modelling techniques. Digital filters are available for separating base flow component of the stream hydrograph.

Hydro-chemical tracers and environmental isotope methods also use hydrograph separation techniques based on mass balance approach. Stream recharge can be computed either using modelling techniques or simply by applying the Darcy Law.

Base flow assessment and Stream recharge should be carried out in consultation with Central Water Commission in order to avoid any duplicity in the estimation of total water availability in a river basin.

2.1.1.5. Vertical Inter Aquifer Flow

This can be estimated provided aquifer geometry and aquifer parameters are known. This can be calculated using the Darcy's law if the hydraulic heads in both aquifers and the hydraulic conductivity and thickness of the aquitard separating both the aquifers are known. Ground water flow modelling is an important tool to estimate such flows. As envisaged in this report regional scale modelling studies will help in refining vertical inter aquifer flow estimate.

2.1.1.6. Evaporation and Transpiration

Evaporation can be estimated for the aquifer in the assessment unit if water levels in the aquifer are within the capillary zone. It is recommended to compute the evaporation through field studies. If field studies are not possible, for areas with water levels within 1.0mbgl, evaporation can be estimated using the evaporation rates available for other adjoining areas. If depth to water level is more than 1.0mbgl, the evaporation losses from the aquifer should be taken as zero.

Transpiration through vegetation can be estimated if water levels in the aquifer are within the maximum root zone of the local vegetation. It is recommended to compute the transpiration through field studies. Even though it varies from place to place depending on type of soil & vegetation, in the absence of field studies the following estimation can be followed. If water levels are within 3.5mbgl, transpiration can be estimated using the transpiration rates available for other areas. If it is greater than 3.5m bgl, the transpiration should be taken as zero.

For estimating evapotranspiration, field tools like Lysimeters can be used to estimate actual evapotranspiration. Usually agricultural universities and IMD carry out lysimeter experiments and archive the evapotranspiration data. Remote sensing based techniques like SEBAL (Surface Energy Balance Algorithm for Land) can be used for estimation of actual evapotranspiration. Assessing offices may apply available lysimeter data or other techniques for estimation of evapotranspiration. In case where such data is not available, evapotranspiration losses can be empirically estimated from PET data provided by IMD.

2.1.1.7. Recharge During Monsoon Season

The sum of normalized monsoon rainfall recharge and the recharge from other sources and lateral and vertical flows into & out of the sub unit and stream inflows & outflows during monsoon season is the total recharge/ accumulation during monsoon season for the sub unit. Similarly, this is to be computed for all the sub units available in the assessment unit.

2.1.1.8. Recharge During Non-Monsoon Season

The rainfall recharge during non-monsoon season is estimated using rainfall infiltration factor Method only when the non-monsoon season rainfall is more than 10% of normal annual rainfall. The sum of non-monsoon rainfall recharge and the recharge from other sources and lateral and vertical flows into & out of the sub unit and stream inflows & outflows during non-monsoon season is the total recharge/ accumulation during non-monsoon season for the sub unit. Similarly, this is to be computed for all the sub units available in the assessment unit.

2.1.1.9. Total Annual Ground Water Recharge

The sum of the recharge/ accumulations during monsoon and non-monsoon seasons is the total annual ground water recharge/ accumulations for the sub unit. Similarly, this is to be computed for all the sub units available in the assessment unit.

2.1.1.10. Annual Extractable Ground Water Resource (EGR)

The Annual Extractable Ground Water Resource (EGR) is computed by deducting the Total Annual Natural Discharge from Total Annual Ground Water Recharge.

The ground water base flow contribution limited to the ecological flow of the river should be determined which will be deducted from Annual Ground Water Recharge to determine Annual Extractable Ground Water Resources (EGR). The ecological flows of the rivers are to be determined in consultation with Central Water Commission and other concerned river basin agencies. In case base flow contribution to the ecological flow of rivers is not determined then following assumption is to be followed.

In the water level fluctuation method, a significant portion of base flow is already accounted for by taking the post monsoon water level one month after the end of rainfall. The base flow in the remaining non-monsoon period is likely to be small, especially in hard rock areas. In the assessment units, where river stage data are not available and neither the detailed data for quantitative assessment of the natural discharge are available, present practice (GEC 1997) of allocation of unaccountable natural discharges to 5% or 10% of annual recharge may be retained. If the rainfall recharge is assessed using water level fluctuation method this will be 5% of the annual recharge and if it is assessed using rainfall infiltration factor method, it will be 10% of the annual recharge. The balance will account for Annual Extractable Ground Water Resources (EGR).

2.1.1.11. Estimation of Ground Water Extraction

Ground water draft or extraction is to be assessed as follows.

$$GE_{ALL} = GE_{IRR} + GE_{DOM} + GE_{IND} \dots \dots \dots (15)$$

Where,

GE_{ALL} = Ground water extraction for all uses

GE_{IRR} = Ground water extraction for irrigation

GE_{DOM} = Ground water extraction for domestic uses

GE_{IND} = Ground water extraction for industrial uses

2.1.1.11.1. Ground Water Extraction for Irrigation (GE_{IRR})

The methods for estimation of ground water extraction are as follows.

Unit Draft Method: – In this method, season-wise unit draft of each type of well in an assessment unit is estimated. The unit draft of different types (eg. Dug well, Dug cum bore well, shallow tube well, deep tube well, bore well etc.) is multiplied with the number of wells of that particular type to obtain season-wise ground water extraction by that particular structure.

Crop Water Requirement Method: – For each crop, the season-wise net irrigation water requirement is determined. This is then multiplied with the area irrigated by ground water abstraction structures. The database on crop area is obtained from Revenue records in Tehsil office, Agriculture Census and also by using Remote Sensing techniques.

Power Consumption Method: –Ground water extraction for unit power consumption (electric) is determined. Extraction per unit power consumption is then multiplied with number of units of power consumed for agricultural pump sets to obtain total ground water extraction for irrigation.

2.1.1.11.2. Ground Water Extraction for Domestic Use (GE_{DOM})

There are several methods for estimation of extraction for domestic use(GE_{DOM}). Some of the commonly adopted methods are described here.

Unit Draft Method: – In this method, unit draft of each type of well is multiplied by the number of wells used for domestic purpose to obtain the domestic ground water extraction.

Consumptive Use Method: – In this method, population is multiplied with per capita consumption usually expressed in litre per capita per day (lpcd). It can be expressed using following equation.

$$GE_{DOM} = Population \times ConsumptiveRequirement \times L_g \dots \dots \dots (16)$$

Where,

L_g = Fractional Load on Ground Water for Domestic Water Supply.

The Load on Ground water can be obtained from the Information based on Civic water supply agencies in urban areas.

2.1.1.11.3. Ground Water Extraction for Industrial Use (GE_{IND})

The commonly adopted methods for estimating the extraction for industrial use are as below:

Unit Draft Method: - In this method, unit draft of each type of well is multiplied by the number of wells used for industrial purpose to obtain the industrial ground water extraction.

Consumptive Use Pattern Method: – In this method, water consumption of different industrial units is determined. Numbers of Industrial units which are dependent on ground water are multiplied with unit water consumption to obtain ground water extraction for industrial use.

$$GE_{IND} = NumberofIndustrialUnits \times UnitWaterConsumption \times L_g \dots \dots \dots (17)$$

Where,

L_g = Fractional load on ground water for industrial water supply.

The load on ground water for industrial water supply can be obtained from water supply agencies in the Industrial belt.

Ground water extraction obtained from different methods need to be compared and based on field checks, the seemingly best value may be adopted. At times, ground water extraction obtained by different methods may vary widely. In such cases, the value matching the field situation should be

considered. The storage depletion during a season, where other recharges are negligible can be taken as ground water extraction during that particular period.

2.1.1.12. Stage of Ground Water Extraction

The stage of ground water extraction is defined by,

$$\text{Stage of GW Extraction} = \frac{\text{Existing Gross GW Extraction for all Uses}}{\text{Annual Extractable GW Resources}} \times 100 \dots \dots \dots (18)$$

The existing gross ground water extraction for all uses refers to the total of existing gross ground water extraction for irrigation and all other purposes. The stage of ground water extraction should be obtained separately for command areas, non-command areas and poor ground water quality areas.

2.1.1.13. Validation of Stage of Ground Water Extraction

The assessment based on the stage of ground water extraction has inherent uncertainties. In view of this, it is desirable to validate the 'Stage of Ground Water Extraction' with long term trend of ground water levels.

Long term Water Level trends are prepared for a minimum period of 10 years for both pre-monsoon and post-monsoon period. If the ground water resource assessment and the trend of long term water levels contradict each other, this anomalous situation requires a review of the ground water resource computation, as well as the reliability of water level data. The mismatch conditions are enumerated below.

SOGWE	Ground Water Level Trend	Remarks
≤ 70%	Significant decline in trend in both pre-monsoon and post-monsoon	Not acceptable and needs reassessment
> 100%	No significant decline in both pre-monsoon and post-monsoon long term trend	Not acceptable and needs reassessment

2.1.1.14. Categorisation of Assessment Unit

As emphasised in the National Water Policy, 2012, a convergence of Quantity and Quality of ground water resources is required while assessing the ground water status in an assessment unit. Therefore, it is recommended to separate estimation of resources where water quality is beyond permissible limits for the parameter salinity.

2.1.1.14.1. Categorisation of Assessment Unit Based on Quantity

The categorisation based on status of ground water quantity is defined by Stage of Ground Water Extraction as given below:

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

2.1.1.14.2. Categorisation of Assessment Unit Based on Quality

As it is not possible to categorize the assessment units in terms of the extent of quality hazard, based on the available water quality monitoring mechanism and database on ground water quality, the Committee recommends that each assessment unit, in addition to the Quantity based categorization (safe, semi-critical, critical and over-exploited) should bear a quality hazard identifier. If any of the three quality hazards in terms of Arsenic, Fluoride and Salinity are encountered in the assessment sub unit in mappable units, the assessment sub unit may be tagged with the particular Quality hazard.

2.1.1.15. Allocation of Ground Water Resource for Utilisation

The Annual Extractable Ground Water Resources are to be apportioned between domestic, industrial and irrigation uses. Among these, as per the National Water Policy, requirement for domestic water supply is to be accorded priority. This requirement has to be based on population as projected to the year 2025, per capita requirement of water for domestic use, and relative load on ground water for urban and rural water supply. In situations where adequate data is not available to make this estimate, the following empirical relation is recommended.

$$Alloc = 22 \times N \times L_g \text{ mmperyear} \dots \dots \dots (19)$$

Where,

Alloc = Allocation for domestic water requirement

N = population density in the unit in thousands per sq. km.

L_g = fractional load on ground water for domestic water supply (≤ 1.0)

In deriving equation (19), it is assumed that the requirement of water for domestic use is 60 lpd per head. The equation can be suitably modified in case per capita requirement is different. If by chance, the estimation of projected allocation for future domestic needs is less than the current domestic extraction due to any reason, the allocation must be equal to the present day extraction. It can never be less than the present day extraction as it is unrealistic.

2.1.1.16. Net Annual Ground Water Availability for Future Use

The water available for future use is obtained by deducting the allocation for domestic use and current extraction for Irrigation and Industrial uses from the Annual Extractable Ground Water Recharge. The resulting ground water potential is termed as the net annual ground water availability for future use. The Net annual ground water availability for future use should be calculated separately for non-command areas and command areas. As per the recommendations of the R&D Advisory committee, the ground water available for future use can never be negative. If it becomes negative, the future allocation of Domestic needs can be reduced to current extraction for domestic use. Even then if it is still negative, then the ground water available for future uses will be zero.

2.1.1.17. Additional Potential Resources under Specific Conditions**2.1.1.17.1. Potential Resource Due to Spring Discharge**

Spring discharge occurs at the places where ground water level cuts the surface topography. The spring discharge is equal to the ground water recharge minus the outflow through evaporation and evapotranspiration and vertical and lateral sub-surface flow. Thus, Spring Discharge is a form of

‘Annual Extractable Ground Water Recharge’. It is a renewable resource, though not to be used for Categorisation. Spring discharge measurement is to be carried out by volumetric measurement of discharge of the springs. Spring discharges multiplied with time in days of each season will give the quantum of spring resources available during that season. The committee recommends that in hilly areas with substantial potential of spring discharges, the discharge measurement should be made at least 4 times a year in parity with the existing water level monitoring schedule.

$$\text{Potential groundwater resource due to springs} = Q \times \text{No. of days} \dots \dots \dots (20)$$

Where,

Q = Spring Discharge

No of days = No of days spring yields.

2.1.1.17.2. Potential Resource in Waterlogged and Shallow Water Table Areas

In the area where the ground water level is less than 5m below ground level or in waterlogged areas, the resources up to 5m below ground level are potential and would be available for development in addition to the annual recharge in the area. The computation of potential resource to ground water reservoir in shallow water table areas can be done by adopting the following equation:

$$\text{Potential groundwater resource in shallow water table areas} = (5 - D) \times A \times S_y \dots \dots \dots (21)$$

Where,

D = Depth to water table below ground surface in pre-monsoon period in shallow aquifers.

A = Area of shallow water table zone.

S_y = Specific Yield

2.1.1.17.3. Potential Resource in Flood Prone Areas

Ground water recharge from a flood plain is mainly the function of the following parameters-

- Areal extent of flood plain
- Retention period of flood
- Type of sub-soil strata and silt charge in the river water which gets deposited and controls seepage

Since collection of data on all these factors is time taking and difficult, in the meantime, the potential resource from flood plain may be estimated on the same norms as for ponds, tanks and lakes. This has to be calculated over the water spread area and only for the retention period using the following formula.

$$\text{Potential groundwater resource in Flood Prone Areas} = 1.4 \times N \times \frac{A}{1000} \dots \dots \dots (22)$$

Where,

N = No. of Days Water is Retained in the Area

A = Flood Prone Area

2.1.1.18. Apportioning of Ground Water Assessment from Watershed to Development Unit

Where the assessment unit is a watershed, there is a need to convert the ground water assessment in terms of an administrative unit such as block/ taluka/ mandal. This may be done as follows.

A block may comprise of one or more watersheds, in part or full. First, the ground water assessment in the subareas, command, non-command and poor ground water quality areas of the watershed may be converted into depth unit (mm), by dividing the annual recharge by the respective area. The contribution of this subarea of the watershed to the block, is now calculated by multiplying this depth with the area in the block occupied by this sub-area. This procedure must be followed to calculate the contribution from the sub-areas of all watersheds occurring in the block, to work out the total ground water resource of the block.

The total ground water resource of the block should be presented separately for each type of sub-area, namely for command areas, non-command areas and poor ground water quality areas, as in the case of the individual watersheds.

2.1.2. Assessment of In-Storage Ground Water Resources or Static Ground Water Resources

The computation of the static or in-storage ground water resources may be done after delineating the aquifer thickness and specific yield of the aquifer material. The computations can be done as follows: -

$$SGWR = A \times (Z_2 - Z_1) \times S_y \dots \dots \dots (23)$$

Where,

SGWR = Static or in-storage ground water resources

A = Area of the assessment unit

Z₂ = Bottom of unconfined aquifer

Z₁ = Pre-monsoon water level

S_y = Specific yield in the in-storage zone

2.1.3. Assessment of Total Ground Water Availability in Unconfined Aquifer

The sum of Annual Exploitable Ground Water Resource and the In-storage Ground Water Resources of an unconfined aquifer is the Total Ground Water Availability of that aquifer.

2.2. GROUND WATER ASSESSMENT OF CONFINED AQUIFER SYSTEM

The assessment of the ground water resources of the confined aquifers is done by following ground water storage approach. If the areal extent of the confined aquifer is "A" then the total quantity of water added to or released from the entire aquifer is

$$Q = S \times A \times \Delta h \dots \dots \dots (24)$$

Where,

Q = Quantity of water confined aquifer can release (m³)

S = Storativity

A = Areal extent of the confined aquifer (m²)

Δh = Change in Piezometric head (m)

Once the piezometric head reaches below the top confining bed, it behaves like an unconfined aquifer and directly dewater the aquifer and there is a possibility of damage to the aquifer as well as topography. The quantity of water released in confined aquifer due to change in pressure can be computed between piezometric head (h_t) at any given time 't' and the bottom of the top confining layer (h_0) by using the following equation.

$$Q_p = S \times A \times \Delta h = S \times A \times (h_t - h_0) \dots \dots \dots (25)$$

Where,

Q_p = Ground Water Potential of Confined Aquifer

S= Storativity

A = Areal extent of the confined aquifer

Δh = Change in Piezometric head

h_t = Piezometric head at any particular time

h_0 = Bottom of the top Confining Layer

If any development activity is started in the confined aquifer, the assessment is done for both the dynamic as well as in-storage resources of the confined aquifer.

2.2.1. Dynamic Ground Water Resources of Confined Aquifer

To assess the dynamic ground water resources of the confined aquifer the following equation can be used with the pre and post monsoon piezometric heads of the particular aquifer.

$$Q_D = S \times A \times \Delta h = S \times A \times (h_{POST} - h_{PRE}) \dots \dots \dots (26)$$

Where,

Q_D = Dynamic Ground Water Resource of Confined Aquifer (m^3)

S = Storativity

A = Areal extent of the confined aquifer (m^2)

Δh = Change in piezometric head (m)

h_{POST} = Piezometric head during post-monsoon period (mamsl)

h_{PRE} = Piezometric head during pre-monsoon period (m amsl)

2.2.2. In-storage Ground Water Resources of Confined Aquifer

For assessing the in- storage ground water potential of a confined aquifer, one has to compute the resources between the pre-monsoon piezometric head and bottom of the top confining layer. That can be assessed using the following formula:

$$Q_I = S \times A \times \Delta h = S \times A \times (h_{PRE} - h_0) \dots \dots \dots (27)$$

Where,

Q_I =In-storage Ground Water Resource of Confined Aquifer (m^3)

S = Storativity

A = Areal extent of the confined aquifer (m^2)

Δh = Change in piezometric head (m)

h_0 = Bottom level of the top confining layer (m amsl)

h_{PRE} = Piezometric head during pre-monsoon period (m amsl)

If the confined aquifer is not being exploited for any purpose, the dynamic and static resources of the confined aquifer need not be estimated separately. Instead the in-storage ground water resource of the aquifer can be computed using the following formula.

$$Q_p = S \times A \times \Delta h = S \times A \times (h_{POST} - h_0) \dots \dots \dots (28)$$

Where,

Q_p = In-storage Ground Water Resource of Confined Aquifer or the quantity of water under pressure (m^3)

S = Storativity

A = Areal extent of the confined aquifer (m^2)

Δh = Change in piezometric head (m)

h_0 = Bottom level of the top confining layer (m amsl)

h_{POST} = Piezometric head during post-monsoon period (m amsl)

The calculated resource includes small amount of dynamic resource of the confined aquifer also, which replenishes every year. But to make it simpler this was also computed as part of the static or in-storage resource of the confined aquifer.

2.2.3. Assessment of Total Ground Water Availability of Confined Aquifer

If the confined aquifer is being exploited, the Total Ground Water Availability of the confined aquifer is the sum of Dynamic Ground Water Resources and the In-storage Ground Water Resources of that confined aquifer whereas if it is not being exploited, the Total Ground Water Availability of the confined aquifer comprises of only one component i.e. the In-storage Ground Water Resources of that confined aquifer.

2.3. GROUND WATER ASSESSMENT OF SEMI-CONFINED AQUIFER SYSTEM

The Assessment of Ground Water Resources of a semi-confined aquifer has some more complications. Unless and until, it is well studied that the recharge to this is not computed either in the over lying unconfined aquifer or underlying/overlying semi confined aquifers, it should not be assessed separately. If it is assessed separately, there is a possibility of duplication of estimating the same resource by direct computation in one aquifer and as leakage in the other aquifer. As it is advisable to under estimate rather than to overestimate the resources, it is recommended not to assess these resources separately as long as there is no study indicating its non-estimation. If it is found through field studies that the resources are not assessed in any of the aquifers in the area, these resources are to be assessed following the methodology similar to that used in assessing the resources of Confined aquifers.

2.4. TOTAL GROUND WATER AVAILABILITY OF AN AREA

The Total Ground Water Availability in any area is the sum of dynamic and static/in-storage ground water resources in the unconfined aquifer and the dynamic and In-storage ground water resources of the Confined aquifers and semi confined aquifers in the area.

2.5. GROUND WATER ASSESSMENT IN URBAN AREAS

The Assessment of Ground Water Resources in urban areas is similar to that of rural areas. Because of the availability of draft data and slightly different infiltration process and recharge due to other sources, the following few points are to be considered.

- Even though the data on existing ground water abstraction structures are available, accuracy is somewhat doubtful and individuals cannot even enumerate the well census in urban areas. Hence it is recommended to use the difference of the actual demand and the supply by surface water sources as the withdrawal from the ground water resources.
- The urban areas are sometimes concrete jungles and rainfall infiltration is not equal to that of rural areas unless and until special measures are taken in the construction of roads and pavements. Hence, it is proposed to use 30% of the rainfall infiltration factor proposed for urban areas as an adhoc arrangement till field studies in these areas are done and documented field studies are available.
- Because of the water supply schemes, there are many pipelines available in the urban areas and the seepages from these channels or pipes are huge in some areas. Hence this component is also to be included in the other resources and the recharge may be estimated. The percent losses may be collected from the individual water supply agencies, 50% of which can be taken as recharge to the ground water system.
- In the urban areas in India, normally, there is no separate channels either open or sub surface for the drainage and flash floods. These channels also recharge to some extent the ground water reservoir. As on today, there is no documented field study to assess the recharge. The seepages from the sewerages, which normally contaminate the ground water resources with nitrate also contribute to the quantity of resources and hence same percent as in the case of water supply pipes may be taken as norm for the recharge on the quantity of sewerage when there is sub surface drainage system. If estimated flash flood data is available the same percent can be used on the quantum of flash floods to estimate the recharge from the flash floods. Even when the drainage system is open channels, till further documented field studies are done same procedure may be followed.
- It is proposed to have a separate ground water assessment for urban areas with population more than 10 lakhs.

2.6. GROUND WATER ASSESSMENT IN COASTAL AREAS

The assessment of ground water resources in coastal areas is similar to that of other areas. Because of the nature of hydraulic equilibrium of ground water with sea water, care should be taken in assessing the ground water resources of this area. While assessing the resources in these areas, following few points are to be considered.

- The ground water resources assessment in coastal areas includes the areas where the influence of sea water has an effect on the existence of fresh water in the area. It can be

demarcated from the Coastal Regulatory zone or the Geomorphological maps or from the maps where sea water influences are demarcated.

- Wherever, the pre monsoon and post monsoon water levels are above mean sea level the dynamic component of the estimation will be same as other areas.
- If both these water levels are below sea level, the dynamic component should be taken as zero.
- Wherever, the post monsoon water table is above sea level and pre monsoon water table is below sea level the pre monsoon water table should be taken as at sea level and fluctuation is to be computed.
- The static or in storage resources are to be restricted to the minimum of 40 times the pre monsoon water table or the bottom of the aquifer.

2.7. GROUND WATER ASSESSMENT IN WATER LEVEL DEPLETION ZONES

There may be areas where ground water level shows a decline even in the monsoon season. The reasons for this may be any one of the following : (a) There is a genuine depletion in the ground water regime, with ground water extraction and natural ground water discharge in the monsoon season(outflow from the region and base flow) exceeding the recharge. (b) There may be an error in water level data due to inadequacy of observation wells.

If it is concluded that the water level data is erroneous, recharge assessment may be made based on rainfall infiltration factor method. If, on the other hand, water level data is assessed as reliable, the ground water level fluctuation method may be applied for recharge estimation. As ΔS in equation 3& 4 is negative, the estimated recharge will be less than the gross ground water extraction in the monsoon season. It must be noted that this recharge is the gross recharge minus the natural discharges in the monsoon season. The immediate conclusion from such an assessment in water depletion zones will be that the area falls under the over-exploited category which requires micro level study.

2.8. NORMS TO BE USED IN THE ASSESSMENT

The committee recommends that the state agencies should be encouraged to conduct field studies and use these computed norms in the assessment. For conducting field studies, it is recommended to follow the field-tested procedures for computing the norms. There is the possibility of error creeping in at various levels in the field study and hence the committee is of the opinion to give a maximum and minimum values for all the norms used in the estimation. The committee can foresee the handicap of the state agencies which are not able to compute the norms by their own field study. In such cases, it suggests an average of the range of norms to be used as the recommended value for the norm.

2.8.1. Specific Yield

Recently under Aquifer Mapping Project, Central Ground Water Board has classified all the aquifers into 16 Principal Aquifers which in turn were divided into 42 Major Aquifers. Hence, it is required to assign Specific Yield values to all these aquifer units. The values recommended in the **Table-2.1** may be followed in the future assessments. The Major aquifer map can be obtained from Regional offices of Central Ground Water Board.

The recommended Specific Yield values are to be used for assessment, unless sufficient data based on field studies are available to justify the minimum, maximum or other intermediate values. The Norms suggested below are nothing but the redistribution of norms suggested by GEC-1997 methodology and hence people are encouraged to conduct field studies and strengthen the Norms database.

Table-2.1: Norms Recommended for Specific Yield

Sl. No.	Principal Aquifer	Major Aquifers		Age	Recommended (%)	Minimum (%)	Maximum (%)
		Code	Name				
1	Alluvium	AL01	Younger Alluvium (Clay/Silt/Sand/ Calcareous concretions)	Quaternary	10	8	12
2	Alluvium	AL02	Pebble / Gravel/ Bazada/ Kandi	Quaternary	16	12	20
3	Alluvium	AL03	Older Alluvium (Silt/Sand/Gravel/Lithomargic clay)	Quaternary	6	4	8
4	Alluvium	AL04	Aeolian Alluvium (Silt/ Sand)	Quaternary	16	12	20
5	Alluvium	AL05	Coastal Alluvium (Sand/Silt/Clay)	Quaternary	10	8	12
6	Alluvium	AL06	Valley Fills	Quaternary	16	12	20
7	Alluvium	AL07	Glacial Deposits	Quaternary	16	12	20
8	Laterite	LT01	Laterite / Ferruginous concretions	Quaternary	2.5	2	3
9	Basalt	BS01	Basic Rocks (Basalt) - Weathered, Vesicular or Jointed	Mesozoic to Cenozoic	2	1	3
10	Basalt	BS01	Basic Rocks (Basalt) - Massive Poorly Jointed	Mesozoic to Cenozoic	0.35	0.2	0.5
11	Basalt	BS02	Ultra Basic - Weathered, Vesicular or Jointed	Mesozoic to Cenozoic	2	1	3
12	Basalt	BS02	Ultra Basic - Massive Poorly Jointed	Mesozoic to Cenozoic	0.35	0.2	0.5
13	Sandstone	ST01	Sandstone/Conglomerate	Upper Palaeozoic to Cenozoic	3	1	5
14	Sandstone	ST02	Sandstone with Shale	Upper Palaeozoic to Cenozoic	3	1	5
15	Sandstone	ST03	Sandstone with shale/ coal beds	Upper Palaeozoic to Cenozoic	3	1	5
16	Sandstone	ST04	Sandstone with Clay	Upper Palaeozoic to Cenozoic	3	1	5
17	Sandstone	ST05	Sandstone/Conglomerate	Proterozoic to Cenozoic	3	1	5
18	Sandstone	ST06	Sandstone with Shale	Proterozoic to	3	1	5

Sl. No.	Principal Aquifer	Major Aquifers		Age	Recommended (%)	Minimum (%)	Maximum (%)
		Code	Name				
				Cenozoic			
19	Shale	SH01	Shale with limestone	Upper Palaeozoic to Cenozoic	1.5	1	2
20	Shale	SH02	Shale with Sandstone	Upper Palaeozoic to Cenozoic	1.5	1	2
21	Shale	SH03	Shale, limestone and sandstone	Upper Palaeozoic to Cenozoic	1.5	1	2
22	Shale	SH04	Shale	Upper Palaeozoic to Cenozoic	1.5	1	2
23	Shale	SH05	Shale/Shale with Sandstone	Proterozoic to Cenozoic	1.5	1	2
24	Shale	SH06	Shale with Limestone	Proterozoic to Cenozoic	1.5	1	2
25	Limestone	LS01	Miliolitic Limestone	Quaternary	2	1	3
26	Limestone	LS01	Karstified Miliolitic Limestone	Quaternary	10	5	15
27	Limestone	LS02	Limestone / Dolomite	Upper Palaeozoic to Cenozoic	2	1	3
28	Limestone	LS02	Karstified Limestone / Dolomite	Upper Palaeozoic to Cenozoic	10	5	15
29	Limestone	LS03	Limestone/Dolomite	Proterozoic	2	1	3
30	Limestone	LS03	Karstified Limestone/Dolomite	Proterozoic	10	5	15
31	Limestone	LS04	Limestone with Shale	Proterozoic	2	1	3
32	Limestone	LS04	Karstified Limestone with Shale	Proterozoic	10	5	15
33	Limestone	LS05	Marble	Azoic to Proterozoic	2	1	3
34	Limestone	LS05	Karstified Marble	Azoic to Proterozoic	10	5	15
35	Granite	GR01	Acidic Rocks (Granite, Syenite, Rhyolite etc.) - Weathered, Jointed	Mesozoic to Cenozoic	1.5	1	2
36	Granite	GR01	Acidic Rocks (Granite, Syenite, Rhyolite etc.) - Massive or Poorly Fractured	Mesozoic to Cenozoic	0.35	0.2	0.5
37	Granite	GR02	Acidic Rocks (Pegmatite, Granite, Syenite, Rhyolite etc.) - Weathered, Jointed	Proterozoic to Cenozoic	3	2	4
38	Granite	GR02	Acidic Rocks (Pegmatite, Granite, Syenite, Rhyolite etc.) - Massive, Poorly Fractured	Proterozoic to Cenozoic	0.35	0.2	0.5
39	Schist	SC01	Schist - Weathered, Jointed	Azoic to Proterozoic	1.5	1	2
40	Schist	SC01	Schist - Massive, Poorly Fractured	Azoic to Proterozoic	0.35	0.2	0.5
41	Schist	SC02	Phyllite	Azoic to Proterozoic	1.5	1	2
42	Schist	SC03	Slate	Azoic to Proterozoic	1.5	1	2
43	Quartzite	QZ01	Quartzite - Weathered, Jointed	Proterozoic to Cenozoic	1.5	1	2

Sl. No.	Principal Aquifer	Major Aquifers		Age	Recommended (%)	Minimum (%)	Maximum (%)
		Code	Name				
44	Quartzite	QZ01	Quartzite - Massive, Poorly Fractured	Proterozoic to Cenozoic	0.3	0.2	0.4
45	Quartzite	QZ02	Quartzite - Weathered, Jointed	Azoic to Proterozoic	1.5	1	2
46	Quartzite	QZ02	Quartzite- Massive, Poorly Fractured	Azoic to Proterozoic	0.3	0.2	0.4
47	Charnockite	CK01	Charnockite - Weathered, Jointed	Azoic	3	2	4
48	Charnockite	CK01	Charnockite - Massive, Poorly Fractured	Azoic	0.3	0.2	0.4
49	Khondalite	KH01	Khondalites, Granulites - Weathered, Jointed	Azoic	1.5	1	2
50	Khondalite	KH01	Khondalites, Granulites - Massive, Poorly Fractured	Azoic	0.3	0.2	0.4
51	Banded Gneissic Complex	BG01	Banded Gneissic Complex - Weathered, Jointed	Azoic	1.5	1	2
52	Banded Gneissic Complex	BG01	Banded Gneissic Complex - Massive, Poorly Fractured	Azoic	0.3	0.2	0.4
53	Gneiss	GN01	Undifferentiated metasedimentaries/ Undifferentiated metamorphic - Weathered, Jointed	Azoic to Proterozoic	1.5	1	2
54	Gneiss	GN01	Undifferentiated metasedimentaries/ Undifferentiated metamorphic - Massive, Poorly Fractured	Azoic to Proterozoic	0.3	0.2	0.4
55	Gneiss	GN02	Gneiss - Weathered, Jointed	Azoic to Proterozoic	3	2	4
56	Gneiss	GN02	Gneiss-Massive, Poorly Fractured	Azoic to Proterozoic	0.3	0.2	0.4
57	Gneiss	GN03	Migmatitic Gneiss - Weathered, Jointed	Azoic	1.5	1	2
58	Gneiss	GN03	Migmatitic Gneiss - Massive, Poorly Fractured	Azoic	0.3	0.2	0.4
59	Intrusive	IN01	Basic Rocks (Dolerite, Anorthosite etc.) - Weathered, Jointed	Proterozoic to Cenozoic	2	1	3
60	Intrusive	IN01	Basic Rocks (Dolerite, Anorthosite etc.) - Massive, Poorly Fractured	Proterozoic to Cenozoic	0.35	0.2	0.5
61	Intrusive	IN02	Ultrabasics (Epidiorite, Granophyre etc.) - Weathered, Jointed	Proterozoic to Cenozoic	2	1	3
62	Intrusive	IN02	Ultrabasics (Epidiorite, Granophyre etc.) - Massive, Poorly Fractured	Proterozoic to Cenozoic	0.35	0.2	0.5

2.8.2. Rainfall Infiltration Factor

It is recommended that to assign Rainfall Infiltration Factor values to all the aquifer units recently classified by the Central Ground Water Board. The values recommended in **Table-2.2** may be followed in the future assessments. The recommended Rainfall Infiltration Factor values are to be used for assessment, unless sufficient data based on field studies are available to justify the minimum, maximum or other intermediate values.

An additional 2% of rainfall recharge factor may be used in such areas or parts of the areas where watershed development with associated soil conservation measures are implemented. This additional factor is subjective and is separate from the contribution due to the water conservation structures such as check dams, nalla bunds, percolation tanks etc. The norms for the estimation of recharge due to these structures are provided separately. This additional factor of 2% is at this stage, only provisional, and will need revision based on pilot studies.

The Norms suggested below are nothing but the redistribution of norms suggested by GEC-1997 methodology and hence people are encouraged to conduct field studies and strengthen the Norms database.

Table-2.2: Norms Recommended for Rainfall Infiltration Factor

Sl. No.	Principal Aquifer	Major Aquifers		Age	Recommended (%)	Minimum (%)	Maximum (%)
		Code	Name				
1	Alluvium	AL01	Younger Alluvium (Clay/Silt/Sand/ Calcareous concretions)	Quaternary	22	20	24
2	Alluvium	AL02	Pebble / Gravel/ Bazada/ Kandi	Quaternary	22	20	24
3	Alluvium	AL03	Older Alluvium (Silt/Sand/Gravel/Lithomargic clay)	Quaternary	22	20	24
4	Alluvium	AL04	Aeolian Alluvium (Silt/ Sand)	Quaternary	22	20	24
5	Alluvium	AL05	Coastal Alluvium (Sand/Silt/Clay) -East Coast	Quaternary	16	14	18
5	Alluvium	AL05	Coastal Alluvium (Sand/Silt/Clay) - West Coast	Quaternary	10	8	12
6	Alluvium	AL06	Valley Fills	Quaternary	22	20	24
7	Alluvium	AL07	Glacial Deposits	Quaternary	22	20	24
8	Laterite	LT01	Laterite / Ferruginous concretions	Quaternary	7	6	8
9	Basalt	BS01	Basic Rocks (Basalt) - Vesicular or Jointed	Mesozoic to Cenozoic	13	12	14
9	Basalt	BS01	Basic Rocks (Basalt) - Weathered	Mesozoic to Cenozoic	7	6	8
10	Basalt	BS01	Basic Rocks (Basalt) - Massive Poorly Jointed	Mesozoic to Cenozoic	2	1	3
11	Basalt	BS02	Ultra Basic - Vesicular or Jointed	Mesozoic to Cenozoic	13	12	14
11	Basalt	BS02	Ultra Basic - Weathered	Mesozoic to Cenozoic	7	6	8
12	Basalt	BS02	Ultra Basic - Massive Poorly	Mesozoic to	2	1	3

Sl. No.	Principal Aquifer	Major Aquifers		Age	Recommended (%)	Minimum (%)	Maximum (%)
		Code	Name				
			Jointed	Cenozoic			
13	Sandstone	ST01	Sandstone/Conglomerate	Upper Palaeozoic to Cenozoic	12	10	14
14	Sandstone	ST02	Sandstone with Shale	Upper Palaeozoic to Cenozoic	12	10	14
15	Sandstone	ST03	Sandstone with shale/ coal beds	Upper Palaeozoic to Cenozoic	12	10	14
16	Sandstone	ST04	Sandstone with Clay	Upper Palaeozoic to Cenozoic	12	10	14
17	Sandstone	ST05	Sandstone/Conglomerate	Proterozoic to Cenozoic	6	5	7
18	Sandstone	ST06	Sandstone with Shale	Proterozoic to Cenozoic	6	5	7
19	Shale	SH01	Shale with limestone	Upper Palaeozoic to Cenozoic	4	3	5
20	Shale	SH02	Shale with Sandstone	Upper Palaeozoic to Cenozoic	4	3	5
21	Shale	SH03	Shale, limestone and sandstone	Upper Palaeozoic to Cenozoic	4	3	5
22	Shale	SH04	Shale	Upper Palaeozoic to Cenozoic	4	3	5
23	Shale	SH05	Shale/Shale with Sandstone	Proterozoic to Cenozoic	4	3	5
24	Shale	SH06	Shale with Limestone	Proterozoic to Cenozoic	4	3	5
25	Limestone	LS01	Miliolitic Limestone	Quaternary	6	5	7
27	Limestone	LS02	Limestone / Dolomite	Upper Palaeozoic to Cenozoic	6	5	7
29	Limestone	LS03	Limestone/Dolomite	Proterozoic	6	5	7
31	Limestone	LS04	Limestone with Shale	Proterozoic	6	5	7
33	Limestone	LS05	Marble	Azoic to Proterozoic	6	5	7
35	Granite	GR01	Acidic Rocks (Granite, Syenite, Rhyolite etc.) - Weathered, Jointed	Mesozoic to Cenozoic	7	5	9
36	Granite	GR01	Acidic Rocks (Granite, Syenite, Rhyolite etc.) - Massive or Poorly Fractured	Mesozoic to Cenozoic	2	1	3
37	Granite	GR02	Acidic Rocks (Pegmatite, Granite, Syenite, Rhyolite etc.) - Weathered, Jointed	Proterozoic to Cenozoic	11	10	12
38	Granite	GR02	Acidic Rocks (Pegmatite, Granite, Syenite, Rhyolite etc.) - Massive, Poorly Fractured	Proterozoic to Cenozoic	2	1	3
39	Schist	SC01	Schist - Weathered, Jointed	Azoic to Proterozoic	7	5	9
40	Schist	SC01	Schist - Massive, Poorly Fractured	Azoic to Proterozoic	2	1	3
41	Schist	SC02	Phyllite	Azoic to Proterozoic	4	3	5
42	Schist	SC03	Slate	Azoic to Proterozoic	4	3	5
43	Quartzite	QZ01	Quartzite - Weathered, Jointed	Proterozoic to Cenozoic	6	5	7
44	Quartzite	QZ01	Quartzite - Massive, Poorly	Proterozoic to	2	1	3

Sl. No.	Principal Aquifer	Major Aquifers		Age	Recommended (%)	Minimum (%)	Maximum (%)
		Code	Name				
			Fractured	Cenozoic			
45	Quartzite	QZ02	Quartzite - Weathered, Jointed	Azoic to Proterozoic	6	5	7
46	Quartzite	QZ02	Quartzite- Massive, Poorly Fractured	Azoic to Proterozoic	2	1	3
47	Charnockite	CK01	Charnockite - Weathered, Jointed	Azoic	5	4	6
48	Charnockite	CK01	Charnockite - Massive, Poorly Fractured	Azoic	2	1	3
49	Khondalite	KH01	Khondalites, Granulites - Weathered, Jointed	Azoic	7	5	9
50	Khondalite	KH01	Khondalites, Granulites - Massive, Poorly Fractured	Azoic	2	1	3
51	Banded Gneissic Complex	BG01	Banded Gneissic Complex - Weathered, Jointed	Azoic	7	5	9
52	Banded Gneissic Complex	BG01	Banded Gneissic Complex - Massive, Poorly Fractured	Azoic	2	1	3
53	Gneiss	GN01	Undifferentiated metasedimentaries/ Undifferentiated metamorphic - Weathered, Jointed	Azoic to Proterozoic	7	5	9
54	Gneiss	GN01	Undifferentiated metasedimentaries/ Undifferentiated metamorphic - Massive, Poorly Fractured	Azoic to Proterozoic	2	1	3
55	Gneiss	GN02	Gneiss -Weathered, Jointed	Azoic to Proterozoic	11	10	12
56	Gneiss	GN02	Gneiss-Massive, Poorly Fractured	Azoic to Proterozoic	2	1	3
57	Gneiss	GN03	Migmatitic Gneiss - Weathered, Jointed	Azoic	7	5	9
58	Gneiss	GN03	Migmatitic Gneiss - Massive, Poorly Fractured	Azoic	2	1	3
59	Intrusive	IN01	Basic Rocks (Dolerite, Anorthosite etc.) - Weathered, Jointed	Proterozoic to Cenozoic	7	6	8
60	Intrusive	IN01	Basic Rocks (Dolerite, Anorthosite etc.) - Massive, Poorly Fractured	Proterozoic to Cenozoic	2	1	3
61	Intrusive	IN02	Ulra Basics (Epidiorite, Granophyre etc.) - Weathered, Jointed	Proterozoic to Cenozoic	7	6	8
62	Intrusive	IN02	Ulra Basics (Epidiorite, Granophyre etc.) - Massive, Poorly Fractured	Proterozoic to Cenozoic	2	1	3

2.8.3. Norms for Canal Recharge

Unlike other norms, the Recharge factor for calculating recharge due to canals is given in two units viz. ham/million m² of wetted area/day and cumecs per million m² of wetted area. As all other norms are in ham, the committee recommends the norm in ham/million m² of wetted area for computing the recharge due to canals.

There is a wide variation in the values of the recharge norms proposed by GEC 1997. The Canal seepage norm is approximately 150 times the other recharge norms. In the absence of any field studies to refine the norms it is decided by the committee to continue with the same norms. The committee strongly recommends that each state agency must conduct one field study at least one in each district before completing the first assessment using this methodology. The committee also suggests a recommended value and minimum and maximum values as in the case of other norms. Where specific results are available from case studies in some states, the adhoc norms are to be replaced by norms evolved from these results.

The Norms suggested in **Table-2.3** below are nothing but the rationalization and redistribution of norms suggested by GEC-1997 methodology and hence people are encouraged to conduct field studies and strengthen the Norms database.

Table-2.3: Norms Recommended for Recharge due to Canals

Formation	Canal Seepage factor ham/day/million square meters of wetted area		
	Recommended	Minimum	Maximum
Unlined canals in normal soils with some clay content along with sand	17.5	15	20
Unlined canals in sandy soil with some silt content	27.5	25	30
Lined canals in normal soils with some clay content along with sand	3.5	3	4
Lined canals in sandy soil with some silt content	5.5	5	6
All canals in hard rock area	3.5	3	4

2.8.4. Norms for Recharge Due to Irrigation

The Norms Suggested by GEC-1997 gives for only three ranges of water levels and it creates a problem in the boundary conditions. For instance, as a result of the variation in water level from 24.9 to 25.1m bgl in the adjoining blocks, change occurs in the return flow from irrigation in the range of 10% to 15%. Hence to reduce the discrepancy it is recommended to have linear relationship of the norms in between 10m bgl water level and 25m bgl water level. It is proposed to have the same norm of 10m bgl zone for all the water levels less than 10m. Similarly, the norm recommended for 25m may be used for the water levels more than 25m as well. The Recommended Norms are presented in **Table-2.4**.

For surface water, the recharge is to be estimated based on water released at the outlet. For ground water, the recharge is to be estimated based on gross draft. Where continuous supply is used instead of rotational supply, an additional recharge of 5% of application may be used.

Where specific results are available from case studies in some states, the adhoc norms are to be replaced by norms evolved from these results.

Table-2.4: Norms Recommended for Recharge from Irrigation

DTW m bgl	Ground Water		Surface Water	
	Paddy	Non-paddy	Paddy	Non-paddy
≤ 10	45.0	25.0	50.0	30.0
11	43.3	23.7	48.3	28.7
12	40.4	22.1	45.1	26.8
13	37.7	20.6	42.1	25.0
14	35.2	19.2	39.3	23.3
15	32.9	17.9	36.7	21.7
16	30.7	16.7	34.3	20.3
17	28.7	15.6	32.0	18.9
18	26.8	14.6	29.9	17.6
19	25.0	13.6	27.9	16.4
20	23.3	12.7	26.0	15.3
21	21.7	11.9	24.3	14.3
22	20.3	11.1	22.7	13.3
23	18.9	10.4	21.2	12.4
24	17.6	9.7	19.8	11.6
≥ 25	20.0	5.0	25.0	10.0

2.8.5. Norms for Recharge due to Tanks & Ponds

As the data on the field studies for computing recharge from Tanks & Ponds are very limited, it is recommended to follow the same norm as followed in GEC 1997 in future assessments also. Hence the norm recommended by GEC-2015 for Seepage from Tanks & Ponds is 1.4 mm / day.

2.8.6. Norms for Recharge due to Water Conservation Structures

Even though the data on the field studies for computing recharge from Water Conservation Structures are very limited, it is recommended that the Recharge from the water conservation structures is 40% of the Gross Storage based on the field studies by Non-Government Organizations. Hence, the norm recommended by GEC-2015 for the seepage from Water Conservation Structures is 40% of gross storage during a year which means 20% during monsoon season and 20% during non-monsoon Season.

2.8.7. Norm for Per Capita Requirement

As the option is given to use the actual requirement for domestic needs, the Requirement Norm recommended by the committee is 60 lpcd for domestic needs. This can be modified if the actual requirement is known.

2.8.8. Norm for Natural Discharges

The Discharge Norm used in computing Unaccounted Natural Discharge is 5% if water table fluctuation method is used or 10% if rainfall infiltration factor method is used for assessing the Rainfall recharge. This committee recommends to compute the base flow for each assessment unit. Wherever, there is no assessment of base flow, earlier norms recommended by GEC 1997 i.e. 5% or 10% of the Total Annual Ground Water Recharge as the Natural Discharges may be continued.

2.8.9. Unit Draft

GEC-1997 methodology recommends to use well census method for computing the ground water draft. The norm used for computing ground water draft is the unit draft. The unit draft can be computed by field studies. This method involves selecting representative abstraction structure and calculating the discharge from that particular type of structure and collecting the information on how many hours of pumping is being done in various seasons and number of such days during each season. The Unit Draft during a particular season can be computed using the following equation:

$$\text{Unit Draft} = \text{Discharge in } m^3/hr \times \text{No. of pumping hours in a day} \times \text{No. of days} \dots \dots \dots (29)$$

One basic drawback in the methodology of computing unit draft is that there is no normalization procedure for the same. As per GEC-1997 guidelines, the recharge from rainfall is normalized for a normal rainfall. It means that even though the resources are estimated in a surplus rainfall year or in a deficit rainfall year, the assessment is normalised for a normal rainfall which is required for planning. For recharge from other sources, average figures/ values are taken. If the average figures are not available for any reason, 60% of the design figures are taken. This procedure is very much essential as the planning should be for average resources rather than for the recharge due to excess rainfall or deficit rainfall. But the procedure that is being followed for computing unit draft does not have any normalization procedure. Normally, if the year in which one collects the draft data in the field is an excess rainfall year, the abstraction from ground water will be less. Similarly, if the year of the computation of unit draft is a drought year the unit draft will be high. Hence, there is a requirement to devise a methodology that can be used for the normalization of unit draft figures. The following are the two simple techniques, which can be followed. If the unit draft values for one rainfall cycle are available for at least 10 years second method shown in equation 31 is to be followed or else the first method shown in equation 30 may be used.

$$\text{Normalised Unit Draft} = \frac{\text{Unit Draft} \times \text{Rainfall for the year}}{\text{Normal Rainfall}} \dots \dots \dots (30)$$

$$\text{Normalised Unit Draft} = \frac{\sum_{i=1}^n \text{Unit Draft}_i}{\text{Number of Years}} \dots \dots \dots (31)$$

Although GEC-1997 methodology recommends a default value for the unit drafts, each State is using its own values, generally after conducting field studies, even though without a documentation. Hence, it is felt that this norm may be computed by the state agency, which is going to assess the norms before commencement of the assessment. But it is strongly recommended that the field studies should be documented and submitted along with the results of the assessment.

2.9. INDIA -GROUNDWATER RESOURCE ESTIMATION SYSTEM (IN-GRES)

“INDIA-GROUNDWATER RESOURCE ESTIMATION SYSTEM (IN-GRES) is a Software/Web-based Application developed by CGWB in collaboration with IIT-Hyderabad. It provides common and standardized platform for Ground Water Resource Estimation for the entire country and its pan-India operationalization (Central and State Governments). The system take ‘Data Input’ through Excel as well as Forms, compute various ground water components (recharge, extraction etc.) and classify assessment units into appropriate categories (safe, semi-critical, critical and over-exploited). The Software uses GEC 2015 Methodology for estimation and calculation of Groundwater resources. It allows for unique and homogeneous representation of groundwater fluxes as well as categories for all the assessment units (AU) of the country.

URL of IN-GRES → <http://ingres.iith.ac.in>

The detailed description about IN-GRES Software is given in **Appendix-C**.

CHAPTER 3

3.0 RAINFALL OF INDIA

Rainfall is the main source of ground water recharge in the country. However, distribution of rainfall has a wide variation both in space and time. Rain gauge stations are established and maintained by different departments and Undertakings of Central and State governments and also by private parties as per their specific data requirements. Though the period of seasons varies from place to place, for climatological purposes especially for rainfall, a year is divided into 4 seasons: Winter (January and February), Pre monsoon (March to May), South West Monsoon (June to September) and Post Monsoon (October to December). Most part of India receives rainfall mainly during SW Monsoon season.

Rainfall is highly variable in time and space. Over 75% of the annual rainfall is received in the four rainy months from June to September only there by leading to large variations on temporal scale. The average annual rainfall is 119 cm, but it has great spatial variations. The areas on the Western Ghats and the Sub-Himalayan areas in North East and Meghalaya Hills receive heavy rainfall of over 250 cm annually, whereas the Areas of Northern parts of Kashmir and Western Rajasthan receive rainfall less than 40 cm. Rainfall Normal have been computed using rainfall records of 50 years (1961-2010) of a network of 3200 Stations all over the India. The two significant features of India's Monsoon rainfall are that, in the north India, rainfall decreases westwards and in the Peninsular India, it decreases eastwards and then increases in the coastal region.

In 2021, the actual annual rainfall received by the country was 1236.4 mm which was 105% of its long period average (LPA). The country received actual SW Monsoon season (June to September) rainfall of 874.5 mm which was 99% of its long period average (LPA). The rainfall for the country as whole during Pre-monsoon, Post Monsoon and winter season was 155.6mm, 177.9 mm & 27.8 mm which was 118%, 144% & 68% of LPA respectively. The rainfall deficiency for the country as a whole was maximum (32%) during Winter season. Annually, Met sub-division-wise, Konkan & Goa received highest rainfall of 3558.7 mm and West Rajasthan received lowest rainfall of 317.5 mm. [Source: *Rainfall Statistics of India-2021 of India Meteorological Department (Ministry of Earth Sciences), Report No.- MoES/IMD/HS/Rainfall Report/02(2022)/60*]

State wise seasonal and annual observed rainfalls for the states are given in **Table-3.1**. It has been observed that during 2021, annual highest area weighted rainfall of **4032.5** mm was received at Konkan & Goa and the lowest rainfall of **317.5** mm was received at West Rajasthan. During the SW Monsoon season, Konkan & Goa received highest rainfall of **3558.7** mm and West Rajasthan received lowest rainfall of **317.5** mm.

State wise monthly observed rainfall (mm) for the states is given in **Table-3.2**. During SW Monsoon season, monthly highest rainfall of **1272.9** mm occurred over the state of Goa in the month of July and minimum rainfall of **0.9** mm occurred over the Ladakh (UT) in the month of August.

Table-3.1 : State –wise Seasonal Rainfall (mm) -Year 2021						
S.NO.	Broad Region/ States	Winter	Pre-Monsoon	SW-Monsoon	Post-Monsoon	Annual
EAST & NORTHEAST INDIA						
1	ARUNACHALPRADESH	41.8	581.5	1294.0	157.2	2083.8
2	ASSAM	41.8	581.5	1294.0	157.2	2083.8
3	MEGHALAYA	1.2	699.6	2257.6	213.6	3171.9
4	NAGALAND	7.4	211.1	841.1	93.5	1153.1
5	MANIPUR	10.1	225.7	560.9	116.9	913.6
6	MIZORAM	2.9	185.0	1271.3	193.9	1653.1
7	TRIPURA	7.5	274.1	1246.1	233.3	1761.1
8	SIKKIM	68.9	828.8	1798.0	347.7	3043.3
9	WESTBENGAL	2.0	300.9	1612.9	286.9	2202.7
10	JHARKHAND	3.6	240.5	1041.5	159.3	1444.8
11	BIHAR	0.7	266.0	1044.3	201.7	1512.7
NORTHWEST INDIA						
1	UTTARPRADESH	7.5	95.7	749.2	93.7	946.1
2	UTTARAKHAND	44.5	244.2	1156.1	219.6	1664.5
3	HARYANA	26.1	54.5	571.3	27.9	679.8
4	CHANDIGARH(UT)	19.6	80.9	600.2	41.6	742.4
5	DELHI	31.0	76.4	745.2	60.7	904.4
6	PUNJAB	13.0	49.7	436.8	34.8	534.4
7	HIMACHALPRADESH	57.7	213.7	690.9	75.4	1037.6
8	JAMMU&KASHMIR(UT)	122.6	248.0	401.6	122.6	894.7
9	LADAKH(UT)	8.5	20.2	21.9	6.3	57.0
10	RAJASTHAN	9.0	54.4	485.3	38.3	587.0
CENTRAL INDIA						
1	ODISHA	4.2	188.6	1045.1	182.9	1420.8
2	MADHYAPRADESH	9.2	68.7	942.7	72.2	1092.7
3	GUJARAT	1.2	49.8	694.6	47.6	793.2
4	DADRA& NAGARHAVELI (UT)	0.0	139.2	2674.2	221.0	3034.4
5	DAMAN & DIU(UT)	0.0	218.3	1869.0	125.5	2212.8
6	GOA	37.3	284.8	3125.1	500.0	3947.2
7	MAHARASHTRA	12.8	62.8	1194.3	140.8	1410.7
8	CHHATISGARH	12.8	97.3	1107.7	91.9	1309.6
SOUTH PENINSULA						
1	A&NISLAND(UT)	91.5	602.6	2025.0	774.4	3493.4
2	ANDHRAPRADESH	24.4	104.5	613.5	406.4	1148.9
3	TELANGANA	3.5	66.7	1044.2	94.2	1208.5
4	TAMILNADU	150.8	120.9	393.4	711.6	1376.7
5	PUDUCHERRY(UT)	350.3	64.3	435.8	1425.1	2275.5

S.NO.	Broad Region/ States	Winter	Pre-Monsoon	SW-Monsoon	Post-Monsoon	Annual
6	KARNATAKA	36.3	179.2	865.4	369.9	1450.9
7	KERALA	114.1	746.8	1719.1	1026.3	3606.3
8	LAKSHADWEEP(UT)	216.9	514.6	790.9	376.3	1898.7
COUNTRYASAWHOLE		27.8	155.6	874.5	177.9	1236.4

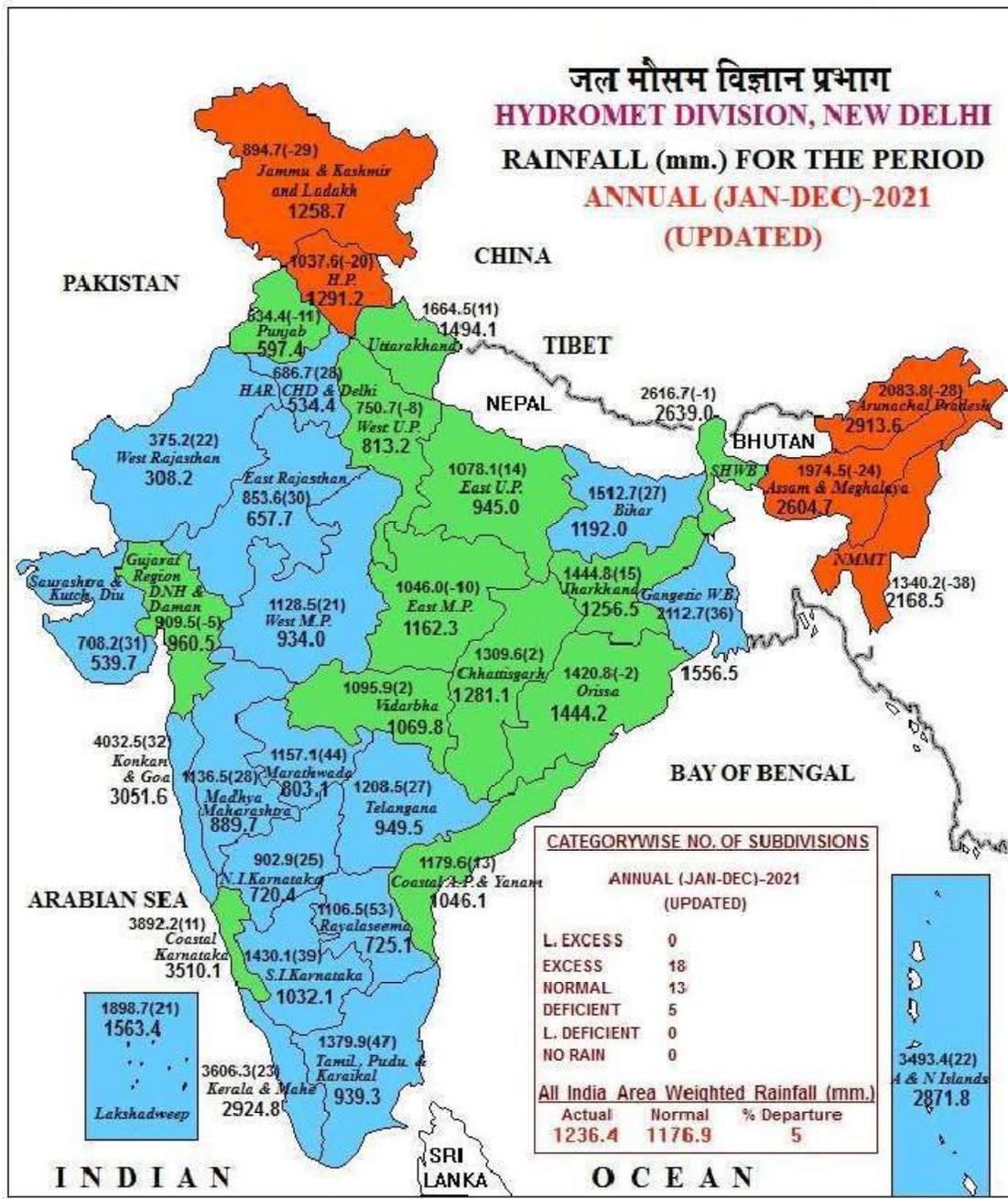
S. No	STATES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
EAST & NORTH EAST INDIA													
1	ARUNACHAL PRADESH	29.1	12.7	98.4	183.7	296.5	377.3	266.8	508.7	141.2	124.6	13.9	16.8
2	ASSAM	11.1	2.8	40.7	76.6	220.7	379.8	305.6	296.1	168.5	120.2	3.9	10.9
3	MEGHALAYA	0.5	0.7	53.4	190.1	456.0	721.3	496.8	865.9	173.6	203.4	0.0	10.3
4	NAGALAND	5.5	1.8	37.9	36.5	136.7	230.7	231.5	239.4	139.5	74.6	2.1	16.8
5	MANIPUR	8.5	1.6	37.6	57.0	131.1	174.2	132.8	170.0	83.9	74.2	4.2	38.5
6	MIZORAM	2.9	0.0	26.6	37.5	120.8	284.5	348.6	337.9	300.3	105.7	22.4	65.8
7	TRIPURA	7.5	0.0	51.5	31.3	191.2	283.4	393.7	335.0	234.0	104.6	12.2	116.5
8	SIKKIM	22.4	46.5	182.2	237.1	409.5	489.5	515.0	519.3	274.1	301.6	16.5	29.6
9	WEST BENGAL	1.0	1.0	7.8	31.6	261.5	394.3	435.8	358.6	424.2	214.2	20.5	52.2
10	JHARKHAND	1.0	2.6	9.3	7.3	223.9	266.8	319.5	200.0	255.2	111.7	24.0	23.5
11	BIHAR	0.2	0.5	1.4	5.0	259.6	354.3	258.3	328.7	103.0	189.6	0.0	12.0
NORTH WEST INDIA													
1	UTTAR PRADESH	5.5	2.0	0.5	2.5	92.7	151.5	212.8	214.2	170.7	89.3	0.1	4.3
2	UTTARAKHAND	27.3	17.2	11.0	57.7	175.5	262.9	371.6	307.6	214.0	203.2	1.0	15.4
3	HARYANA	21.1	5.0	4.3	4.5	45.7	48.8	253.1	81.9	187.5	25.1	0.0	2.8
4	CHANDIGARH (UT)	6.3	13.3	6.2	13.9	60.8	119.4	148.1	160.2	172.5	41.0	0.2	0.5
5	DELHI	29.6	1.4	1.2	2.6	72.6	29.6	338.9	144.7	232.1	56.7	0.0	4.0
6	PUNJAB	10.4	2.6	6.9	18.9	23.9	49.7	173.7	70.3	143.2	34.6	0.1	0.1
7	HIMACHALPRADESH	38.4	19.3	41.7	111.8	60.1	84.6	289.0	146.0	171.3	56.7	1.1	17.6
8	JAMMU & KASHMIR(UT)	87.3	35.3	103.9	83.2	61.0	38.2	212.3	74.1	76.9	101.0	4.9	16.6
9	LADAKH(UT)	4.1	4.4	7.2	9.0	4.0	1.4	11.4	0.9	8.2	4.2	0.1	2.1
10	RAJASTHAN	5.5	2.0	0.5	2.5	92.7	151.5	212.8	214.2	170.7	89.3	0.1	4.3
CENTRAL INDIA													
1	ODISHA	1.3	2.9	5.1	26.0	157.5	181.3	275.0	204.9	384.0	80.4	53.7	48.8
2	MADHYAPRADESH	3.3	5.9	7.7	1.3	59.6	166.4	280.2	264.4	231.7	55.6	5.3	11.3
3	GUJARAT	1.1	0.1	0.0	1.2	48.6	98.9	148.2	47.0	400.5	24.2	13.0	10.4
4	DADRA & NAGARHAVELI (UT)	0.0	0.0	0.0	0.0	139.2	430.0	713.5	365.0	1165.7	114.2	22.8	84.0
5	DAMAN & DIU (UT)	0.0	0.0	0.0	0.0	218.3	204.1	490.1	493.8	681.1	19.2	31.3	75.0
6	GOA	26.1	11.3	0.9	27.8	256.1	946.9	1272.9	346.2	559.1	223.3	182.6	94.0
7	MAHARASHTRA	6.9	5.9	6.6	9.7	46.5	267.5	397.2	179.3	350.2	82.7	25.5	32.7
8	CHHATISGARH	2.3	10.5	4.0	18.1	75.2	244.4	331.7	221.5	310.2	39.5	23.0	29.4
SOUTH PENINSULA													
1	A & N ISLAND (UT)	42.7	48.8	38.3	150.2	414.1	315.9	535.3	506.5	667.3	413.1	265.7	95.5
2	ANDHRAPRADESH	15.8	8.6	0.4	28.6	75.5	95.6	202.5	138.5	177	118.8	269.1	18.5
3	TELANGANA	1.7	1.7	0.4	23.4	42.9	195.7	365.7	192.8	290.1	59.1	33.6	1.5
4	TAMILNADU	139.1	11.7	7.4	36.9	76.6	62.4	124.7	88.7	117.6	228.1	423.1	60.4
5	PUDUCHERRY (UT)	197.1	153.2	0.4	4.1	59.8	44.5	104.5	147.3	139.5	380.5	986.3	58.3

S. No	STATES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
6	KARNATAKA	22.4	13.9	3	49.4	126.8	224	311.9	168.6	160.9	194.2	155.2	20.5
7	KERALA	105.5	8.6	49.7	127.6	569.4	408.3	577.4	416.2	317.1	589.5	394.5	42.3
8	LAKSHADWEEP (UT)	167.5	49.3	9.3	95.8	409.5	160	156.5	319.5	154.9	160.1	165.1	51.1

3.1 METEOROLOGICAL SUBDIVISION-WISE ANNUAL & SEASONAL RAINFALL MAPS

The rainfall statistics is computed based on the receipt of rainfall data from about 5100 stations spread over the entire country out of which 264 stations and 05 districts were added during 2021. Based on daily rainfall data of these stations, the rainfall of all the districts is computed and using the rainfall of the districts, rainfall statistics for the Meteorological (Met.) Subdivisions, states, the four broad regions and for the whole country have been computed. The present publication includes the updated rainfall statistics for the country as a whole, for the four broad regions, 36 Meteorological Subdivisions, States, UTs and 695 Districts of India. The statistics is provided on monthly, seasonal i.e. winter (January-February), Pre-Monsoon (March-May), Southwest (SW) Monsoon (June-September) and Post-Monsoon (October-December), and on Annual basis. The Rainfall Normal used in this report are based on the rainfall records for the period from 1961-2010. Percentage departure of rainfall from Rainfall Normal's has been color coded as per their categories. The list of categories, their corresponding ranges and color codes is given in **Table-3.3**.

Met. Subdivision-wise rainfall maps for the year 2021 and for the four seasons depicting the observed and normal rainfall values along with their percentage departure from normal with defined colours for different categories are given below at **Fig-3.1 to Fig-3.5**. The normal rainfall values are shown in Bold figures on the map whereas the actual rainfall is shown in small figures. Percentage departures of rainfall are shown within the brackets.



LEGEND: ■ L. EXCESS (+60% OR MORE) ■ EXCESS (+20% TO +59%) ■ NORMAL (+19% TO -19%)
 ■ DEFICIENT [-20% TO -59%] ■ L. DEFICIENT [-60% TO -99%] ■ NO RAIN [-100%] ■ NO DATA

NOTES:
 [a] Rainfall figures are based on operational data.
 [b] Small figures indicate actual rainfall (mm.), while bold figures indicate Normal rainfall (mm.)
 Percentage Departures of Rainfall are shown in Brackets.

Figure-3.1: Annual Rainfall Map-2021

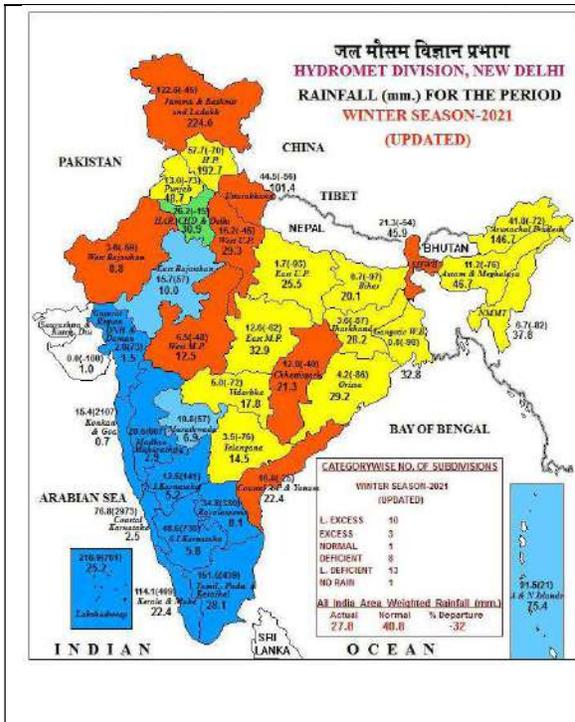


Figure-3.2 : Winter Rainfall Map

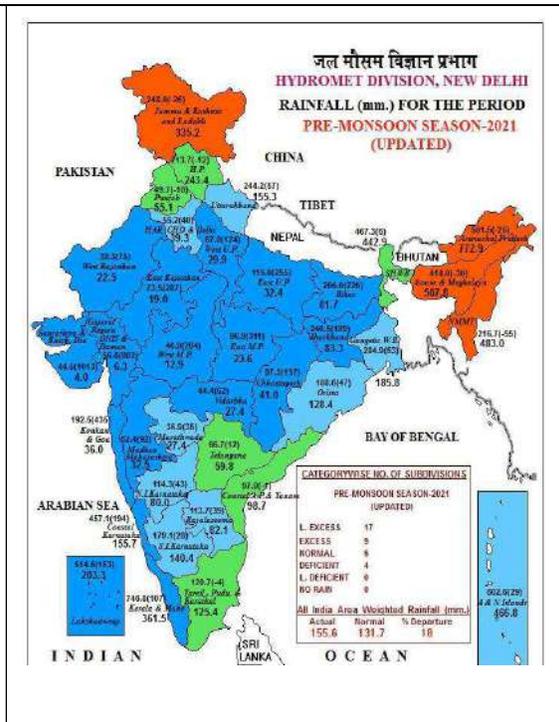


Figure-3.3 : Pre-Monsoon Rainfall Map

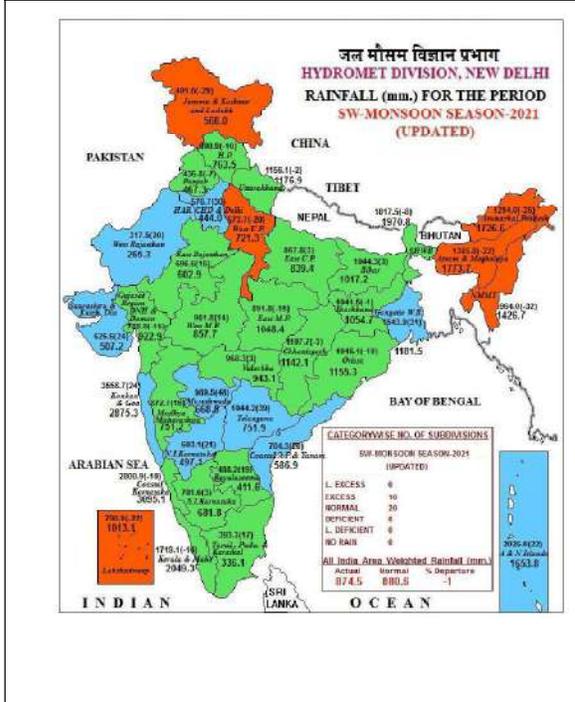


Figure-3.4 : SW Monsoon Rainfall Map

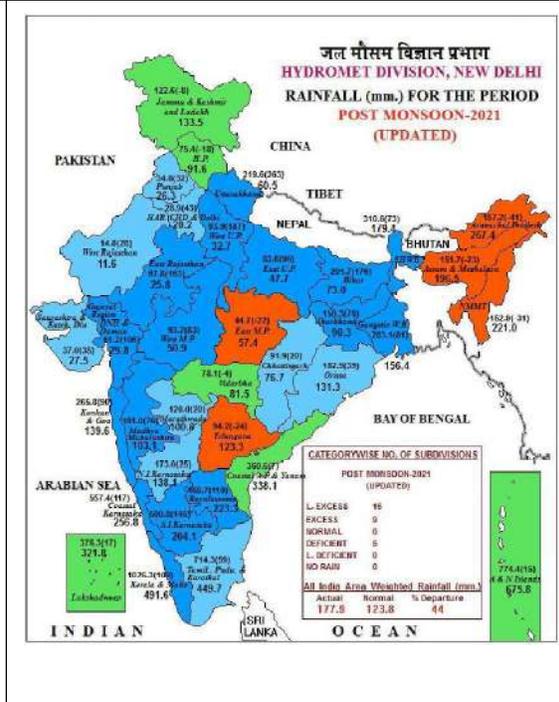


Figure-3.5 : Post-Monsoon Rainfall Map

Large Excess [60% or more] | Excess [20% to 59%] | Normal [-19% to 19%] | Deficient [-59% to -20%] | Large Deficient [-99% to -60%] | No Rain [-100%] | No Data

NOTES:

- a) Rainfall figures are based on operation data.
- b) Small figures indicate actual rainfall (mm), while bold figures indicate Normal rainfall (mm).
- c) Percentage Departures of rainfall are shown in brackets.

Table-3: The list of categories, their corresponding ranges and color codes

Category	Departure from Normal	Color Code
Large Excess (LE)	60% or more	
Excess (E)	20% to 59%	
Normal (N)	-19% to +19%	
Deficient (D)	-20% to -59%	
Large Deficient (LD)	-60% to -99%	
No Rain	-100%	
No Data	Data Not Available	

CHAPTER 4

4.0 HYDROGEOLOGICAL SETUP OF INDIA

India is occupied by a variety of hard and fissured formations, including crystalline, trappean basalt and consolidated sedimentaries (including carbonate rocks), with patches of semi-consolidated sediments in narrow intra-cratonic basins. Apart from this, the northern part of the country and south of Himalayan terrain is occupied by alluvial formation stretching from Rajasthan in the west to Brahmaputra valley in the east. Rugged topography, compact and fissured nature of the rock formations combine to give rise to discontinuous aquifers, with moderate to poor yield potentials. The near surface weathered mantle coupled with deeper fractures form an important aquifer in case of hard rocks. In hard rock terrains, deep weathered pediments, lowlands, valley fills and abandoned river channels, generally have adequate thickness of porous material, to act as repositories of groundwater.

4.1 AQUIFER SYSTEMS OF INDIA

Various rock formations with different hydrogeological characteristics act as distinct aquifer systems of varying dimensions. The aquifer systems of India can be broadly categorized into 14 Principal Groups. A brief description of the Principal Aquifer Systems (*Fig- 4.1*), as identified by CGWB (CGWB 2012) is given below.

4.1.1 Alluvial Aquifers

The Quaternary sediments comprising Recent Alluvium, Older Alluvium, Aeolian Alluvium (Silt/ Sand) and Coastal Alluvium of Bay of Bengal are by and large important unconsolidated formations constituting major alluvial aquifers. These sediments are essentially composed of clays, silts, sands, pebbles, Kankar etc. These are by far the most significant ground water reservoirs for large scale and extensive development. The hydrogeological environment and ground water regime in the Indo-Ganga-Brahmaputra basin indicate the existence of potential aquifers having enormous fresh ground water reserves. Bestowed with high incidence of rainfall and covered by a thick pile of porous sediments, these ground water reservoirs get replenished every year and are being used heavily. In these areas, in addition to the Annual Replenishable Ground Water Resources available in the zone of Water Level Fluctuation (Dynamic Ground Water Resource), there exists a huge ground water reserve in the deeper part below the zone of fluctuation as well as in the deeper confined aquifers. The coastal aquifers show wide variation in water quality, both laterally and vertically, thus imposing quality constraints for groundwater development.

4.1.2 Laterite

Laterites are formed from the leaching (chemical weathering) of parent sedimentary rocks (sandstones, clays, limestones); metamorphic rocks (schists, gneisses, migmatites) and igneous rocks (granites, basalts, gabbros, peridotites). It is rich in iron and aluminium, formed in hot and wet tropical areas. Laterites are the most wide spread and extensively developed aquifer especially in the peninsular states of India. Laterite forms potential aquifers along valleys and topographic lows where the thickness of the saturated zone is more and can sustain large diameter open wells for domestic and irrigation use.

4.1.3 Sandstone, Shale Aquifers

The sandstone and shale aquifers generally belong to the group of rocks ranging in age from Carboniferous to Mio-Pliocene. The terrestrial freshwater deposits belonging to Gondwana System and the Tertiary deposits along the west and east coast of the peninsular region are included under this category. The Gondwana sandstones form highly potential aquifers, locally. Elsewhere, they have moderate potential and in places they yield meager supplies. The Gondwanas, Lathis, Tipams, Cuddalore sandstones and their equivalents are the most extensive productive aquifers in this category.

4.1.4 Limestone Aquifers

The consolidated sedimentary rocks include carbonate rocks such as limestones, dolomite and marble. Among the carbonate rocks, limestones occupy the largest area. In the carbonate rocks, the principal water bearing zones are the fractures and solution cavities. Consolidated sedimentary rocks of Cuddapah and Vindhyan subgroups and their equivalents consist of limestones/dolomites apart from other major litho-units such as conglomerates, sandstones, shales, slates and quartzites.

4.1.5 Basalt Aquifers

Basalt is a basic volcanic rock which forms alternate layers of compact and vesicular beds of lava flows as seen in the Deccan trap area. The ground water occurrence in basalts are controlled by nature and extent of weathering, presence of vesicles and lava tubes, thickness of flows, number of flows and the nature of inter-trappean layers. Basaltic aquifers have usually medium to low permeability. Ground water occurrence in the Deccan Traps is controlled by the contrasting water bearing properties of different flow units, thus, resulting in multiple aquifer system, at places. The water bearing zones are the weathered and fractured zones.

4.1.6 Crystalline Aquifers

The crystalline hard rock aquifers such as granite, gneisses and high grade metamorphic rocks such as charnockites and khondalites constitute good repository of ground water. Most of the results of groundwater exploration projects have proven that hard rocks neither receive nor transmit water, unless they are weathered and/or fractured. The aquifers are the weathered zone or the fracture system. The fracture system includes fractures, joints, bedding planes, and solution holes. These openings do not have an even distribution and are rather localized. The weathered zone is underlain by semi-weathered rock, fractured rock followed by bedrock. The depth of the bed rock varies from 30-100 m.

In hard rock terrains, ground water occurs under phreatic condition in the mantle of weathered rock, overlying the hard rock, while within the fissures, fractures, cracks, joints within the hard rock, ground water is mostly under semi-confined or in the confined state. Compared to the volume of water stored under semi-confined condition within the body of the hardrock, the storage in the overlying phreatic aquifer is often much greater. In such cases, the network of fissures and fractures serves as a permeable conduit feeding this water to the well. Ground water flow rarely occurs across the topographical water divides and each basin or sub-basin can be treated as a separate hydrogeological unit for planning the development of ground water resources.

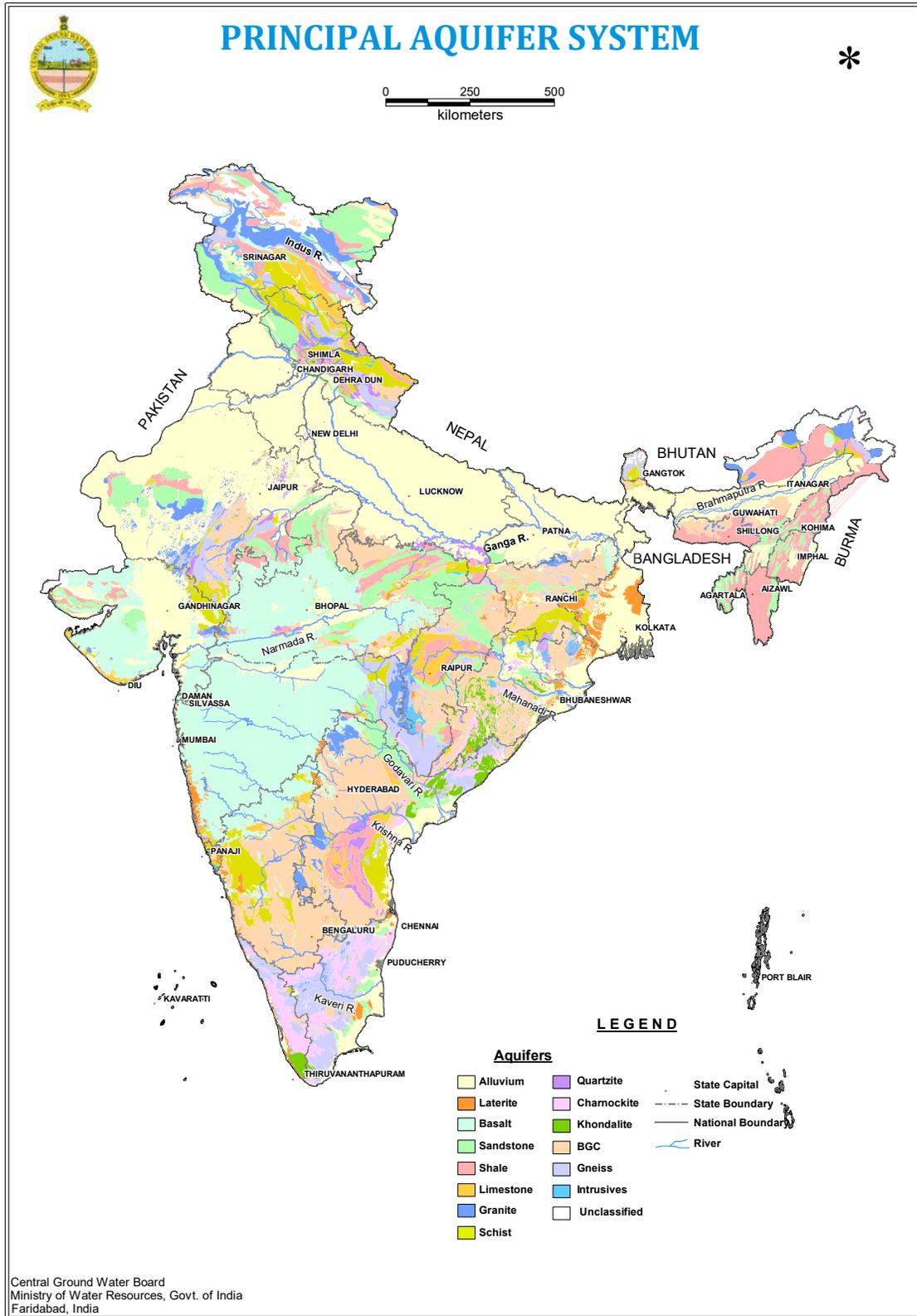


Fig-4.1: Principal Aquifer Systems of India

CHAPTER-5

5.0 GROUND WATER LEVEL SCENARIO IN THE COUNTRY

Groundwater level is one of the basic data elements, which reflects the groundwater regime in an area. Central Ground Water Board (CGWB) monitors groundwater levels four times a year during January, April/ May, August and November through a network of fixed observation wells spreading throughout the country. The periodicity of groundwater level monitoring by the State Governments varies from State to State. The primary objective of monitoring the groundwater level is to record the response of groundwater regime to the natural and anthropogenic stresses on recharge and discharge components which are governed by geology, climate, physiography, land use pattern and hydrologic characteristics. Natural conditions affecting the regime include climatic parameters like rainfall, evapotranspiration etc. Anthropogenic influences include pumpage from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc. Water level data generated and archived by CGWB along with data from State Government departments have been used for assessment of groundwater resources. An outline of groundwater scenario during the period of assessment is given below.

5.1 GROUNDWATER LEVEL SCENARIO (2022)

Groundwater level data of **pre-monsoon 2022** for the country (**Fig. 5.1**) reveals that the general depth to water level of the country ranges from 5 to 10 m bgl. Very shallow water levels of less than 2 m bgl is observed in few states, such as Assam, Andhra Pradesh, Bihar, Karnataka, Kerala, Jharkhand, Maharashtra, Meghalaya and Tamil Nadu in small patches. Groundwater level in the range of 2 to 5 m bgl is seen in Assam, Andhra Pradesh, northern parts of Uttar Pradesh and Bihar, Coastal parts of Odisha, few pockets in Telangana, Karnataka, Kerala, Tamil Nadu, Gujarat and Maharashtra. Major part of the country shows water level in the range 5 to 10 m bgl, especially in the states of Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Odisha, Chhattisgarh, Maharashtra, Gujarat, Tamil Nadu, Telangana and Karnataka. In major parts of north-western and western states, especially in the states of Delhi, Haryana, Punjab and Rajasthan, depth to water level is generally deeper and ranges from about 20 to more than 40 m bgl. The peninsular part of the country recorded water level in the range of 5 to 20 m bgl.

The groundwater level data for **post-monsoon 2022** indicates that out of the total 14577 wells analysed, 3697 (25.4%) wells are showing water level less than 2 m bgl (metres below ground level), 6095 (41.8%) wells are showing water level in the depth range of 2 to 5 m bgl, 3127 (21.5%) wells are showing water level in the depth range of 5 to 10 m bgl, 1039 (7.1%) wells are showing water level in the depth range of 10 to 20 m bgl, 414 (2.8%) wells are showing water level in the depth range of 20 to 40 m bgl and the remaining 205 (1.4%) wells are showing water level more than 40 m bgl. The general depth to water level of the country ranges from 0 to 5 m bgl as almost 70% of the wells fall in this range. Very shallow water level of less than 2 m bgl is observed in all the states, except Chandigarh. Groundwater level in the range of 2 to 5 m bgl is also predominant in the entire country. Deeper water level is observed in parts of north-western and western states, especially in the states/UTs of Chandigarh, Delhi, Haryana, Punjab and Rajasthan, depth to water level is generally deeper and ranges from about 10 m bgl to more than 40 m bgl. The depth to water level map of the country is shown in **Fig. 5.2**.

5.1.1 Fluctuation of Groundwater level: Pre-monsoon 2022 compared to Pre-monsoon 2021

A comparison of depth to water level of Pre-monsoon 2022 with Pre-monsoon 2021 (**Fig. 5.3**) indicates that 45.8% of the total 8050 Nos analysed wells show rises in water level whereas almost 52.8% wells show decline in water level. 1.0% wells show no change. Rise and decline in water level are primarily in the 0 to 2 m range. Decline of water level is quite prominent in the states Gujarat, Rajasthan, Madhya Pradesh, Punjab, Bihar, Uttar Pradesh and West Bengal. Decline of more than 4 m water level is observed in small pockets in the states of Chhattisgarh, Gujarat, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh and West Bengal. Due to COVID-19 pandemic monitoring data in November 2021 is insufficient.

5.1.2 Fluctuation of Groundwater level: November 2022 compared to November 2021

A comparison of depth to water level of November 2021 with November 2021 (**Fig. 5.4**) indicates that 42.7% of the total 13074 Nos analysed wells show rises in water level whereas 55.8% wells show decline in water level. 1.4% wells show no change. Rise and decline in water level are primarily in the 0 to 2 m range. Rise in water level is prominently seen in the states/UTs of Andaman & Nicobar, Andhra Pradesh, Chandigarh, Chhattisgarh, Delhi, Gujarat, Daman & Diu, Haryana, Karnataka, Madhya Pradesh, Odisha, Puducherry, Rajasthan, Tamil Nadu, Telangana, Uttaranchal, Uttar Pradesh and West Bengal. Similarly states where decline in water level is observed in significant parts are Assam, Chhattisgarh, Dadra & Nagar Haveli, Goa, Gujarat, Jharkhand, Maharashtra, Odisha, Punjab, Rajasthan and West Bengal. Water levels deeper than 4 m are observed in small packets in Chandigarh, Gujarat, Rajasthan, Uttar Pradesh, Bihar, and West Bengal.

5.1.3 Fluctuation of Groundwater level: decadal water level fluctuation with mean Pre-Monsoon (2012 to 2021) and Pre-Monsoon 2022

A comparison of decadal water level fluctuation with mean of pre-monsoon (2012 to 2021) and pre-monsoon 2022 (**Fig. 5.5**) indicates that 66.6% of the analysed wells show rise in water level whereas 33.3% wells show decline in water level. 0.1% wells show no change. Rise and decline in water level are primarily in the 0 to 2 m range. Rise in water level is prominently seen in the states/UTs of Andaman & Nicobar, Andhra Pradesh, Asam, Bihar, Gujarat, Daman & Diu, Jharkhand, Karnataka, Kerala, Maharashtra, Odisha, Puducherry, Rajasthan, Tamil Nadu, Telangana, Uttarakhand, Uttar Pradesh and West Bengal. Similarly states where decline in water level is observed in significant parts are Chandigarh, Chhattisgarh, Goa, Gujarat, Jharkhand, Maharashtra, Odisha, Punjab, Rajasthan, Uttar Pradesh and West Bengal. Water levels deeper than 4 m are observed in small packets in Chandigarh, Chhattisgarh, Gujarat, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh, and West Bengal.

5.1.4 Fluctuation of Groundwater level: decadal water level fluctuation with mean Post-Monsoon (2012 to 2021) and Post-Monsoon 2022

A comparison of decadal water level fluctuation with mean of post-monsoon (2012 to 2021) and post-monsoon 2022 (**Fig. 5.6**) indicates that 61.1% of the analysed wells show rise in water level whereas 38.9% wells show decline in water level. Rise and decline in water level are primarily in the 0 to 2 m range. Rise in water level is prominently seen in the states/UTs of Andaman & Nicobar, Andhra Pradesh, Asam, Gujarat, Daman & Diu, Haryana, Jharkhand, Karnataka, Maharashtra, Odisha, Puducherry, Rajasthan, Tamil Nadu, Telangana, Uttarakhand, and Uttar Pradesh. Similarly states

where decline in water level is observed in significant parts are Assam, Bihar, Chandigarh, Chhattisgarh, Goa, Gujarat, Jharkhand, Kerala, Maharashtra, Odisha, Punjab, Rajasthan, Uttar Pradesh and West Bengal. Water levels deeper than 4 m are observed in small packets in Chandigarh, Gujarat, Punjab, Rajasthan, Uttar Pradesh, and West Bengal.

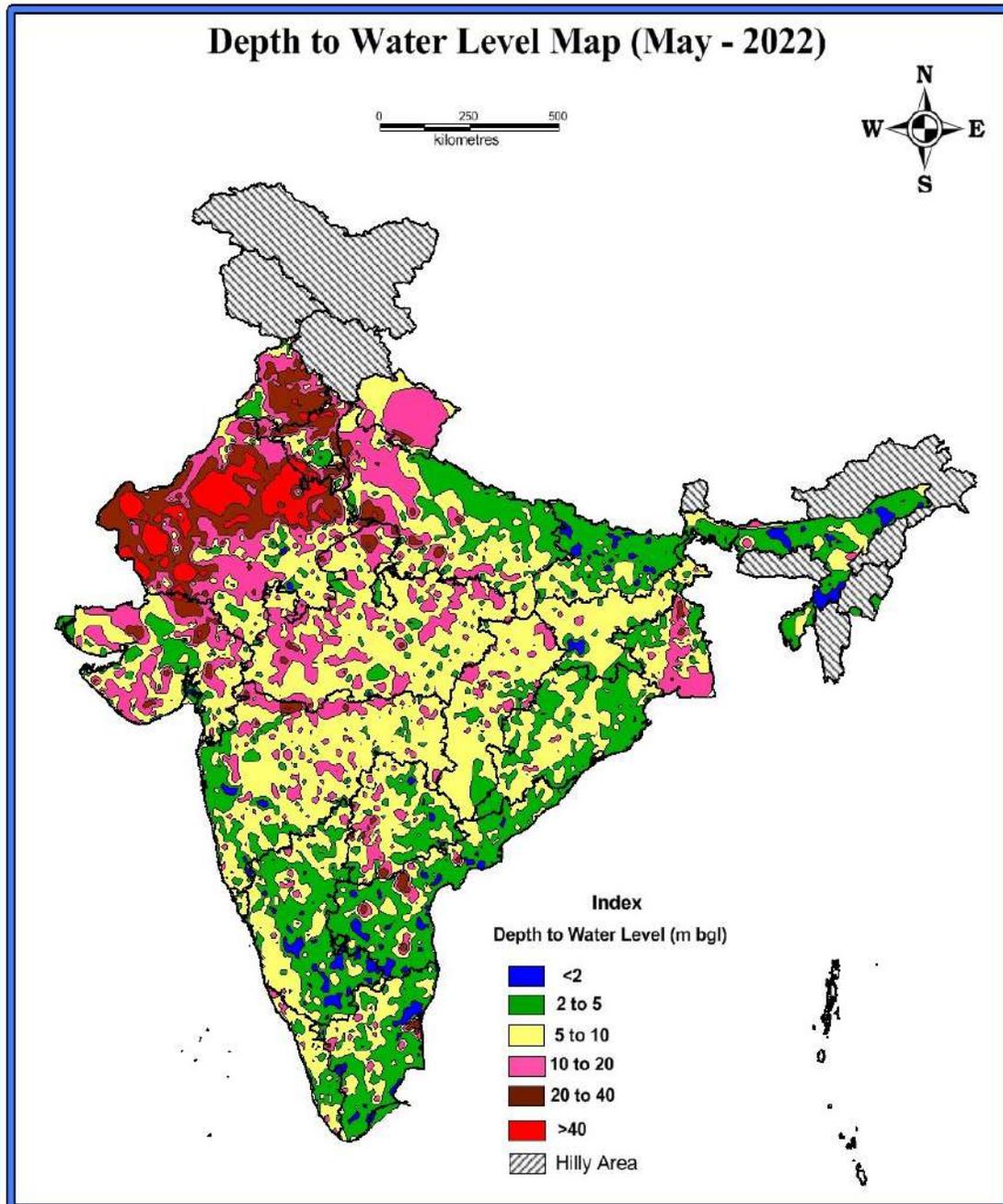


Fig-5.1: Pre-monsoon Depth to Water Level Map (2022)

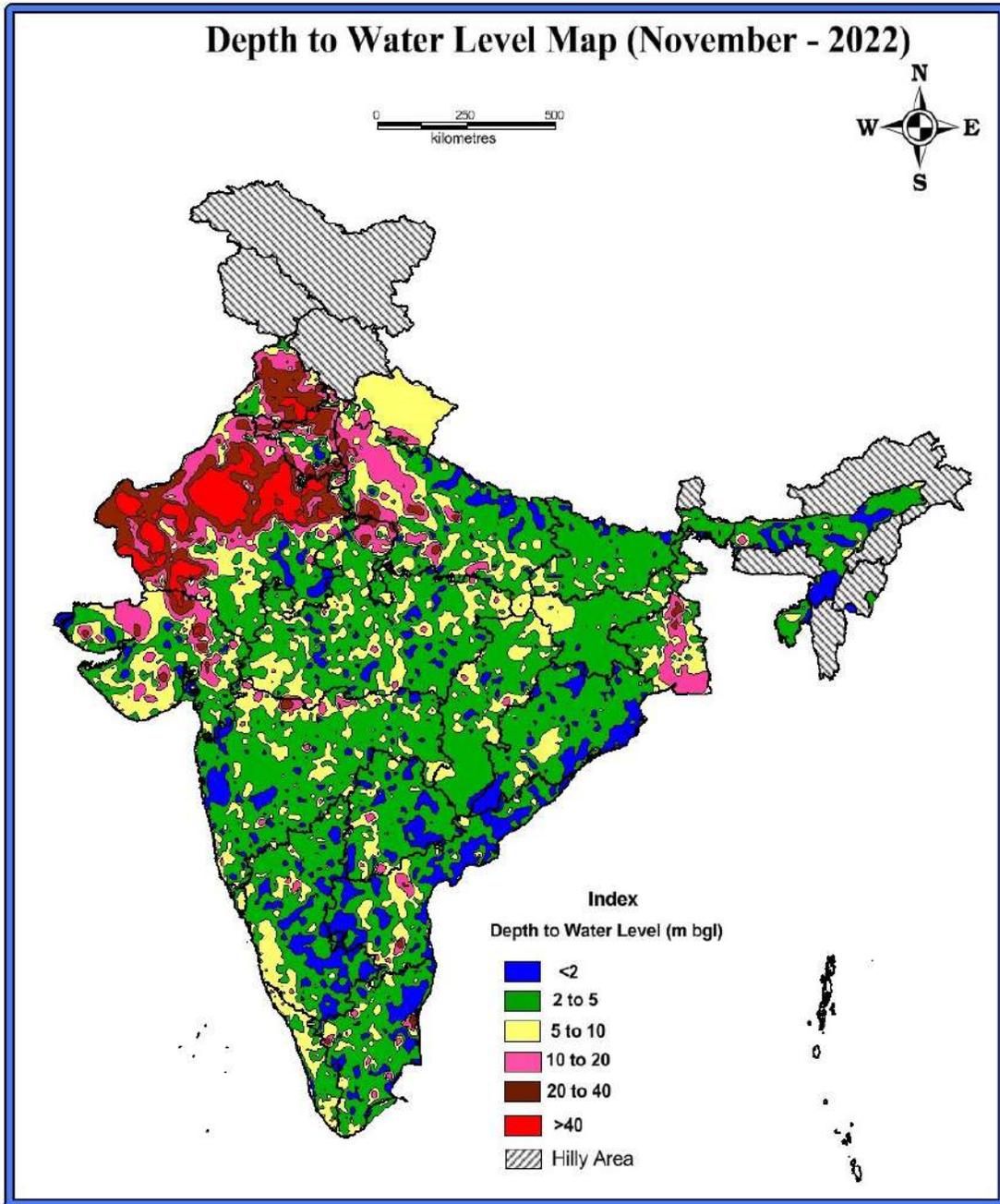


Fig-5.2: Post-monsoon Depth to Water Level Map (2022)

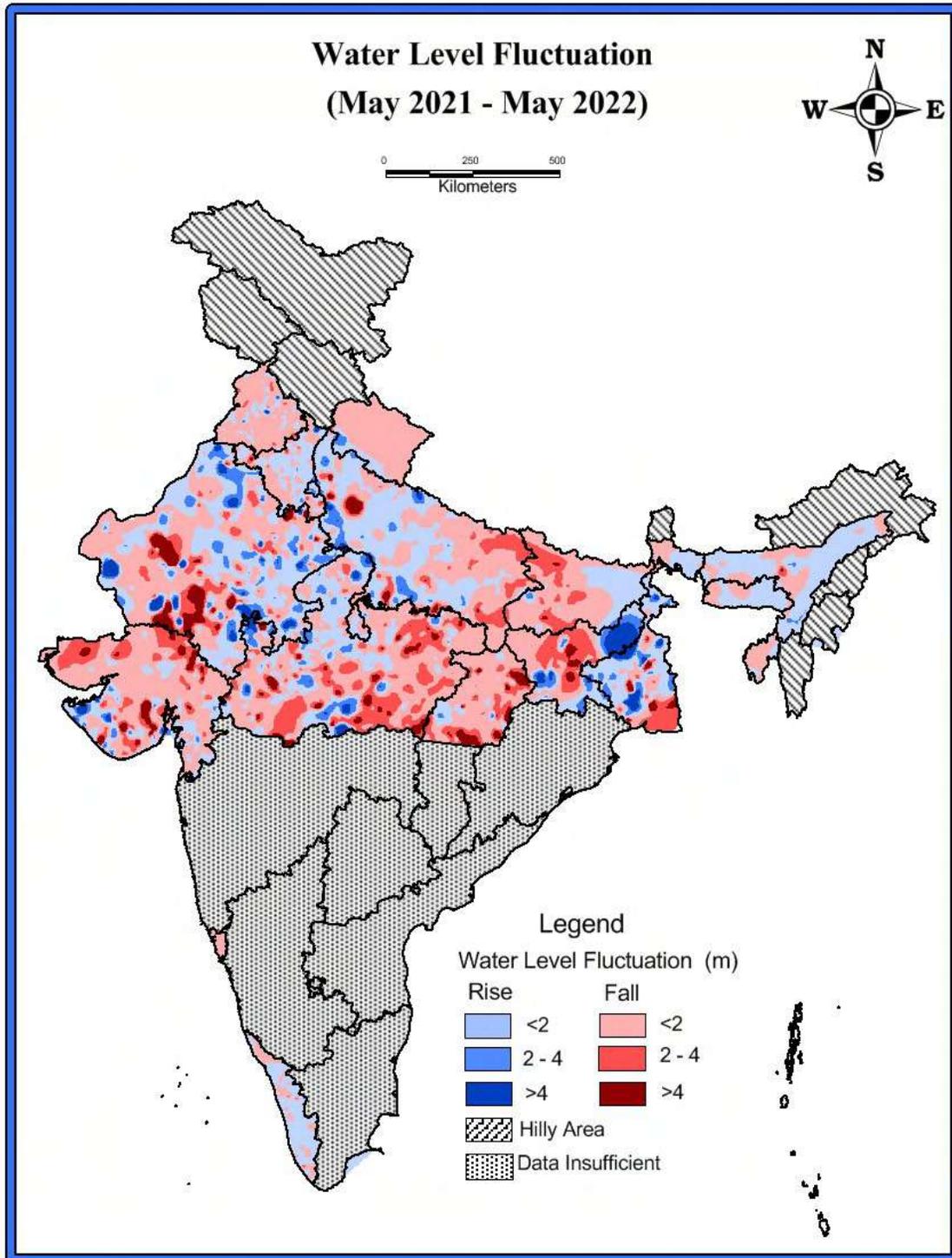


Fig-5.3: Groundwater Level Fluctuation: Pre-monsoon 2021 compared to Pre-monsoon 2022

* Insufficient monitoring in May 2021 due to restrictions imposed because of lock down due to COVID pandemic.

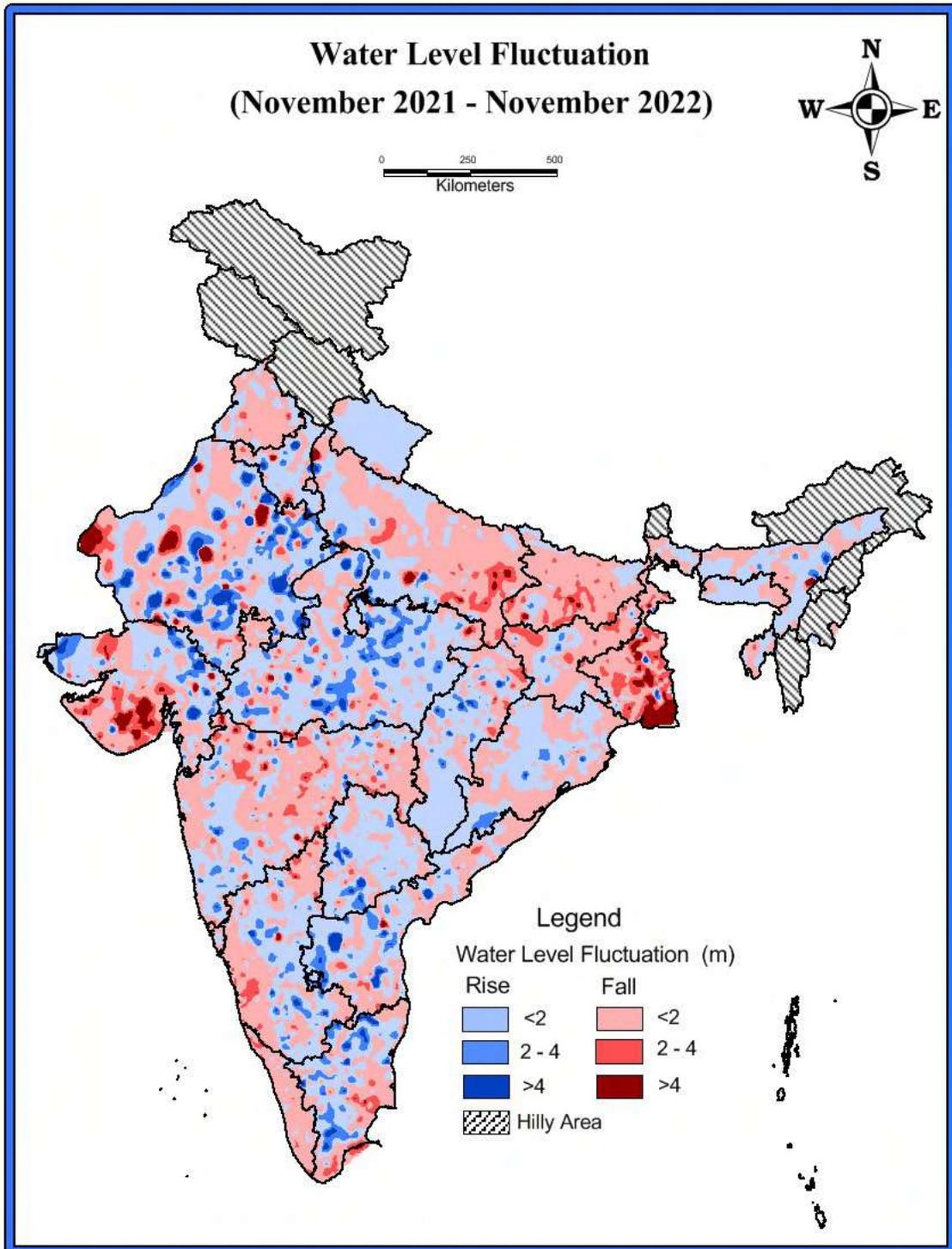


Fig-5.4: Groundwater Level Fluctuation: November 2021 compared to November 2022

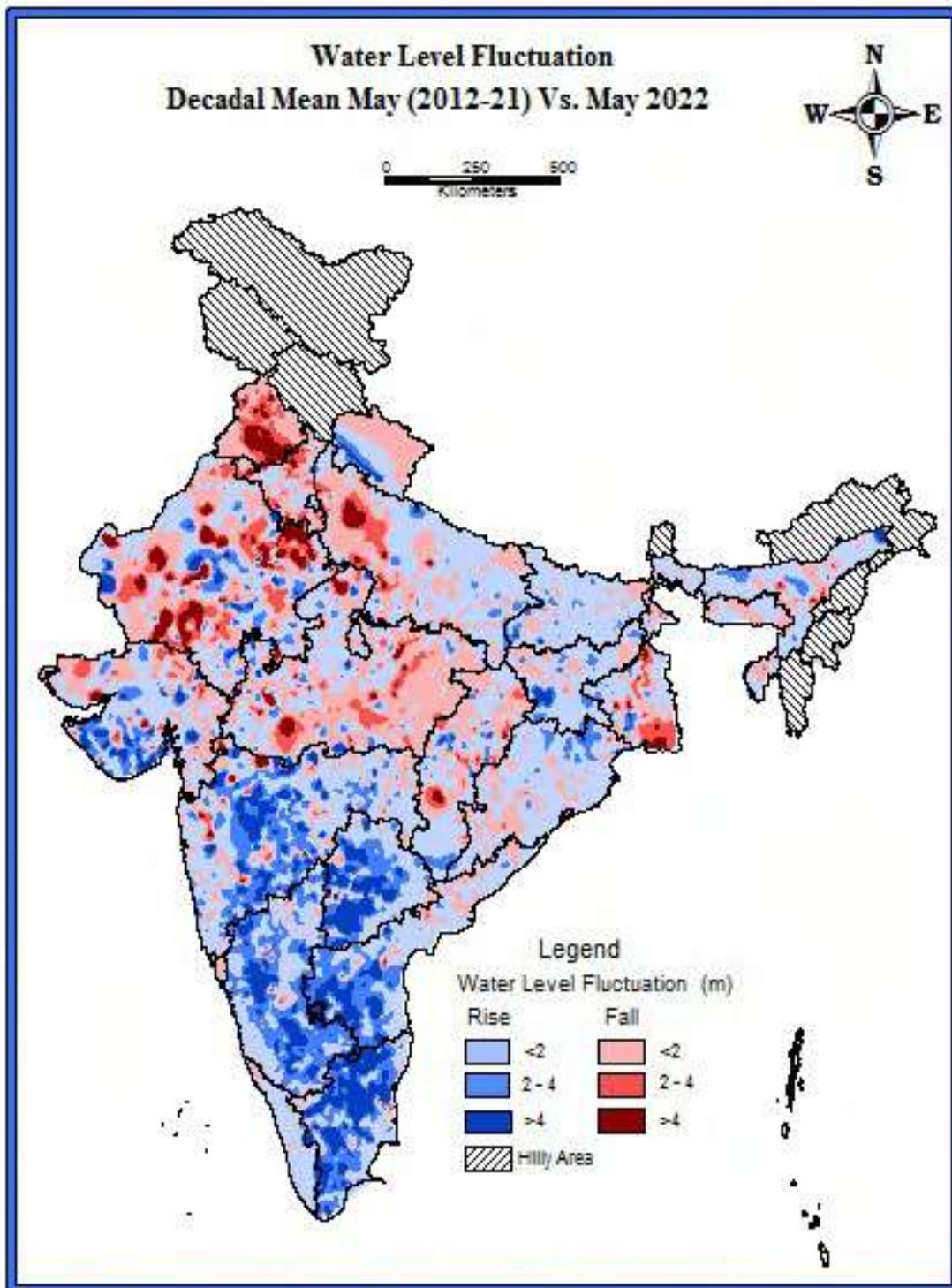


Fig-5.5: Decadal water level fluctuation with mean Pre-Monsoon (2012 to 2021) and Pre-Monsoon 2022

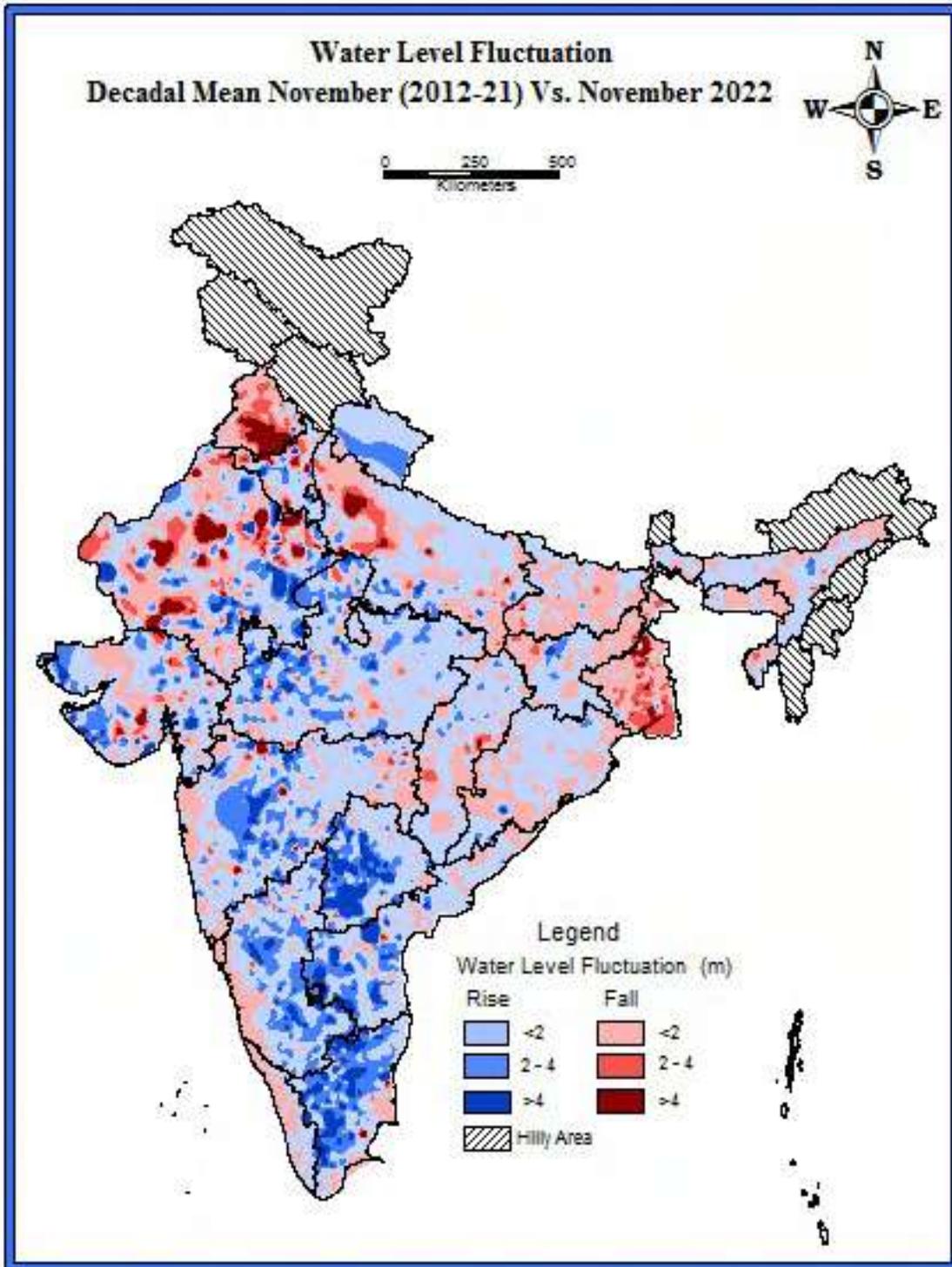


Fig-5.6: Decadal water level fluctuation with mean Post-Monsoon (2012 to 2021) and Post-Monsoon 2022

CHAPTER 6

6.0 GROUND WATER RESOURCES OF INDIA

The Dynamic ground water resources (as in 2023) of the entire country have been assessed jointly by CGWB and State Ground Water Departments under the supervision of the State level Committees. The dynamic ground water resources are also known as Annual Ground Water Recharge, since it gets recharged every year from rainfall and other sources (secondary sources) such as applied irrigation water, surface water bodies, water conservation structures, etc. Methodology adopted for the assessment has been outlined in Chapter-2 of this report. This section provides a summary of the Ground water Resources Assessment 2023 (GWRA-2023) made for the country.

6.1 DYNAMIC GROUND WATER RESOURCES

As per the 2023 assessment of Dynamic Ground Water Resources, the Total Annual Ground Water Recharge for the entire country has been assessed as 449.08 billion cubic meter (bcm) and Total natural discharges works out to be 41.89 bcm. Hence, Annual Extractable Ground Water Resources for the entire country is 407.21 bcm.

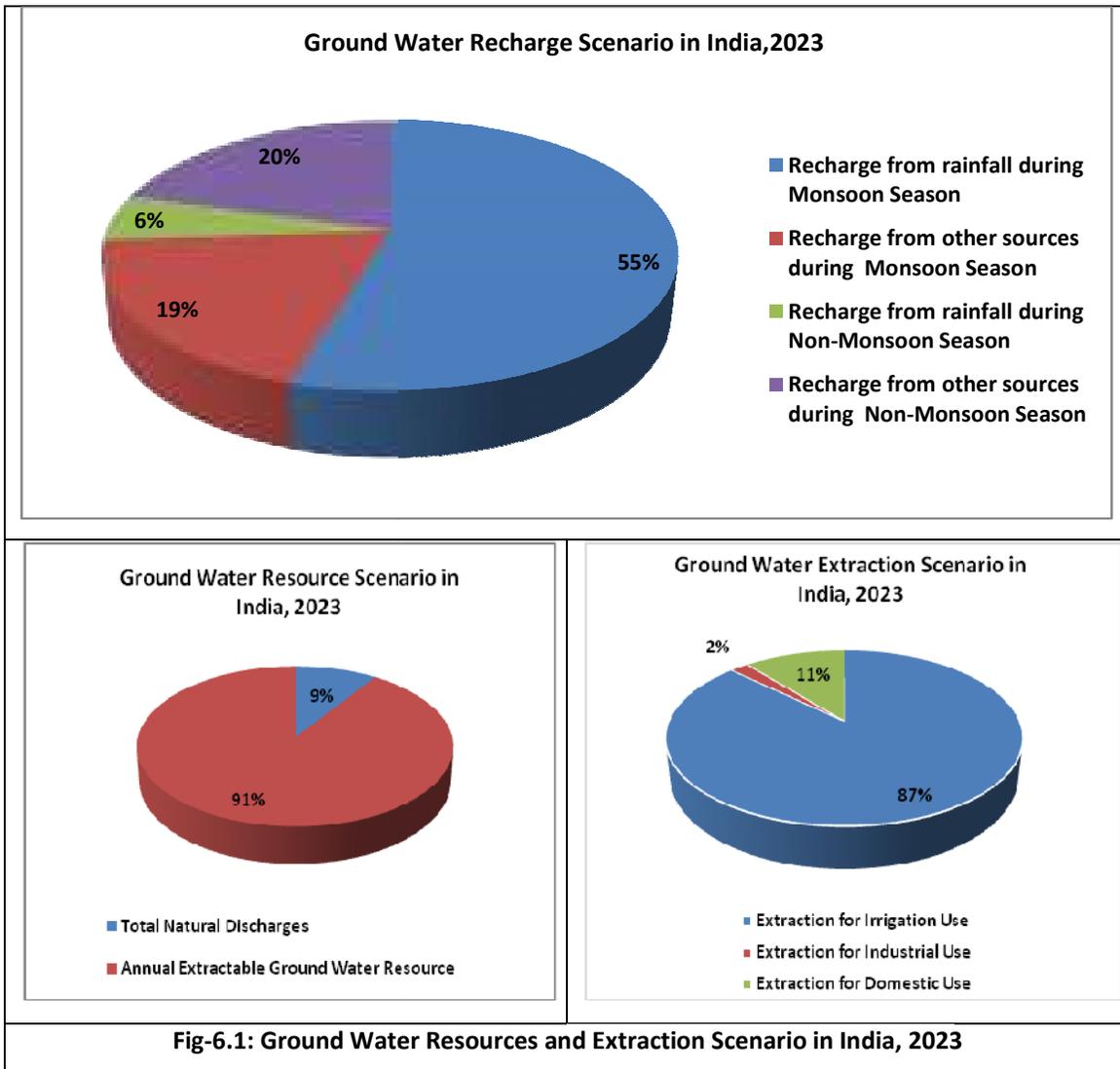
Rainfall recharge during monsoon and non-monsoon period is the major contributor of total annual groundwater recharge of the country, which is 270.78 bcm or 60% of the total recharge (Monsoon season: 54%, Non-monsoon season: 6%) and the remaining 40%(Monsoon season: 19%, Non-monsoon season: 21%) or 178.31 bcm is from 'Other sources' viz. canal seepage, return flow from irrigation, recharge from tanks, ponds and water conservation structures taken together. (**Fig-6.1**). The contribution in Annual Ground Water Recharge from rainfall during monsoon season is more than 70% in the states/UT of Assam, Goa, Gujarat, Jharkhand, Kerala, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Rajasthan, Daman & Diu, and Lakshadweep (**Fig- 6.2**). The overall contribution of rainfall (both monsoon & non-monsoon) recharge to country's total annual ground water recharge is 60% and the share of recharge from 'Other sources' viz. canal seepage, return flow from irrigation, recharge from tanks, ponds and water conservation structures taken together is 40%.

State-wise Ground Water Resources of India (as in 2023) are given in **Annexure-I** and the district-wise figures for each State are given in **Annexure-II**. The over-all scenario of ground water resource and extraction in the country is given in **Fig-6.1, 6.2, 6.3, 6.4 & 6.5**.

Volumetric estimates are dependent on the areal extent of the assessment units. In order to compare the ground water resource of different assessment units, the volumetric estimates of annual ground water recharge have been converted to depth units (m) by dividing the annual ground water recharge by the area of the respective assessment units (km²). Spatial variation in annual ground water recharge (m) is shown in **Fig-6.3**. Annual Ground Water Recharge is significantly high in the Indus-Ganga-Brahmaputra alluvial belt in the North, East and North East India covering the states of Punjab, Haryana, Uttar Pradesh, Bihar, West Bengal and valley areas of North Eastern States, where rainfall is plenty and thick piles of unconsolidated alluvial formations are conducive for recharge. Annual Ground Water Recharge in these regions varies from 0.25 to more than 0.5 m. The coastal alluvial belt particularly Eastern Coast also has relatively high annual ground water recharge, in the range 0.25 to more than 0.5 m. In western India, particularly Rajasthan and parts of northern Gujarat that have arid climate, the annual ground water recharge is scanty, mostly up to 0.025 m. Similarly, in major parts of the southern peninsula covered with hardrock terrains, annual ground

water recharge mostly ranges from 0.10 to 0.15 m. This is primarily because of comparatively low infiltration and storage capacity of the rock formations prevailing in the region. The remaining part of Central India is mostly characterized by moderate recharge in the range of 0.10 to 0.25 m.

The overall estimate of Annual Ground Water Recharge for the entire country shows an increase of 11.48 bcm in the present assessment as compared to the last assessment i.e. 2022. The Annual Extractable Ground Water Resources shows an increase of 9.13 bcm. The Annual Ground Water Extraction for irrigation, domestic and Industrial uses has increased by 2.18 bcm.



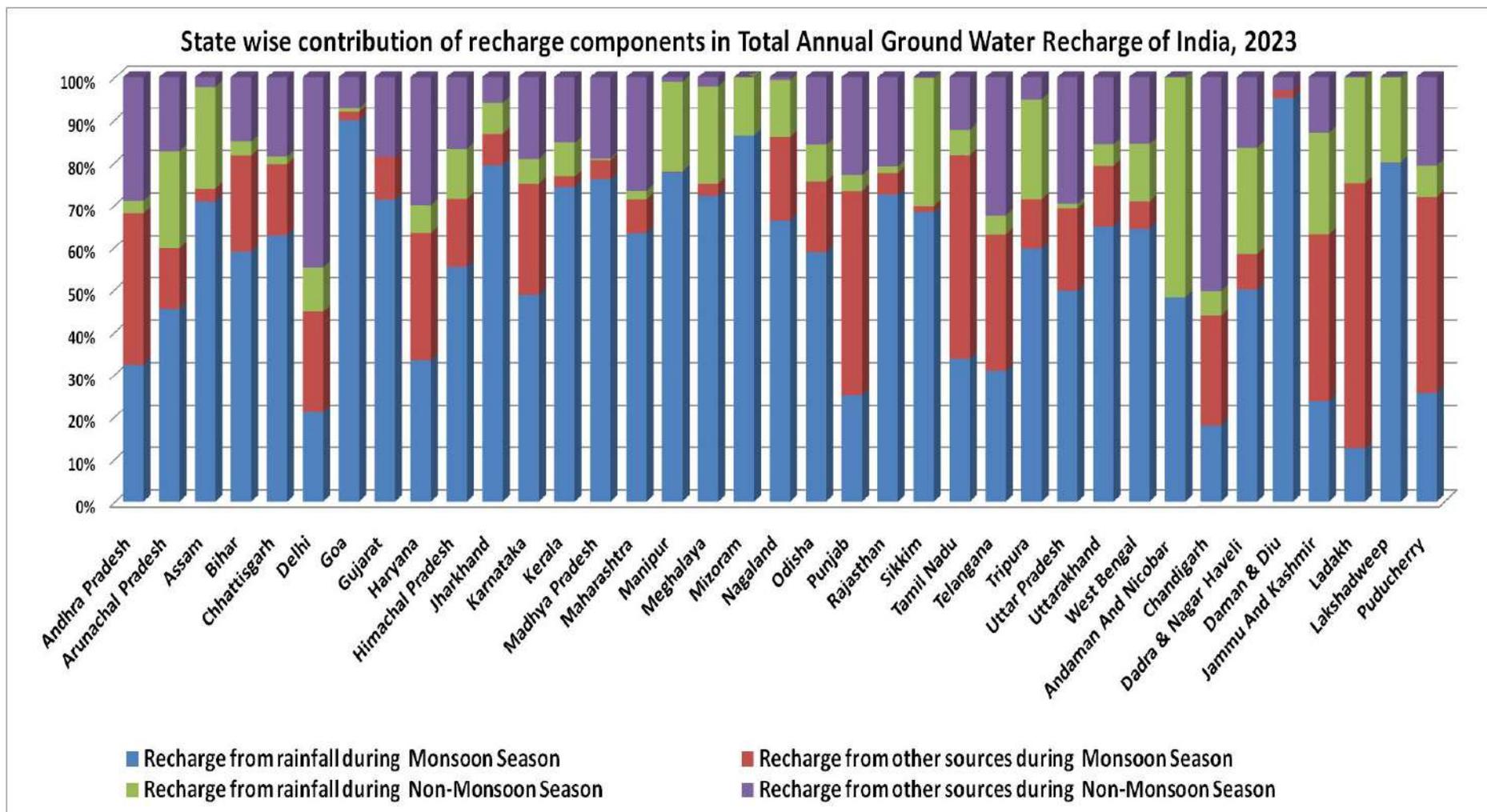


Fig-6.2: State wise contribution of recharge components in Total Annual Ground Water Recharge of India, 2023

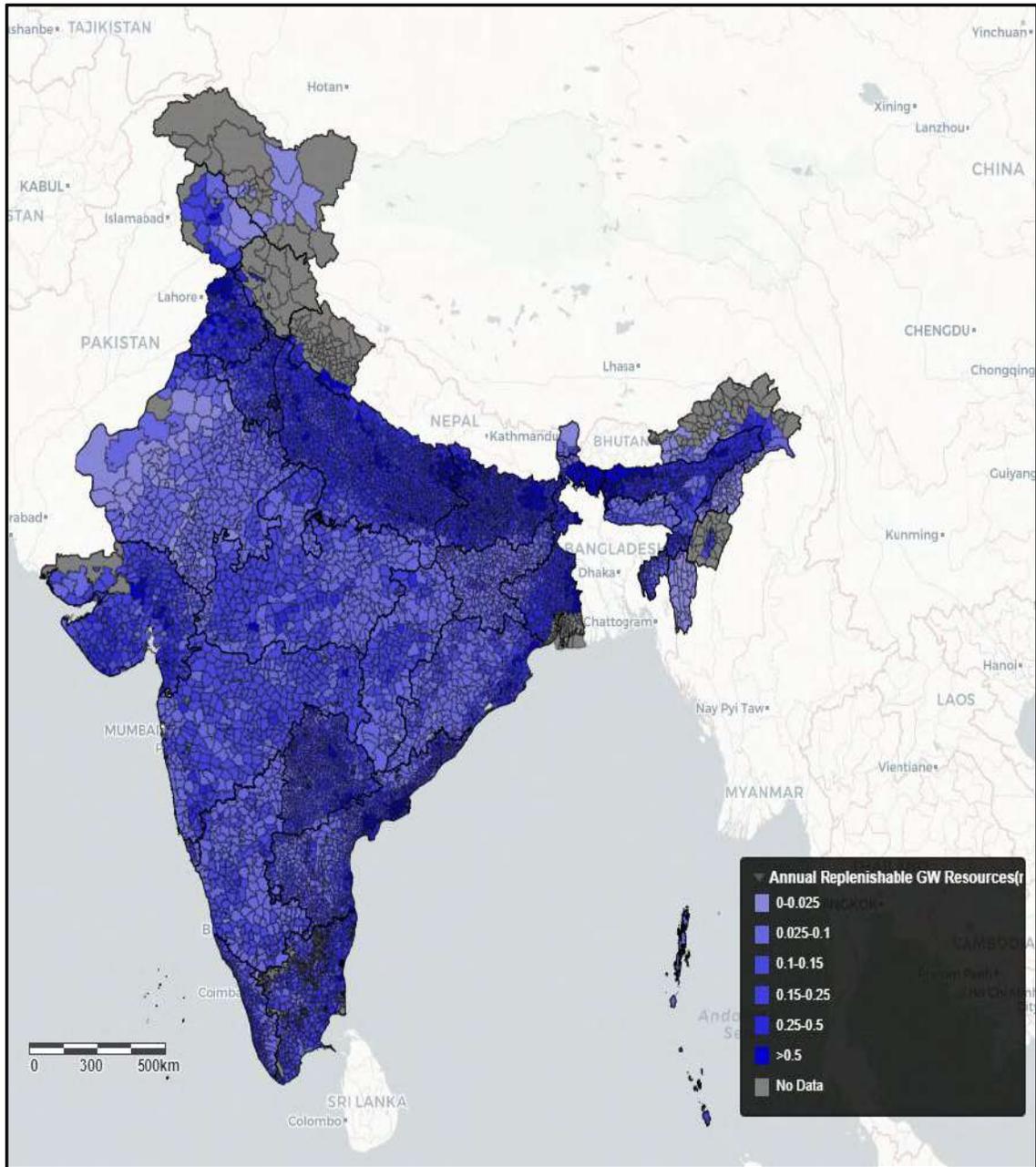


Fig. 6.3: Spatial variation in annual ground water recharge (in m), 2023

6.2 GROUND WATER EXTRACTION

The assessment of ground water extraction is carried out considering the Minor Irrigation Census data and sample surveys carried out by the State Ground Water Departments. The Total Annual Ground Water Extraction of the entire country for the year 2023 has been estimated as 241.34 bcm. The agriculture sector is the largest consumer of groundwater resources, accounting for 87% of the total annual groundwater extraction, which amounts to 209.74 bcm. The domestic use accounts for 11% (27.57 bcm), while industrial use represents 2% (4.01 bcm) of total annual groundwater extraction of the Country. In the states/UTs of, Arunachal Pradesh, Delhi, Goa, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Andaman and Nicobar, Chandigarh, Jammu and Kashmir, Ladakh, Lakshadweep the ground water extraction for domestic uses is more than 40 % **(Fig-6.4)**.

6.3 STAGE OF GROUND WATER EXTRACTION

The overall stage of groundwater extraction in the country is 59.26%. The stage of ground water extraction is very high in the States/UTs of Haryana, Punjab, Rajasthan, Dadra & Nagar Haveli and Daman & Diu where it is more than 100%, which implies that in these states the annual ground water consumption is more than annual extractable ground water resources. In the states of Delhi, Tamil Nadu, Uttar Pradesh, Karnataka and UTs of Chandigarh, Lakshadweep and Puducherry, the stage of ground water extraction is between 60-100%. In rest of the states/UTs, the stage of ground water extraction is below 60 %.

6.4 CATEGORIZATION OF ASSESSMENT UNITS

Out of the total 6553 assessment units (Blocks/ Taluks/ Mandals/ Districts/Valleys), 736 (11.23%) has been categorized as 'Over-exploited', 199 (3.04%) as 'Critical', 698 (10.65%) as 'Semi-critical', and 4793 (73.14%) units as 'Safe'. There are 127 (1.94%) assessment units, which are completely saline. The State-wise and District-wise numbers of assessment units under different categories are given in **Annexure III (A) and Annexure III (B)** respectively. The percentage of Over-exploited and Critical administrative units more than 25% of the total units are in Delhi, Haryana, Punjab, Rajasthan, Tamil Nadu, Dadra & Nagar Haveli, Daman & Diu **(Fig-6.5)**. The State-wise name of the assessment units under Over-exploited, Critical and Semi-critical categories and Quality problems in assessment units are given in **Annexure IV (A) and Annexure IV (B)** respectively. Similarly out of 24.64 lakh sq km recharge worthy area of the country, 4.18 lakh sq km (16.95%) are under 'Over-Exploited', 0.86 lakh sq km (3.49 %) are under 'Critical', 2.92 lakh sq km (11.85%) are under 'Semi-Critical', 16.30 lakh sq km (66.15 %) are under 'Safe' and 0.38 lakh sq km (1.55%) are under 'Saline' category assessment units. State-wise and District-wise details are given in **Annexure III (E) and Annexure III (F)** respectively. Out of 407.21 bcm of Total Annual Extractable Resources of the country, 45.12 bcm (11.08%) are under 'Over-Exploited', 12.91 bcm (3.17%) are under 'Critical', 47.37 bcm (11.63%) are under 'Semi-Critical', 301.80 bcm (74.11%) are under 'Safe' category assessment units. State/UT-wise and District-wise details are given in **Annexure III (C) and Annexure III (D)** respectively.

The state wise summary of assessment units improved or deteriorated from 2022 to 2023 assessment and detailed comparison of categorization of assessment units from 2022 and 2023 are given in **Annexure V (A) and Annexure V (B)** respectively.

State Wise Extraction for Irrigation, Industrial and Dometic Uses

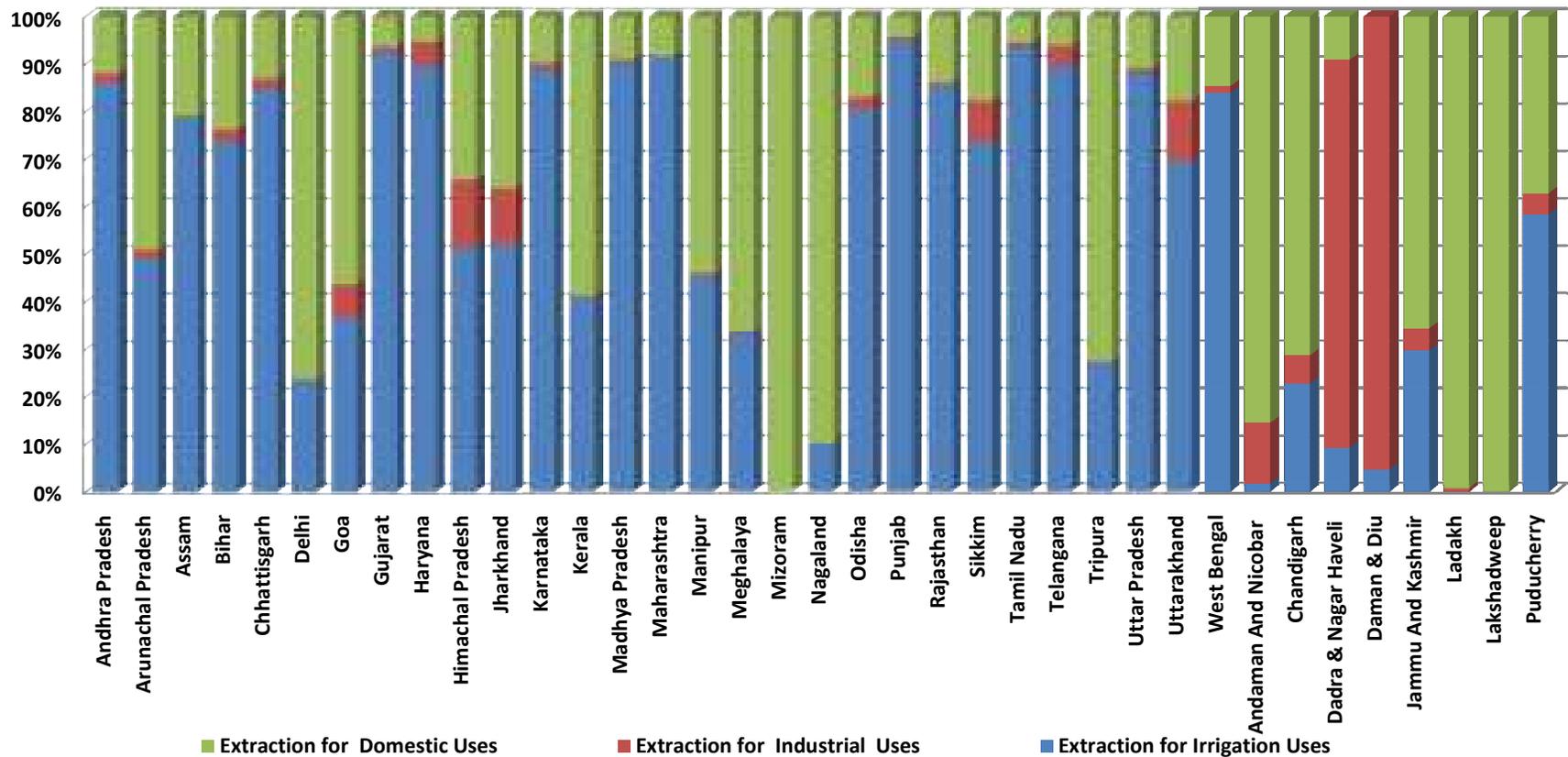


Fig-6.4: State wise % of Groundwater extraction for Irrigation vs. Industrial and Domestic Purposes

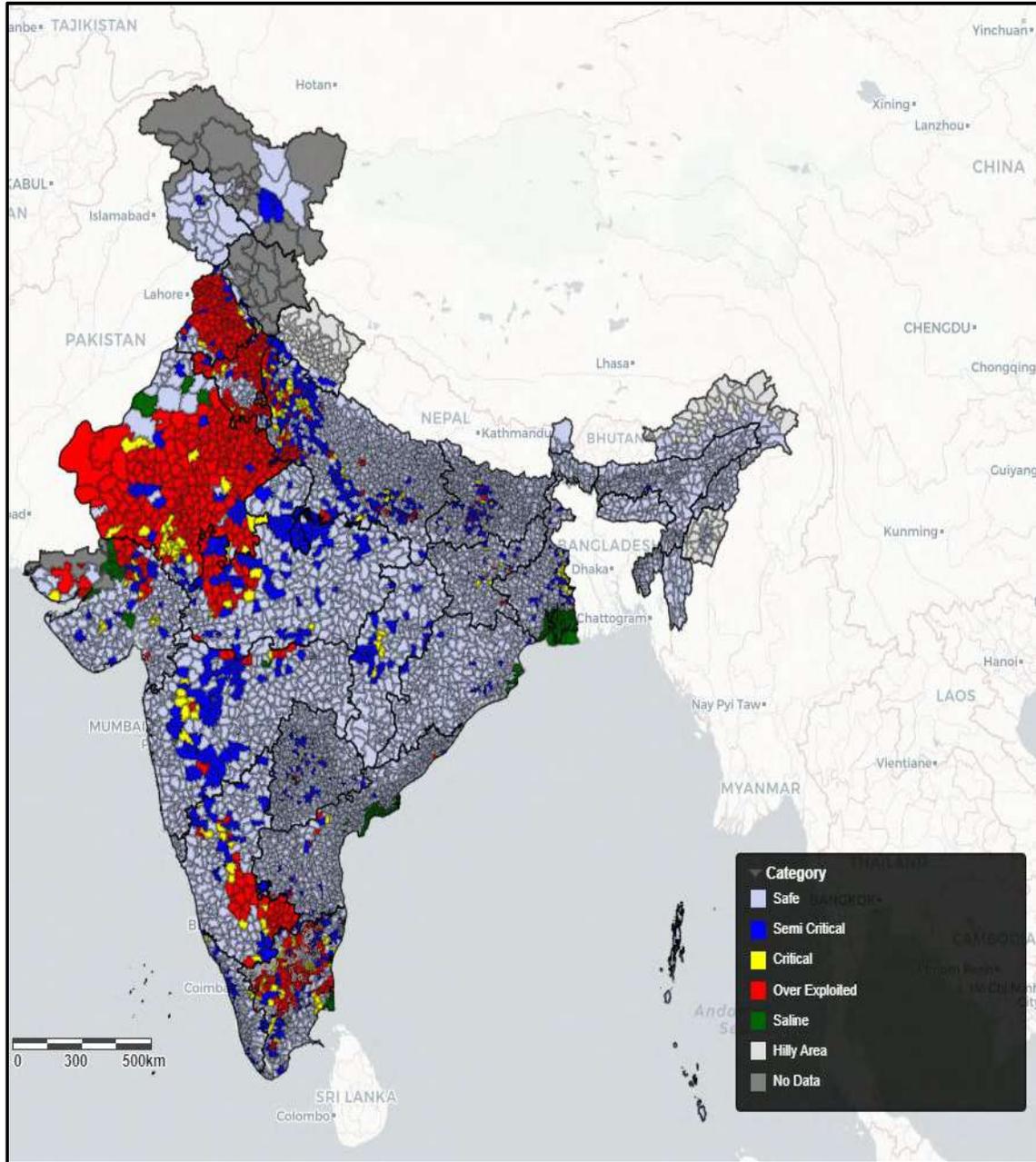


Fig-6.5: Categorization of Assessment Units

6.5 INTEGRATION OF GROUND WATER AND SURFACE WATER DATA WITH A VIEW TO FACILITATE PLANNING FOR CONJUNCTIVE USE OF WATER RESOURCES

Assessment of ground water resources is based on the principle of water balance using the equation 'Inflow – Outflow = Change in Storage (of an aquifer)'. Major inflow components include recharge due to rainfall and recharge from other sources. Major outflow component is ground water extraction for domestic, irrigation and industrial uses. Vertical flow across the aquifer system, lateral flow along the aquifer system (through flow), transpiration, evaporation and base flow are other important components.

The area of each assessment unit (block/taluk/mandal/tehsil etc.) is divided into command area and non-command area for the purpose of assessment. If an assessment unit is having more than 100 ha area under major and medium irrigation projects then that much area will be considered as command area. For the command area, along with other data/information pertaining to ground water resource assessment, data/information related to canal flows is collected from the relevant agencies for assessing the recharge from canal seepage. Similarly, data related to irrigation water applied in the assessment area from surface and ground water sources in different seasons are estimated for assessing the return flow from irrigation (return flow factor depends upon depth to water level, paddy/non-paddy crops etc.). Recharge from water bodies/tanks/lakes are assessed in the area based on average water spread area and recharge factor. Recharge from water conservation structures in the area are assessed based on the storage capacity, number fillings and recharge factor. All these data/information are collected/compiled for assessment of ground water resource of the assessment units. Based the ground water resources assessed and surface water sources availability, integrated water resource management plan and planning for conjunctive management of surface and ground water can be devised at block/assessment level by the planners. This data/information collected/compiled for assessment will be very useful for local administrators for managing water resources in a holistic and sustainable manner.

CHAPTER 7

7.0 STATE WISE GROUND WATER RESOURCE SCENARIO

The ground water conditions, its availability and utilization scenario and categorization of assessment units in different states are given in Annexure I, II, III & IV. State wise summaries are given below.

7.1 ANDHRA PRADESH

The State is divided into 667 assessment units (Mandals) .The State is predominantly covered by hard rocks.As much as 80% of the State is underlain by hard rock formations like Archaeans, Pre-Cambrians, Cuddapahs, Kurnools and Deccan traps. The remaining 20% is underlain by soft rocks including Gondwanas, Rajahmundry sandstone and Recent Alluvium.

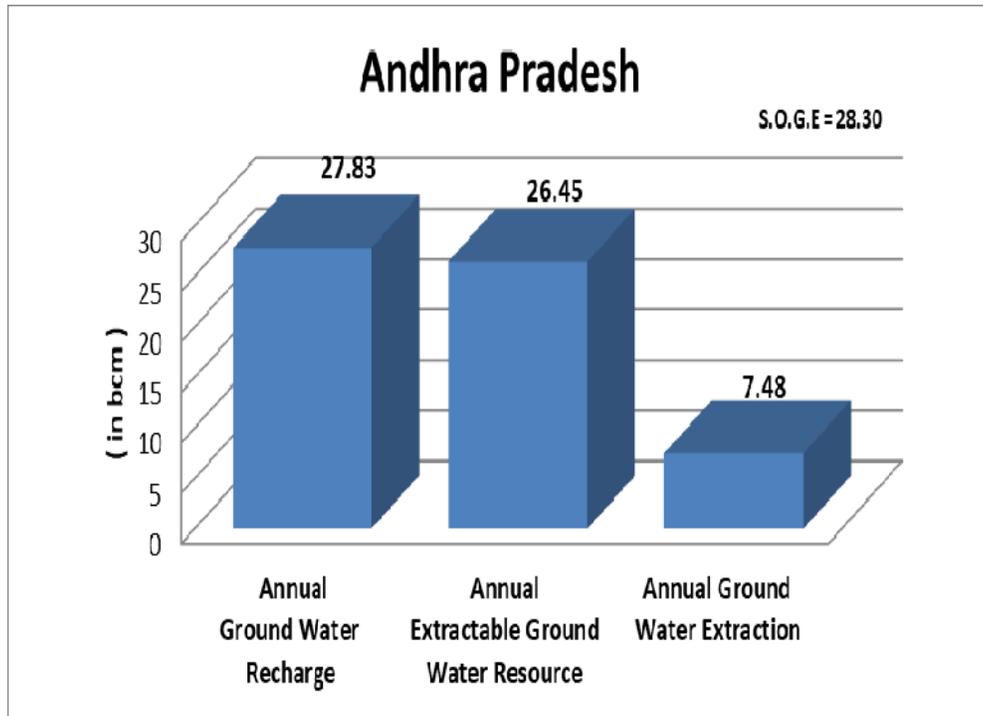
The Ground water resources have been assessed watershed wise and are apportioned to mandals. The Total Annual Ground Water Recharge of the State has been estimated as 27.83 bcm and Annual Extractable Resource is 26.45 bcm. The current Annual Ground Water Extraction for all uses is 7.48 bcm and Stage of Ground Water Extraction is 28.3 %.

Out of 667 assessment units (mandals), 10 (1.5%) units have been categorized, as 'Over-exploited', 03 units (0.45%) as 'Critical', 18 units (2.7%) as 'Semi-Critical', 597 units (89.5 %) as 'Safe' and 39 units categorized as 'Saline' (5.85%).

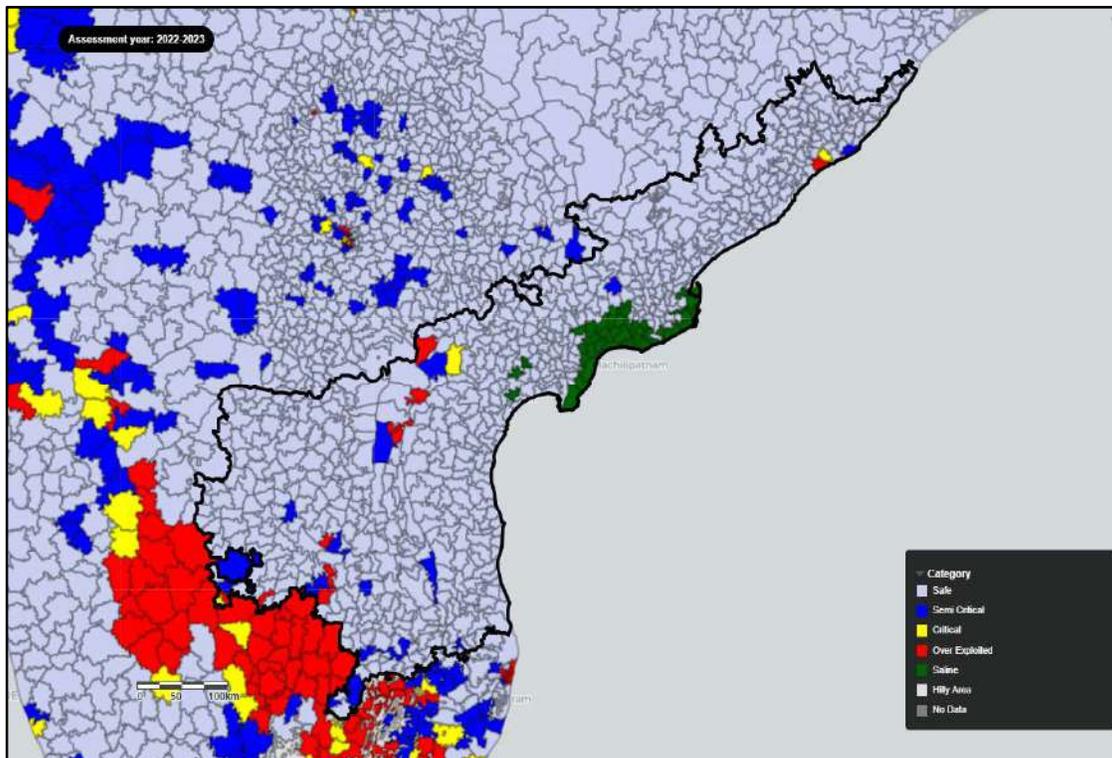
Similarly, out of 139599.85sq km recharge worthy area of the State, 1886.36 sq km (1.35 %) area are under 'Over-Exploited', 775.78 sq km (0.56 %) under 'Critical', 3936.09 sq km (2.82 %) under 'Semi-critical', 126905.3 sq km (90.91 %) under 'Safe' category of assessment units. 6096.33 sq km (4.37%) area is under 'Saline' category of assessment units.

Out of total 26445.91 mcm annual extractable ground water resources of the State, 221.8 mcm (0.84%) are under 'Over-exploited', 77.62 mcm (0.29 %) under 'Critical', 489.85 mcm (1.85 %) under 'Semi-critical' and 25656.64 mcm (97.02 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the total Annual Ground Water Recharge for the State has increased from 27.23 bcm to 27.83 bcm, which is attributed to excess rainfall, increase in surface water impoundments, government interventions, e.g. water conservation activities. Similarly, the annual extractable groundwater resources of the State increased from 25.86 bcm to 26.45 bcm. The annual groundwater extraction has increased marginally from 7.45 to 7.48 bcm in the State. The stage of groundwater extraction of the state decreased marginally from 28.81% to 28.3% in the current assessment indicating overall improvement in ground water scenario.



Dynamic Ground water Recourses Scenario 2023 - Andhra Pradesh



Categorization Map of GWRA 2023 – Andhra Pradesh

7.2 ARUNACHAL PRADESH

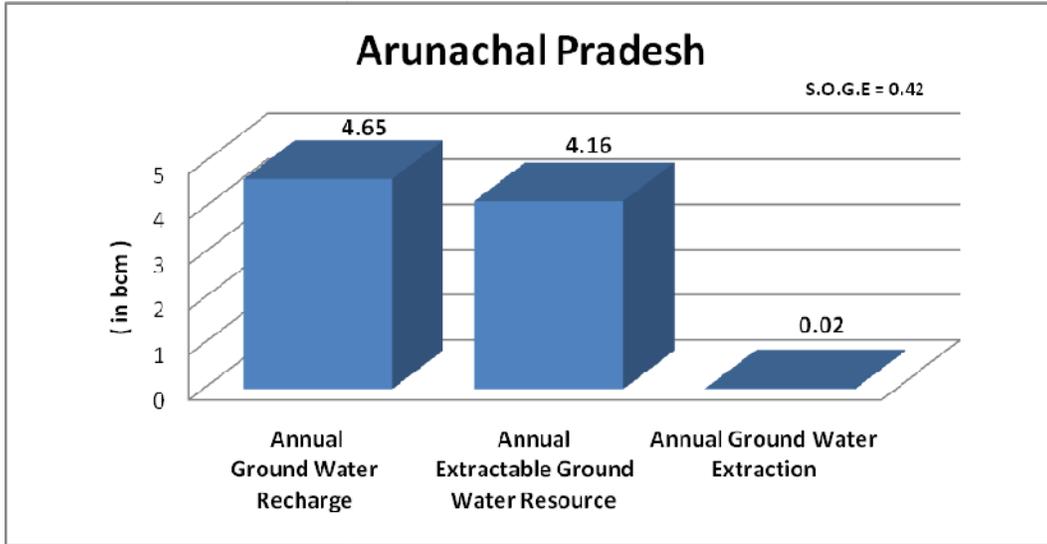
The state of Arunachal Pradesh is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. Major part of the state is covered with consolidated crystalline rocks and meta-sediments of Precambrian and Palaeozoic age, while Tertiary sediments consisting of semi-consolidated argillaceous assemblage, represented by the Disang, Barail, Tipam, Siwalik and Dihing groups of rock, occupy periphery areas bordering Assam and behave as run-off and in select patches functions as infiltration zone. In consolidated formations, ground water potential appears to be limited. Semi-consolidated Tertiary formations are likely to give moderate or poor yield and expected to be controlled by aquifer geometry and structural features. Ground water in both consolidated and semi-consolidated formations also manifests as springs and in all geological formation springs occur as both seasonal and perennial in nature.

Unconsolidated Quaternary sediments comprising the terrace deposits of Pleistocene (Bhabar zone) and also the terrace and alluvial fan deposits of Holocene age prevail in the fringe valley areas and as thin carpet in isolated structural valley sand with considerable thickness in open and wide valleys joining Brahmaputra Alluvial plains. The unconsolidated alluvial sediments in the valley areas act as good repositories for ground water development. Valleys adjoining Assam are most promising where good thickness of granular zones is distributed. Discharge of the deep tube wells, tapping mostly unconsolidated Quaternary sediments & at places Upper Tertiary formations, varies from 1.4m³/hr to 54m³/hr, while transmissivity ranges from 1 to 661m²/day. Storativity ranges from 0.35x10⁻³ to 6.65x10⁻³

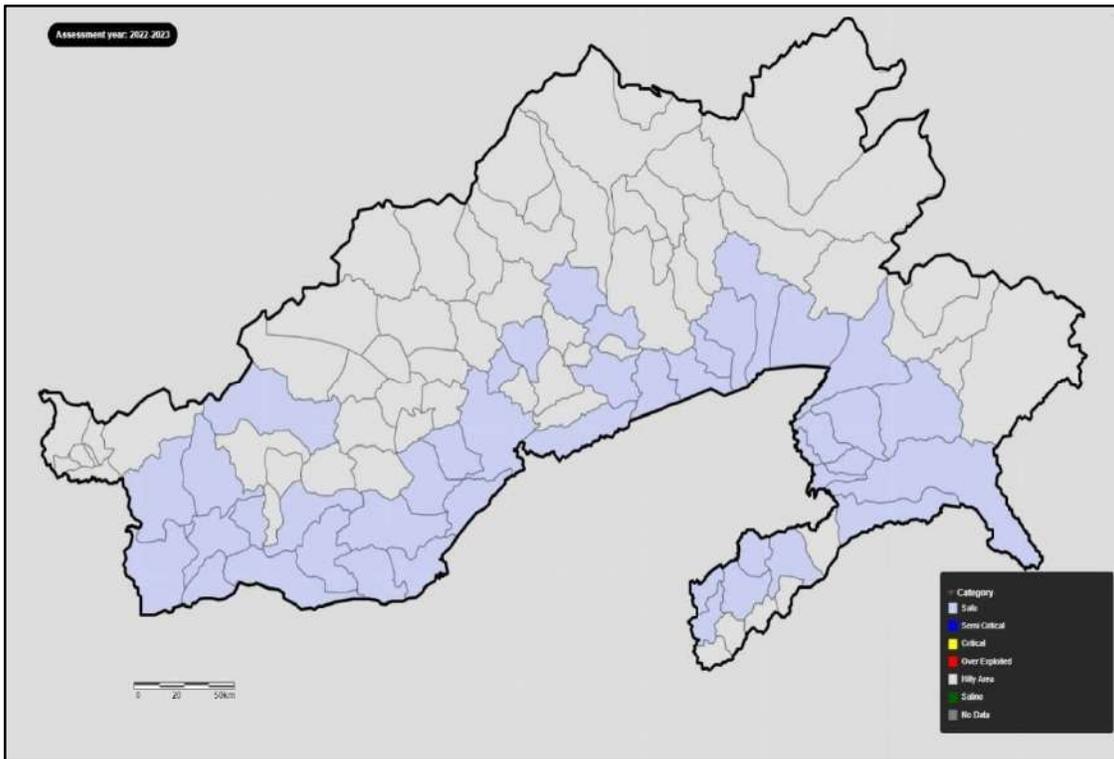
The ground water resource estimation of the state has been done block-wise by considering 42 nos. of groundwater recharge worthy blocks as assessment unit. The Total Annual Groundwater Recharge of the State has been estimated as 4.65 bcm and Annual Extractable Groundwater Resources is 4.16 bcm. The Current Annual Ground Water Extraction for all uses is 0.02 bcm and Stage of Ground Water Extraction is 0.42 %. All the 42 assessment units have been categorized as 'Safe'. There is no saline area in the state.

Similarly out of 5721.38 sq km recharge worthy area of the State, 5721.38 sq km (100 %) under 'Safe' categories of assessment units. Out of total 4163.11 mcm annual extractable ground water resources of the State, 4163.11 mcm (100 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Total Annual Ground Water Recharge for the State has increased from 4.52 bcm in 2022 to 4.65 bcm in 2023, Annual Extractable Ground Water Resources increased from 4.07 bcm in 2022 to 4.16 bcm in 2023 and Total Ground Water Extraction decreased from 0.03bcm in 2022 to 0.02 bcm in 2023. The Stage of Ground Water Extraction decreased from 0.79 % to 0.42 %.



Dynamic Ground water Recourses Scenario 2023 – Arunachal Pradesh



Categorization Map of GWRA 2023 – Arunachal Pradesh

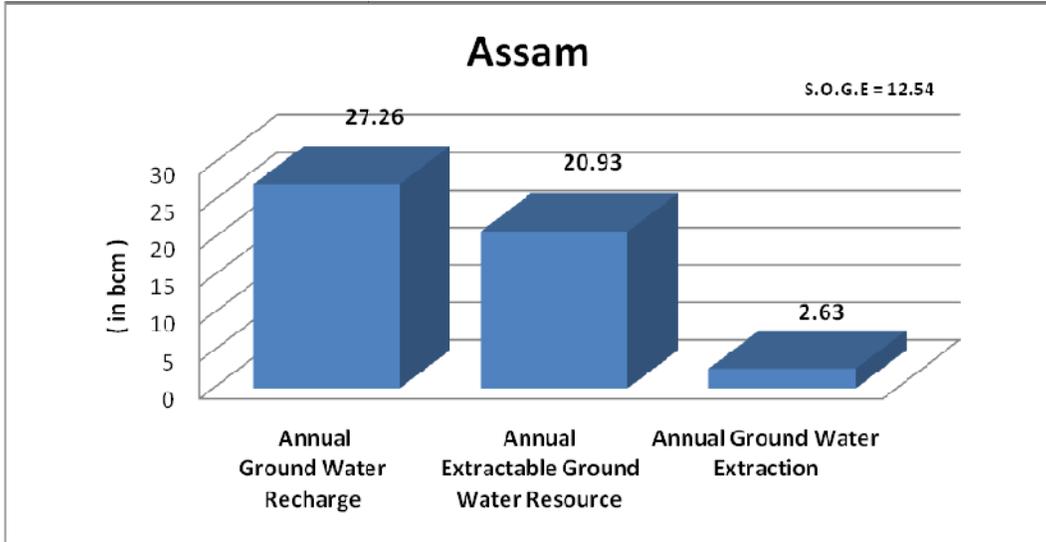
7.3 ASSAM

The State is underlain mainly by unconsolidated Quaternary formation in Brahmaputra valley and potential aquifers lie at shallow as well as deeper zone. The semi-consolidated Tertiary formations are found to occur in the southern part of KarbiAnglong, Cachar, Karimganj and Hailakandi districts and in Upper Assam covering southern fringe of Dibrugarh, Tinsukia, Sibsagar, Jorhat, Golaghat districts. The consolidated Precambrian rocks occur mainly in N.C. Hills, Karbi-Anglong, Kamrup, Goalpara, Dhubri, and Nagaon.

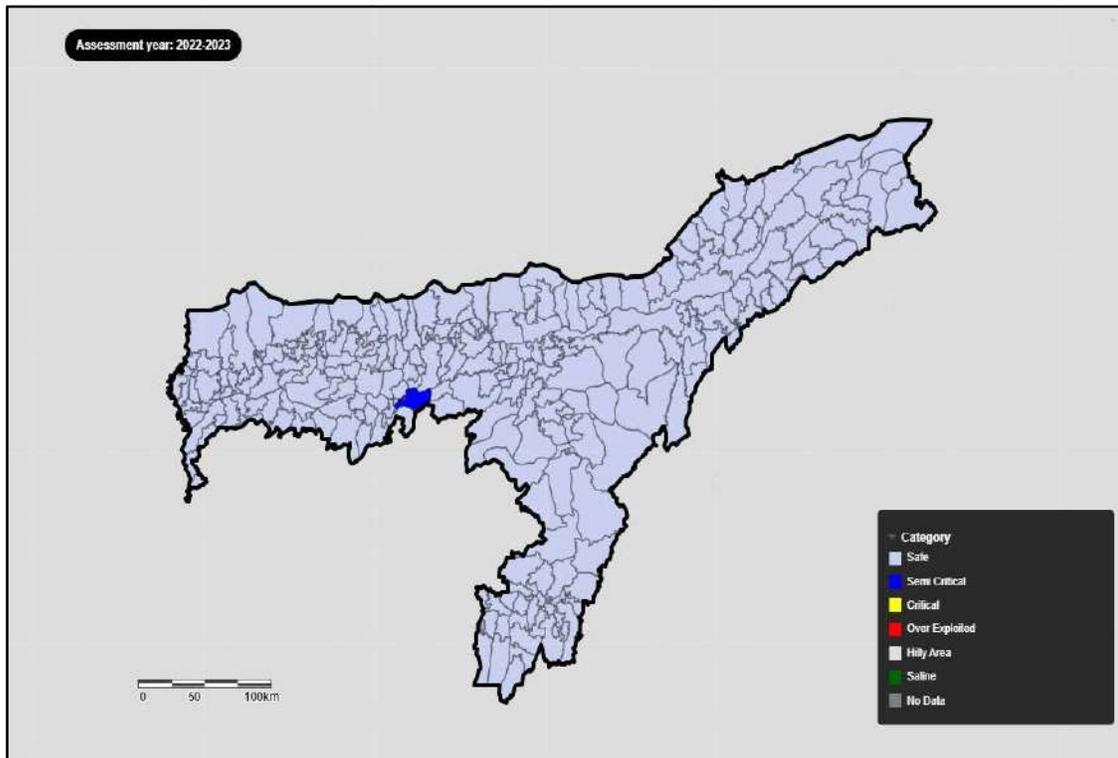
Groundwater resources has been estimated for this year on a block-wise basis for the state. The Total Annual Groundwater Recharge of the State has been estimated as 27.26 bcm and Annual Extractable Groundwater Resources is 20.93 bcm. The Current Annual Ground Water Extraction for all uses is 2.63 bcm and Stage of Ground Water Extraction is 12.54 %. Out of 245 assessment units, 244 have been categorized as 'Safe' and one assessment unit of Kamrup (Metro) Urban is in 'Semi Critical' condition. There is no saline area in the state.

Similarly out of 68817.93 sq km recharge worthy area of the State, 200.42 sq km (0.29 %) under 'Semi-critical', 68617.51 sq km (99.71 %) under 'Safe' categories of assessment units. Out of total 20931.53 mcm annual extractable ground water resources of the State, 41.47 mcm (0.2 %) under 'Semi-critical' and 20890.06 mcm (99.8 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Total Annual Ground Water Recharge for the State has increased from 26.53 bcm in 2022 to 27.26 bcm in 2023, Annual Extractable Ground Water Resources increased from 21.40 bcm in 2022 to 20.93 bcm in 2023 and Total Ground Water Extraction decreased from 2.65 bcm in 2022 to 2.63 bcm in 2023. Stage of Ground Water Extraction decreased from 12.38 % to 12.54 %.



Dynamic Ground water Recourses Scenario 2023 – Assam



Categorization Map of GWRA 2023 – Assam

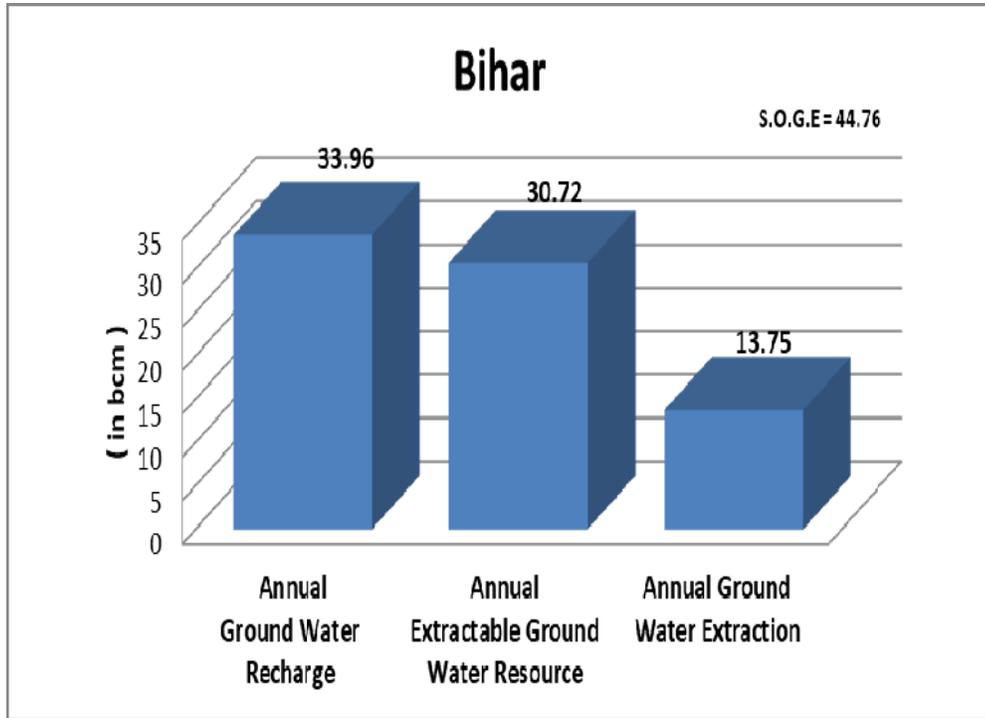
7.4 BIHAR

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. Dug wells and shallow tube wells tapping the phreatic zone are the common ground water abstraction structures. The assessment of dynamic ground water resources has been carried out in 535 Assessment Units (534 blocks + Patna Urban) of the State. The Total Annual Ground Water Recharge has been worked out as 33.96 bcm with the Annual Extractable Ground Water Resources as 30.72 bcm. The Current Annual Ground Water Extraction for all uses has been estimated as 13.75 bcm and the Stage of Ground Water Extraction of the State is 44.76 %.

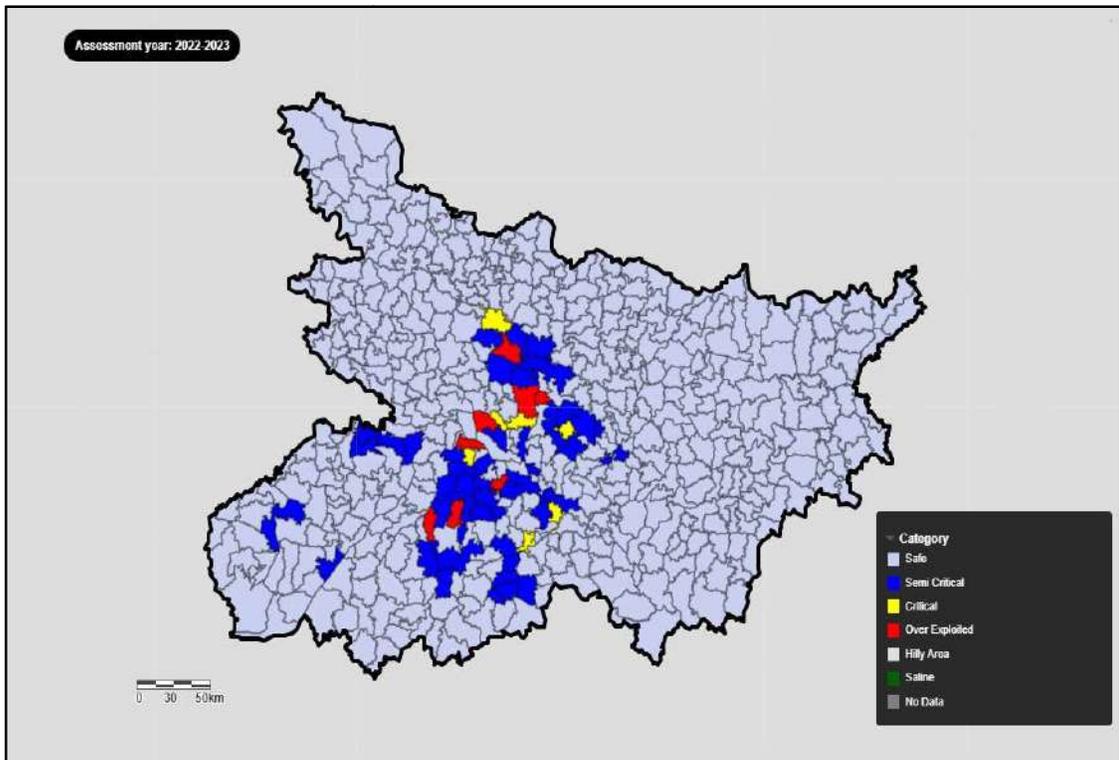
Out of the total 535 assessment units (blocks + Patna Urban), 8 units (1.50 %) are 'Over-exploited', 7 units (1.31 %) are 'Critical', 53 units (9.91 %) are 'Semi-Critical', 467 units (87.29 %) units are 'Safe' category. There is no 'Saline' block in the State.

Similarly out of 90348.70 sq. km recharge worthy area of the State, 867.8 sq km (0.96 %) area are under 'Over-Exploited', 803.91 sq. km (0.89 %) under 'Critical', 7417.08 sq. km (8.21 %) under 'Semi-critical', 81259.91 sq. km (89.94 %) under 'Safe' categories of assessment units. Out of total 30718.81 mcm annual extractable ground water resources of the State, 283.46 mcm (0.92 %) are under 'Over-exploited', 237.4 mcm (0.77 %) under 'Critical', 2168.92 mcm (7.06 %) under 'Semi-critical' and 28029.03 mcm (91.24 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Total Annual Ground Water Recharge and Annual Extractable Ground Water Resources for the State have increased from 33.15 to 33.96 bcm and 30.04 to 30.72 bcm respectively. The Annual Ground Water Extraction has increased from 13.5 to 13.75 bcm. Stage of Ground Water Extraction decreased from 44.94% to 44.76 %. This year, the dynamic resources of the State have been estimated separately for canal command and non-command areas. Slight variations in recharge, both from canal sources and rainfall has been observed.. The revival and renovation of tanks and water bodies as part of the Jal Jeevan Hariyali Mission, initiated by the Government of Bihar, resulted in a marginal increase in recharge from surface water sources and surface water irrigation.



Dynamic Ground water Recourses Scenario 2023 – Bihar



Categorization Map of GWRA 2023 – Bihar

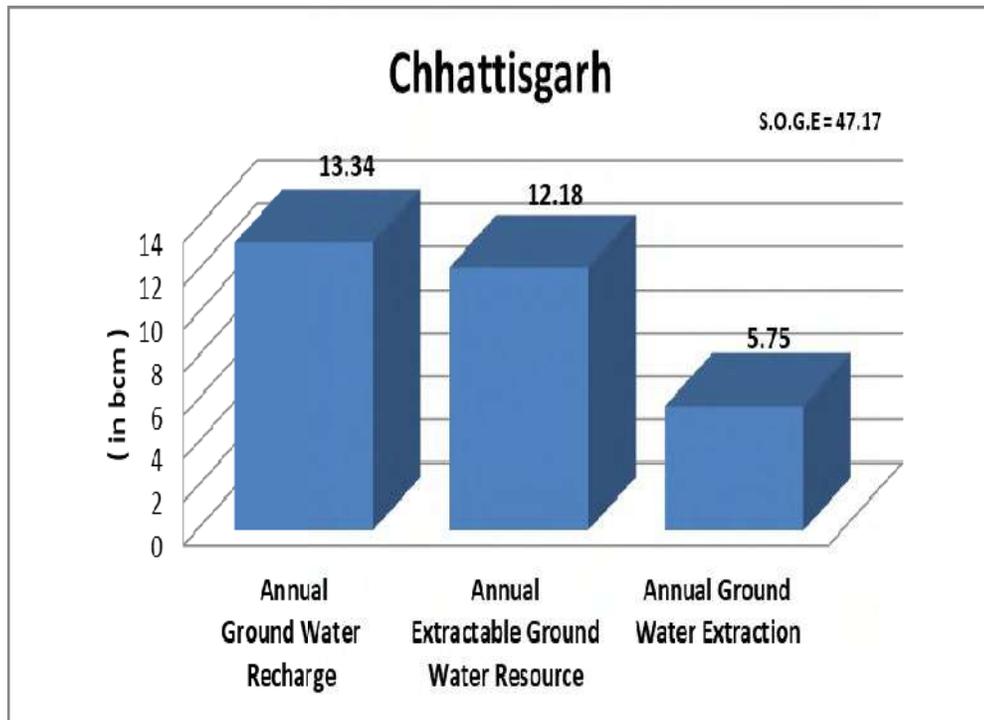
7.5 CHHATTISGARH

The State is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. 87% area of the State is underlain by hard rock and the ground water in these areas is being tapped mostly by dug wells constructed in the weathered zone and bore wells tapping the deeper aquifers. The yield of open (dug) wells varies from 1 to 2 lps and the yield of the bore wells ranges from < 1 to 5 lps. About 13 % area of the State is occupied by Semi-consolidated sedimentary rocks where Dug wells & tube wells have yield range of 1 to 10 lps.

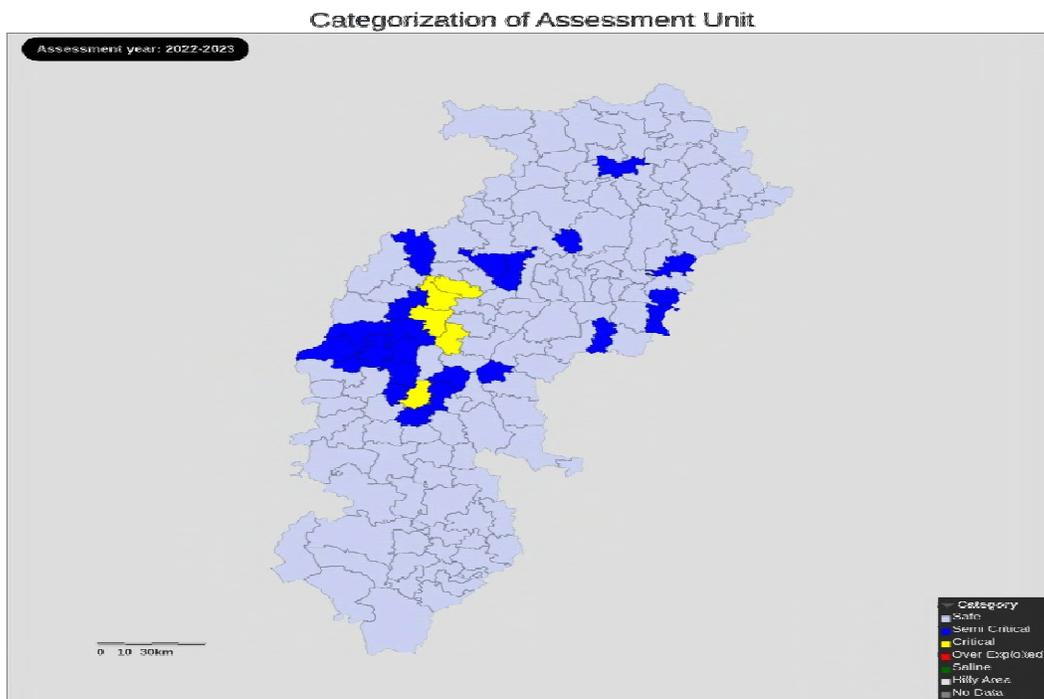
The assessment of ground water resources has been carried out block-wise. The Total Annual Ground Water Recharge of the State has been assessed as 13.34 bcm and Annual Extractable Ground Water Resource is 12.18 bcm. The Total Current Annual Ground Water Extraction is 5.75 bcm and Stage of Ground Water Extraction is 47.17 %.

Out of 146 assessment units (blocks), 5 units (3.42 %) as 'Critical', 22 units (15.07 %) have been categorized as 'Semi-critical' and 119 units (81.51 %) as 'Safe' categories of assessment units. There are no 'Over-exploited' and 'Saline' categories of assessment units in the State. Out of 106078.71 sq. km recharge worthy area of the State, 3119.06 sq km (2.94 %) area are under 'Critical', 13987.35 sq. km (13.19 %) under 'Semi-critical', 88972.30 sq km (83.87 %) under 'Safe' categories of assessment units. Out of total 12183.72 mcm annual extractable ground water resources of the State, 466.98 mcm (3.83 %) under 'Critical', 2288.80 mcm (18.79 %) under 'Semi-critical' and 9427.94 mcm (77.38 %) are under 'Safe' categories.

As compared to 2022 assessment, the Total Annual Ground Water Recharge and Annual Extractable Ground Water Resources for the State have increased from 12.04 to 13.34 bcm and 11.01 to 12.18 bcm respectively. The increase in surface water irrigation area and canal running days along with updated data of ponds and tanks is responsible for increased ground water recharge. There is an increase in ground water extraction from 5.46 to 5.75 bcm. Stage of ground water extraction has decreased from 49.58 % to 47.17 %. Increase in number of irrigation wells resulted in the increase of total extraction.



Dynamic Ground water Recourses Scenario 2023 – Chhattisgarh



Categorization Map of GWRA 2023 – Chhattisgarh

7.6 DELHI

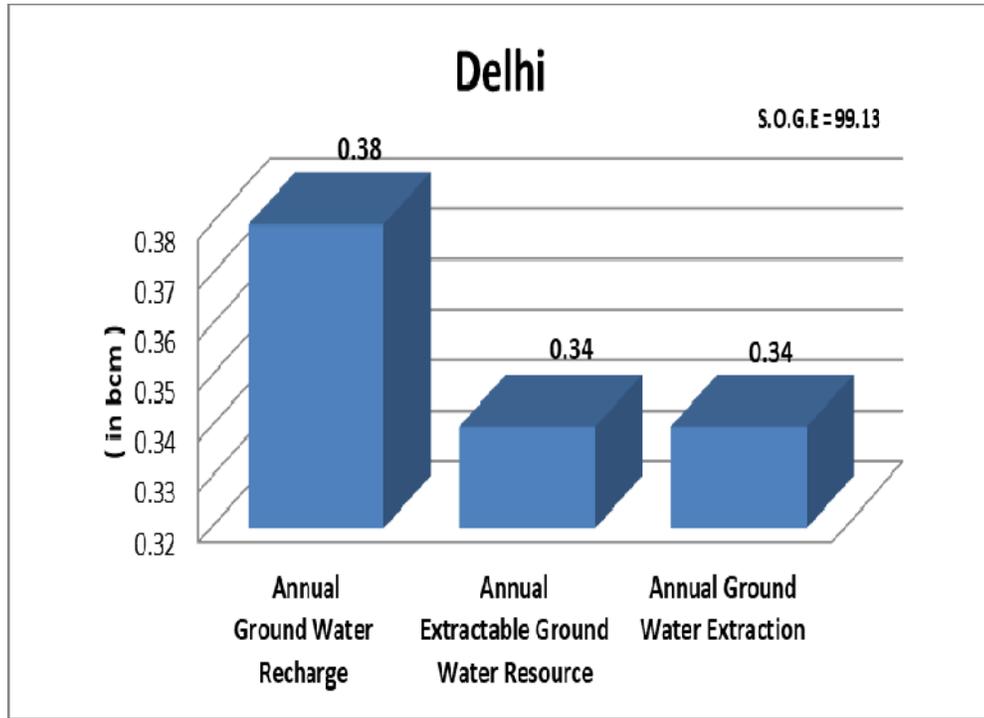
The State is covered by diverse rock types of different geological ages from Pre-Cambrian to Recent. As much as 89% of the State is occupied by alluvium and ground water is being tapped mostly through tube wells. Yields of tube wells vary from 4 to 10 lps in older alluvial deposits and from 25 to 55 lps in newer alluvium. About 11 % of the State is occupied by quartzitic hard rock, where bore wells have yield of 0.6 to 5 lps.

The ground water resources assessment has been carried out tehsil-wise. The Total Annual Ground Water Recharge of the State has been assessed as 0.38 bcm and Annual Extractable Ground Water Resources is 0.34 bcm. The Total Current Annual Ground Water Extraction is 0.34 bcm and Stage of Ground Water Extraction is 99.13 %.

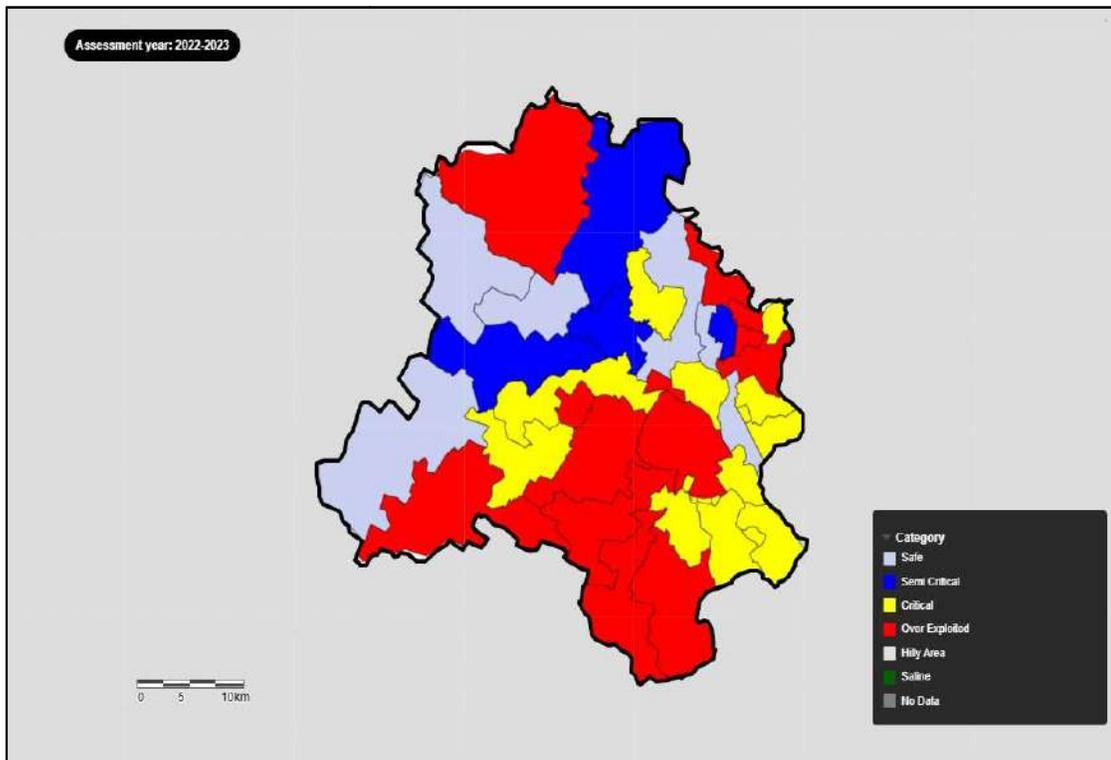
Out of 34 assessment units (tehsils), 13 units (38.24 %) have been categorized as 'Over-exploited', 12 units (35.29 %) as 'Critical', 4 units (11.76 %) as 'Semi-critical', and 5 units (14.71 %) as 'Safe' categories of assessment units.

Similarly, out of 1487.61 sq km recharge worthy area of the State, 617.25 sq km (41.49 %) area are under 'Over-Exploited', 306.4 sq km (20.6 %) under 'Critical', 233.73sq km (15.71 %) under 'Semi-critical', 330.23 sq km (22.2 %) under 'Safe' categories. Out of total 344.49 mcm annual extractable ground water resources of the State, 122.11 mcm (35.45 %) are under 'Over-exploited', 102 mcm (29.61 %) under 'Critical', 46.94 mcm (13.63 %) under 'Semi-critical' and 73.44 mcm (21.32 %) are under 'Safe' categories.

As compared to 2022 assessment, the Total Annual Ground Water Recharge decreased from 0.41 bcm to 0.38 bcm and Annual Extractable Ground Water Resources decreased from 0.37 bcm to 0.34 bcm. The decrease in the total annual groundwater recharge can be attributed to a reduction in recharge from rainfall, resulting from lower precipitation during the current assessment year compared to the previous assessment year. There is decrease in the Annual Ground Water Extraction for the state from 0.36 bcm to 0.34 bcm and the Stage of Ground Water Extraction has increased from 98.16 % to 99.13 %.



Dynamic Ground water Recourses Scenario 2023 – Delhi



Categorization Map of GWRA 2023 – Delhi

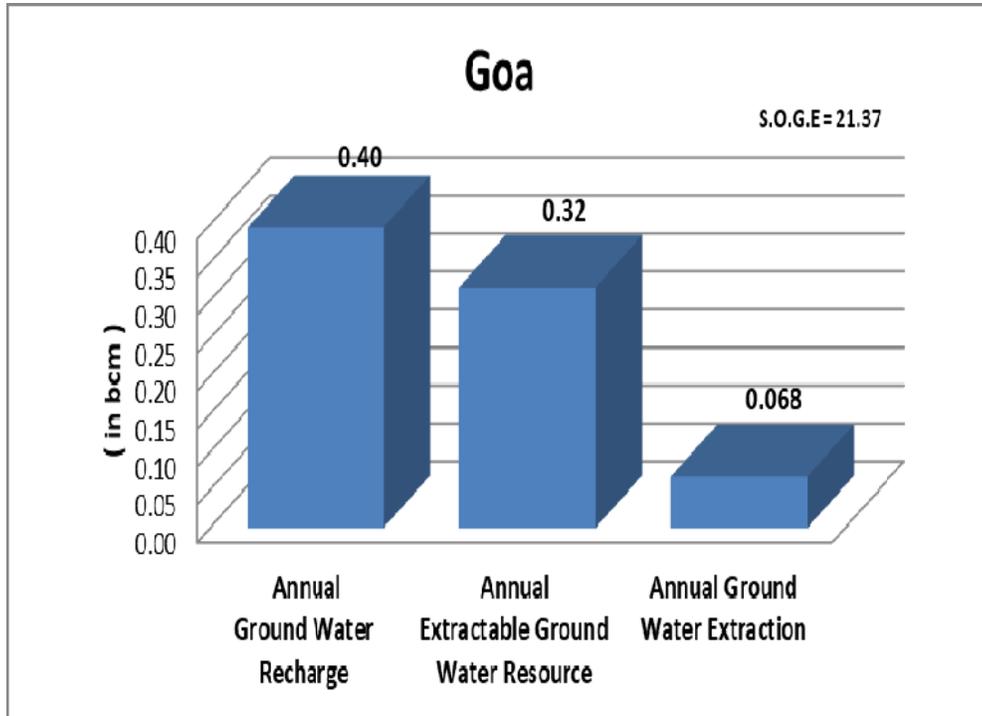
7.7 GOA

Major part of Goa State is covered by consolidated formations of Dharwar Super Group. Ground water occurs under unconfined to semi-confined conditions in beach sands, laterites, weathered and fractured crystalline rocks. The development of ground water from phreatic zone is mostly through dug wells and shallow bore wells.

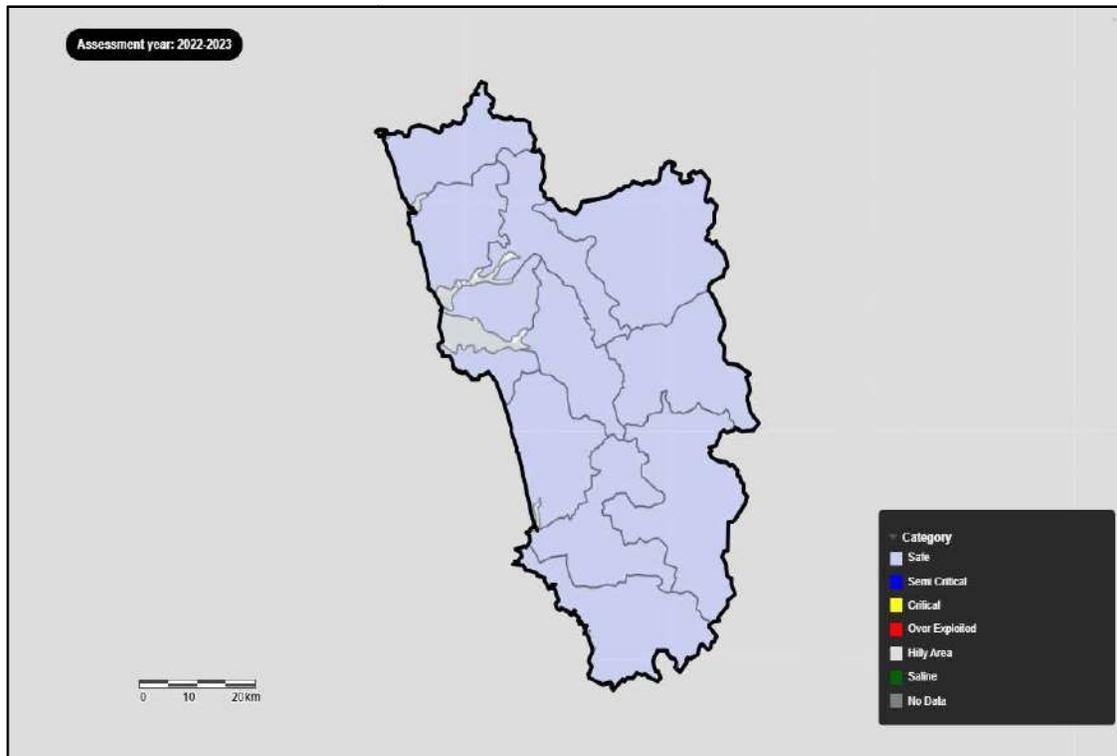
The Ground Water Resources has been assessed taluk-wise. Total Annual Ground Water Recharge has been assessed as 0.396 bcm and Annual Extractable Ground Water Resources as 0.317 bcm. The Annual Ground Water Extraction is 0.068 bcm and Stage of Ground Water Extraction is 21.37 %. All 12 taluks in the State have been categorized as 'Safe'.

Likewise, within the State's 2209.59 sq km of recharge-worthy areas, the entire expanse, falls within the 'Safe' category of assessment units. Out of the State's total annual extractable groundwater resources 317 mcm, the entirety 100%, falls within the 'Safe' category of assessment units.

As compared to 2022 assessment, the Total Annual Ground Water Recharge decreased from 0.41 bcm to 0.398 bcm and Annual Extractable Ground Water Resources decreased from 0.33 bcm to 0.317 bcm. The Annual Ground Water Extraction has also marginally decreased from 0.078 bcm to 0.068 bcm, owing to reduction in domestic draft due to surface water supply under JJM. The Stage of Ground Water Extraction has marginally decreased from 23.63 % to 21.37 %.



Dynamic Ground water Recourses Scenario 2023 – Goa



Categorization Map of GWRA 2023 – Goa

7.8 GUJARAT

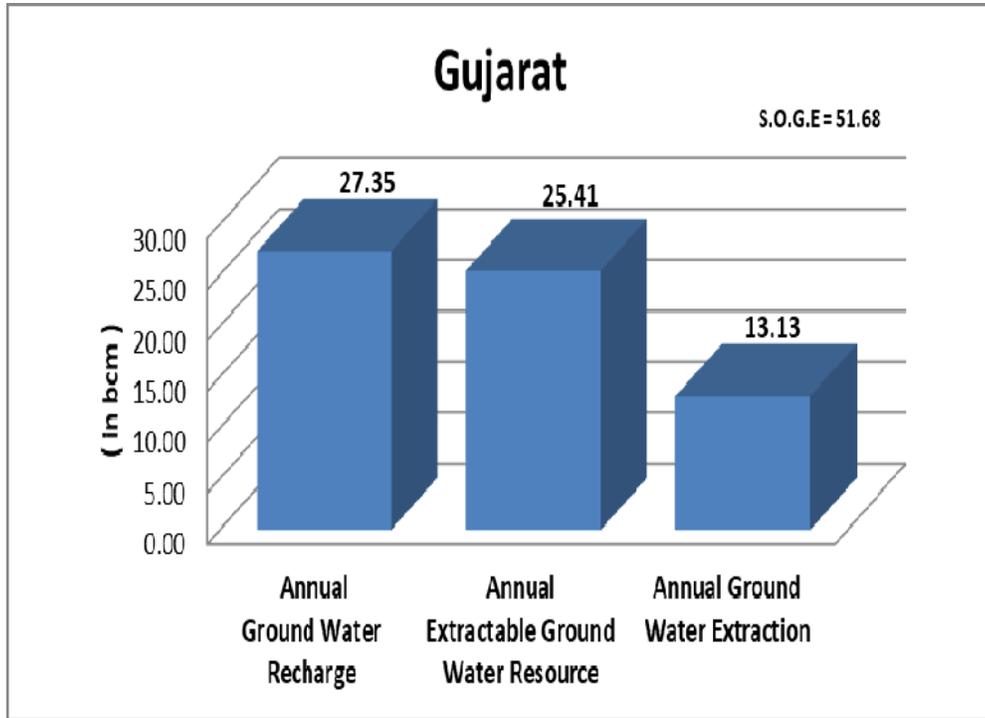
The State is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. As much as 60% of the State is underlain by hard rock and rest by soft rock/alluvium formations. In hard rock areas, the ground water is tapped mostly through dug wells constructed in the weathered zone. Dug cum bore wells and deep bore wells are common for irrigation. In alluvium/ soft rock areas, deep tube wells are common for both irrigation and domestic usage. The yield of open (dug) wells varies from 2 to 10 m³/day, whereas that of tube wells ranges from less than 10 to 100 m³/day.

The assessment of groundwater resources has been carried out Taluka-wise. Total Annual Ground Water Recharge of the State has been assessed as 27.35 bcm and Annual Extractable Ground Water Resources as 25.41 bcm. The Annual Ground Water Extraction has been assessed as 13.13 bcm and Stage of Ground Water Extraction as 51.68 %.

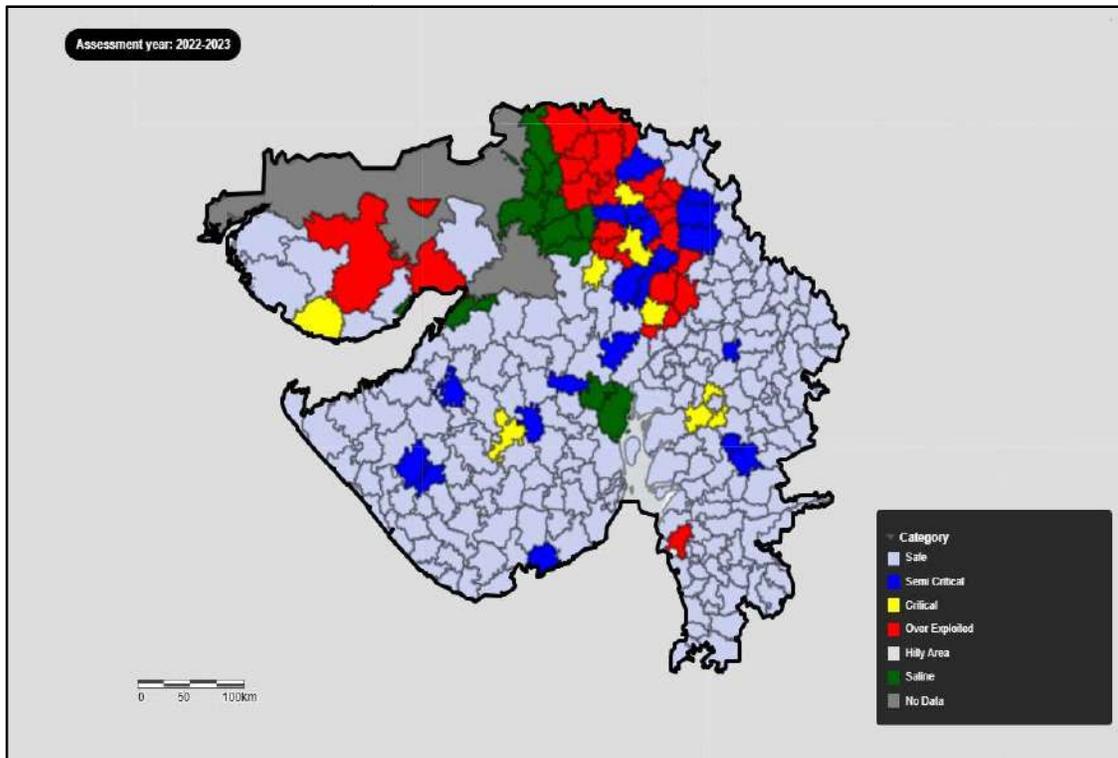
Out of 252 assessment units (talukas), 23 units (9.13 %) have been categorized as 'Over- exploited', 8 units (3.17 %) as 'Critical', 20 units (7.94 %) as 'Semi-critical', 189 units (75.00 %) as 'Safe' and there are 12 units (4.76 %) as 'Saline' categories of assessment units.

Similarly out of 162778.14 sq. km recharge worthy area of the State, 18448.47 sq km (11.33 %) area are under 'Over-Exploited', 5258.1 sq km (3.23 %) under 'Critical', 11487.16 sq km (7.06 %) under 'Semi-critical', 1,18,697.61 sq. km (72.92 %) under 'Safe' and 8886.8 sq. km (5.46 %) area under 'Saline' categories of assessment units. Out of total 25405.18 mcm annual extractable ground water resources of the State, 2105.34 mcm (8.29 %) are under 'Over-exploited', 743.01 mcm (2.92 %) under 'Critical', 2050.16 mcm (8.07 %) under 'Semi-critical' and 20506.66 mcm (80.72 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, Total Annual Ground Water Recharge has increased from 26.46 bcm to 27.35 bcm and Annual Extractable Ground Water Resource has increased from 24.58 to 25.41 bcm. The Annual Ground Water Extraction has marginally increased from 13.09 to 13.13 bcm. The Stage of Ground Water Extraction has improved marginally from 53.23 % to 51.68 % indicating overall improvement of ground water scenario.



Dynamic Ground water Recourses Scenario 2023 – Gujarat



Categorization Map of GWRA 2023 – Gujarat

7.9 HARYANA

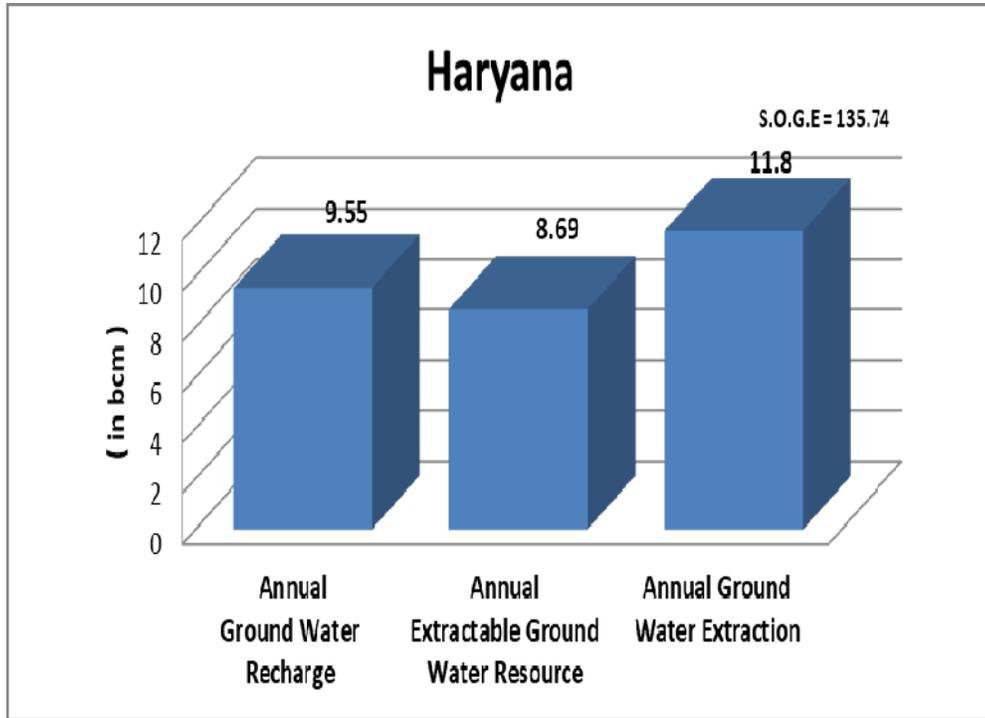
Haryana State is mainly occupied by the alluvial deposits, which cover around 98 % of the State while hardrock covers around 2 %. Alluvial deposits are of Older and Newer types and consist chiefly of clay, silt and fine to medium sand. Other deposits are piedmont deposits, which are confined to a narrow zone, about 2 to 4 km wide, between Siwalik Hills and Alluvial Plains. Sand-dunes are found in the districts of Bhiwani, Mahendragarh, Hissar and Sirsa. Coarse sand, gravels and boulders are found to occur in piedmont areas and in the adjacent alluvial tracts. The hard rock formations belong to the formation of Delhi systems of Pre- Cambrian age and occupy the southern part of the state, while Shivalik system of Tertiary age are occupying the northern most part of the state.

Total Annual Ground Water Recharge of the State has been assessed as 9.55 bcm and Annual Extractable Ground Water Resource is 8.69bcm. The Total Current Annual Ground Water extraction is 11.80bcm and Stage of Ground Water extraction is 135.74 %.

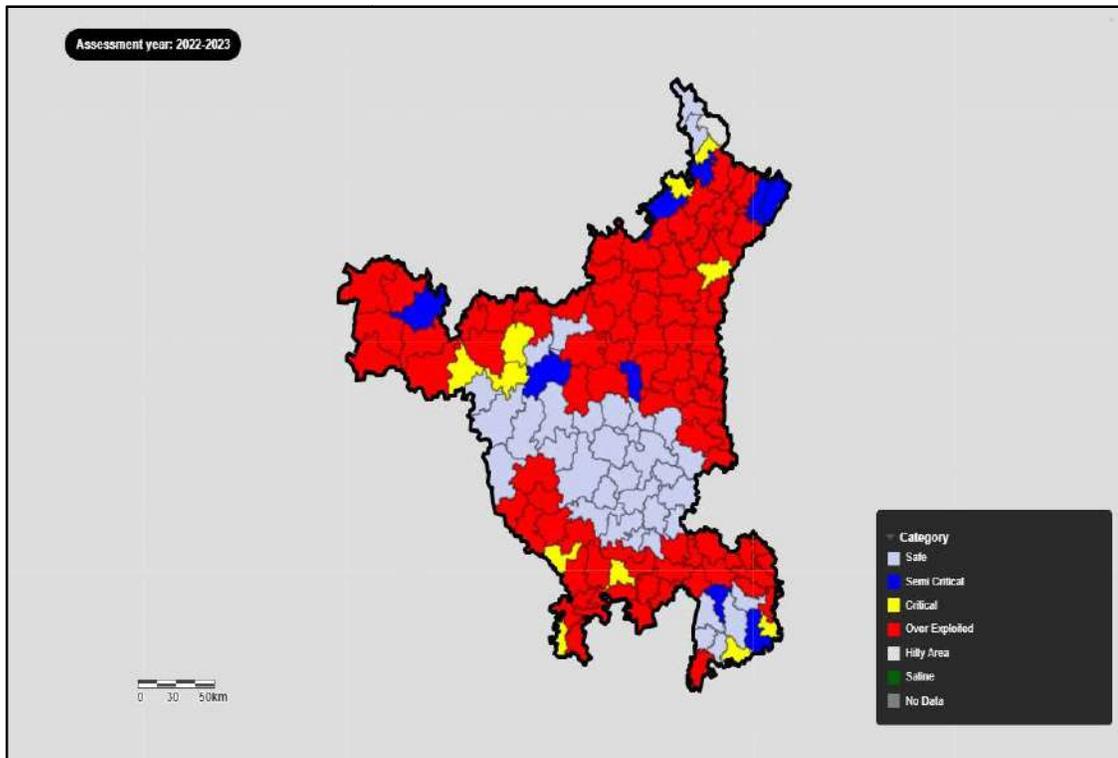
Out of total 143 assessment units (blocks/Urban), 88 units (61.54 %) have been categorized as 'Over-exploited', 11 units (7.69 %) as 'Critical', 9 units (6.29 %) as 'Semi Critical' and 35 units (24.48 %) as 'Safe' categories of assessment units.

Similarly, out of 43205.82 sq. km recharge worthy area of the State, 25959.44 sq. km (60.08 %) area are under 'Over-Exploited', 2590.43 sq. km (6 %) under 'Critical', 2558.1 sq. km (5.92%) under 'Semi-critical', 12097.86 sq. km (28 %) under 'Safe' categories of assessment units. Out of total 8690.53 mcm annual extractable ground water resources of the State, 5488.11 mcm (63.15 %) are under 'Over-exploited', 587.66 mcm (6.76 %) under 'Critical', 697.24 mcm (8.02 %) under 'Semi-critical' and 1917.52 mcm (22.06 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Total Annual Ground Water Recharge have increased from 9.48 to 9.55 bcm in 2023, Annual Extractable Resources have increased from 8.61 to 8.69 bcm and the Annual Ground Water Extraction from 11.54 to 11.80 bcm. The Stage of Ground Water Extraction has increased from 134.14 % to 135.74 %.



Dynamic Ground water Recourses Scenario 2023 – Haryana



Categorization Map of GWRA 2023 – Haryana

7.10 HIMACHAL PRADESH

The diverse physiographic, climatic, topographic and geologic conditions have given rise to diversified groundwater situation in different parts of the state. The rock formations ranging in age from Archean to Recent occupy the State and control the occurrence and movement of ground water depending upon aquifer composition, structure and deposition. Hilly and mountainous parts with steep slopes mainly constitute the run off areas and have low ground water potential. In valley and low-lying areas, unconsolidated / semi-consolidated formations form potential aquifers.

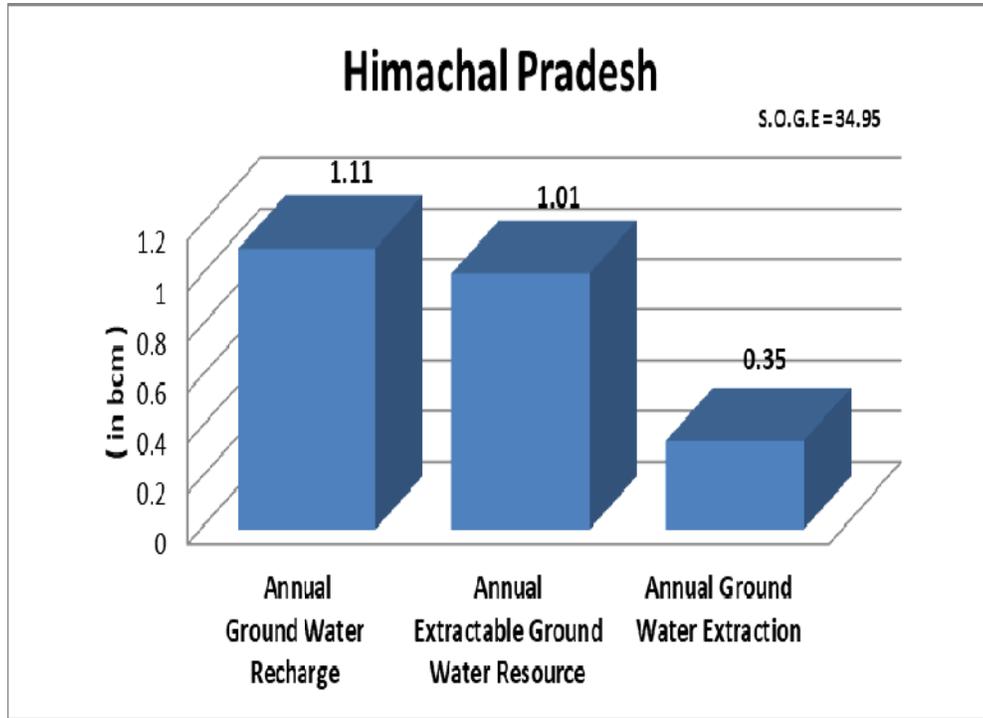
In consolidated formations the water availability is restricted to weathered mantle, joints/fractures, weak planes, bedding planes and limestone caverns. The limestone associated with phyllite and quartzite forms potential aquifers. In granites, potentiality of the aquifer is highly dependable on the fracture intensity. In granitic aquifers the discharge ranges between 1-3 lps. Groundwater in hard rock areas is either developed through bore wells or natural springs are tapped for both drinking and irrigation purposes.

In the unconsolidated formations the occurrence and movement of ground water is highly dependent on lithology particularly the presence of clay content. The unconsolidated formations are confined to valley areas, having good yield prospects that can sustain moderate to high capacity deep tube wells. The yield of the tube wells depends on the thickness of the total granular zones available within the aquifers tapped which ranges from 5-40 lps in different valleys. The Ground water resources have been assessed valley-wise.

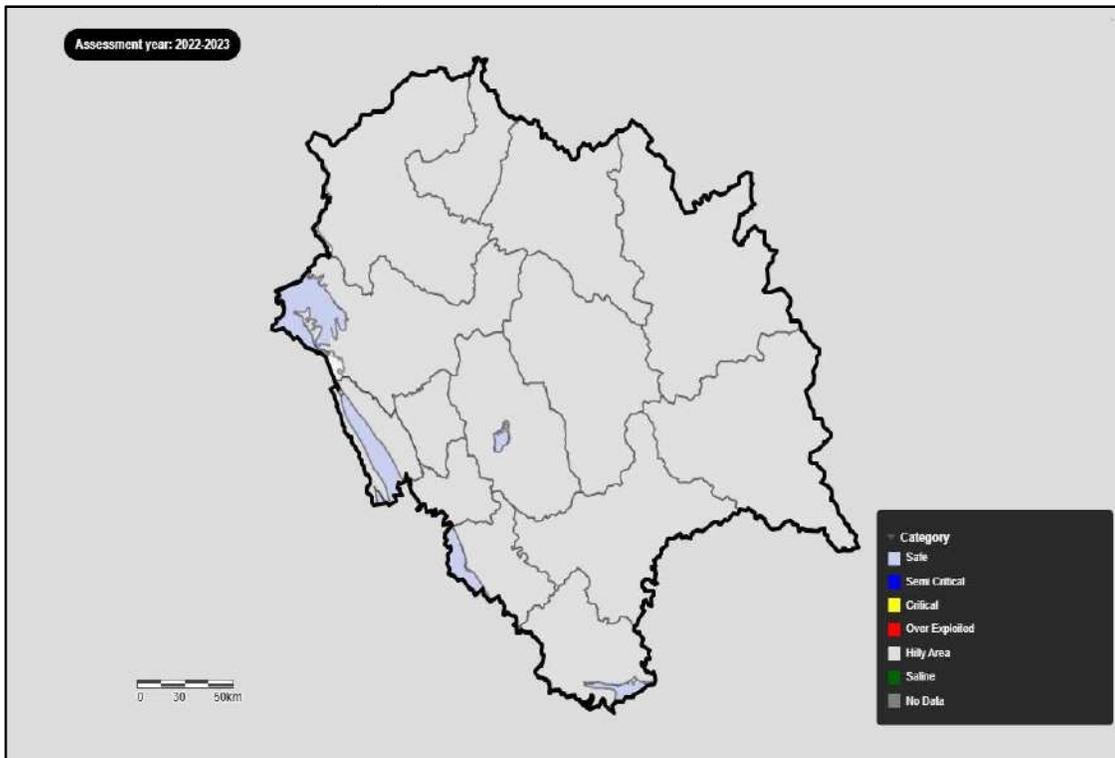
Total Annual Ground Water Recharge of the State has been assessed as 1.11 bcm and Annual Extractable Groundwater Resources is 1.01 bcm. The Current Annual Ground Water Extraction for all uses is 0.35 bcm and Stage of Ground Water Extraction is 34.95 %. Out of the 10 assessment units, all the ten assessment units have been categorized as 'Safe' and there is no saline assessment unit in the State.

Similarly, out of 3468 sq. km recharge worthy area of the State, 100 % under 'Safe' categories of assessment units. Out of total 1014.53 mcm annual extractable ground water resources of the State, 1014.53 mcm (100 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, there is increase in the Total Annual Ground Water Recharge from 1.03 to 1.11 bcm and Annual Extractable Ground Water resources from 0.94 to 1.01 bcm. However, there is no change in Ground Water Extraction of the State. The Stage of Ground Water Extraction has decreased from 37.56 % to 34.95 %.



Dynamic Ground water Recourses Scenario 2023 – Himachal Pradesh



Categorization Map of GWRA 2023 – Himachal Pradesh

7.11 JHARKHAND

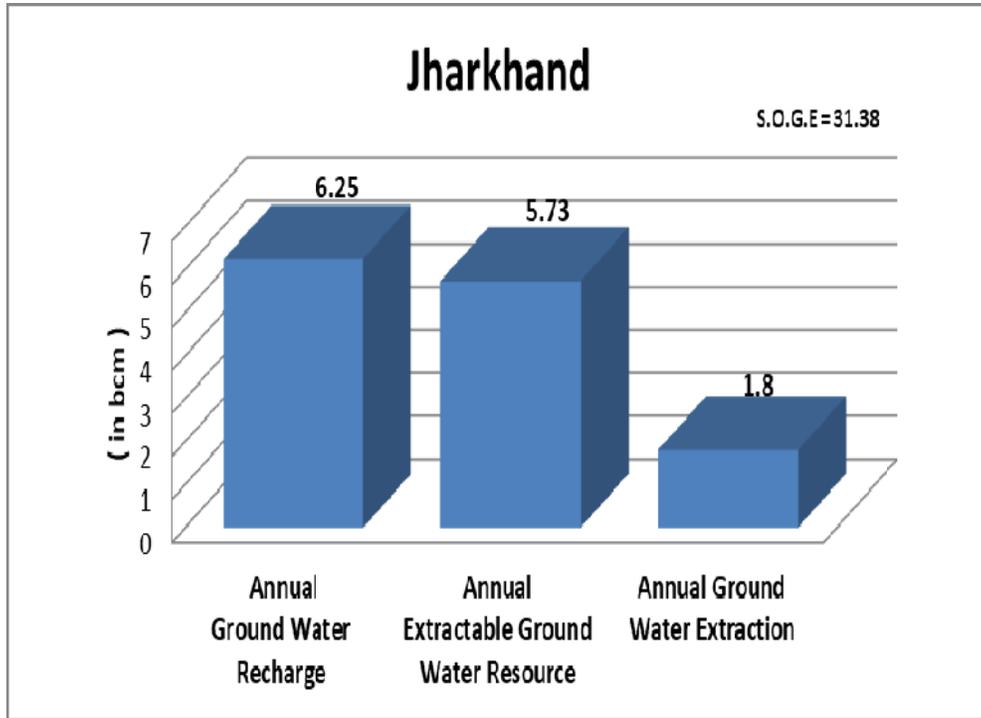
The State is underlain by diverse rock types of different geological ages ranging from Archaean to Recent. The major rock types are igneous and metamorphic rocks covering nearly 85 percent of the geographical area of the state. The weathered zone ranging between 10-30 m acts as a good repository of ground water. However, the secondary porosities in the form of fracture zones below the weathered zones also form potential aquifers. The yield of the exploratory wells ranges from upto 151 m³/hr. The yield of the dugwells ranges from 0.5 to 0.75 m³/hr. The dug wells tapping the weathered zone have an average yield of 0.5 to 1.2 m³/hr. In Gondwana Super group, bore well discharge ranges between 7 to 15 m³/hr and in Tertiary formations, yield ranges from 18 to 78 m³/hr. The Younger Alluvium deposits are confined to patches. The depth of dug wells in general ranges between 10 to 15m bgl and that of shallow tube wells varies between 25 to 50 mbgl.

Ground Water Resource of the State has been assessed block-wise and identified urban area. The Total Annual Ground Water Recharge of the State has been assessed as 6.25 bcm and Annual Extractable Ground Water Resources is 5.73 bcm. The Annual Ground Water Extraction is 1.8 bcm and Stage of Extraction is 31.38 %.

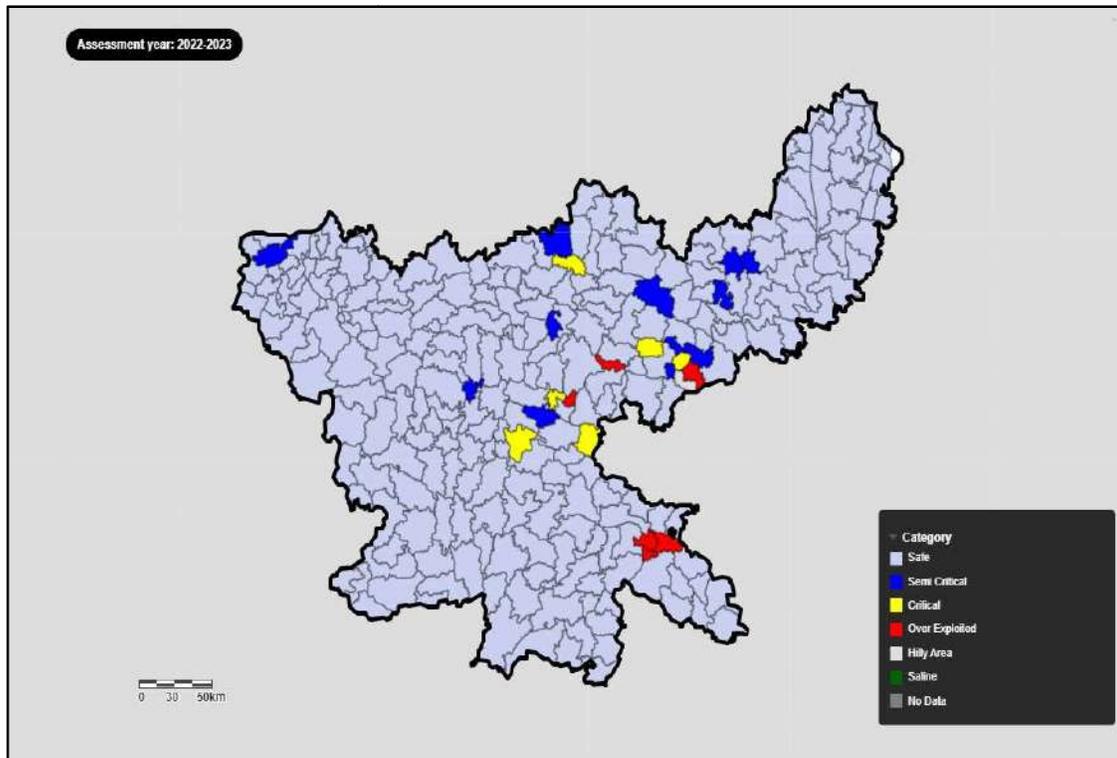
Out of 263 assessment units (blocks-259, Urban area-04), 5 units (1.90 %) have been categorized as 'Over-exploited', 6 units (2.28 %) as 'Critical', 11 units (4.18 %) as 'Semi-critical' and rest 241 units (91.63 %) are under 'Safe' category and there is no saline assessment unit in the State.

Similarly, out of 60646.73 sq km recharge worthy area of the State, 463.92 sq km (0.76 %) area are under 'Over-Exploited', 1068.48 sq km (1.76 %) under 'Critical', 2169.13 sq km (3.58 %) under 'Semi-critical' and 56945.20 sq km (93.90 %) under 'Safe' categories of assessment units. Out of total 5730.94 mcm annual extractable ground water resources of the State, 61.08 mcm (1.07%) are under 'Over-exploited', 133.06 mcm (2.32%) under 'Critical', 221.95 mcm (3.87%) under 'Semi-critical' and 5314.85 mcm (92.74%) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, Total Annual Ground Water Recharge and Annual Extractable Ground Water Resources have increased from 6.21 to 6.25 bcm and 5.69 to 5.73 bcm respectively. The Annual Ground Water Extraction for the State has increased from 1.78 to 1.8 bcm and the Stage of Ground Water Extraction has increased from 31.35 % to 31.38%.



Dynamic Ground water Recourses Scenario 2023 - Jharkhamd



Categorization Map of GWRA 2023 – Jharkhand

7.12 KARNATAKA

Karnataka State is underlain by rock types ranging in age from Archaean to Recent. 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.

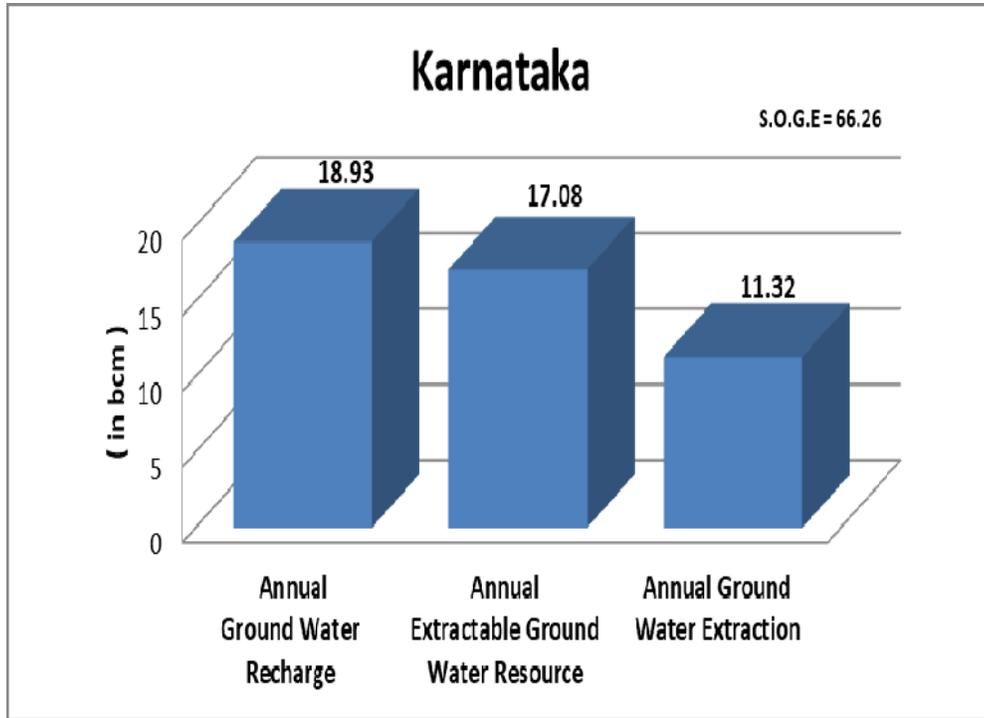
The aquifer systems are classified into nine major groups depending upon their characteristics and are Banded Gneissic Complex (BGC), Basalt, Schists, Granites, Charnockites, Limestones, Laterites, Sandstones and Alluvium.

Ground Water Resource of the State has been assessed taluk-wise. The Annual Ground Water Recharge has been assessed as 18.93 bcm and the Annual Extractable Ground Water resource is 17.08 bcm. The present Annual Ground Water Extraction is 11.32 bcm and the Stage of Ground Water Extraction is 66.26%.

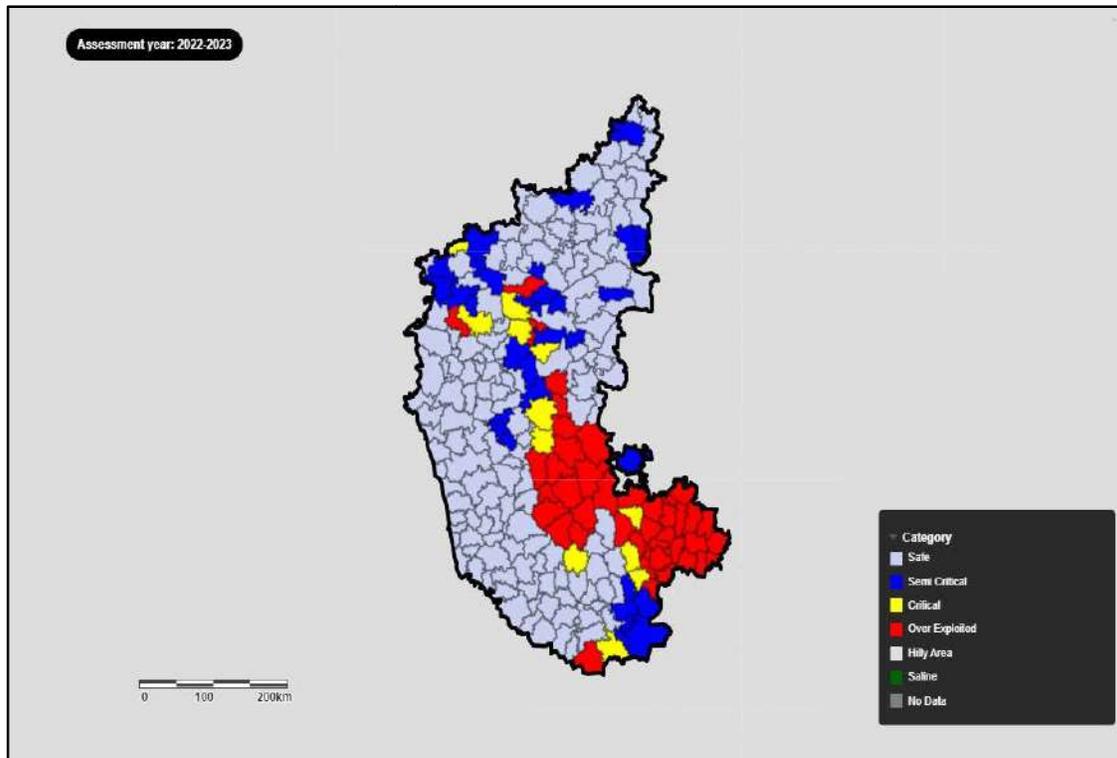
Out of the 234 assessment units (taluks), 44 units (18.8 %) have been categorized as 'Over exploited', 12 units (5.13 %) as 'Critical', and 32 units (13.68 %) as 'Semi critical' and 146 units (62.39 %) have been categorized as 'Safe'. There is no taluk under "Saline" category.

Similarly, out of 170463.35 sq km recharge worthy area of the State, 34281.35 sq km (20.11%) area are under 'Over-Exploited', 10443.17 sq km (6.13 %) under 'Critical', 22695.74 sq km (13.31 %) under 'Semi-critical' and 103043.09 sq km (60.45%) under 'Safe' categories of assessment units. Out of total 17080.79 mcm annual extractable ground water resources of the State, 2721.54 mcm (15.93 %) are under 'Over-exploited', 948.56 mcm (5.55%) under 'Critical', 2245.55 mcm (13.15%) under 'Semi-critical' and 11165.14 mcm (65.37%) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, there is increase in Annual Ground Water Recharge from 17.74 bcm to 18.93 bcm, Annual Extractable Ground Water Resources from 16.04 bcm to 17.08 bcm. This is mainly due to increase in rainfall recharge, recharge from surface water irrigation, recharge from water conservation structures and recharge from tanks and ponds. There is marginal increase in the Current Annual Ground Water Extraction for all uses from 11.22 to 11.32 bcm during this period. Hence overall, the Stage of Ground Water Extraction has decreased from 69.93% in 2022 to 66.26 % in 2023 indicating improvement in overall ground water scenario. As compared to 2022, 17 assessment units (taluks) have improved mainly due to increase in rainfall recharge and recharge from other sources, whereas 1 assessment unit has deteriorated due to reduction in rainfall recharge and slight increase in draft. The ground water quality tagging has also been done, wherein 17 taluks has been tagged for salinity and 14 taluks for fluoride.



Dynamic Ground water Recourses Scenario 2023 – Karnataka



Categorization Map of GWRA 2023 – Karnataka

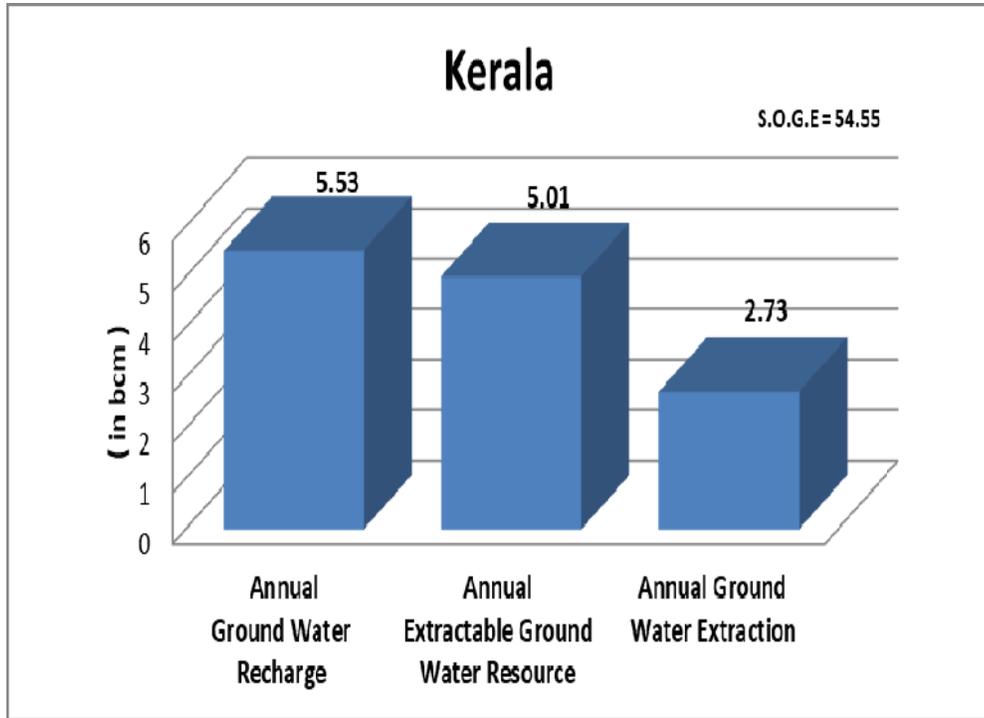
7.13 KERALA

The State of Kerala is underlain by diverse rock types of different geological ages from Pre- Cambrian to Recent. Nearly, 88% of the State is underlain by crystalline rocks of Archaean age comprising Schistose formations, Charnockites, Khondalites and Gneisses. All these formations are intruded by dykes of younger age. The sedimentary formations of Tertiary age occurring along the western parts of the State comprise four distinct beds viz. Alleppey, Vaikom, Quilon and Warkali. The crystalline and the Tertiary formations are lateritized along the midland area. Yields of open (dug) wells in these areas vary from 0.02 to 0.12 lps, whereas that of bore wells ranges from less than 1 to 35 lps. About 12% of the State is underlain by Semi-consolidated and unconsolidated sedimentary formations where dug wells and filter points have yields of 0.02 to 0.4 lps, whereas deep tube wells have yields in the range of 1 to 57 lps. Laterites, which cover most of the geological formations in the major part of the state also forms an important aquifer in the state with dug wells having yields in the range of 0.005 to 0.069 lps.

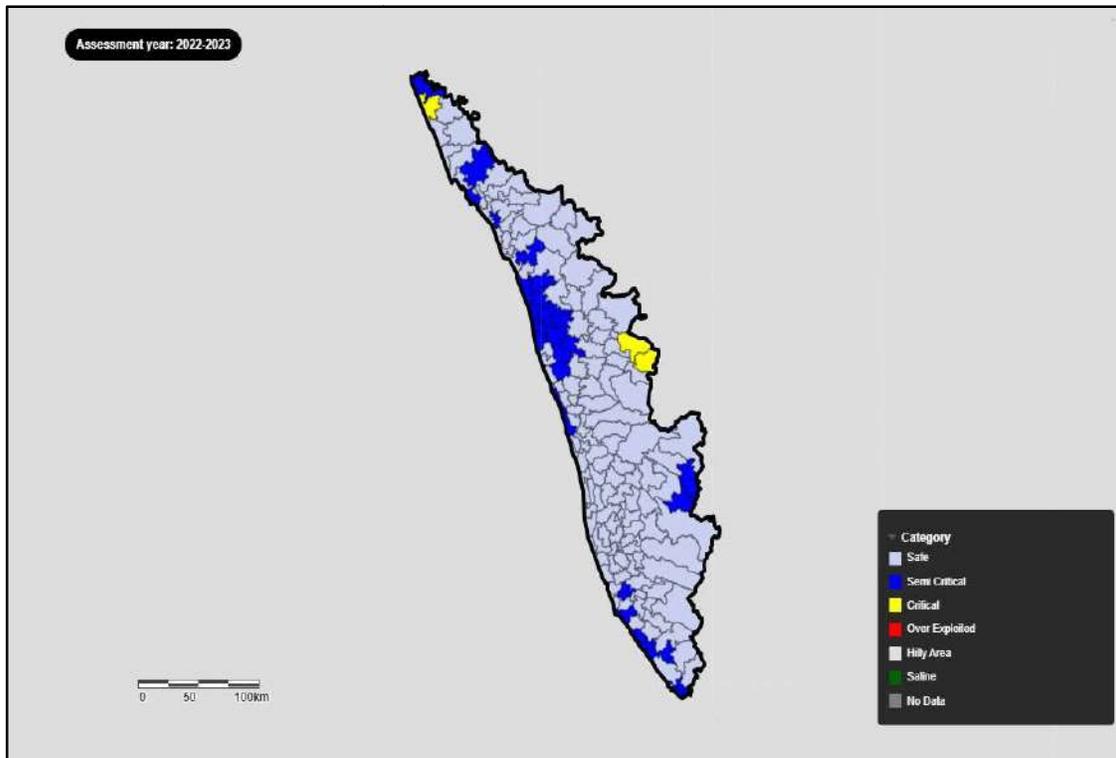
The ground water resources for the state have been assessed block-wise. Total Annual Ground Water Recharge has been estimated as 5.53bcm and Annual Extractable Ground Water Resource is 5.01 bcm. The Annual Ground Water Extraction is 2.73 bcm and Stage of Ground Water Extraction is 54.55 %.

Out of total 152 assessment units (blocks), 3 units (1.97 %) have been categorized as 'Critical', 30 units (19.74 %) as 'Semi-Critical' and 119 units (78.29 %) as 'Safe' categories of assessment units. There is no 'Over- exploited' and 'Saline' assessment unit in the State. Similarly, out of 27047.53 sq km recharge worthy area of the State, 777.38 sq km (2.87 %) area are under 'Critical', 4211.15 sq km (15.57 %) under 'Semi-critical' and 22059.01 sq km (81.56 %) area are under 'Safe' categories of assessment units. Out of total 5005.27 mcm annual extractable ground water resources of the State, 136.74 mcm (2.73 %) are under 'Critical', 761.3 mcm (15.21%) under 'Semi-critical' and 4107.22 mcm (82.06 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, Total Annual Ground Water Recharge of the State has decreased from 5.74 to 5.53bcm and Annual Extractable Ground Water Resources from 5.19 to 5.01bcm. The annual ground water extraction has consistently remained at 2.73 bcm, with no notable change from the previous 2.73 bcm.and the Stage of Ground Water Extraction has increased from 52.56 % to 54.55 %.. Three blocks have deteriorated its category from Safe to Semi-critical viz. Kozhikode (Kozhikode district), Sasthamcotta (Kollam district) and Varkala (Thiruvananthapuram district).



Dynamic Ground water Recourses Scenario 2023 – Kerala



Categorization Map of GWRA 2023 – Kerala

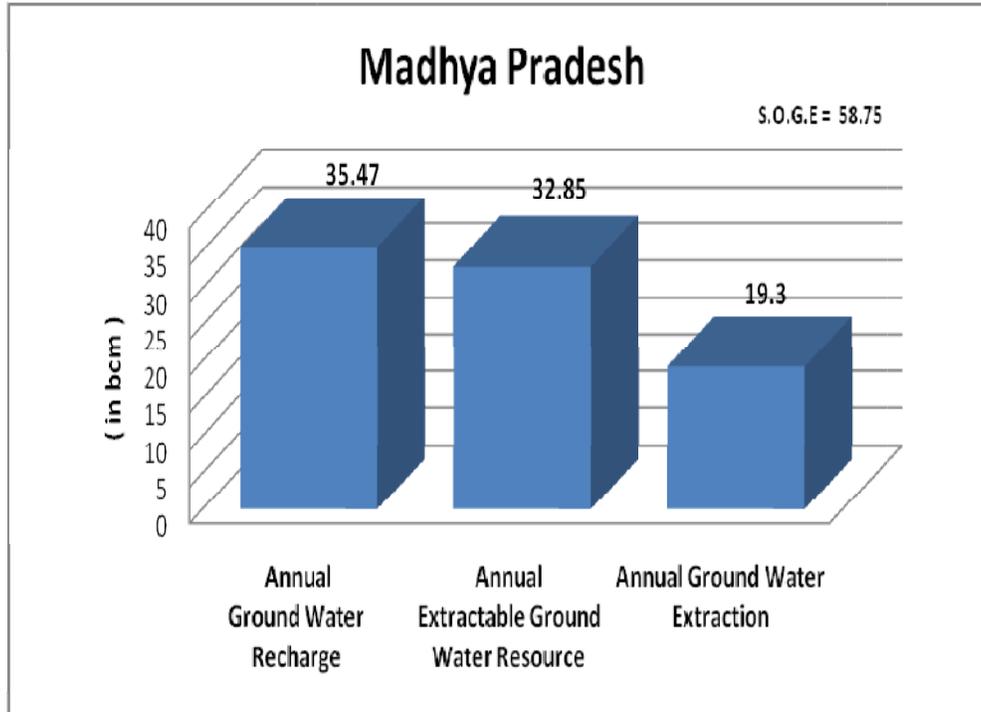
7.14 MADHYA PRADESH

The State of Madhya Pradesh has varied hydrogeological characteristics due to which ground water potential differs from place to place. The State is underlain by various Geological formations ranging in age from the Archaean to the Recent. Hard rock areas cover more than 80% of total land area of the State. These hard-rock areas show wide variations and complexities in nature and composition of rocks, geological structures, geomorphological set up and hydro meteorological conditions. The crystalline rocks of Archaean age like granite, gneiss, granulites, schist, quartzite and granitoids occupy about 15% of geographical area of the State. The basaltic rocks of Deccan lava flows are the predominant formations and occupy nearly 45% of total geographical area. The consolidated sedimentary rocks of Vindhyan Super Group and Mahakoshal (Cuddapah) Super Group of Proterozoic age occupy about 19% of total geographical area and the semi consolidated (Gondwana Formation) occupies about 7%. Recent unconsolidated alluvial sediments occupy about 14% of total geographical area.

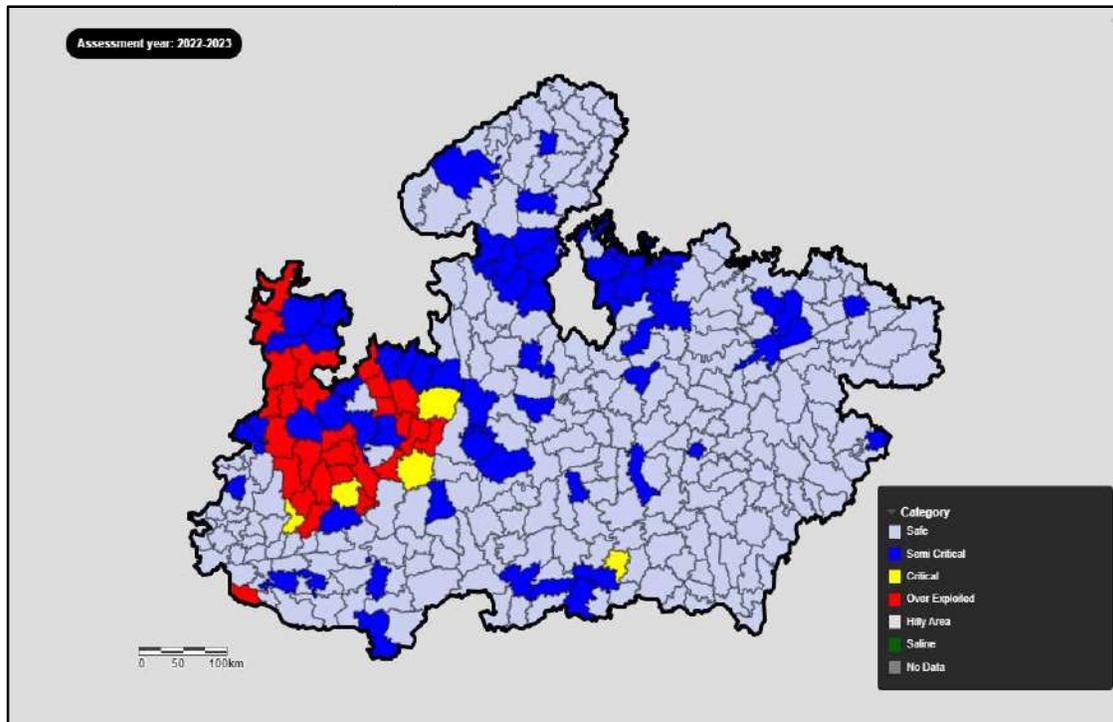
Total Annual Ground Water Recharge of the State has been assessed as 35.47 bcm and Annual Extractable Ground Water Resources is 32.85 bcm. The Annual Ground Water Extraction is 19.30 bcm and Stage of Ground Water Extraction is 58.75 %.

Out of 317 assessment units (313 blocks and 4 urban areas), 26 units (8.2 %) has been categorized as 'Over Exploited', 5 units (1.58 %) as 'Critical', 60 units (18.93 %) as 'Semi-Critical' and 226 units (71.29 %) as 'Safe' categories of assessment units and there are no saline assessment unit. Similarly, out of 269333.27 sq km recharge worthy area of the State, 22554.86 sq km (8.37%) area is under 'Over-Exploited', 4249.07 sq km (1.58 %) under 'Critical', 51803.76 sq km (19.23 %) under 'Semi-critical' and 190725.58 sq km (70.81 %) under 'Safe' categories of assessment units. Out of total 32853.75 mcm annual extractable ground water resources of the State, 3424.26 mcm (10.42%) are under 'Over-exploited', 537.1 mcm (1.63 %) under 'Critical', 6119.62 mcm (18.63 %) under 'Semi-critical' and 22772.77 mcm (69.32%) are under 'Safe' categories of assessment units.

In the assessment year 2023, there has been a shift in the dynamics of groundwater resources compared to the 2022 assessment. Notably, there has been an increase in both groundwater recharge and groundwater extraction. The rise in groundwater recharge can be attributed to increased rainfall recharge and the implementation of water conservation structures, Simultaneously, a discernible escalation in groundwater extraction has transpired, propelled by the recalibration of well census data, escalating water demands due to burgeoning population growth. Total Annual Ground Water Recharge of the State has increase from 35.23 bcm to 35.47 bcm and Annual Extractable Ground Water Resources from 32.58 to 32.85 bcm. The Annual Ground Water Extraction has increased from 19.25 to 19.3 bcm and the Stage of Ground Water Extraction has decreased from 59.1 % to 58.75 %.



Dynamic Ground water Resources Scenario 2023 – Madhya Pradesh



Categorization Map of GWRA 2023 – Madhya Pradesh

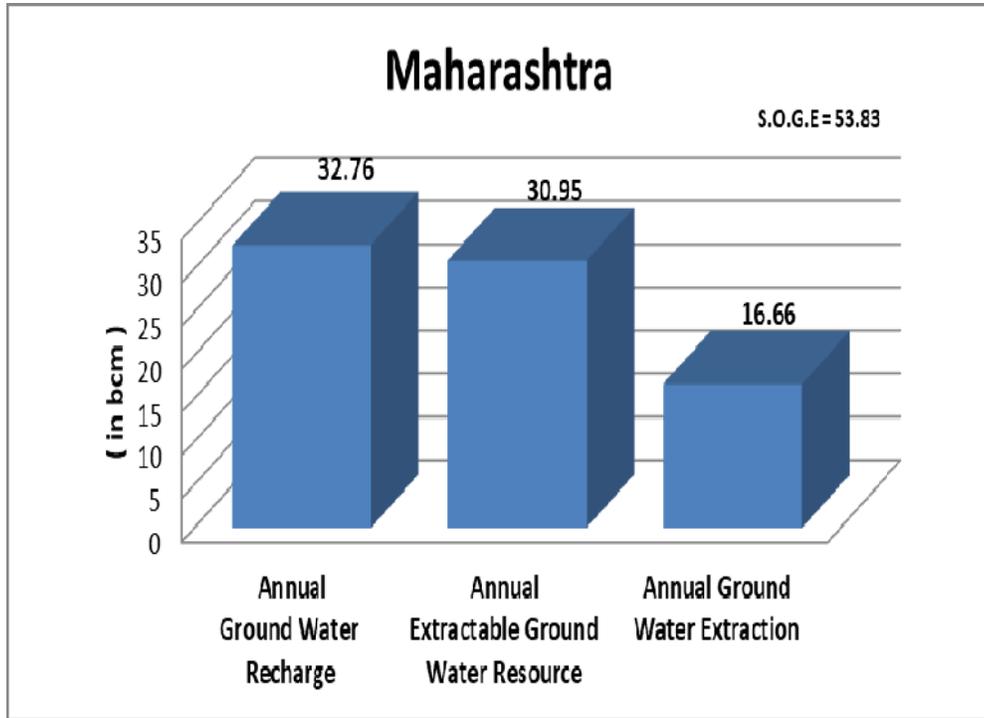
7.15 MAHARASTRA

The State is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. The state is mostly covered by Deccan Traps. The other geological formations, older and younger than Deccan Traps, occur in the northeast and as isolated patches in the Sindhudurg and Ratnagiri districts. Large part of the State is underlain by Basaltic hard rock's where dug wells are predominant. They mostly tap the weathered zone and fractures/joints. The yield of dug wells varies from 3 to 5 lps. A small part of the State is occupied by Semi- consolidated sedimentary rocks where tube wells have a yield of 5 to 45 lps. The central part of Maharashtra which is a drought prone area, receives very less rainfall i.e. from 400 to 700 mm, but the geology is favorable for the ground water recharge. Hence, in this area the dependency on groundwater is very high. Two-third of irrigation wells are from this area only. This primarily includes parts from Dhule, Nashik, Jalgaon, Ahmednagar, Pune, Satara, Sangli, Solapur, Osmanabad, Beed and Aurangabad districts.

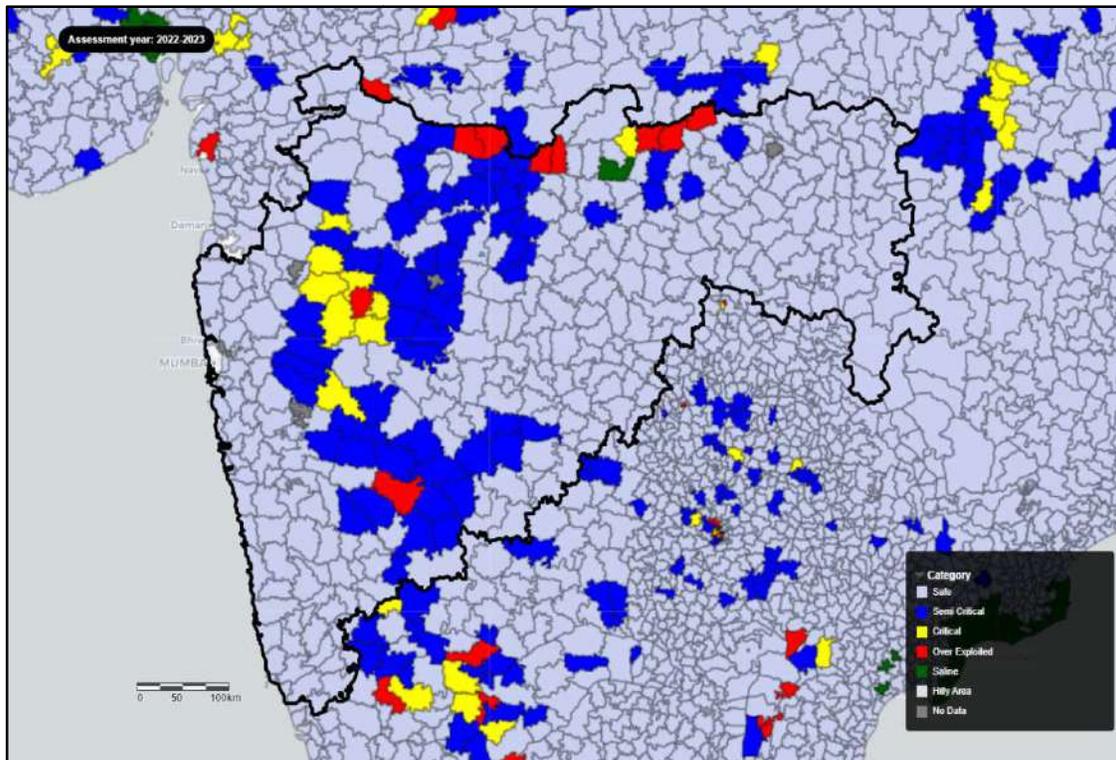
The Ground water resources have been assessed for 1534 watersheds in the state and subsequently apportioned to taluk level. Total Annual Ground Water Recharge of the State has been estimated as 32.76 bcm and Annual Extractable Ground Water Resources is 30.95 bcm. The Annual Ground Water Extraction is 16.66 bcm and Stage of Ground Water Extraction is 53.83 %.

Out of 353 assessment units (taluks), 9 units (2.55%) have been categorized as 'Over-exploited', 9 units (2.55 %) as 'Critical', 57 units (16.15 %) as 'Semi-critical' and remaining 277 units (78.47 %) as 'Safe' and 1 unit (0.28 %) as 'Saline' categories of assessment units. Similarly, out of 259914.03 sq. km recharge worthy area of the State, 7034.69 sq. km (2.71 %) area is under 'Over-Exploited', 8857.49 sq. km (3.41 %) under 'Critical', 56959.42 sq. km (21.91 %) under 'Semi-critical', 186285.52 sq. km (71.67 %) under 'Safe' and 776.89 sq. km (0.30 %) area under 'Saline' categories of assessment units. Out of total 30949.23 mcm annual extractable ground water resources of the State, 816.52 mcm (2.64 %) are under 'Over-exploited', 1037.96 mcm (3.35 %) under 'Critical', 6283.84 mcm (20.3 %) under 'Semi-critical' and 22810.91 mcm (73.7 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Annual Ground Water Recharge and annual extractable ground water resources in 2023 has increased marginally from 32.29 bcm to 32.76 bcm and 30.45 to 30.95 bcm and Annual Ground Water Extraction remain more or less same. The Stage of Ground Water Extraction has decreased marginally from 54.68 % to 53.83%.



Dynamic Ground water Resources Scenario 2023 – Maharashtra



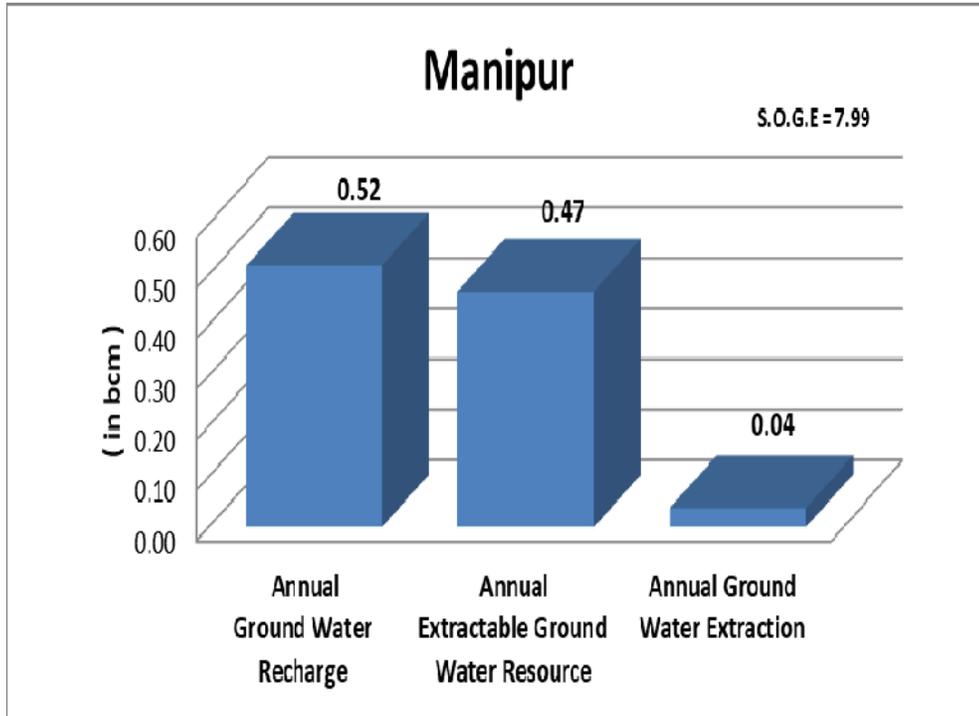
Categorization Map of GWRA 2023 – Maharashtra

7.16 MANIPUR

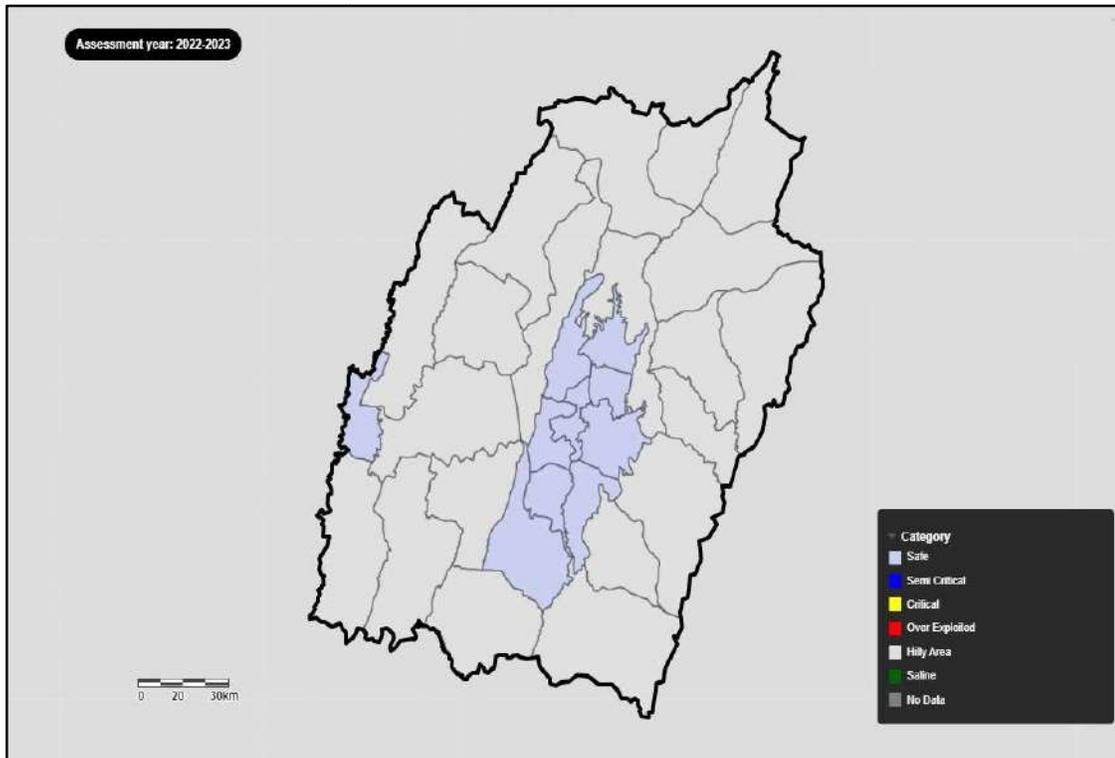
The State of Manipur is occupied by mostly North South parallel hill ranges made up of consolidated and semi-consolidated rocks ranging in age from pre-Mesozoic to Miocene. The consolidated rocks confined to the eastern part of the state along the Myanmar border. The semi-consolidated formations, which cover almost the entire state, comprise shale, siltstone, sandstone, and conglomerate. These formations belong to Disang, Barail, Surma and Tipam group of rocks. In the western and central part of the State, unconsolidated alluvium of quaternary age occurs in the valleys and topographical lows. Ground water is restricted to secondary porosity in joints, fissures, fractures and weathered residuum of consolidated and semi-consolidated rocks and inter-granular pore spaces of alluvial deposits. In the valley, ground water is utilized through tube wells, tapping granular zones with 10 to 20 m thickness, and the yield of the tube well varies from 10 to 30 m³/hr.

The Ground Water Resources of Manipur as in 2023 have been assessed block-wise for the recharge worthy area. Total Annual Ground Water Recharge of the State has been assessed as 0.52 bcm and Annual Extractable Ground Water Resources as 0.47 bcm. The Annual Ground Water Extraction is 0.04 bcm and Stage of Ground Water extraction is 7.99 %. All the assessment units and districts have been categorized as 'Safe' and there is no saline area in the state. Out of 9 assessment units 9 units (100 %) as 'Safe' categories of assessment units and there is no saline assessment unit.

Similarly, out of 2559 sq km recharge worthy area of the State, 2559 sq km (100 %) under 'Safe' categories of assessment units. Out of total 466.07 mcm annual extractable ground water resources of the State, 466.07 mcm (100 %) are under 'Safe' categories of assessment units. The comparison with previous assessment shows there is no major changes in the Ground Water Resources of Manipur.



Dynamic Ground water Resources Scenario 2023 – Manipur



Categorization Map of GWRA 2023 – Manipur

7.17 MEGHALAYA

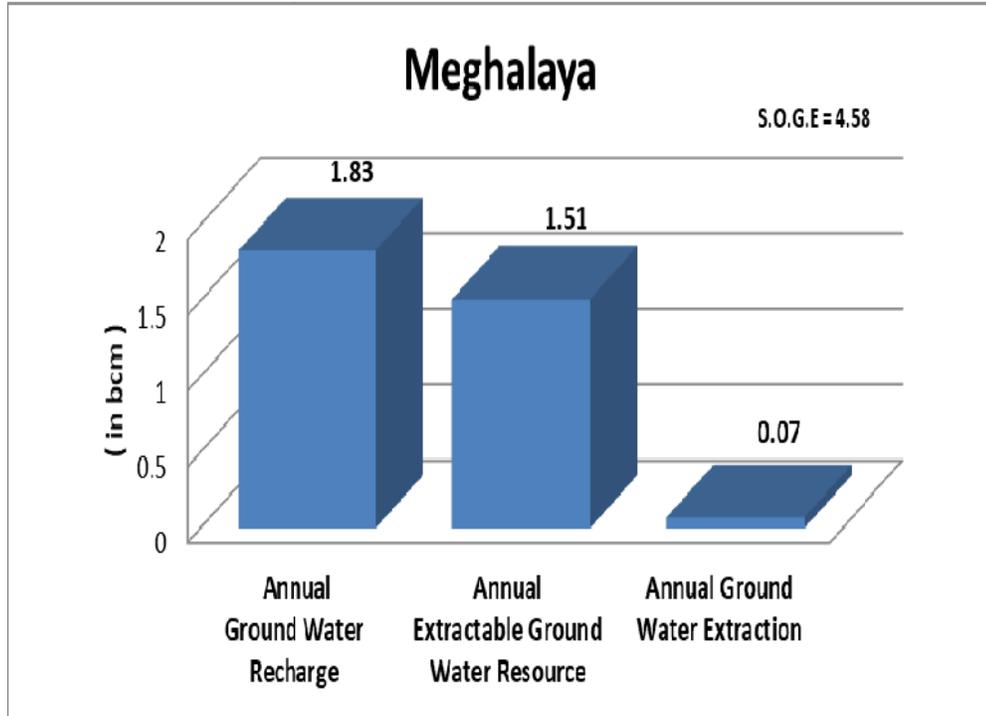
The Meghalaya State is essentially occupied by hard rocks belonging to the Archean gneissic complex with acidic and basic intrusives and Precambrian Shillong Group of rocks. The aquifer system in the state can be divided as a two aquifer systems, viz., first aquifer (shallow) and second aquifer (deeper). Shallow or first aquifer consists of weathered residuum where ground water occurs under water table condition and is mainly developed through construction of dug wells. The second aquifer is the deeper aquifer which tapped the fractured zone and is mainly developed through borewells. Based on the study of litholog and analysis of depth of construction of dug wells and bore wells, it is found that the first aquifer occur within depth of 20 to 40 m. Ground water in the second aquifer occurs under semi-confined to confined condition in the fractures upto the maximum explored depth of 280m. The south-western, southern and south-eastern parts of the state is covered by semi- consolidated formations comprising sandstones, shales, conglomerates, limestones etc. belonging to Cretaceous – Tertiary age. The aquifers are formed by rock strata that are granular/porous, fissured/fractured or cavernous. These aquifers are thick and discontinuous in nature. The unconsolidated sediments comprising sand, gravel, silt, clay, etc. are found to occur as thin veneer along rivulets and as valley-fills.

The Ground water resources have been assessed block-wise. Total Annual Ground Water Recharge of the State has been assessed as 1.83 bcm and Annual Extractable Ground Water Resources as 1.51 bcm. The Annual Ground Water Extraction is 0.07 bcm and Stage of Ground Water Extraction is 4.58 %. All the 39 assessment units have been categorized as 'Safe'.

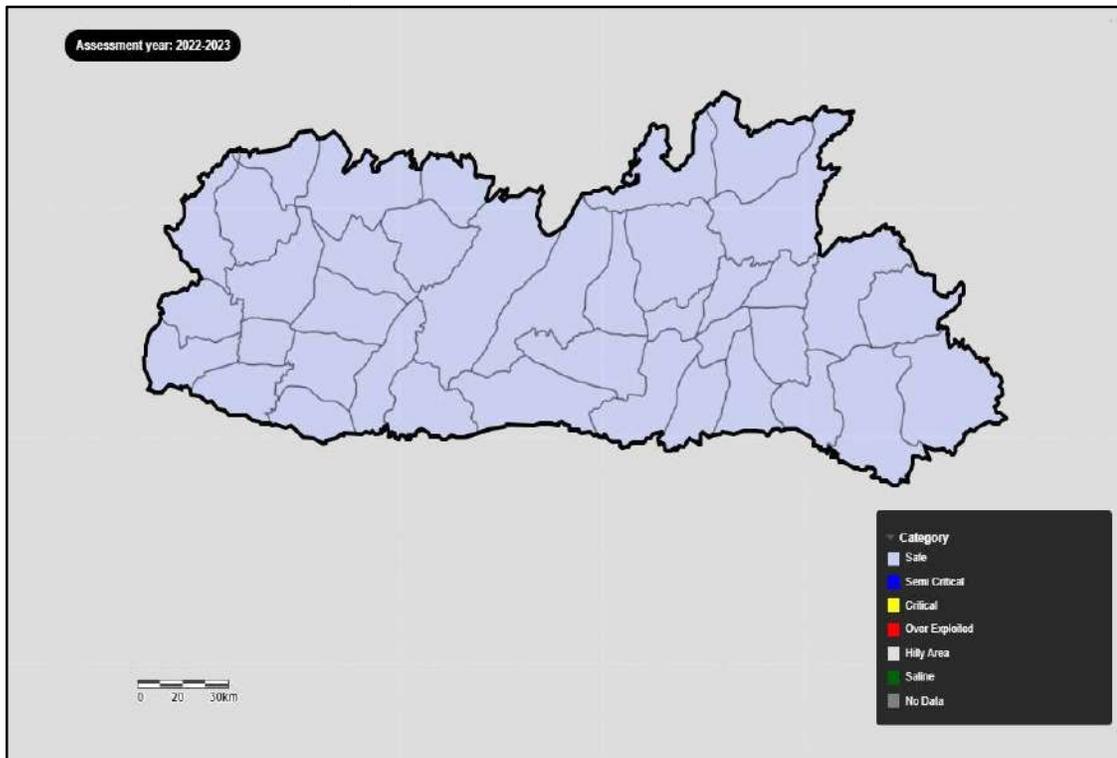
Out of 39 assessment units, all are categorized as 'Safe' assessment units and there are no saline assessment unit.

Similarly, out of 8171.35 sq km recharge worthy area of the State, 8171.35 sq km (100 %) under 'Safe' categories of assessment units. Out of total 1507.61 mcm annual extractable ground water resources of the State, 1507.61 mcm (100 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Annual Ground Water Recharge has increased from 1.72 to 1.83 bcm. The reasons can be attributed to increase in recharge from other sources. The Ground Water Extraction has increased minutely. Therefore, Stage of ground water extraction has slightly increased from 3.55 % to 4.58 %.



Dynamic Ground water Recourses Scenario 2023 – Meghalaya



Categorization Map of GWRA 2023 – Meghalaya

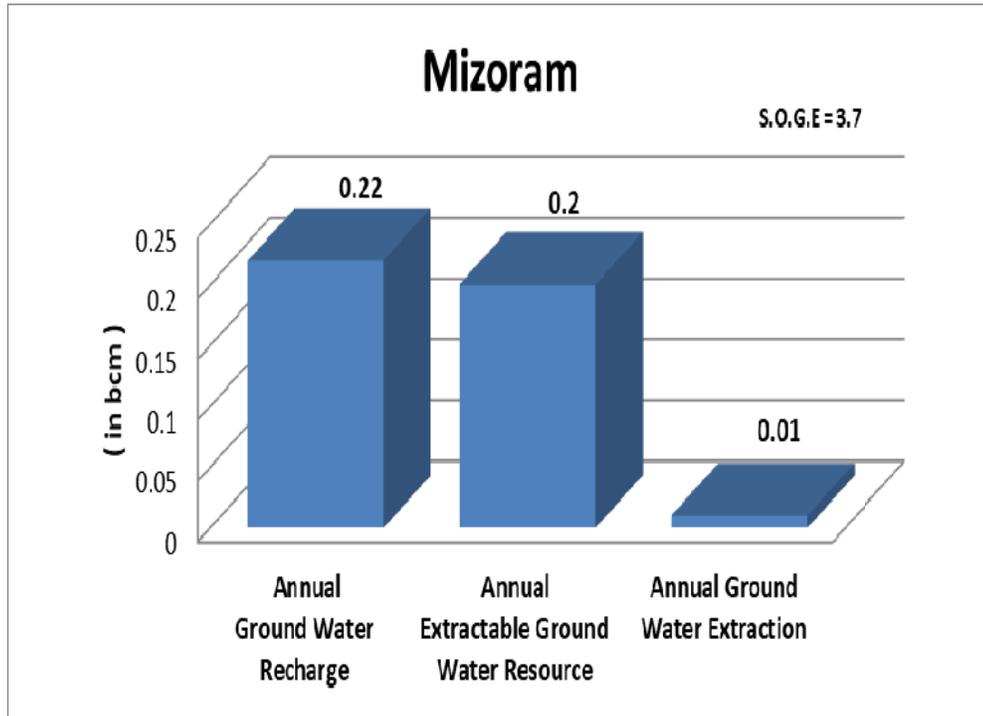
7.18 MIZORAM

The State is occupied mainly by the rocks of the Tertiary formation ranging in age from Oligocene to Miocene to Recent. The Barail formation the lowermost rock units comprising siltstone and bands of soft and hard fine-grained sandstone with strings of carbonaceous material and occur in the north eastern part of the state. The Surma is divided into two formations, Bhuban and Bokabil. The Bhuban is made up of grey sandstone and shale and occupies the major part of the State along the length of the state. The Bokabil, predominantly argillaceous, mostly occurs along the western part of the State. The Tipam sandstone is of semi- consolidated nature comprising medium to coarse grained sandstone with subordinate shale and occurs in limited extent in the north western part of the state. The alluvial deposits comprising silt, clay and sands occur in the valley fill area with very limited thickness. Ground water is restricted only to valley filled areas and secondary porosities of semi-consolidated rocks. These aquifers are the main source for springs. Ground water stored in the hill slopes emanates in the form of springs, which are being used as a source for water supply. In the valley area, the yield potential of tube wells within the depth range of 200 m tapping Tertiary sandstone ranges from 120 to 330 liters per minute (lpm) for drawdown of 13 to 20 m. The transmissivity and Storativity are to the tune of 11 to 46 m²/day and 4.28 x 10⁻⁴ respectively.

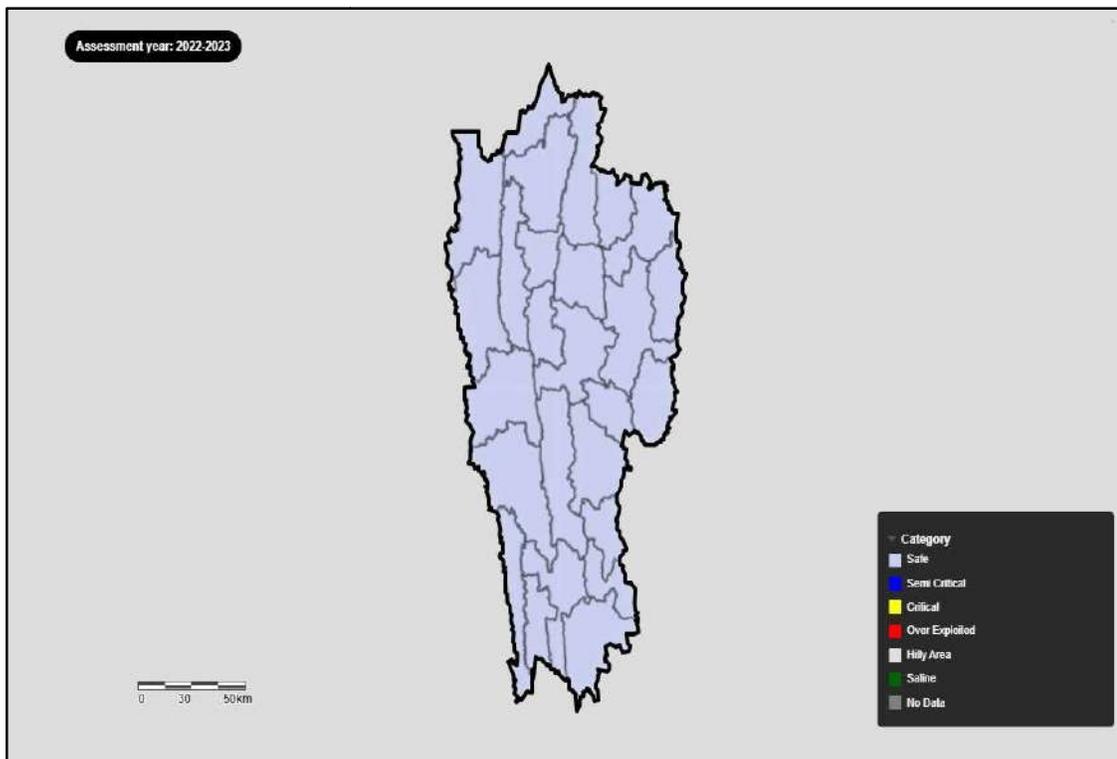
The ground water resources for the state have been assessed block-wise. Total Annual Ground Water Recharge has been assessed as 0.22 bcm and Annual Extractable Ground Water Resource is 0.2 bcm. The Annual Ground Water Extraction is 0.007 bcm and Stage of Ground Water Extraction is 3.7 %. All the 26 assessed blocks have been categorized as 'Safe'. There are no saline areas in the state.

Similarly, out of 3149.41 sq km recharge worthy area of the State, 100 % of the area under 'Safe' categories of assessment units. All the total 199.56 mcm annual extractable ground water resources of the State, are under 'Safe' categories of assessment units. The comparison with previous assessment shows there is no major changes in the Ground Water Resources of Mizoram.

As compared to 2022 assessment, there is no major change in Annual Groundwater Recharge, Annual Groundwater Extractable Resources and Groundwater Extraction. Stage of GW Extraction has decreased marginally from 3.96 % in 2022 to 3.7 % 2023.



Dynamic Ground water Recourses Scenario 2023 – Mizoram



Categorization Map of GWRA 2023 – Mizoram

7.19 NAGALAND

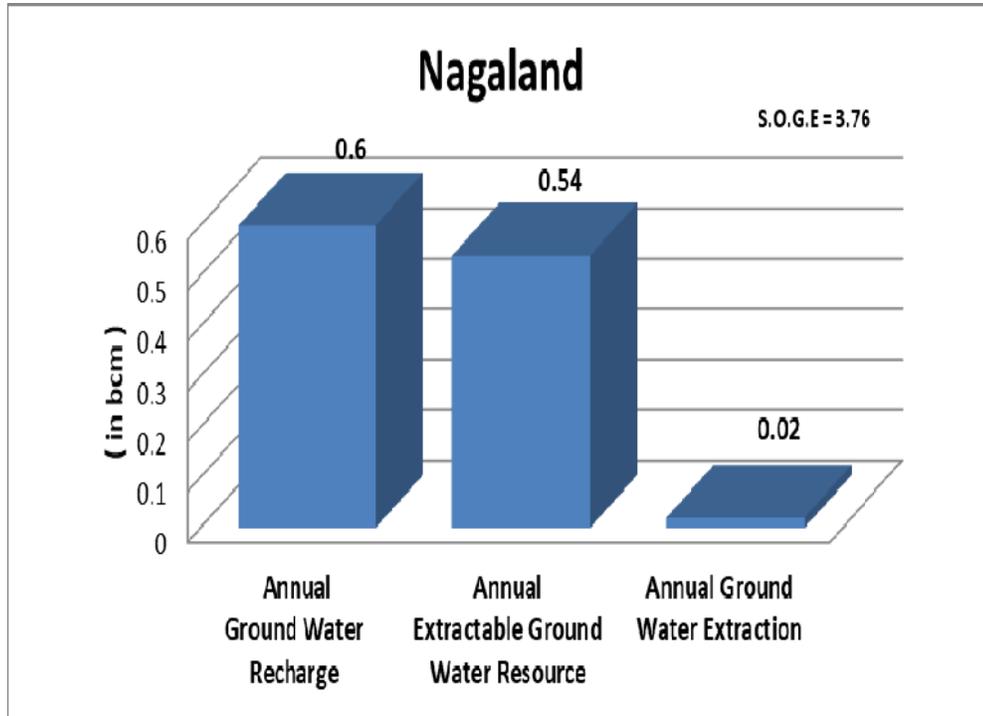
The State is covered by rocks ranging in age from Pre-Cretaceous to Recent. The rock sequences comprise the geosynclinal facies, represented by Disang Group, Barail Group, Surma Group, Tipam Group, Namsang formation and Dihing Group. While the Disang and Surma Group of rocks are mainly argillaceous, the Barail and Tipam groups are Arenaceous. The Girujan clay formation overlying the Tipam sandstones is characterized by typical blue, mottled clay and argillaceous sandstone beds. Older rocks occupy southern parts of the State, where as younger rocks are exposed in the northern parts. The unconsolidated alluvial plains, comprising clay, sand pebble, cobble and boulder assemblages, occupy the narrow, intermountain and open valleys in the northern part of the state bordering upper reaches of Brahmaputra flood plains of Assam. The consolidated formations are confined to the south eastern part of the State along the Burma (Myanmar) border.

Ground water development potentiality in valley fill and alluvial deposits are restricted to construction of open wells having depth of 15 to 20 meters and deep tube well down to 100 m depth which yield to the tune of 10 to 45m³/day with more than 5m drawdown. Water bearing formations pertaining to Tertiary deposits are found to have moderate potentials which can sustain deep tube wells having yield prospects varying from 10 to 20m³/hr. The valleys underlain by Tipam sandstones form good aquifers with yield prospects varying from 30 to 80m³/hr. In the consolidated formations, ground water abstraction structures can be constructed in structurally weak zones. Ground water emerges as perennial springs which are the main source of water supply for domestic needs in the state.

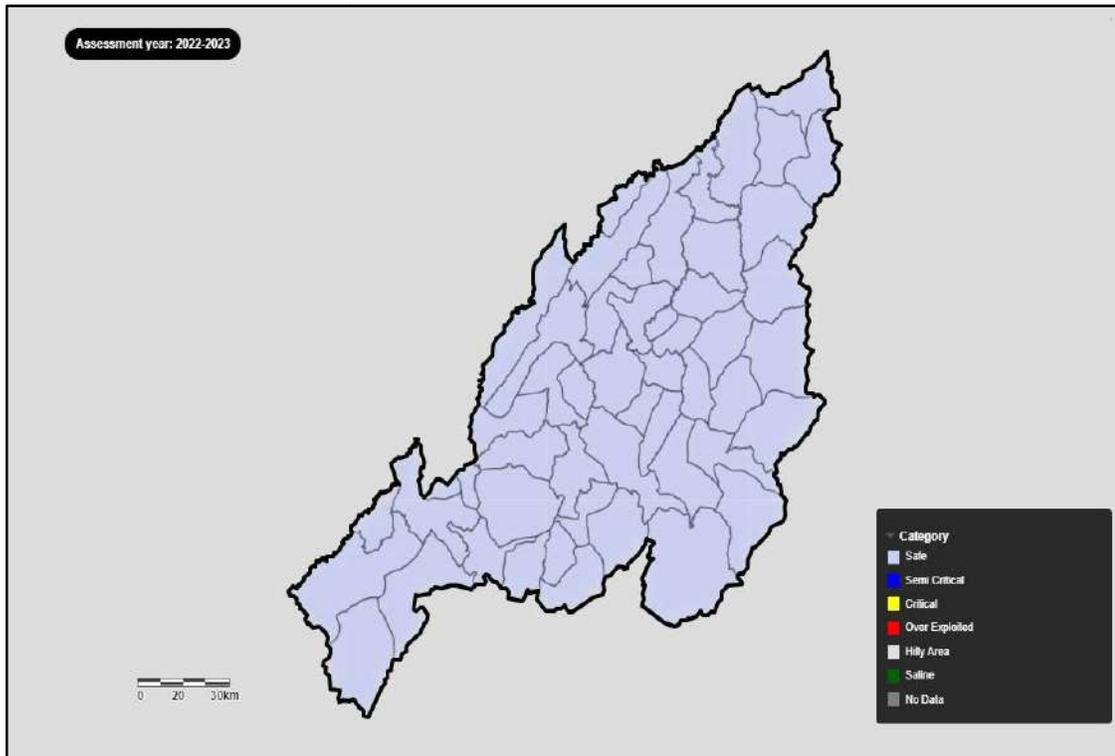
The ground water resources for the state have been assessed block-wise. Recharge worthy area of Nagaland has been reassessed and hilly areas are demarcated where the slope is more than 20% using Shuttle Radar Topographic Mission (SRTM) Digital Elevation Model (DEM) with 30m resolution data and geomorphological maps. The total Annual Ground Water Recharge of the State has been assessed as 0.60 bcm and Annual Extractable Ground Water Resource as 0.54 bcm. Annual Ground Water Extraction is 0.02 bcm and Stage of Ground Water Development is 3.76%. All the 52 Assessment Units have been categorized as 'Safe'. There is no saline area in the state.

Similarly, out of 3855.07 sq km recharge worthy area of the State, 100 % of the area is under 'Safe' categories of assessment units. The entire 543.76 mcm annual extractable ground water resources of the State is under 'Safe' categories of assessment units.

As compared to 2022 assessment, Annual Ground Water Recharge of the State has decreased from 0.79 bcm to 0.60 bcm. The Annual Extractable Ground Water Resource has decreased from 0.71 bcm to 0.54 bcm and there is no significant change in annual ground water extraction. The Stage of Ground Water Extraction has increase from 2.89 % to 3.76 %.



Dynamic Ground water Recourses Scenario 2023 – Nagaland



Categorization Map of GWRA 2023 – Nagaland

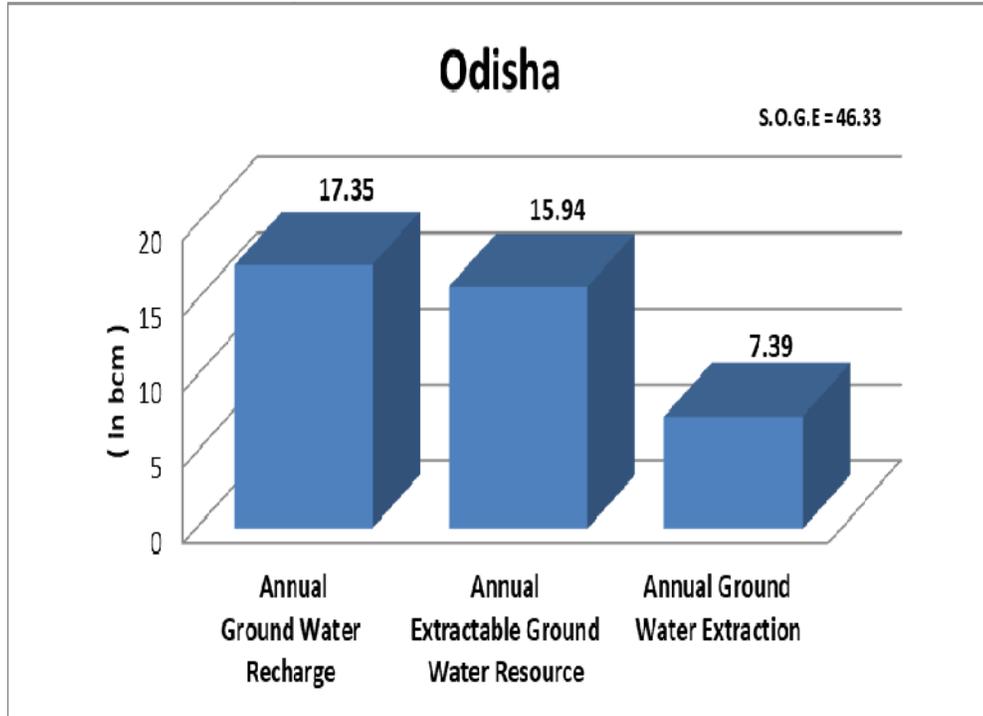
7.20 ODISHA

The State is underlain by diverse rock types, which range in age from Precambrian to Cenozoic era. The Precambrian occupy nearly 80 % of the total geographical area of the State. The Tertiary and the Quaternary Alluvial formations are restricted mainly to the narrow coastal tracts. The Gondwana group of rocks belonging to Paleozoic and Mesozoic era occurs in isolated patches in different parts of the State. These formations occur in Talcher area of Angul district and in river valley area of Sambalpur and Sundargarh districts. Ground water abstraction in the state is mostly done by dug wells constructed in the weathered zone in hard rock areas and in shallow phreatic aquifers in alluvial areas. The yield of open (dug) wells varies from 1 to 5 lps. However, at present, bore wells, shallow to medium deep tube wells, filter point tube wells are also in use for ground water abstraction both for domestic and irrigational purpose. The yield of bore wells varies from 2 to 5 lps in general depending on the occurrence of saturated fractures at depths. The yield from shallow and medium deep tube wells may vary from 6 to 10 lps in general depending on the aquifer disposition.

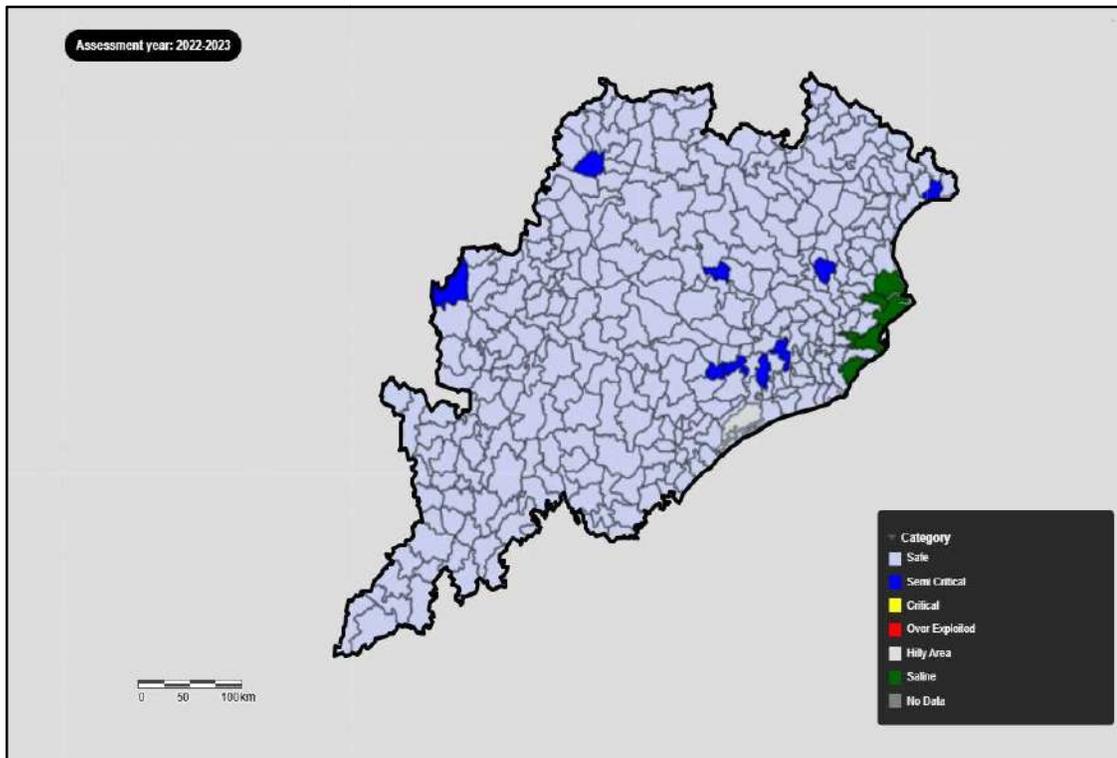
The Ground water resources in the state have been assessed block-wise. Total Annual Ground Water Recharge of the State has been assessed as 17.35 bcm and Annual Extractable Ground Water Resource as 15.94 bcm. The Annual Ground Water Extraction is 7.39 bcm and Stage of Ground Water Extraction is 46.33 %.

Out of the total of 314 assessment units (blocks), 9 units (2.87 %) have been categorized as 'Semi-critical', 299 units (95.22 %) as 'Safe' and 6 units (1.91 %) as 'Saline' categories of assessment units. Similarly out of 121593.15 sq km recharge worthy area of the State, 3339.96 sq km (2.75 %) area are under 'Semi-critical', 116071.86 sq km (95.46 %) under 'Safe' and 2181.33 sq km (1.79 %) area under 'Saline' categories of assessment units. Out of total 15933.74 mcm annual extractable ground water resources of the State, 499.73 mcm (3.14 %) are under 'Semi-critical' and 15434.01mcm (96.86 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Annual Ground Water Recharge has decreased from 17.79 to 17.35 BCM. Similarly Annual Extractable Ground Water Resource has decreased from 16.34 to 15.94 bcm and total annual ground water extraction for all uses has increased from 7.23 to 7.39 bcm. The stage of ground water extraction has increased to 46.33 % in 2023 as compared to 44.25 % in 2022.



Dynamic Ground water Recourses Scenario 2023 – Odisha



Categorization Map of GWRA 2023 – Odisha

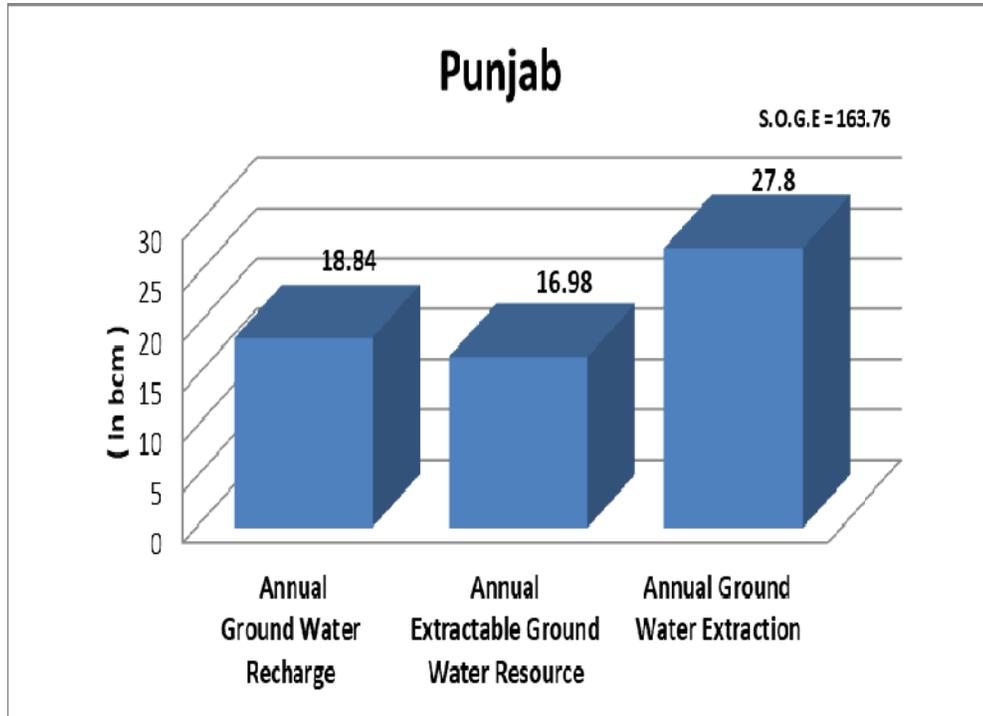
7.21 PUNJAB

Punjab is one of the smallest states of India having 3 perennial rivers namely Sutlej, Beas and Ravi and one non-perennial river Ghaggar. The Punjab State is a flat alluvial plain having a thin belt of mountains along north eastern border and stable sand dunes are seen dotting the landscape in the south western parts. The alluvial deposits in the State comprise sand, silt and clays often mixed with kankar. Sandy zones of varying grade constitute abundant ground water resources & act as a reservoir. The alluvial plain towards the hills is bordered by the piedmont deposits comprising Kandi and Sirowal. Immediately south-west of the hills, Kandi belt is 10 to 15 km wide followed by Sirowal which imperceptibly merges with the alluvial plain. Kandi deposit explored up to 450 m depth show gradation from boulders to clays and at places an admixture of various grades in different proportions. The Sirowal deposit is essentially composed of finer sediments but occasional gravel beds are also encountered in them.

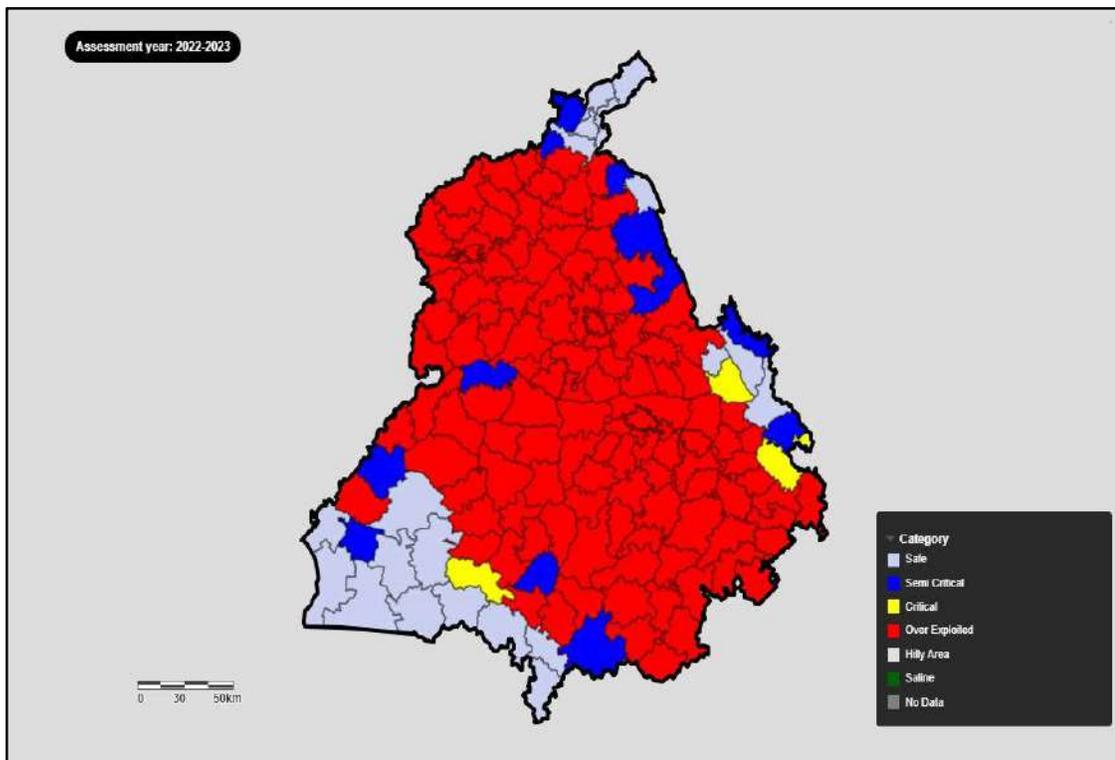
The ground water resources for the state have been assessed block-wise. Total Annual Ground Water Recharge of the State has been assessed as 18.84 bcm and Annual Extractable Ground Water Resource as 16.98 bcm. The Annual Ground Water Extraction is 27.8 bcm and Stage of Ground Water Extraction is 163.76 %.

Out of total 150 assessed blocks and 03 Urban area taken for study, 114 blocks and 03 Urban Areas (total 76.47 %) have been categorized as 'Over-exploited', 03 blocks (1.96%) as 'Critical', 13 blocks (8.5%) as 'Semi Critical' and 20 blocks (13.07%) as 'Safe'. Similarly out of 50175.27 sq. km recharge worthy area of the State, 36515.30 sq km (72.8 %) area are under 'Over-Exploited', 1192.98 sq. km (2.38%) under 'Critical', 4307.45 sq km (8.58%) under 'Semi-critical' and 8159.54 sq km (16.26 %) under 'Safe'. Out of total 16978.36 mcm annual extractable ground water resources of the State, 12794.57 mcm (75.36 %) are under 'Over-exploited', 309.67 mcm (1.82 %) under 'Critical', 1360.17 mcm (8.01 %) under 'Semi-critical' and 2513.95 mcm (14.81 %) are under 'Safe' categories of assessment units.

As compared to 2022 estimates, the Annual Ground Water Recharge has decreased from 18.94 to 18.84 bcm and similarly, Annual Extractable Ground Water Resource decreased from 17.07 to 16.98 bcm and total current annual ground water extraction decreased 28.02 to 27.8 bcm (excluding Poor Quality 1.24bcm). The stage of ground water extraction has increased from 165.99% to 163.76 %. The reduction in recharge is due to less rainfall, lining of unlined canals, reduced recharge from ponds & tanks and decreased extraction is due to decrease in irrigation draft.



Dynamic Ground water Recourses Scenario 2023 - Punjab



Categorization Map of GWRA 2023 – Punjab

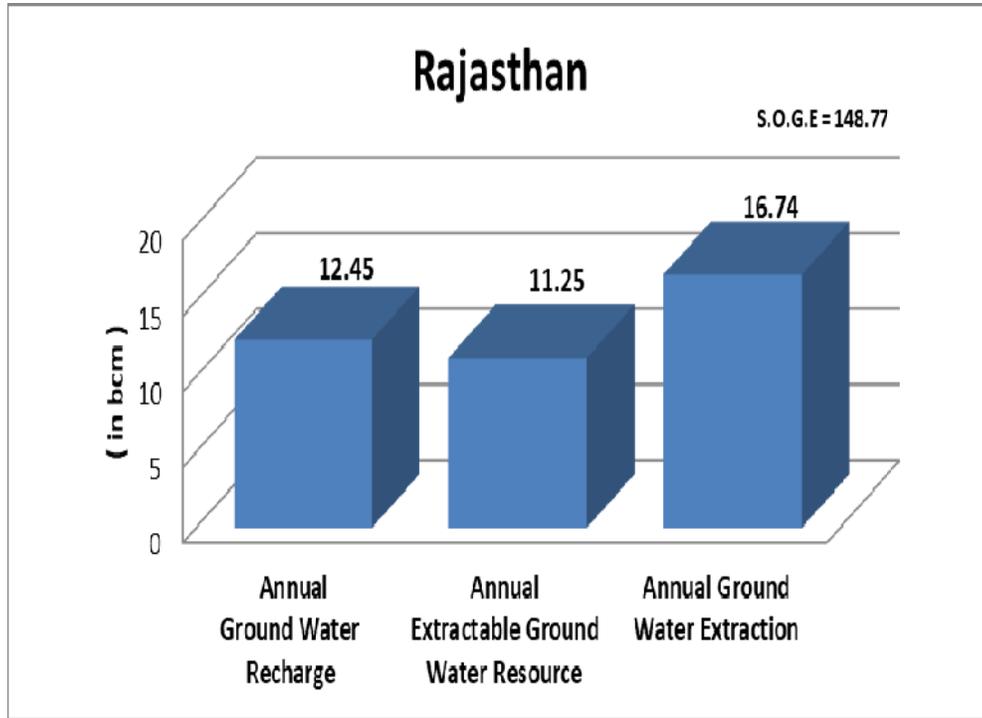
7.22 RAJASTHAN

The State of Rajasthan has diversified geology, ranging from Archean metamorphic to recent alluvial sediments. Based upon geological diversities, geomorphological setup and ground water potentialities, the state of Rajasthan can be divided into three broad hydrogeological units. (i) Unconsolidated formation (ii) Semi-consolidated formation (iii) Consolidated (Fissured formation). Large part of the State is underlain by Quaternary sediments (Thar Desert) consisting of clay, silt, sand and gravel of various grades. Exploratory drilling data reveals that the yield vary from meager to $10 \text{ m}^3/\text{day}$, transmissivity ranges between 80 to $300 \text{ m}^2/\text{day}$ and storage co-efficient vary from 1.1×10^{-5} to 3.9×10^{-6} in the state. Ground Water occurs within the weathered residue and in the secondary porosity in Sandstone belonging to the Vindhyan formation. Yield potential is limited due to compact nature of the formation. The limestone is also having low ground water potential. The yields of dug wells vary from 0.25 to $0.75 \text{ m}^3/\text{day}$. The yield of the wells drilled in Vindhayan formation has been observed to be $15 \text{ m}^3/\text{day}$, tapping fractures between 50 - 75 m bgl. In consolidated formation (Fissured) the thickness of the weathered zone varies from 5 to 50 m. Ground Water occurs under unconfined condition within the weathered zone. The results of the exploratory drilling carried out by CGWB in hard rock are as indicate presence of productive fractures down to the depth of 100 m and yield varies from 3 to $15 \text{ m}^3/\text{day}$, whereas transmissivity varies from 3 to $30 \text{ m}^2/\text{day}$.

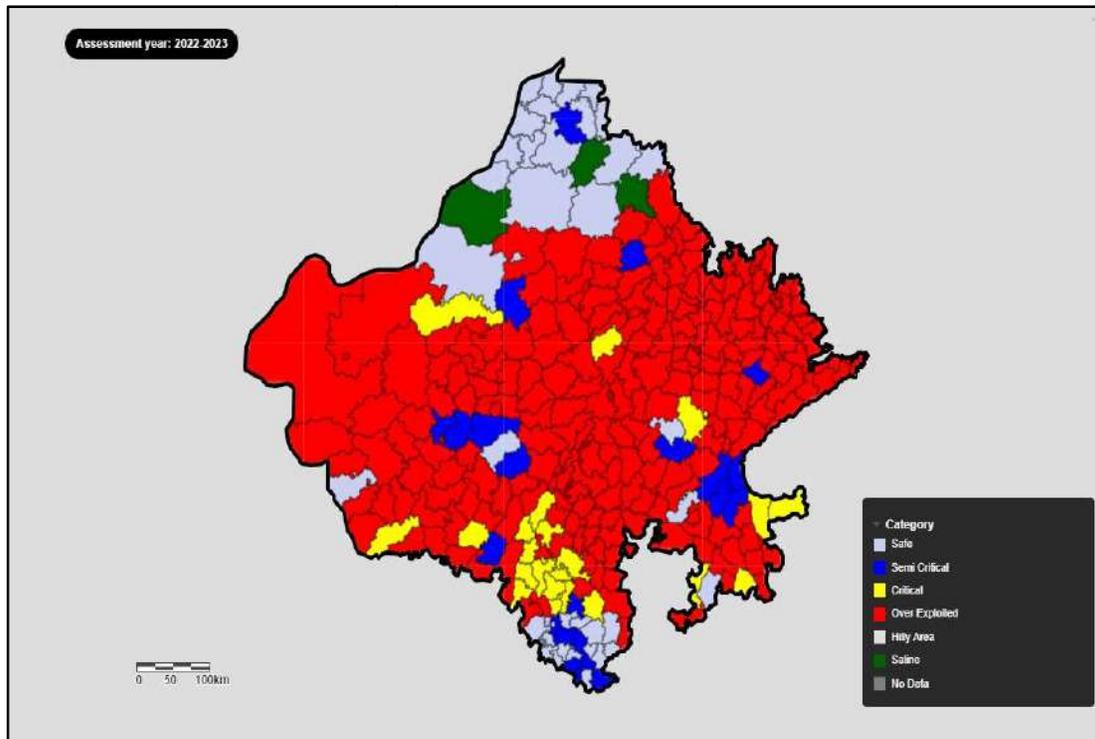
The dynamic ground water resources for the state have been assessed block-wise. Total Annual Ground water Recharge of the State has been assessed as 12.45 bcm and Annual Extractable Ground Water Resource as 11.25 bcm. The Annual Ground Water Extraction is 16.74 bcm and the Stage of ground water extraction in the state is 148.77 %.

In the year 2023, 07 (seven) new urban assessment units have been added apart from 295 assessment units. This year also assessment has been done for 302 units. Out of the 302 assessment units (blocks and urban areas), 216 units (71.52 %) have been categorized as 'Over Exploited', 23 units (7.62 %) as 'Critical', 22 units (7.28 %) as 'Semi-Critical', 38 units (12.58 %) blocks as 'Safe' and 3 units (0.99 %) as 'Saline'. Similarly out of 317010.74 sq km recharge worthy area of the State, 222734.36 sq km (70.26 %) area are under 'Over-Exploited', 19808.7 sq km (6.25 %) under 'Critical', 19080.79 sq km (6.02 %) under 'Semi-critical', 46451 sq km (14.65 %) under 'Safe' and 8935.89 sq km (2.82 %) area under 'Saline' categories of assessment units. Out of total 11251.35 mcm annual extractable ground water resources of the State, 8235.03 mcm (73.19 %) are under 'Over-exploited', 857.87 mcm (7.62 %) under 'Critical', 935.81 mcm (8.32 %) under 'Semi-critical' and 1222.65 mcm (10.87 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, the Annual Ground Water Recharge and Annual Extractable Ground Water Resource have increased from 12.13 bcm to 12.45 bcm and from 10.96 bcm to 11.25 bcm respectively. Annual ground water extraction has increases from 16.56 bcm to 16.74 bcm. The stage of ground water extraction has decreased from 151.07 % to 148.77 %. The change in Annual Ground Water recharge is because of change in rainfall for recharge and area under irrigation (both by surface water and ground water).



Dynamic Ground water Recourses Scenario 2023 – Rajasthan



Categorization Map of GWRA 2023 – Rajasthan

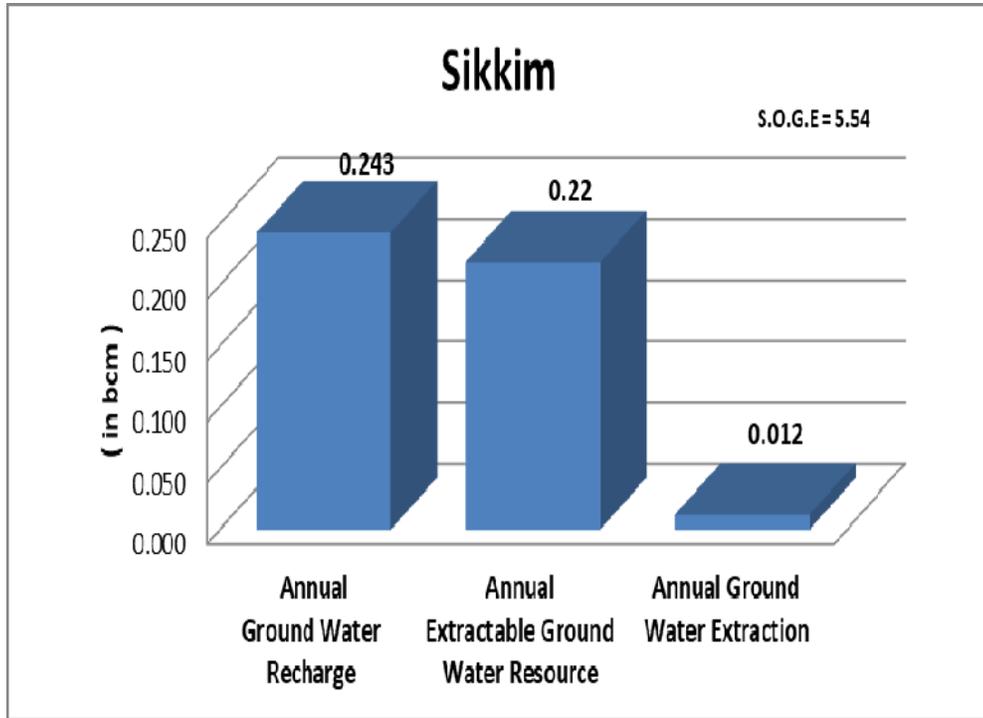
7.23 SIKKIM

Sikkim is a small mountainous State characterized by rugged undulating topography with series of ridges and valleys. The various rock types prevalent in the state are pelitic and carbonate rocks and Gondwanas over a gneissic basement and occasional colluviums and valley fill deposits, as well as alluvial terraces along higher order streams and river courses. The formations reveal an intense tectonic-structurally complex deformational history. Ground water occurs largely in disconnected localized pockets and in deeper fractures zones. Springs are the main source and conduits of water.

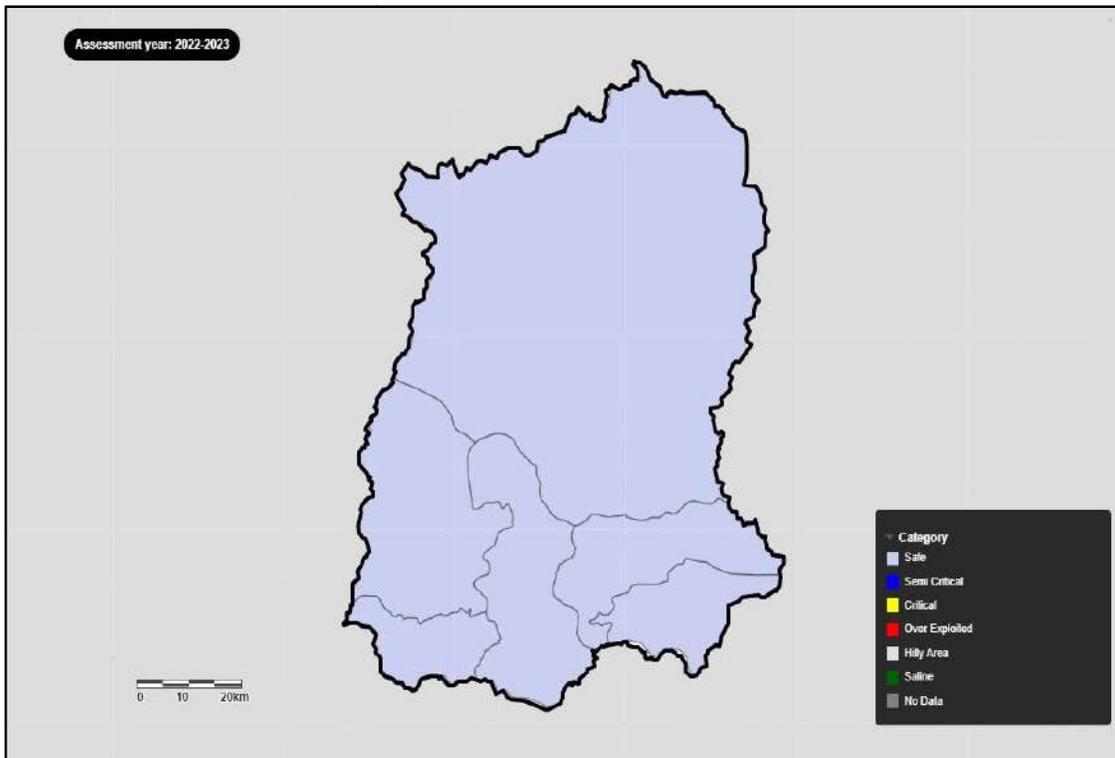
The ground water resource assessment (in 2023) for the State of Sikkim has been carried out as per GEC 2015 guidelines through 'IN-GRES', with Districts as primary assessment units. Total Annual Ground Water Recharge has been estimated at 0.243 bcm and Annual Extractable Ground Water Resource has been estimated at 0.219 bcm. Current Annual Ground Water Extraction for all uses has been estimated at 0.012 bcm, which translates into a Stage of Ground Water Extraction at 5.54 %, and as per the present assessment all the six assessment units (Six Districts – Gangtok, Gyalshing, Mangan, Namchi, Pakyong, Soreng) are in 'Safe' category.

All of the recharge worthy area (1496 sq km) and Total Annual Extractable Resource (218.68 mcm) is under 'Safe' category.

As compared to 2022 assessment, Total Annual Ground Water Recharge of the State has decreased from 0.27 bcm to 0.24 bcm. Annual Extractable Ground Water Resource reduced from 0.24 bcm to 0.22 bcm. The Annual Ground Water Extraction from all sources though marginally decreased from 0.014 bcm to 0.012 bcm. Stage of Ground Water Extraction decreased from 6.04 % to 5.54 %. Decrease in annual rainfall resulted in decrease in recharge, which is reflected in marginal decrease in Annual Extractable Resource.



Dynamic Ground water Recourses Scenario 2023 - Sikkim



Categorization Map of GWRA 2023 – Sikkim

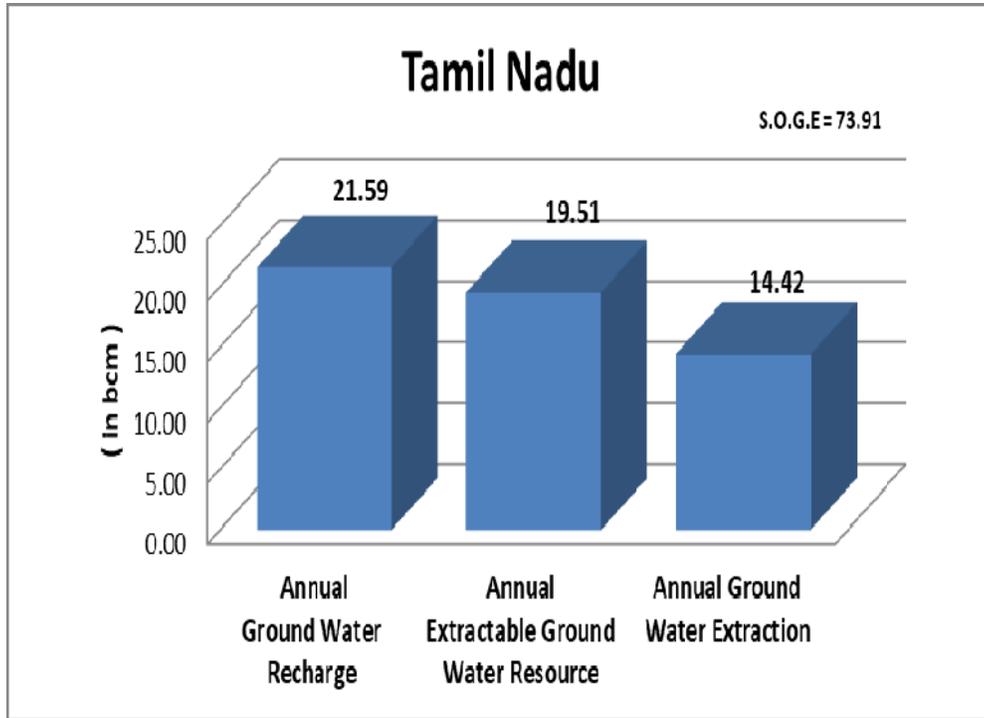
7.24 TAMIL NADU

Tamil Nadu state is underlain by diverse hydrogeological formations. Nearly 73 % of the state is occupied by hard rocks (consolidated), semi-consolidated and unconsolidated formations which are mainly confined to the eastern part including the coastal tract. In the hard rock areas, groundwater is developed through dug wells tapping the weathered zone and dug cum bore wells and bore wells tap the deeper fractures down to a depth of 300 m. In semi consolidated and unconsolidated formation, shallow zones are tapped by filter points and shallow tube wells and deeper zones through deeper tube wells. The yield of open wells vary from 1 to 3 lps, where as in dug wells tapping soft rocks including sedimentary formations, the yield is up to 10 lps. The yield from unconsolidated and semi consolidated formations are in general 10 to 20 lps and also as high as 40 lps are also noticed at select places.

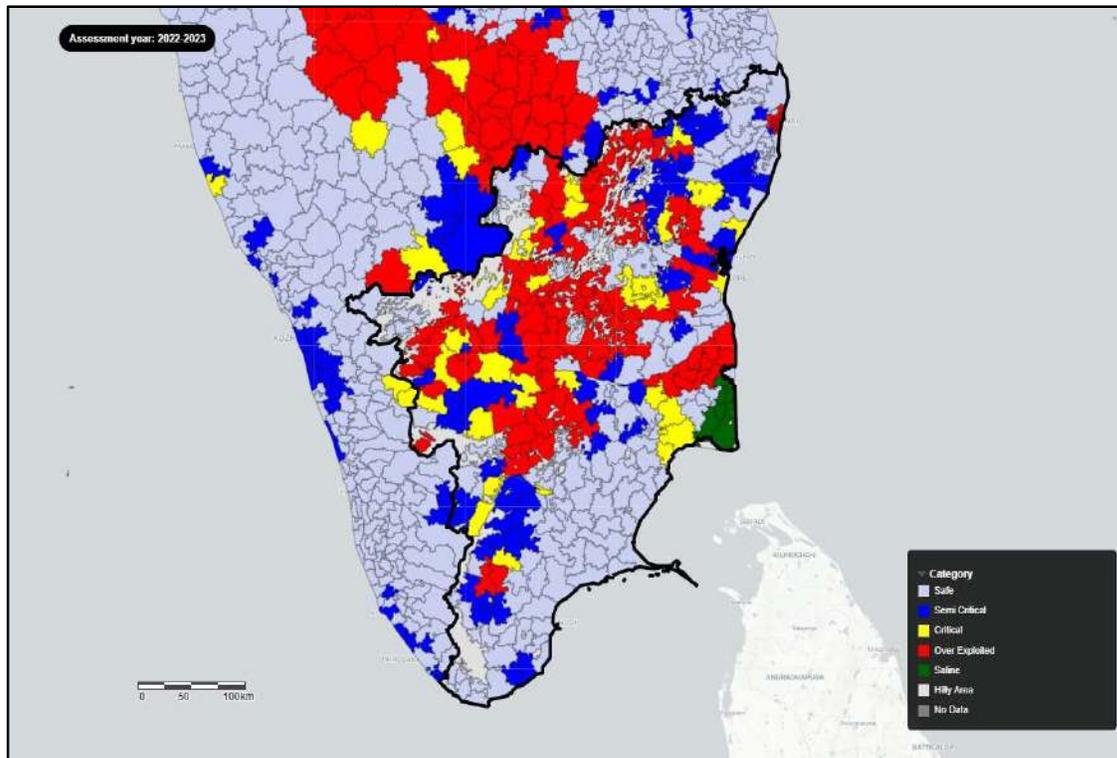
The ground water resources for the State have been assessed Block-wise and for the 2023 Ground Water Resource Assessment, 1202 Firkas were assessed. The Firka wise resources assessed were sum up to taluk level. Total Annual Ground Water Recharge of the State has been assessed as 21.59 bcm and Annual Extractable Ground Water resources as 19.51 bcm. The Annual Ground Water Extraction is 14.42 bcm and Stage of Ground Water Extraction as 73.91 %.

Out of 313 assessment units (taluka), 100 units (31.95 %) have been categorized as 'Over Exploited', 27 units (8.63 %) as 'Critical', 56 units (17.89 %) as 'Semi-Critical', 125 units (39.94 %) as 'Safe' and 5 units (1.60 %) have been categorized as 'Saline'. Similarly out of 108691 sq km recharge worthy area of the State, 31130 sq km (28.64 %) area are under 'Over-Exploited', 11774 sq km (10.83 %) under 'Critical', 19483 sq km (17.92 %) under 'Semi-critical', 44393 sq km (40.84 %) under 'Safe' and 1911 sq km (1.76 %) area under 'Saline' categories of assessment units. Out of total 19505.70 mcm annual extractable ground water resources of the State, 4772.59 mcm (24.47 %) are under 'Over-exploited', 2029.09 mcm (10.4 %) under 'Critical', 3776.06 mcm (19.36 %) under 'Semi-critical' and 8927.94 mcm (45.77 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, Total Annual Ground Water Recharge has marginally increased minutely from 21.11 to 21.59 bcm. The Annual Extractable Ground Water Resources has also marginally increased from 19.09 to 19.51 bcm and the annual ground water extraction has decreased marginally from 14.43 to 14.42 bcm. Consequently, there is a decrease in the stage of ground water extraction from 75.59 % to 73.91 % indicating overall improvement in ground water scenario. The increase in ground water recharge is due to changes in rainfall pattern and decreased extraction is due to decrease in the load on ground water resources in irrigation and domestic sector.



Dynamic Ground water Resources Scenario 2023 – Tamil Nadu



Categorization Map of GWRA 2023 – Tamil Nadu

7.25 TELENGANA

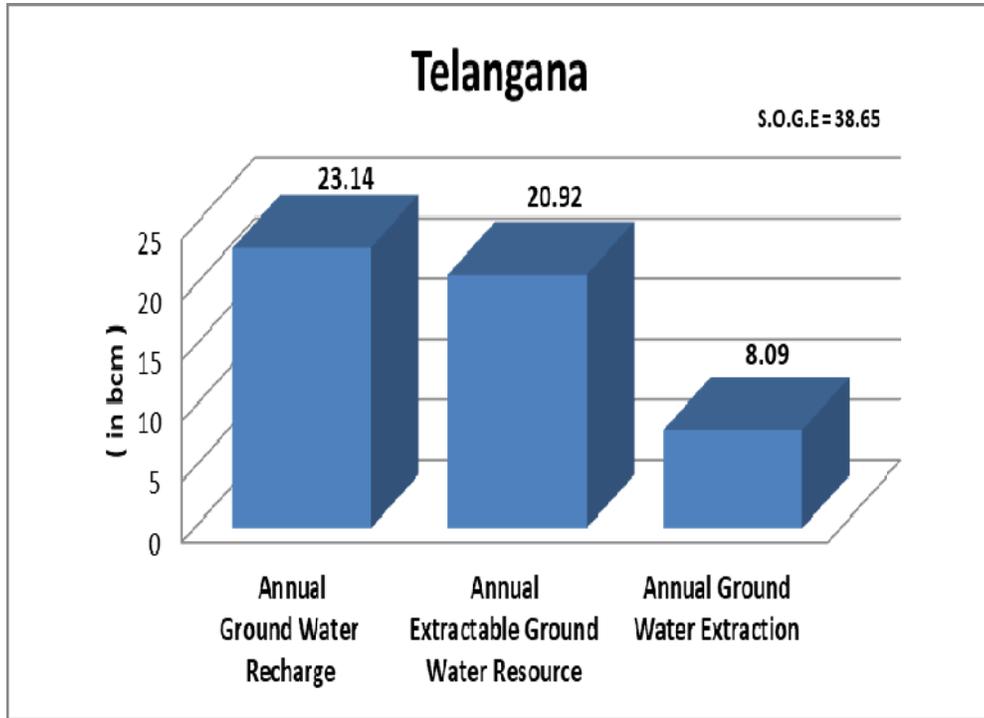
Telangana state is characterized by wide range of geological formations from Archaean to Recent age. Nearly 85% of the state is underlain by hardrocks (consolidated formations) belonging to the Peninsular Gneissic Complex, Dharwar and Eastern Ghats of Archaean to Middle Proterozoic age, Pakhal Group of rocks belonging to Middle to Upper Proterozoic age and Deccan Traps. In hardrocks average well yields are around 50 to 125 lpm. The rest of the state is underlain by semi consolidated sedimentary formations encompassing Gondwanas, Tertiary group of formations and Sub-Recent to Recent unconsolidated sediments. Transmissivity of these aquifers varies between 28 and 950m²/day. The unconsolidated formations are represented by inland river alluvium.

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 23.14 bcm and Annual extractable Ground Water resource as 20.92 bcm. The Annual Ground Water Extraction is 8.09 bcm and Stage of Ground Water Extraction is 38.65 %.

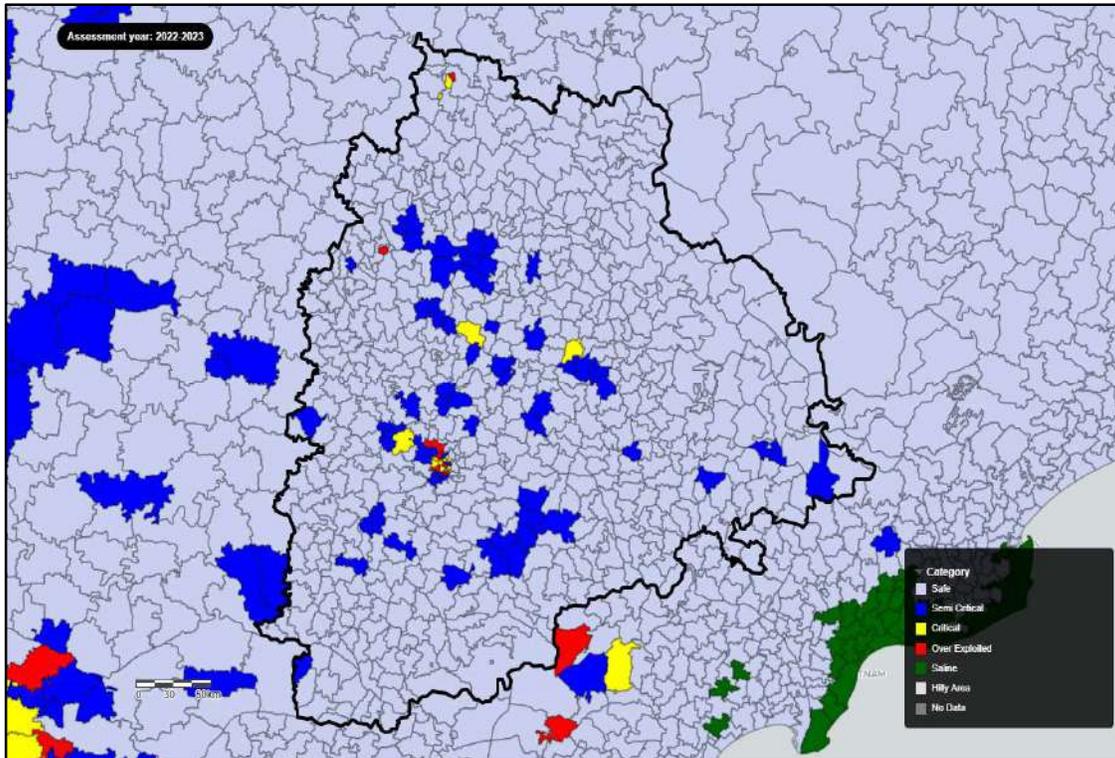
Out of 612 assessment units (Mandals), 11 units (1.8 %) have been categorized as 'Over Exploited', 10 units (1.63 %) as 'Critical', 61 units (9.97 %) as 'Semi-Critical' and 530 units (86.6 %) as 'Safe'. There is no 'Saline' category of assessment unit in the state.

Similarly out of 105777.24 sq km recharge worthy area of the State, 156.44 sq km (0.15 %) area are under 'Over-Exploited', 605.7sq km (0.57 %) under 'Critical', 8510.64 sq km (8.05 %) under 'Semi-critical', 96504.46 sq km (91.23%) under 'Safe' categories of assessment units. Out of total 20920.92 mcm annual extractable ground water resources of the State, 20.08 mcm (0.1 %) are under 'Over-exploited', 97.23 mcm (0.46 %) under 'Critical', 1268.76 mcm (6.06%) under 'Semi-critical' and 19534.85 mcm (93.37 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, Total Annual Ground Water Recharge of the State has increased from 21.27 to 23.14 bcm. This is mainly due to increase in recharge from 'Other sources'. The Annual Extractable Ground Water Resources has increased from 19.25 to 20.92 bcm. The overall Stage of Ground Water Extraction decreased from 41.6 % to 38.65%. This can be attributed to government interventions like water conservation activities under Mission Kakatiya, improvement in surface water irrigation and drinking water supply under Mission Bhagiratha and copious rainfall received by the state during last year.



Dynamic Ground water Resources Scenario 2023 – Telangana



Categorization Map of GWR 2023 – Telangana

7.26 TRIPURA

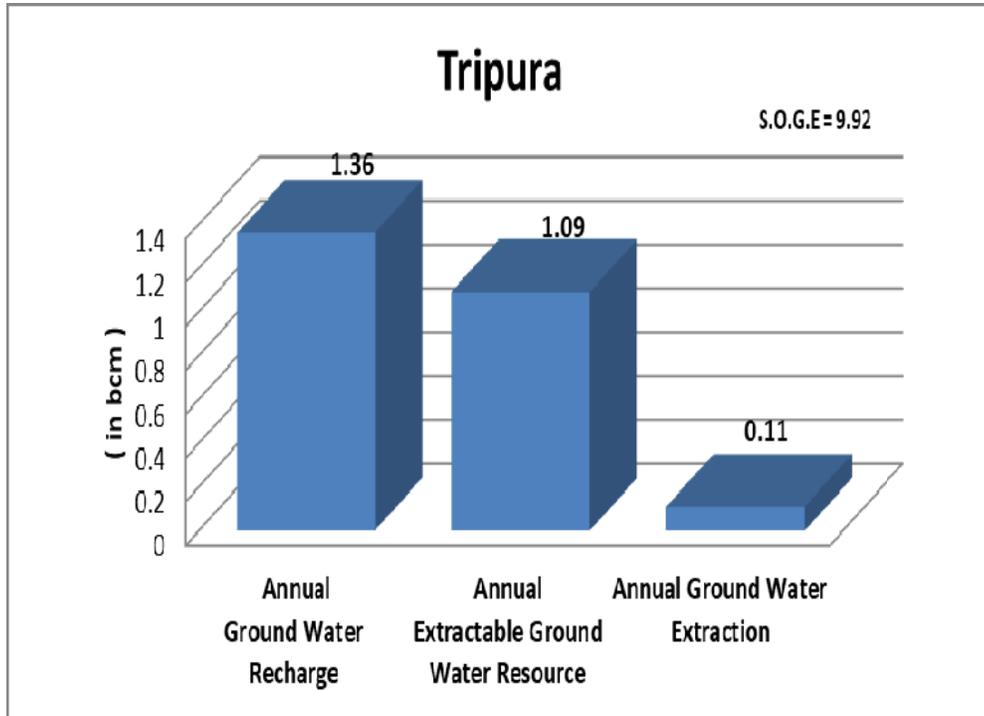
The State of Tripura is occupied by the rocks ranging in age from Upper Tertiary to Quaternary. Mobile trough geosynclinal deposition of Barail group followed by flysch type of Surma & Tipam sediments, overlain by Dupitila formation, is noticed in the State. Most of the longitudinal synclinal valleys of the state are the basins of deposition of recent formation. Recent alluvium occurs along the streams and the flood plains of major rivers.

Ground water occurs under unconfined condition in Dupitila, Recent & Tipam formations. Besides, it also occurs under confined to semi-confined conditions in Tipam formation at considerable depth. Recharge areas for the deeper aquifer lies in the adjacent anticlinal hills. Wherever a good thickness of impermeable clay beds underlie & overlie the saturated granular zones, auto flow artesian conditions have been found in the valleys, which are the discharge area. The artesian flowing conditions occur in patches both at shallow depth and at deeper depth. The auto discharge of the flowing wells in the State ranges from 100 to 6000 lph, the maximum auto discharge from deep tube well to the extent of 54000 lph has been found in Khowai valley near Khowai town, where the piezometric head rose up to 7 m above ground level.

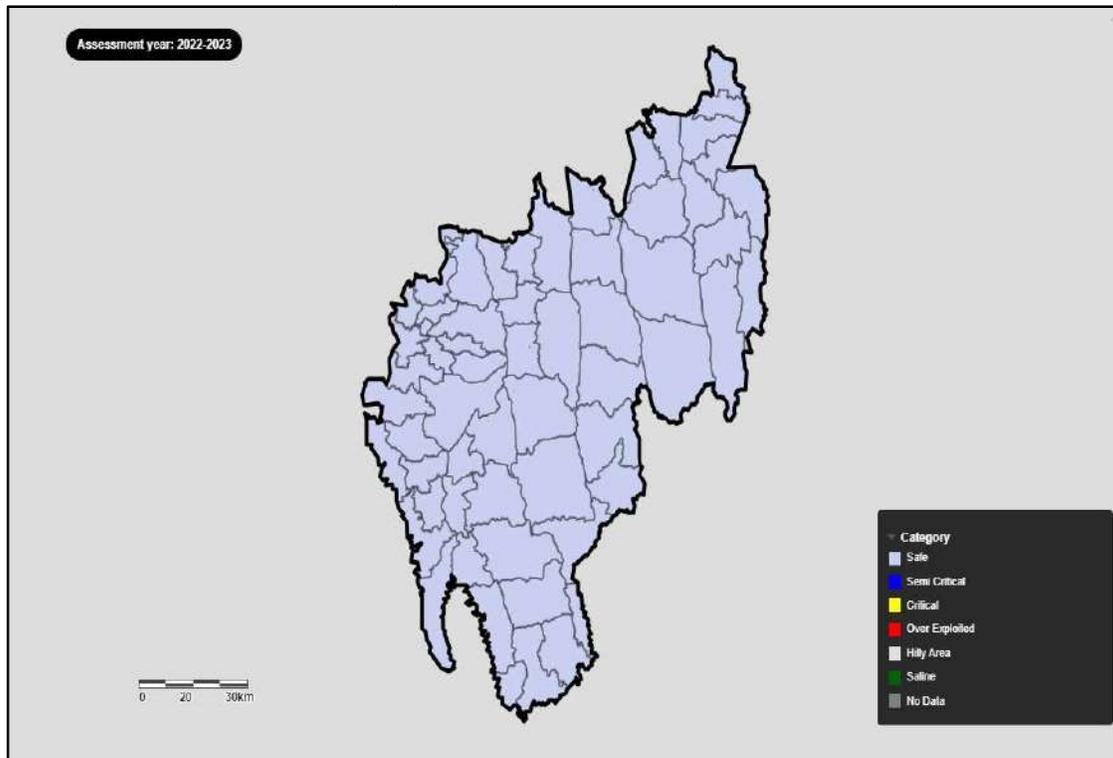
Ground water resources have been assessed block-wise for recharge worthy area. Total Annual Ground Water Recharge of the State has been assessed as 1.36 bcm and Annual Extractable Ground Water Resource as 1.09 bcm. The Annual Ground Water Extraction is 0.11 bcm and Stage of Ground Water Extraction is 9.92 %. All the 59 assessment units have been categorized as 'Safe'.

The state has Recharge worthy area of 6197.84 Sq. Km and Total Annual Extractable Resource is of 1094.05 mcm is under 'safe' categories of assessment units.

As compared to 2022 assessment, there is no significant change in ground water recharge and ground water extraction in the State.



Dynamic Ground water Recourses Scenario 2023 – Tripura



Categorization Map of GWRA 2023 – Tripura

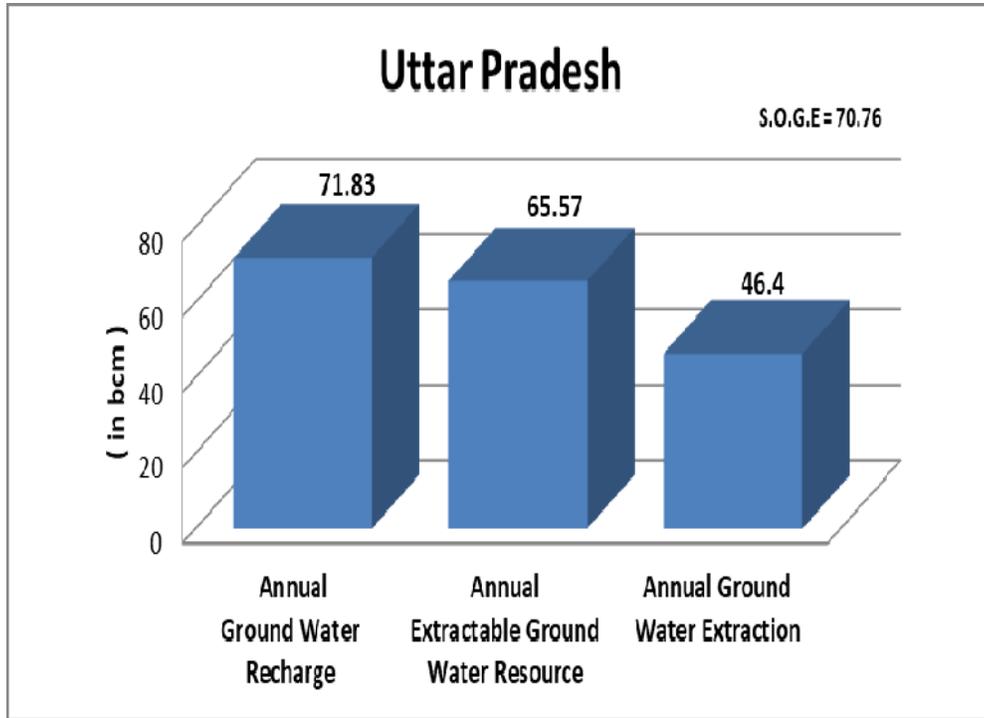
7.27 UTTAR PRADESH

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. Ground water extraction in phreatic aquifer is through hand pumps, dug wells, dug cum bore wells and shallow tube wells. The yield from these wells has been generally found to be in the range of 40 to 60 lps. 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. The average yield of tube wells constructed in this zone varies from 30 to 60 lps with moderate drawdown. Central Ganga Plain constitutes the most promising ground water repository characterized by multi-layered aquifer systems. The yield of the open wells and hand pumps constructed in the phreatic aquifer vary from 5 to 10 lps. The tube wells in the phreatic aquifer yield between 20 to 28 lps at 6 to 8 m drawdown. Marginal alluvial plain consists of kankar mixed clay-silt beds intercalated with sand and gravel lenses. The aquifer in this area is capable of yielding 15 to 40 lps at moderate drawdown. Southern part mainly occupied by Hard rocks comprising of Granite/Granitic Gneiss and Marginal Alluvium in Bundelkhand Region and Vindhyan Sedimentary formations in Mirzapur and Sonbhadra Districts. The wells tapping these formations generally recorded yield between 2 to 8 lps. The Ground water resources of the State have been assessed block-wise.

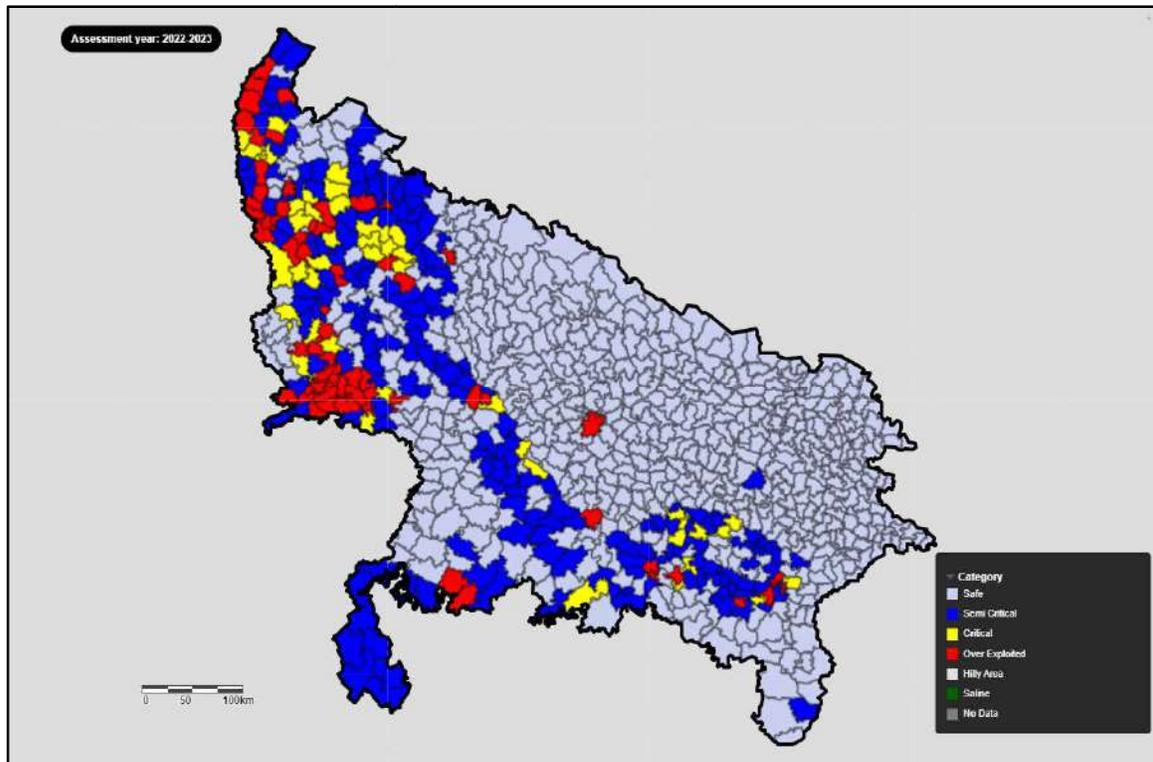
Total Annual Ground Water Recharge of the state has been assessed as 71.83 bcm and Annual Extractable Ground Water Resource as 65.57 bcm. The Annual Ground Water Extraction is 46.40 bcm and average Stage of Ground Water Extraction of the State is 70.76%.

Out of the 836 assessment units consisting 826 blocks and 10 cities, 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'. Similarly, out of 229555.18 sq km recharge worthy area of the State, 14952.13 sq km (6.51 %) area are under 'Over-Exploited', 11777.16 sq km (5.13 %) under 'Critical', 51620.24 sq km (22.49 %) under 'Semi-critical', 151205.64 km (65.87 %) under 'Safe' categories of assessment units. Out of total 65571.79 mcm annual extractable ground water resources of the State, 3917.31 mcm (5.97 %) are under 'Over-exploited', 3276.41 mcm (5.00%) under 'Critical', 12977.06 mcm (19.79 %) under 'Semi-critical' and 45401.02 mcm (69.24 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, ground water recharge and ground water extraction figure increased minutely. The stage of ground water extraction has also marginally increased from 70.66 % to 70.76%.



Dynamic Ground water Resources Scenario 2023 – Uttar Pradesh



Categorization Map of GWRA 2023 – Uttar Pradesh

7.28 UTTARAKHAND

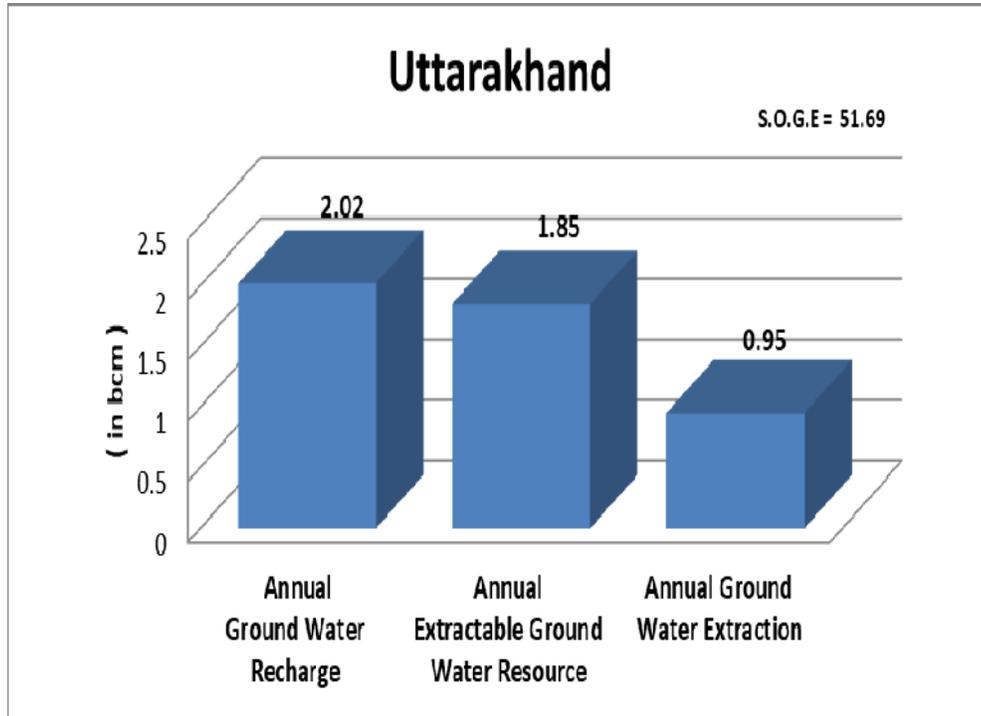
Uttarakhand State, a predominantly hilly state, covers a total geographical area of 53,483 km² and is situated between 28°43'20" – 31°28'00" N Latitude and 77°34'06" – 81°01'31" E Longitude. Most of the northern part of the state is covered by high Himalayan peaks and glaciers. The state shares international boundaries with China (Tibet) in the north and Nepal in the East. The assessment of dynamic ground water resources has been carried out in 18 assessment units (blocks) of the state.

Total Annual Ground Water Recharge in the State (2023) has been assessed as 2.02 bcm. Ground water resources are replenished through rainfall and other sources like return flow from irrigation, canal seepage etc. The main source of annual ground water recharge is rainfall, which contributes nearly 69.93 % of the Total Annual Ground Water Recharge. The Total Annual Extractable Ground Water Resource of the State has been assessed as 1.85 bcm. The Annual Ground Water Extraction of the State (2023) is 0.95 bcm, the largest user being irrigation sector. The Stage of ground water extraction for the entire State, is 51.69 %.

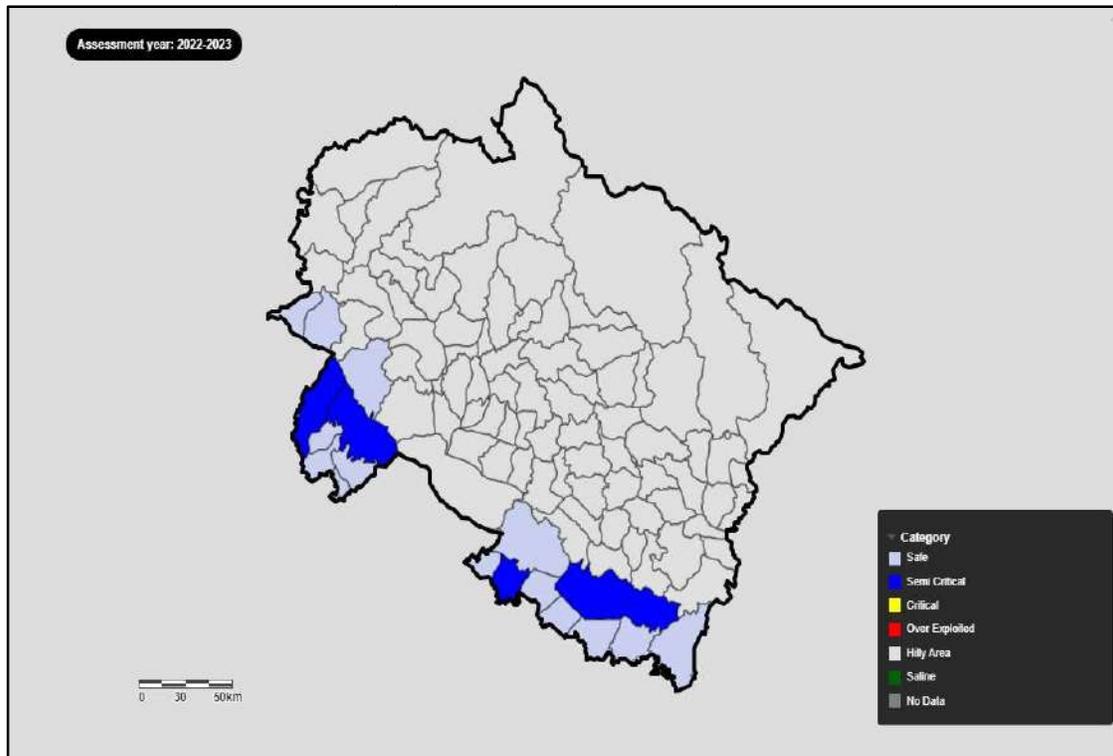
Out of the 18 assessed blocks of Uttarakhand State, 14 blocks (77.78%) are 'Safe', whereas remaining 4 blocks (22.23%) are categorised as 'Semi Critical'. There are no issues related to groundwater quality in the assessment units and hence there is no poor quality or saline block in the State.

Out of 4993.04 sq km recharge worthy area of the State, 950.94 sq km (19.05 %) under 'Semi-critical', 4042.1 sq km (80.95 %) under 'Safe' category of assessment units. Out of total 1846.93 mcm annual extractable ground water resources of the State, 360.87 mcm (19.54 %) under 'Semi-critical' and 1486.07 mcm (80.46 %) are under 'Safe' categories of assessment units.

As compared to 2022 estimate, there is negligible changes in Annual Ground Water Recharge, Annual Extractable Ground Water Resources and Annual Ground Water Extraction. The stage of groundwater extraction has increased marginally from 48.04% to 51.69%.



Dynamic Ground water Recourses Scenario 2023 – Uttarakhand



Categorization Map of GWRA 2023 – Uttarakhand

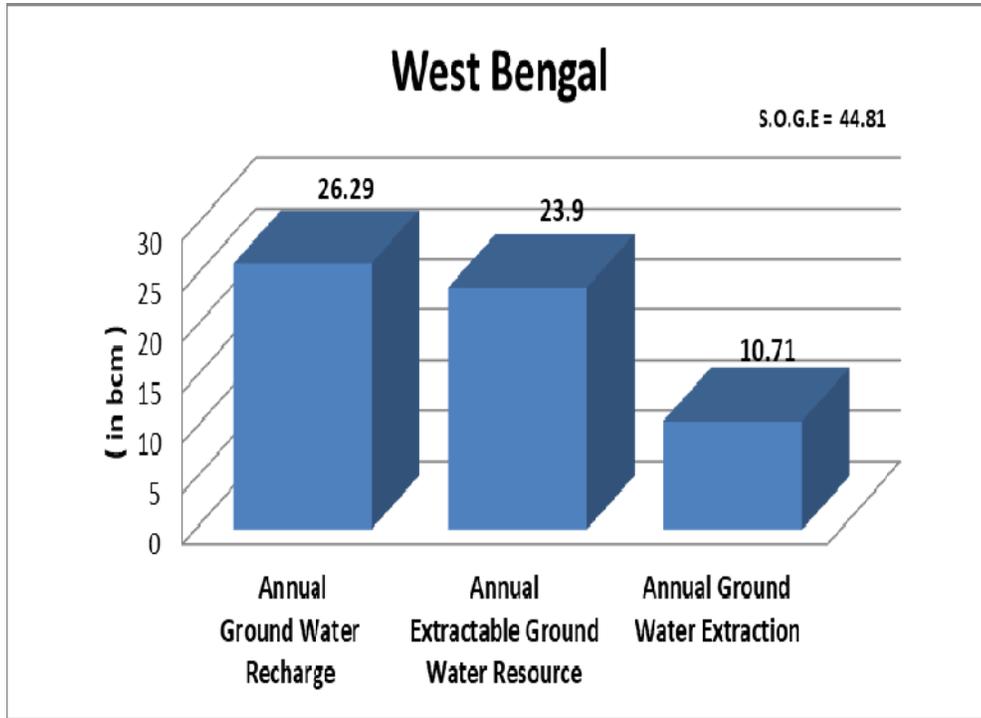
7.29 WEST BENGAL

Nearly two third area of the State is occupied by unconsolidated sediments; the western part of the state is partly occupied by the hard rocks. Phreatic aquifer is generally developed through dug well, dug cum bore well and shallow tube well. Yield potential of these wells varies from 1 to 5 lps.

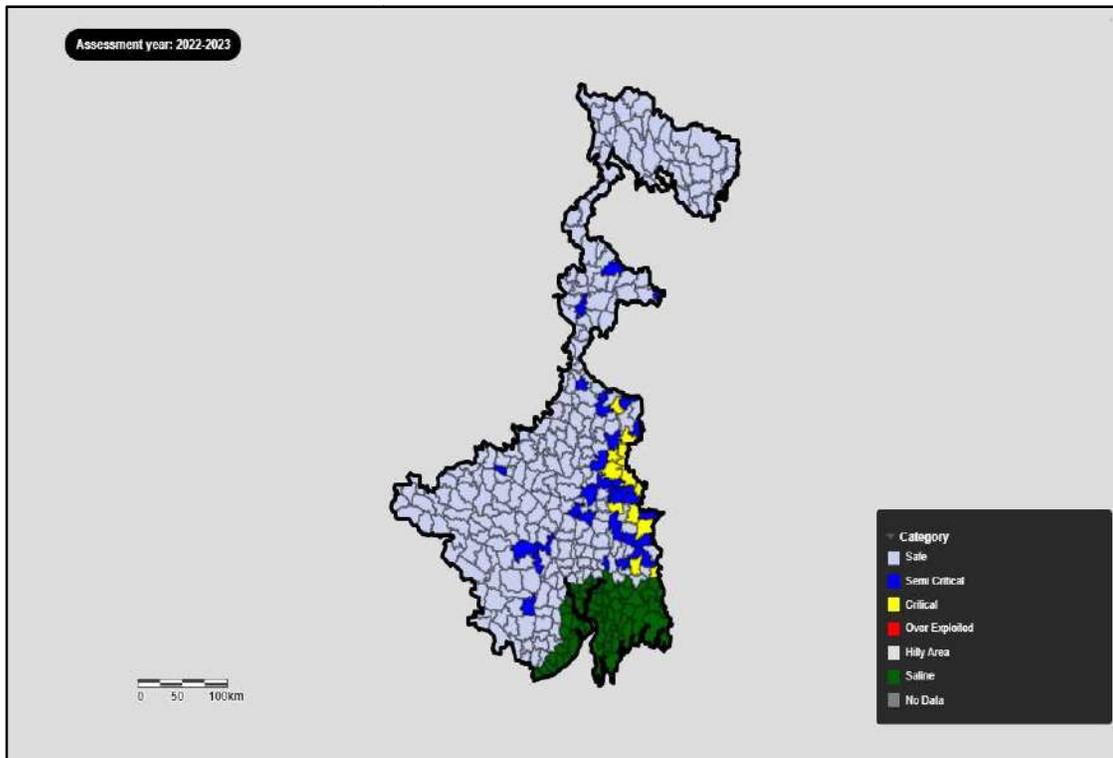
The ground water resource assessment (in 2023) for the State of West Bengal has been carried out as per GEC-2015 guidelines through 'IN-GRES', with blocks as primary assessment units. All 344 blocks of the State of West Bengal and one (01) urban area as Kolkata Municipal Corporation is assessed.. Total Annual Ground Water Recharge has been estimated at 26.29 bcm and Annual Extractable Ground Water Resource has been estimated at 23.9 bcm. Current Annual Ground Water Extraction for all uses has been estimated at 10.71 bcm, which translates into a Stage of Ground Water Extraction at 44.81 %. As per present assessment categorization scheme, out of 345 assessed units, 241 AUs (69.86%) are 'Safe', 32 AUs (9.28%) are 'Semi-Critical', 12 AUs (3.48%) are 'Critical' and 60 AUs (17.39%) are of poor groundwater quality (Saline). There is no Over-Exploited Blocks in the State.

Similarly, out of 79765.77 sq km recharge worthy area of the State, 2737.02 sq km (3.43 %) under 'Critical', 5886.51 sq km (7.38 %) under 'Semi-critical', 61634.14 sq km (77.27 %) under 'Safe' category of assessment units. 9508.1 sq km (11.92%) area is under 'Saline' category of assessment units. Out of total 23900.68 mcm annual extractable ground water resources of the State, 1336.84 mcm (5.59 %) under 'Critical', 2488.15 mcm (10.41 %) under 'Semi-critical' and 20075.68 mcm (84 %) are under 'Safe' categories of assessment units.

As a whole for the State, compared to earlier assessment (2022), Stage of Ground Water Extraction is decreased from 47.01 % to 44.81 % indicating improvement in overall ground water scenario.



Dynamic Ground water Recourses Scenario 2023 – West Bengal



Categorization Map of GWRA 2023 – West Bengal

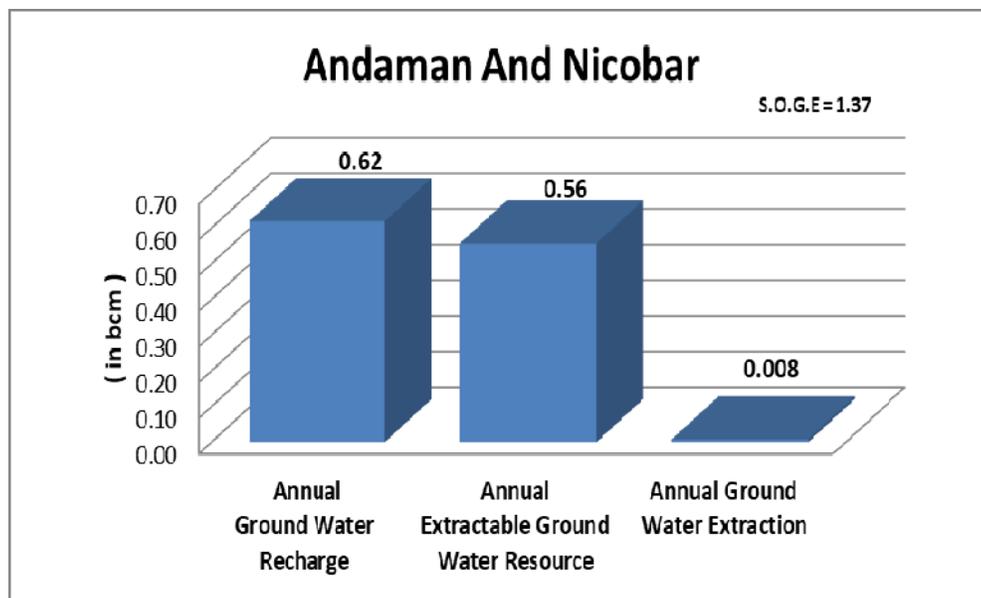
7.30 ANDAMAN AND NICOBAR ISLANDS

Andaman & Nicobar Islands comprise an arc-shaped chain of islands in the Bay of Bengal and are characterized by rugged topography, steep slope, low infiltration capacity and close proximity of hills to the sea. Marine sedimentary group of rocks comprising shale, sandstone, grit and conglomerate; extrusive and intrusive igneous rocks (volcanics and ultramafics) and limestone occupy the entire geographical area. Amongst these, the Sedimentary Group is most pervasive and occupy nearly 70% of the entire area of the islands while the igneous group covers nearly 15% while the rest of 15% goes to the coralline and limestone formations. All these rock formations have been subjected to many tectonic activities, evident from the occurrence of shallow and deep focus earthquakes in the islands.

Marine sedimentary rocks are developed only through dug wells having meager yield of 0.1 to 0.5 lps. The igneous Ophiolite suite of rocks in the area although restricted in occurrence, are observed to yield moderate to high both in shallow and deeper locales and they are developed by dug wells and bore wells with yield ranging from 1 to 10 lps. Area covered by Coralline Limestone contains appreciable quantity of groundwater with yield ranging from 5 to 25 lps.

The Ground Water Resources (in 2023), following GEC 2015 guidelines, have been assessed block-wise. Total Annual Ground Water Recharge of the A&N Islands have been assessed as 0.618 bcm and Annual Extractable Ground Water Resource is assessed as 0.557bcm. The Annual Ground Water Extraction is 0.008 bcm which translates to a Stage of Ground Water Extraction of 1.37 %. Out of 9 assessment units (Blocks), all the assessment units are under 'Safe' category. Similarly, out of 2120.07 sq km recharge worthy area of the UT, the entire recharge worthy area is under 'Safe' category of assessment units and the total 556.96 mcm annual extractable ground water resources of the UT, is under 'Safe' categories of assessment units.

As compared to previous assessment (2022), there is no significant changes in annual ground water recharge, annual extractable groundwater resources, annual groundwater extraction and stage of groundwater extraction in 2023.



Dynamic Ground water Resources Scenario 2023 – Andaman and Nicobar

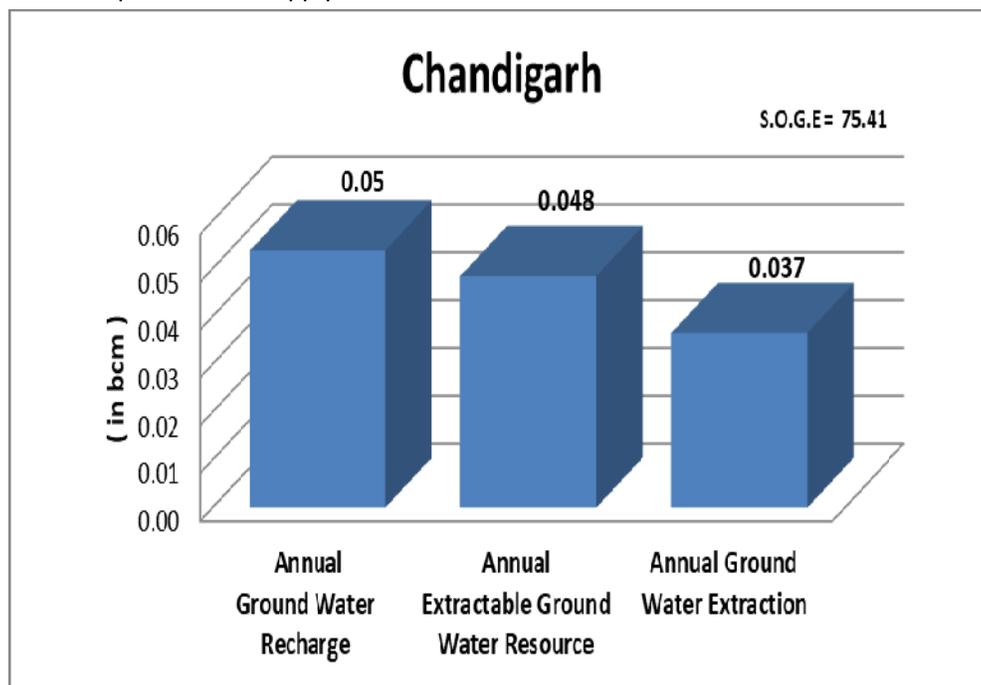
7.31 CHANDIGARH

Chandigarh is underlain by the Quaternary alluvial deposits and comprises layers of fine sand and clay. Coarser sediments occur along the Sukhna Choe and Patialiki Rao, whereas relatively finer sediments underlie the area between these two streams. Fair to good aquifer horizons occur in most part of Chandigarh comprising medium to coarse sand, to a depth of 180 m bgl below which they become finer. Ground water in the area occurs under confined as well as semi-confined conditions. In Manimajra, ground water occurs under unconfined conditions down to about 80 m. In other areas, the semi-confined conditions prevail below 20 to 30 m. The depth of the shallow aquifer system is less than 30 m bgl, where as the depth of the deeper aquifer system ranges from 40 to 450 m bgl of explored depth. The transmissivity values for the deeper aquifer system ranges between 74 and 590 m^2/day . The transmissivity values of shallow aquifers up to 100 m depth ranges from 70 to 466 m^2/day . Ground water is found to be fresh and suitable for drinking as well as irrigation purposes.

UT of Chandigarh has very small area of 114 sq km and whole UT has been taken as an assessment unit. Total Annual Ground Water Recharge has been assessed as 0.054 bcm and Annual Extractable Ground Water Resources as 0.048 bcm. The UT of Chandigarh has been categorized as 'Semi Critical' with Total Extraction of 0.037 bcm and stage of ground water extraction at 75.41 %.

Out of 114 sq km recharge worthy area of the UT, 100 % of the area is under 'Semi-critical'. The entire 48.41 mcm annual extractable ground water resources of the UT, is under 'Semi-critical' categories of assessment units.

In comparison to 2022 assessment, Total annual recharge has increased marginally from 0.05 bcm to 0.054 bcm owing to increased rainfall recharge. The current ground water extraction also decreased minutely from 0.04 bcm to 0.036 bcm due to increased surface water supply. The groundwater extraction in Chandigarh is completely governed by Government and only Government extracts groundwater for public water supply.



Dynamic Ground water Resources Scenario 2023 - Chandigarh

7.32 DAMAN & DIU AND DADRA & NAGAR HAVELI

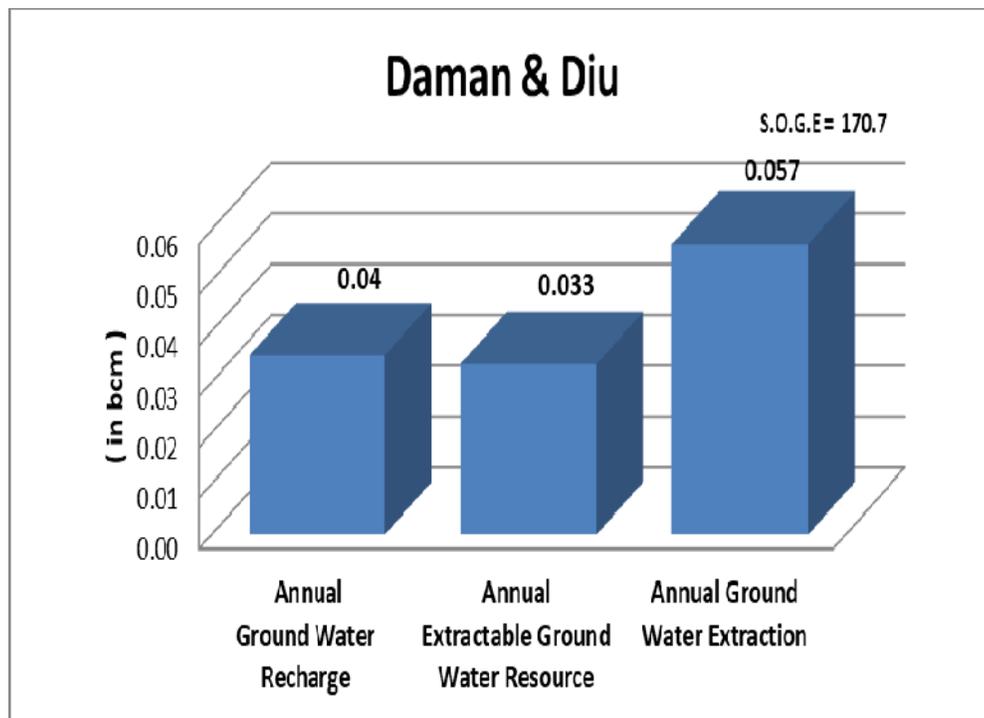
Daman & Diu

The entire island area of Diu is about 40 sq. km and is underlain by Alluvium and Milliolite soft rock formation. The Daman has about 72 sq km area out of which 30 % is covered by alluvium and the rest is underlain by Basalt rocks. In UT of Daman & Diu, dug well as well as dug cum bore wells are common for irrigation and domestic use. The yields of open dug wells varies from less than 1 to 5 m³/day, where as that of Dug cum Bore wells ranges from less than 2 to 10 m³/day.

The ground water resources have been assessed district-wise. The total Annual Ground Water Recharge has been assessed as 0.035 bcm and Annual Extractable Ground water Resources as 0.033 bcm. The total current Annual Ground Water Extraction has been assessed as 0.057 bcm and Stage of Ground Water Extraction as 170.7 %. Both Daman and Diu districts are categorized as 'Over Exploited'.

Out of 110.9 sq km recharge worthy area of the UT, the entire area is under 'Over-Exploited'. Total 33.47 mcm annual extractable ground water resources of the UT, 100% is under 'Over-exploited' categories of assessment units.

As compared to 2022 assessment, the annual groundwater recharge has decreased from 0.038 to 0.035 bcm. The annual extractable groundwater resources decreased marginally from 0.036 bcm to 0.033 bcm. Whereas, the annual ground water extraction remains same. The stage of ground water extraction has increased 157.92% to 170.7 %.



Dynamic Ground water Resources Scenario 2023 – Daman and Diu

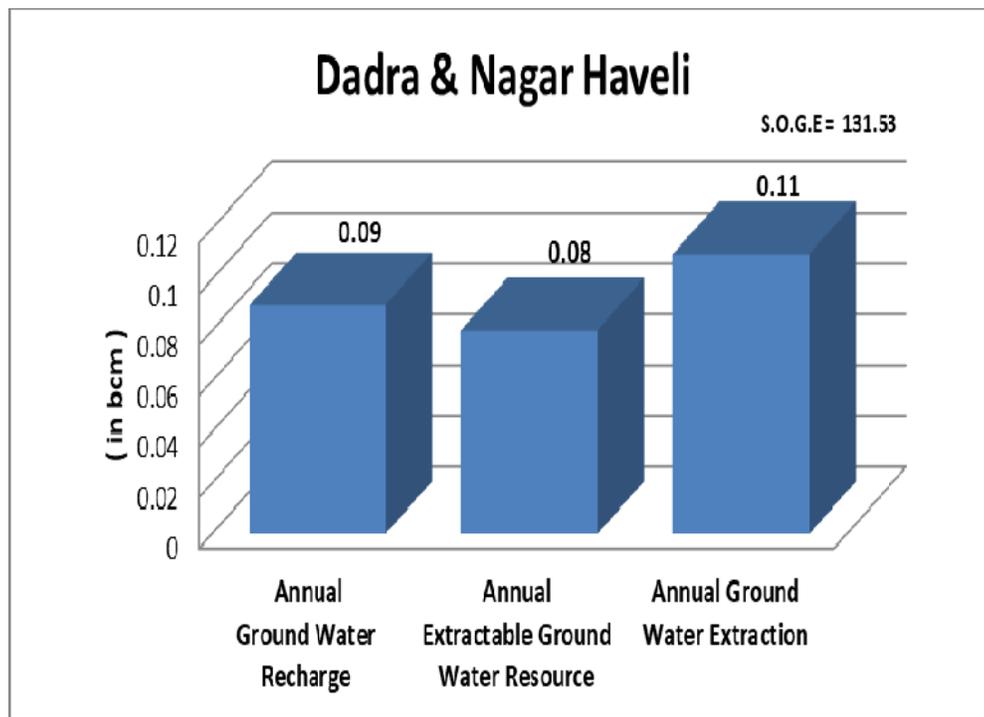
Dadra & Nagar Haveli

The entire area of UT of Dadra and Nagar Haveli is underlain by hard rock terrain (Deccan basalts). The thickness of vesicular units, ranges from 2 to 8 m. Ground water is developed by means of dug wells and dug cum bore wells. The sustainable yield of dug wells for 3 to 4 hours of pumping is 30 m³/day. The transmissivity of shallow aquifer ranges from 5.5 to 305 m²/day.

The entire D & NH has been considered as a single assessment unit. Total Annual Ground Water Recharge of the UT of DNH has been assessed as 0.09 bcm and Annual Extractable Ground Water Resources as 0.08 bcm. The Current Annual Ground Water Extraction for all uses is 0.11 bcm and Stage of Ground Water Extraction is 131.53 %. The entire UT of D&NH has been categorized as 'Over Exploited'.

Out of 416 sq km recharge worthy area of the UT, the entire area is under 'Over-Exploited' category. The total 81.71 mcm annual extractable ground water resources of the UT, is under 'Over-exploited' category.

As compared to 2022 estimate, there is no significant change in annual ground water recharge, annual extractable ground water resources and annual ground water extraction. The stage of ground water extraction has decreased marginally from 133.2% to 131.53% in 2023.



Dynamic Ground water Resources Scenario 2023 – Dadra and Nagar Haveli

7.33 JAMMU & KASHMIR

Jammu & Kashmir Union Territory comprises two Administrative Divisions viz-Jammu, Kashmir with 10 districts each, representing different ground water regimes. In Jammu Region, the ground water occurs in the outer plains (3000 sq km) extending between Munawar Tawi in the north-west to River Ravi in the south-east. The ground water occurs in piedmont deposits belonging to upper Pleistocene to Recent age, comprising unconsolidated sediments in the form of terraces and coalescent alluvial fans developed by the streams debauching out of Siwalik Hills. There are several isolated valleys in the middle Himalayas where ground water occurs in valley fill deposits under unconfined conditions.

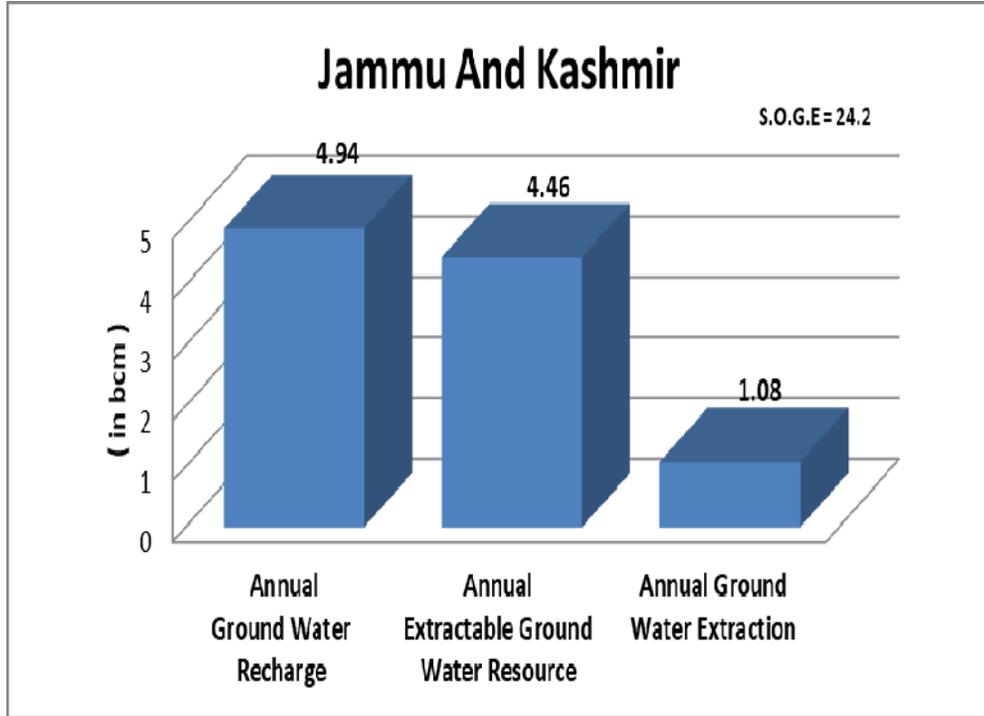
Kashmir valley covers an area of 5600 sq km and is occupied by Karewas which consist of a huge pile of alternating bands of sand, silt, and clay interspersed by glacial boulder beds. The sands are mostly fine to very fine-grained and there is considerable lateral facies variation of sediments with an aggregate thickness of 2500-3000 m. Ground water in the Karewas of Kashmir valley occurs under both confined as well as unconfined conditions.

The Ground water resources of the J&K UT have been assessed for ground water worthy areas and outer plains in 20 districts. These 20 assessment units include the Srinagar urban area (with a population of more than 10 Lakhs). Srinagar Urban Area comprises ground water worthy area of Srinagar district as well as parts of Ganderbal, Baramulla, Budgam, Pulwama and Bandipora districts.

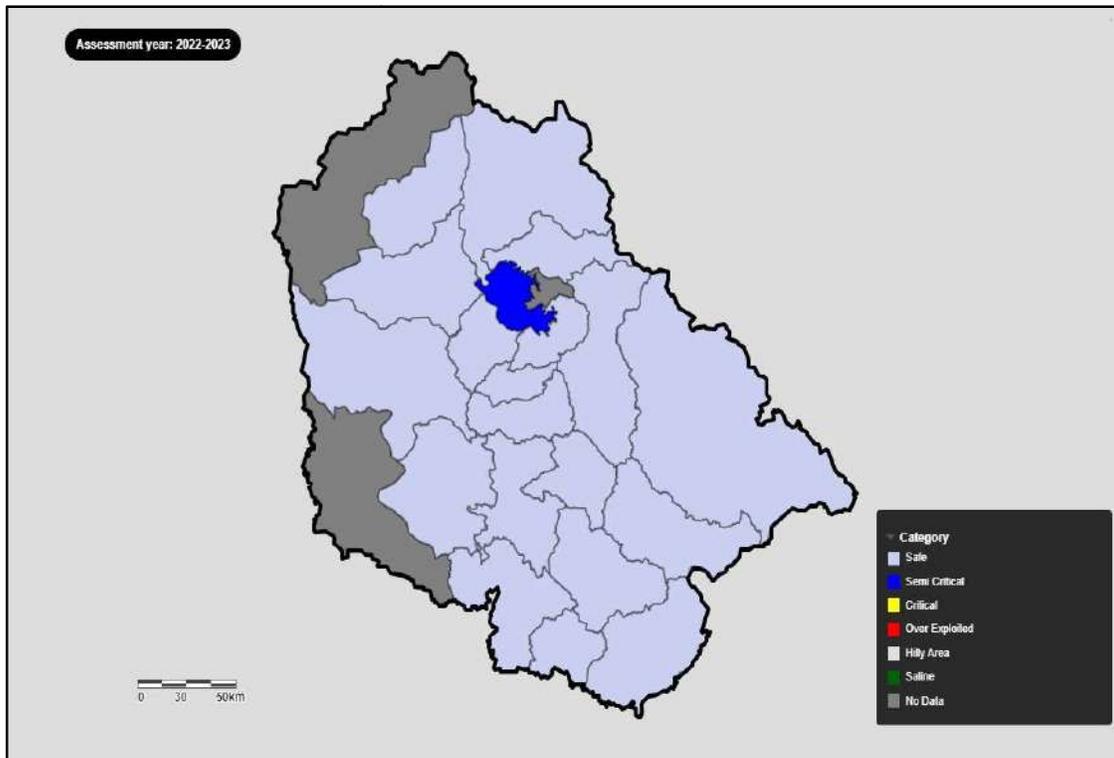
The total Annual Groundwater Recharge of the UT has been estimated as 4.94 bcm and Annual Extractable Ground Water Resources is 4.46 bcm. The Total Current Annual Ground Water Extraction is 1.08 bcm and the Stage of Ground Water Extraction is 24.20 %. Out of 20 assessment units, 19 assessment units have been categorized as 'Safe' whereas 1 assessment unit i.e. Srinagar Urban Area comes under the 'Semi-critical' category.

Out of 8664.25 sq km recharge worthy area of the State, 875 sq km (10.1 %) under 'Semi-critical', 7789.25 sq km (89.9 %) under 'Safe' category of assessment units. Out of total 4463.26 mcm annual extractable ground water resources of the State, 104.35 mcm (2.34 %) under 'Semi-critical' and 4358.92 mcm (97.66 %) are under 'Safe' categories of assessment units.

As compared to the 2022 assessment, the Total Annual Groundwater Recharge and Annual Extractable Ground Water Resources have increased slightly from 4.90 bcm to 4.94 bcm and 4.44 bcm to 4.46 respectively. The Annual Ground Water Extraction has also increased minutely from 1.07 bcm to 1.08 bcm. The Stage of Ground Water Extraction has increased marginally from 24.18 % to 24.20.



Dynamic Ground water Resources Scenario 2023 – Jammu and Kashmir



Categorization Map of GWRA 2023 – Jammu and Kashmir

7.34 LADAKH

Ladakh Union Territory comprises of two districts viz-Leh and Kargil. The Topography of the region is extremely rugged, mountainous and highly inaccessible. The altitude of the area varies from 3000-8000 m amsl. In Leh district, the Indus and Shyok are the main valleys and the Leh plain, More plain, Hanle Plain, Depsang plain and soda plain are some important plains. Leh plain is underlain by morainic deposits consisting of boulders, cobbles, pebbles embedded in an arenaceous matrix and the lake deposits comprising predominantly of clays, sandy- Clays and silt. The sediments are overlain by varved clays and silts of lacustrine origin again succeeded by morainic boulders and cobbles in disintegrated loose sandy matrix and alluvial deposits. Ground water in the valleys occurs in porous formations. This includes moraines and fluvio-glacial deposits of Ladakh.

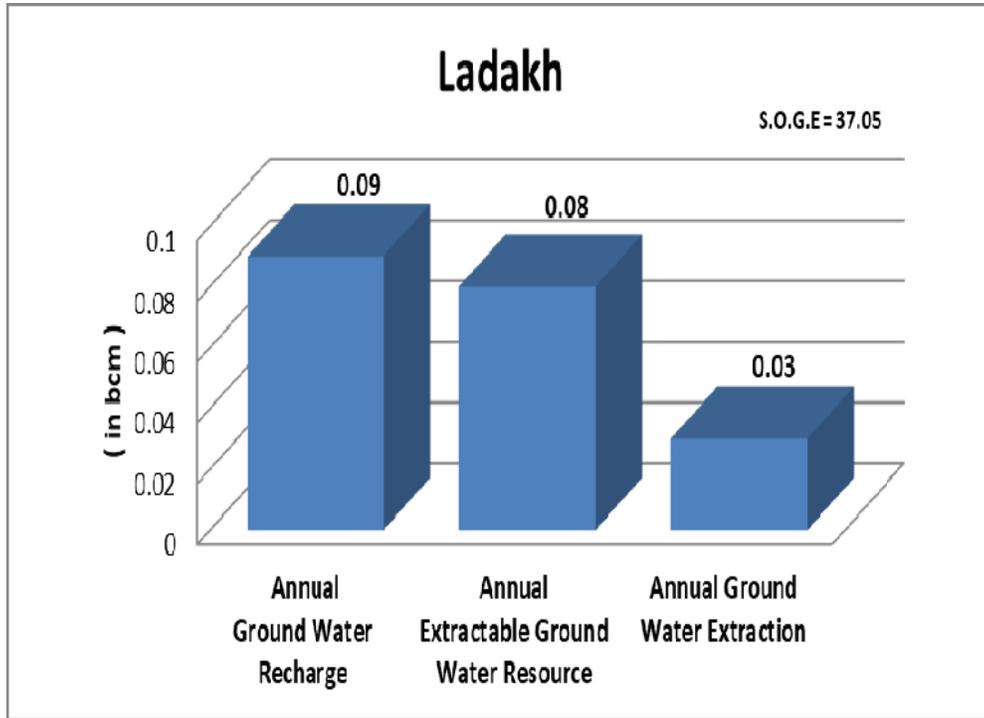
Kargil district comprises of 15 blocks out of which 9 blocks were found ground water recharge worthy areas. Bimbat, Drass, GM Pora, Kargil, Shankoo, Pashkum, Karsha, Zanskar and Shargole blocks are taken as Assessment Units for GWRE 2023.

Similarly, Leh district comprises of 16 blocks out of which 9 blocks were found ground water recharge worthy areas. Diskit, Panamik, Durbuk, Saspol, Nimoo, Leh, Chuchot, Kharu and Thickey are taken as Assessment Units for GWRE 2023. Ground water occurs mainly in the porous formations of morainic deposits comprising of Talus and Scree formations.

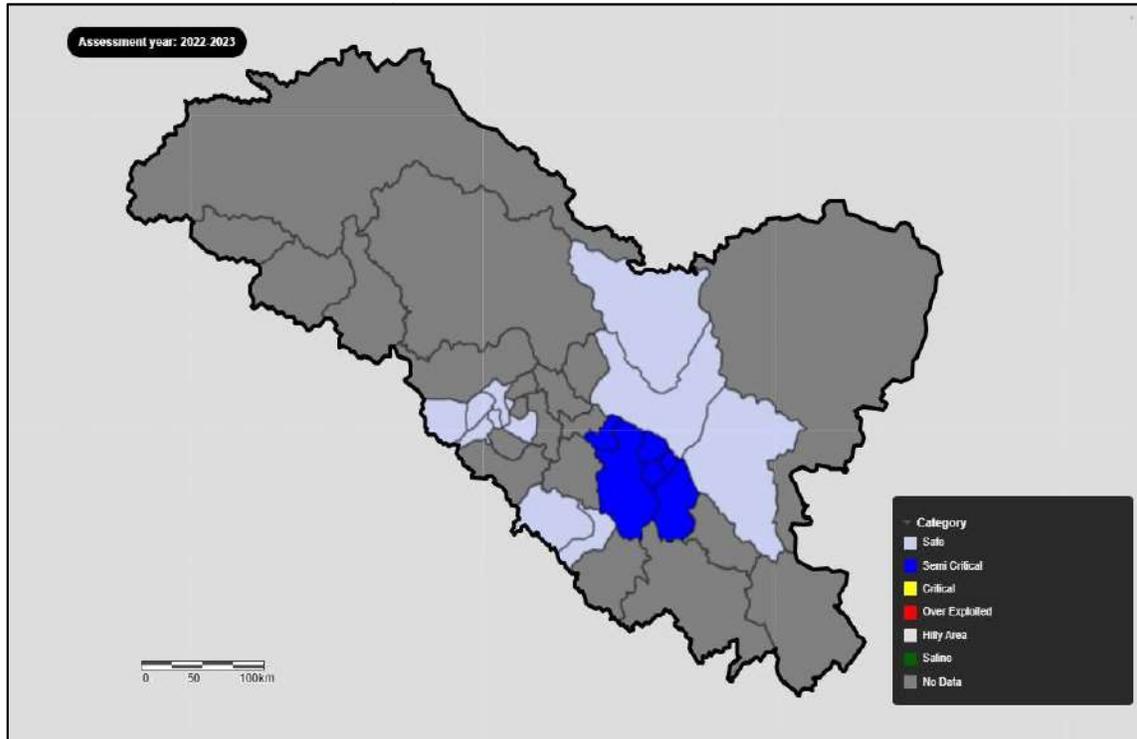
The Ground Water Resources of the Ladakh UT have been assessed for valley areas in 2 districts. The total recharge of ground water involves several components like rainfall/ snowfall being the major one. The other components are seepage from canal, kuhls and return flow from surface water and ground water irrigation. Total Annual Ground Water Recharge of the UT has been estimated as 0.0888 bcm and Annual Extractable Ground Water Resources is 0.0799 bcm. The Total Current Annual Ground Water Extraction is 0.0296 bcm. The Stage of Ground Water extraction in Ladakh is 37.05 %. Out of total 20 Assessment Units, 6 AUs (33.33%) of Leh are categorized as 'Semi Critical' and 12 AUs (66.67%) are categorized as 'Safe'.

Out of 963 sq km recharge worthy area of the UT, 331 sq km (34.37 %) under 'Semi-critical', 632 sq km (65.63 %) under 'Safe' category of assessment units. Out of total 79.97 mcm annual extractable ground water resources of the State, 23.56 mcm (29.46 %) under 'Semi-critical' and 56.41 mcm (70.54 %) are under 'Safe' categories of assessment units.

As compared to the 2022 assessment, the Total Annual Ground Water Recharge and Annual Extractable Ground Water Resources have increased marginally from 0.0813 bcm to 0.0888 bcm and 0.0731 bcm to 0.0799 bcm respectively. The Annual Ground Water Extraction has decreased minutely from 0.0302 bcm to 0.0296 bcm. The Stage of Ground Water Extraction has decreased from 41.36 % to 37.05 %.



Dynamic Ground water Recourses Scenario 2023 - Ladakh



Categorization Map of GWRA 2023 – Ladakh

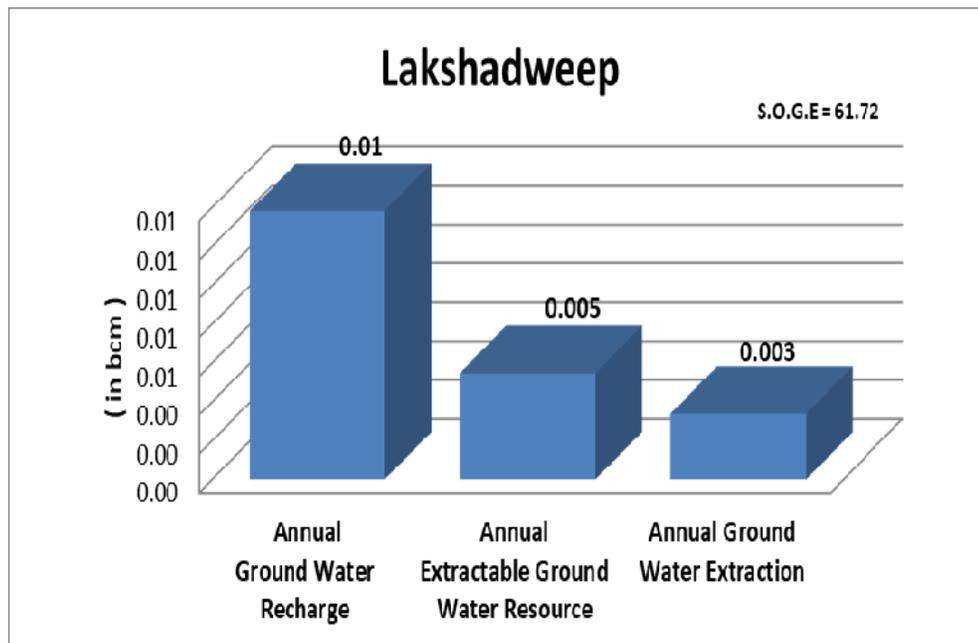
7.35 LAKSHADWEEP

Lakshadweep islands are composed of calcareous sand and materials derived from coral atolls. Alternate layers of loose sand, moderately cemented calc-arenites and well cemented, hard and compact limestone underlie the islands. In these islands, fresh ground water occurs under phreatic conditions as lens floating over the saline water and is in hydraulic continuity with sea water. Water levels in wells are strongly influenced by tides. Dug wells are the common ground water abstraction structures in the islands. The major draft component of these islands is for the domestic consumption. Irrigation draft is negligible in the islands as almost all the crops are rainfed.

Lakshadweep is a undistrict state wherein the dynamic ground water resources have been assessed for individual islands and the output is generated block wise. The total Annual Ground Water Recharge in the UT has been estimated as 0.013 bcm and Annual Extractable Ground Water Resources works out as 0.0051 bcm. The total current Annual Ground Water Extraction has been assessed as 0.0033 bcm and the Stage of Ground Water Extraction as 61.7%. Out of the 5 assessment units, 4 blocks (80%) are categorized as 'Safe' and 1 block (20%) Kavaratti, as 'Semi Critical'.

Similarly, out of 26.21 sq km recharge worthy area of the State, 6.31 sq km (24 %) under 'Semi-critical', 19.87 sq km (76 %) under 'Safe' category of assessment units. Out of total 5.47 mcm annual extractable ground water resources of the State, 1.335 mcm (24 %) under 'Semi-critical' and 4.135 mcm (76 %) are under 'Safe' categories of assessment units.

As compared to the 2022 assessment, there is no significant changes in the Total Annual Ground Water Recharge, Annual Extractable Ground Water Resources, annual ground water extraction and stage of ground water extraction of the UT in 2023.



Dynamic Ground water Resources Scenario 2023 - Lakshadweep

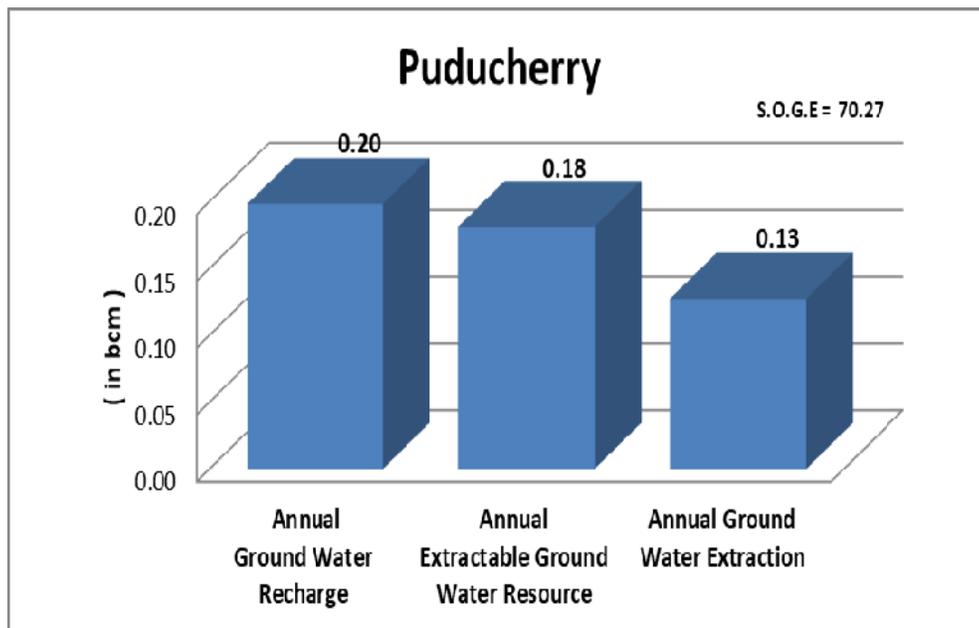
7.36 PUDUCHERRY

The Union Territory of Puducherry is underlain by the semi-consolidated and unconsolidated sedimentary formations, which mainly sustain dug wells, shallow and deep tube wells. The yield of the wells generally varies between 3 to 15 lps. High yielding wells in the range of 10 to 40 lps exists in the Tertiary sandstones.

The Dynamic ground water resources for Union Territory of Puducherry have been assessed Taluk wise i.e.Ozhukarai, Villianur, Puducherry, Bahour, Mahe and Yanam taluks comes under Puducherry District and Thirunallar and Karaikal taluks comes under Karaikal District. The Annual Ground Water Recharge of the UT of Puducherry has been assessed as 0.198 bcm, Annual Extractable Ground Water Resources is 0.181 bcm and the Annual Ground Water Extraction is 0.127 bcm. The overall Stage of Ground Water Extraction of Union Territory of Puducherry is 70.27 %. Out of 8 taluks assessed, 3 taluks (37.5%) (Mahe, Karaikal &Thirunallar) falls under 'Safe' category, 3 taluks (37.50%) (Ozhukarai, Villianur&Bahour) has been categorized as 'Semi-Critical', 1 taluk (12.50%) (Puducherry) as 'Over-exploited' and 1 taluk (12.50%) (Yanam) as 'Saline'.

Similarly, out of 483 sq km recharge worthy area of the UT, 40.65 sq km (8.42 %) area are under 'Over-Exploited', 252.35 sq km (52.25 %) under 'Semi-critical', 170 sq km (35.20 %) under 'Safe' category of assessment units. 20 sq km (4.14%) area is under 'Saline' category of assessment units. Out of total 180.99 mcm annual extractable ground water resources of the State, 24.06 mcm (13.30 %) are under 'Over-exploited', 116.03 mcm (64.11 %) under 'Semi-critical' and 40.89 mcm (22.59 %) are under 'Safe' categories of assessment units.

As compared to 2022 assessment, there is no significant change in annual ground water recharge, extractable ground water resources & ground water extraction. The Stage of Ground Water Extraction of the UT has increased marginally from 69.17 % to 70.27 %.



Dynamic Ground water Resources Scenario 2023 – Puducherry

CHAPTER 8

8.0 CONCLUSIONS

Total Annual Ground Water Recharge in the country (2023) has been assessed as 449.08 billion cubic meters (bcm). Ground water resources are replenished through rainfall and other sources like return flow from irrigation, canal seepage, recharge from water bodies, water conservation structures etc. The main source of annual ground water recharge is rainfall, which contributes nearly 60.3% of the Total Annual Ground Water Recharge. The Total Annual Extractable Ground Water Resource of the country has been assessed as 407.21bcm, after keeping a provision for natural discharge. The Annual Ground Water Extraction of the country (2023) is 241.34bcm, the largest user being irrigation sector, which accounts for 87% of the total annual groundwater extraction. The Stage of ground water extraction for the entire country, which is the percentage of ground water extraction with respect to Annual Extractable Ground Water Recharge, has been computed as 59.26%. The extraction pattern of ground water is not uniform across the country, resulting in ground water stressed conditions in some parts of the country while in some other areas; ground water extraction has been sub-optimal. Out of the total 6553 assessment units (Blocks/ Districts/ Mandals/ Talukas) in the country, 736 units (11.23%) have been categorized as 'Over-Exploited', 199 units (3.04%) have been categorized as 'Critical', 698 units (10.65%) have been categorized as 'Semi-Critical' and 4793 units (73.14%) have been categorized as 'Safe'. Apart from this, there are 127 assessment units (1.94%), which have been categorized as 'Saline' as major part of the ground water in phreatic aquifers is brackish or saline. Similarly out of 24.64 lakh sq km recharge worthy area of the country, 4.18 lakh sq km (16.95%) are under 'Over-Exploited', 0.86 lakh sq km (3.49%) are under 'Critical', 2.92 lakh sq km (11.85%) are under 'Semi-Critical', 16.30 lakh sq km (66.15%) are under 'Safe' and 0.38 lakh sq km (1.55%) are under 'Saline' category assessment units. Out of 407.21bcm of Total Annual Extractable Resources of the country, 45.12bcm (11.08%) are under 'Over-Exploited', 12.91 bcm (3.17%) are under 'Critical', 47.37bcm (11.63%) are under 'Semi-Critical', 301.80 bcm (74.11%) are under 'Safe' category assessment units.

Over-exploitation of ground water resources could be due to various region-specific reasons. Assessment units located in the north-western part of the country (particularly in the states of Punjab, Haryana, Delhi and Uttar Pradesh) have plenty of replenishable ground water resources but because of the over extraction beyond the annual ground water recharge, many of these units have become Over-exploited. Over-exploited units are also common in the western part of the country, particularly in Rajasthan and Gujarat where the prevailing arid climate results in low recharge of ground water and hence stress on these source. In peninsular India, over-exploited units are wide spread in the states of Karnataka, Tamil Nadu and parts of Andhra Pradesh and Telangana which could be attributed mainly to the low storage and transmission capacities of aquifers of the hard rock terrains, which results in reduced availability of the resource.

The total Annual Ground Water Recharge for the entire country, as in 2023 has increased by 11.48bcm as compared to the last assessment (2022). The total Annual Extractable GW Resources has also increased by 9.13bcm. The Annual Ground Water Extraction for irrigation, domestic and Industrial uses has also increased by 2.18 bcm during this period. These variations are attributed mainly to refinement of parameters, refinement in well census data and changing ground water regime. The Stage of Ground Water Extraction of the Country has decreased from 60.08% to 59.26%.

It is also pertinent to add that as it is advisable to restrict the ground water extraction as far as possible to annual replenishable resources, the categorization also reflects the relation between the annual replenishment and ground water extraction.

GEC-2015 methodology has been developed for prevalent Indian conditions, on the basis of terrain characteristics and data availability. "INDIA-GROUNDWATER RESOURCE ESTIMATION SYSTEM (INGRES) is a Software/Web-based Application developed by CGWB in collaboration with IIT-Hyderabad. It provides common and standardized platform for Ground Water Resource Estimation for the entire country and its pan-India operationalization (Central and State Governments). The system take 'Data Input' through Excel as well as Forms, compute various ground water components (recharge, extraction etc.) and classify assessment units into appropriate categories (safe, semi-critical, critical and over-exploited). The Software uses GEC 2015 Methodology for estimation and calculation of Groundwater resources. It allows for unique and homogeneous representation of groundwater fluxes as well as categories for all the assessment units (AU) of the country.

An analysis of assessment results leads us to the following inferences as the way forward in the assessment of Ground water resources.

8.1 WATER BALANCE STUDIES

Ground water is one of the several components of the Hydrologic Cycle, other important components being rainfall, surface water, soil moisture and evapotranspiration. Holistic water resources management interventions require proper understanding of the interactions between the different components of the hydrosphere. Studies for determining the Base flow and lateral flow components in the Water Balance equation need to be taken up to bring more accuracy to the Ground water Resources Assessment. Initially, the number of such studies can be taken up in areas representing different hydrogeological set up of India (Southern hard rock terrain, Deccan Basaltic terrain, Indo-Gangetic and Brahmaputra alluvial plains, Coastal alluvium, Desert terrain and Himalayan terrain etc.)

8.2 AQUIFER CHARACTERIZATION AND PARAMETER ESTIMATION

One of the key elements that determine the accuracy of ground water resources assessment is the realistic estimation of the recharge and discharge parameters. It is recommended that more experimental studies be taken up for refining the norms of RIF, return flow from irrigation based on soil types and agro-climatic zone, recharge from water conservation and water bodies and more field studies for evaluation of specific yield values as well as its variation with depth.

8.3 CASE STUDIES LINKING ASSESSMENT WITH MANAGEMENT

It is recommended to take up case studies in various assessment units wherein quantitative evaluation of the ground water management interventions and consequent changes in the assessment results could be analysed. Such studies would help bring out the efficacy of various management interventions on the ground water regime.

8.4 TEMPORAL AVAILABILITY OF GROUND WATER RESOURCES

Even though the GEC 2015 methodology advocates season-wise resource assessment, the estimation of recharge during monsoon and non-monsoon seasons may not be sufficient. Temporal variations in groundwater availability, particularly in hard rock terrain are not reflected in present practices. Hence,

the assessment of temporal availability of ground water resources on the basis of available water columns can be attempted by considering the water levels measured frequently using Digital Water Level Recorders (DWLRs).

8.5 CREATION OF DATABASE FOR GROUND WATER RESOURCES ASSESSMENT AND ITS REGULAR UPDATING

GEC 2015 has devised the data structure of all the data elements (like water level, rainfall etc) and norms (like Specific Yield, Rainfall Infiltration Factor etc.) with its name, type of data and its precision. The templates (excel sheets) for data collection/compilation for assessment through IN-GRES using GEC 2015 has also been devised. However, major challenges are lack of dedicated manpower as well as presence of State GW/Nodal Departments (in majority of States) at District level for understanding/analysis of data/information to be collected/compiled from different State Departments (like Agriculture, Irrigation, Water Supply, Industries, Water Conservation etc.). Of particular importance in this regard are data/information related to recharge from water bodies, water conservation/harvesting structures, return flow from applied irrigation and details of ground water extraction structures in use for irrigation, domestic and industrial purpose. These need to be collected/compiled and regularly updated at district/block level so that more realistic assessment of ground water resources could be accomplished.

8.6 AQUIFER-WISE ASSESSMENT WITHIN THE PRESENT ADMINISTRATIVE UNITS (ASSESSMENT UNITS) IN AREAS OTHER THAN HARD ROCK TERRAIN

Areas occupied by unconsolidated sediments (alluvial deposits, aeolian deposits, coastal deposits etc.) usually have flat topography and assessment of ground water resources has been carried out taking administrative units (block/mandal/taluk etc.) as assessment units to facilitate the local administration in planning the ground water management programmes (both supply and demand side). However, if more than one hydrogeological/aquifer units (with distinctive characteristics, sustainability and ground water extraction patterns) exist within these administrative units, then the assessment units could be further divided into smaller units based on hydrogeological/aquifer characteristics. This will lead to more accurate assessment (aquifer wise) of resources and micro-level/area-specific interventions/management measures could be implemented.

8.7 GROUND WATER ASSESSMENT OF DEEPER AQUIFER SYSTEMS IN INDO-GANGETIC, BRAHMAPUTRA AND COASTAL ALLUVIAL TERRAIN

The dynamic ground water resources mainly comprises ground water resources available within the zone of water table fluctuation which are being regularly replenished every year through rainfall and other sources of recharge. This assessment has been carried out and categorization done based on utilization with respect to annual availability of dynamic ground water resources. However, in Indo-Gangetic, Brahmaputra and Coastal Alluvial areas multiple aquifer systems exist (on a regional scale) with sustainable and high yield characteristics. For assessment of deeper aquifers, more studies on individual aquifer potential/sustainable yield along with facilities for monitoring of piezometric heads (by establishing piezometers tapping different aquifer zones) have to be carried out. The resources of deeper aquifer systems could be considered for extraction during exigencies as well as for drinking water purpose for nearby regions.

8.8 AQUIFER-STREAM INTERACTIONS

Additional studies on aquifer-stream interactions are required to understand the contribution of ground water to streams and the requirement of environmental flows for sustainability of water resources and surrounding ecosystem.

8.9 GROUND WATER MODELLING AND PREDICTIVE SIMULATION

Besides the assessment of the dynamic ground water resources using norms prescribed in GEC 2015 methodology through automation, the concept of Ground water modelling must be included where predictive simulation can also be done. This would give an idea of the future availability of Ground water resources with respect to the changing climate and extraction patterns.

ANNEXURE - I

**State-wise Ground Water Resources Availability, Utilization and
Stage of Extraction
(as in 2023)**

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STATE-WISE GROUND WATER RESOURCES OF INDIA, 2023																
S. No.	States / Union Territories	Ground Water Recharge					Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season		Irrigation				Industrial	Domestic	Total				
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Andhra Pradesh	8.97	9.94	0.85	8.08	27.83	1.39	26.45	6.44	0.14	0.9	7.48	1.25	19.09	28.3	
2	Arunachal Pradesh	2.11	0.66	1.06	0.81	4.65	0.49	4.16	0.01	0.0003	0.01	0.02	0.01	4.15	0.42	
3	Assam	19.29	0.81	6.53	0.63	27.26	6.32	20.93	2.06	0.01	0.55	2.63	0.58	18.27	12.54	
4	Bihar	20	7.72	1.14	5.11	33.96	3.24	30.72	10.13	0.37	3.26	13.75	3.48	17.02	44.76	
5	Chhattisgarh	8.39	2.24	0.23	2.49	13.34	1.16	12.18	4.87	0.13	0.75	5.75	0.83	6.51	47.17	
6	Delhi	0.08	0.09	0.04	0.17	0.38	0.04	0.34	0.08	0.0007	0.26	0.34	0.28	0.03	99.13	
7	Goa	0.356	0.008	0.003	0.029	0.396	0.079	0.317	0.025	0.0005	0.038	0.068	0.040	0.247	21.37	
8	Gujarat	19.49	2.75	0.00	5.12	27.35	1.95	25.41	12.13	0.17	0.84	13.13	0.80	12.86	51.68	
9	Haryana	3.18	2.87	0.63	2.87	9.55	0.86	8.69	10.55	0.62	0.62	11.8	0.64	1	135.74	
10	Himachal Pradesh	0.62	0.18	0.13	0.19	1.11	0.1	1.01	0.18	0.05	0.12	0.35	0.12	0.66	34.95	
11	Jharkhand	4.96	0.46	0.46	0.37	6.25	0.52	5.73	0.94	0.21	0.65	1.8	0.65	3.95	31.38	
12	Karnataka	9.22	4.95	1.12	3.64	18.93	1.85	17.08	10.09	0.13	1.1	11.32	1.18	7.29	66.26	
13	Kerala	4.09	0.14	0.44	0.85	5.53	0.52	5.01	1.12	0.01	1.59	2.73	2.19	2.02	54.55	
14	Madhya Pradesh	26.94	1.62	0.13	6.78	35.47	2.62	32.85	17.4	0.17	1.72	19.3	1.88	14.45	58.75	
15	Maharashtra	20.74	2.62	0.64	8.76	32.76	1.82	30.95	15.28	0.03	1.36	16.66	1.42	14.81	53.83	
16	Manipur	0.4	0.001	0.11	0.006	0.52	0.05	0.47	0.017	0.0002	0.02	0.04	0.02	0.42	7.99	
17	Meghalaya	1.32	0.05	0.42	0.04	1.83	0.32	1.51	0.02	0.0003	0.04	0.07	0.05	1.43	4.58	
18	Mizoram	0.19	0	0.03	0	0.22	0.02	0.2	0	0	0.01	0.01	0.01	0.19	3.70	
19	Nagaland	0.4	0.12	0.08	0.0039543	0.6	0.06	0.54	0.00227	0.00002	0.02	0.02	0.02	0.52	3.76	
20	Odisha	10.19	2.89	1.51	2.76	17.35	1.41	15.94	5.96	0.18	1.25	7.39	1.37	8.49	46.33	
21	Punjab	4.72	9.07	0.72	4.33	18.84	1.87	16.98	26.39	0.24	1.18	27.8	1.19	1.82	163.76	
22	Rajasthan	9.01	0.64	0.19	2.6	12.45	1.2	11.25	14.3	0.13	2.31	16.74	2.31	0.9	148.77	
23	Sikkim	0.166	0.004	0.073	0.000	0.243	0.024	0.219	0.009	0.001	0.002	0.012	0.002	0.206	5.54	
24	Tamil Nadu	7.26	10.36	1.30	2.66	21.59	2.10	19.51	13.48	0.15	0.79	14.42	1.47	6.86	73.91	
25	Telangana	7.15	7.43	1	7.55	23.14	2.22	20.92	7.24	0.35	0.49	8.09	0.7	12.83	38.65	
26	Tripura	0.81	0.16	0.32	0.07	1.36	0.26	1.09	0.03	0.0003	0.08	0.11	0.09	0.98	9.92	
27	Uttar Pradesh	35.72	14.01	0.78	21.32	71.83	6.26	65.57	40.92	0.44	5.04	46.4	5.42	20.04	70.76	
28	Uttarakhand	1.31	0.29	0.1	0.32	2.02	0.17	1.85	0.67	0.12	0.17	0.95	0.17	0.89	51.69	
29	West Bengal	16.91	1.71	3.54	4.13	26.29	2.39	23.9	8.99	0.15	1.57	10.71	1.77	13.07	44.81	
30	Andaman And Nicobar	0.298	0.0002	0.320	0.0001	0.618	0.062	0.557	0.0001	0.001	0.007	0.008	0.007	0.549	1.37	
31	Chandigarh	0.010	0.014	0.003	0.027	0.054	0.005	0.048	0.008	0.002	0.026	0.037	0.026	0.012	75.41	
32	Dadra & Nagar Haveli	0.06	0.01	0.03	0.02	0.09	0.01	0.08	0.01	0.09	0.01	0.11	0.02	0.01	131.53	
	Daman & Diu	0.03	0.001	0	0.001	0.035	0.002	0.033	0.003	0.055	0	0.057	0.016	0	170.70	
33	Jammu And Kashmir	1.17	1.94	1.18	0.64	4.94	0.47	4.46	0.32	0.05	0.71	1.08	0.73	3.36	24.20	
34	Ladakh	0.01	0.05	0.02	0	0.09	0.01	0.08	0	0.0002	0.03	0.03	0.03	0.05	37.05	
35	Lakshadweep	0.011	0.00001	0.003	0.000	0.014	0.008	0.005	0.00	0.00	0.003	0.003	0.003	0.002	61.723	
36	Puducherry	0.05	0.09	0.01	0.04	0.20	0.02	0.18	0.07	0.01	0.05	0.13	0.05	0.05	70.27	
	Grand Total	245.63	85.89	25.15	92.42	449.08	41.89	407.21	209.74	4.01	27.57	241.34	30.82	195.03	59.26	

Note-For National compilation, Evapotranspiration loss of Arunachal Pradesh, Assam, Meghalaya, Tripura and Lakshadweep has been added in Total Natural Discharges.

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ANNEXURE - II
District-wise Ground Water Resources Availability, Utilization and
Stage of extraction
(as in 2023)

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DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
ANDHRA PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Alluri Sitharama Raju	39712.55	45159.92	3606.24	5041.66	93520.37	4676.52	88843.85	577.32	0.00	1629.76	2208.25	1810.56	86679.17	2.49
2	Anakapalli	23022.41	36881.47	14099.21	6139.20	80142.29	4007.53	76134.74	14953.87	472.55	4898.55	20325.18	5764.06	55762.90	26.70
3	Ananthapuramu	41549.90	43716.95	641.38	37402.50	123310.73	6165.78	117144.95	34880.78	515.59	3588.93	38985.56	4733.85	77496.92	33.28
4	Annamayya	46543.94	20448.06	712.98	21346.88	89051.86	4452.72	84599.14	37917.89	137.75	3372.71	41428.40	5013.91	41865.79	48.97
5	Bapatla	23564.31	36845.21	1344.37	13371.33	75125.22	3756.29	71368.93	10900.62	55.24	2689.97	13645.89	2820.74	57813.38	19.12
6	Chittoor	58261.29	14840.54	1246.99	18816.39	93165.21	4658.55	88506.66	44292.62	1330.25	4042.46	49665.36	5847.33	37894.67	56.11
7	East Godavari	24044.94	46936.69	2492.67	38704.40	112178.70	5608.97	106569.74	28398.39	1155.12	2082.54	31636.01	2199.24	76735.16	29.69
8	Eluru	50871.81	76454.98	1620.74	37091.46	166038.99	8302.18	157736.81	40417.18	460.80	10085.37	50962.97	11458.47	107732.99	32.31
9	Guntur	10346.15	22526.88	4321.07	20783.20	57977.30	2898.92	55078.38	7902.72	209.65	2539.92	10652.25	2788.24	44177.74	19.34
10	Kakinada	16335.84	54048.29	3403.86	28783.29	102571.28	5091.13	97480.11	12460.61	2577.66	2085.56	17123.50	2191.45	80510.19	17.57
11	Konaseema	16267.90	48963.66	2068.18	46064.06	113363.80	5668.18	107695.61	14987.84	1026.65	1266.12	17280.41	1327.73	90449.81	16.05
12	Krishna	23700.04	90011.45	4196.69	82260.96	200169.14	10008.60	190160.54	45685.31	994.54	2061.21	48741.05	2736.07	140744.63	25.63
13	Kurnool	37888.27	22869.19	566.53	15764.23	77088.22	3854.52	73233.70	11879.53	59.85	5277.86	17217.31	5464.97	55888.49	23.51
14	Nlr	20116.16	31641.94	1211.81	19833.50	72803.41	3640.28	69163.13	20579.11	1137.84	1551.26	23268.31	1609.86	46002.42	33.64
15	Nandyal	22411.99	52414.99	66.46	31552.10	106445.54	5322.58	101122.96	13322.30	128.40	503.11	13953.09	503.56	87169.87	13.80
16	Palnadu	17343.91	54608.72	9426.81	18922.04	100301.48	5015.04	95286.44	24219.34	81.63	4268.45	28569.56	4393.82	86662.11	29.98
17	Parvathipuram Manyam	30690.48	36721.59	3665.57	23402.99	94480.63	4724.50	89756.13	17827.11	12.96	1765.96	19605.87	2330.08	71187.33	21.84
18	Prakasam	60916.02	17698.69	994.24	11118.63	90727.58	4415.71	86143.71	23626.02	469.79	3859.60	27955.73	4215.74	58666.08	32.45
19	Sri Potti Sriramulu Nellore	67647.31	52262.93	20210.82	118510.33	258631.39	12931.68	245699.72	57334.73	987.25	5701.42	64023.96	9682.58	179473.61	26.06
20	Sri Sathya Sai	43246.69	31270.86	595.26	42917.36	118030.17	5901.67	112128.50	54079.04	121.32	8856.86	63057.16	11119.93	56121.97	56.24
21	Srikakulam	34392.16	37913.88	2560.80	14338.22	89205.06	4460.36	84744.69	23277.56	259.20	4711.98	28248.35	15250.62	60358.34	33.33
22	Tirupati	81649.20	22032.16	87.94	56115.77	159885.07	7994.30	151890.77	39727.84	1439.05	3788.32	44955.90	8646.84	106732.50	29.60
23	Visakhapatnam	8503.85	3256.51	847.80	1076.53	13684.69	684.40	13000.29	2878.65	50.52	2407.96	5337.18	3184.22	7077.33	41.05
24	Vizianagaram	30432.86	48264.79	4077.59	45923.58	128698.82	6435.44	122263.28	26120.16	131.52	2039.23	28290.90	4185.77	94569.55	23.14
25	West Godavari	12605.49	23343.68	235.36	24001.68	60186.21	3009.35	57176.86	5734.47	101.52	447.04	6282.88	1118.19	50222.81	10.99
26	Y.S.R Kadapa	54542.18	23120.53	539.58	28810.11	107012.40	5350.79	101661.60	29760.06	390.31	4264.09	34414.49	4264.09	68869.94	33.85
	Total(Ham)	896607.65	994254.56	84840.95	808092.40	2783795.56	139035.99	2644591.24	643741.06	14306.96	89786.25	747835.5	124661.92	1908865.70	28.30
	Total(Bcm)	8.97	9.94	0.85	8.08	27.83	1.39	26.45	6.44	0.14	0.90	7.48	1.25	19.09	28.30

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
ARUNACHAL PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	CHANGLANG	16679.04	23267.1	7569.09	29705.68	77220.91	7722.08	69498.83	154.16	0	177.52	331.68	188.4	69156.28	0.48
2	EAST KAMENG	8567.56	1766.35	3180.99	2259	15773.9	1577.39	14196.51	166.1	0	14	180.09	16.26	14014.15	1.27
3	EAST SIANG	58602.28	5556.8	14046.82	7098.03	85303.93	8829.64	76474.29	178	0	62.93	240.93	65.66	76230.64	0.32
4	LOHIT	62562.81	3416.79	41934.2	4365.45	112279.25	10561.55	101717.7	139.5	8.4	224.75	372.65	237.07	101332.73	0.37
5	LOWER DIBANG VALLEY	41521.92	5011.42	32545.92	6400.16	85479.42	8547.94	76931.48	114.84	0	31.21	146.05	31.9	76784.74	0.19
6	LOWER SUBANSIRI	2475.32	516.76	1442.42	661.56	5096.06	675.27	4420.79	76.85	0	21.62	98.46	26.71	4317.24	2.23
7	PAPUM PARE	8131.72	5784.91	2332.98	7387.61	23637.22	4876.35	18760.87	100.76	29.4	102.08	232.25	123.14	18507.56	1.24
8	TIRAP	5952.27	190.74	1658.41	243.84	8045.26	804.52	7240.74	16.6	0	48.31	64.92	50.06	7174.07	0.9
9	UPPER SUBANSIRI	141.52	7558.08	73.65	6434.4	14207.65	1420.76	12786.89	19.36	0	3.51	22.87	4.39	12763.14	0.18
10	WEST KAMENG	2342.96	7081.88	397.31	9040.8	18862.95	1886.31	16976.64	4.64	0	11.28	15.91	11.73	16960.29	0.09
11	WEST SIANG	4445.28	6091.03	916.74	7776.36	19229.41	1922.95	17306.46	23.5	1.18	2.34	27.02	2.4	17279.38	0.16
	Total(Ham)	211422.68	66241.86	106098.53	81372.89	465135.96	48824.76	416311.2	994.31	38.98	699.55	1732.83	757.72	414520.22	0.42
	Total(Bcm)	2.11	0.66	1.06	0.81	4.6513596	0.4882476	4.16	0.01	0.0003	0.01	0.02	0.01	4.15	0.42

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
ASSAM															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	BAKSA	113860.77	6773.38	27266.79	10880.85	158781.79	18300.92	140480.87	2555.28	3.16	1976.51	4534.95	2042.59	135879.84	3.23
2	BARPETA	59076.65	5655.03	22901.18	3527.78	91160.64	13561.87	77598.77	24373.44	13.12	3923.74	28310.31	4218.97	48993.23	36.48
3	BONGAIGAON	35859.3	2572.17	12847.54	2897.03	54176.04	9642.23	44533.81	10153.92	5.5	1648.34	11807.74	1766.22	32608.18	26.51
4	CACHAR	61596.25	2250.95	23182.18	2896.86	89926.24	48305.57	41620.67	1.68	30.77	1390.76	1423.19	1487.81	40100.42	3.42
5	CHIRANG	83302.01	1238.32	25347.61	138.24	110026.18	12774.13	97252.05	1518.72	4.82	936.84	2460.4	970.07	94758.42	2.53
6	DARRANG	39107.46	1500.03	14212.77	1052.21	55872.47	5468.56	50403.91	15523.2	56.52	2076.81	17656.55	2240.22	32583.95	35.03
7	DHEMAJI	97864.5	302.56	38007	67.08	136241.14	45842.64	90398.5	3089.52	7.07	1486.17	4582.78	1588.46	85713.43	5.07
8	DHUBRI	82267.94	4434.97	18117.49	5088.98	109909.38	11577.76	98331.62	23600.64	2.73	4578.26	28181.64	4986.54	69741.69	28.66
9	DIBRUGARH	109264.86	2133.21	37792.02	1121.99	150312.08	25536.56	124775.52	5633.04	82.53	2662.21	8377.76	2761.88	116298.08	6.71
10	DIMA HASAO	43723.76	144.95	19071.65	18.92	62959.28	6295.92	56663.36	336	1.19	233.6	570.79	243.95	56082.23	1.01
11	GOALPARA	57452.16	2096.57	19326	2265.11	81139.84	22484.11	58655.73	9972.48	41.85	2410.11	12424.43	2604.68	46036.72	21.18
12	GOLAGHAT	77427.93	1421.46	29903.35	856.9	109609.64	12614.02	96995.62	3833.76	129.65	1973.04	5936.47	2052.65	90979.54	6.12
13	HAILAKANDI	19091.47	1478.02	9513.41	340.65	30423.55	9547.58	20875.97	5.04	0	527.22	532.27	566.95	20303.97	2.55
14	JORHAT	79504.52	8245.09	32140.71	8577.14	128467.46	72013.47	56453.99	5722.08	22.38	1376.52	7121.01	1416.15	49293.35	12.61
15	KAMRUP	65918.63	8884.97	22462.15	1975.13	99240.88	22542.87	76698.01	20233.92	239.58	3495.44	23968.96	3696.96	52527.55	31.25
16	KAMRUP (M) RURAL	9439.87	7515.06	4887.87	1755.74	23598.54	5367.78	18230.76	1533.84	71.9	431.98	2037.7	435.6	16189.44	11.18
17	KAMRUP (M) URBAN	3408.73	107.61	2135.66	24.84	5676.84	1530.19	4146.65	0	44.93	3177.75	3222.67	3203.51	898.22	77.72
18	KARBI ANGLONG	104922.72	491.96	26988.64	107.63	132510.95	26169.05	106341.9	1058.4	8.17	1919.21	2985.77	2032.03	103243.3	2.81
19	KARIMGANJ	41004.02	1096.05	19365.36	281.84	61747.27	29124.65	32622.62	85.68	2.64	1303.33	1391.66	1404.17	31130.13	4.27
20	KOKRAJHAR	136436.66	2598.85	42129.04	2011.55	183176.1	24331.77	158844.33	6328.56	0	1721.8	8050.38	1750.75	150764.99	5.07
21	LAKHIMPUR	88228.14	788.66	30085.16	204.89	119306.85	47368.26	71938.59	4480.56	10.49	2399.61	6890.69	2537.18	64910.33	9.58
22	MORIGAON	40352.84	2583.37	8474.76	2320.96	53731.93	10792.97	42938.96	10822.56	5.02	2278.91	13106.49	2470.27	29641.1	30.52
23	NAGAON	100753.37	8525.85	21452.74	10412.52	141144.48	39530.94	101613.54	27137.04	94.58	1774.25	29005.86	1912.31	72469.6	28.55
24	NALBARI	25734.6	155.72	8849.97	43.15	34783.44	3478.35	31305.09	7479.36	12.81	394.15	7886.34	409	23403.89	25.19
25	SIBSAGAR	74978.26	603.47	32055.39	187.06	107824.18	16704.31	91119.87	2721.6	72.06	1744.65	4538.3	1795.6	86530.64	4.98
26	SONITPUR	121757.09	1947.22	42220.16	1087.58	167012.05	40545.64	126466.41	8942.64	100.64	3959.28	13002.54	4160.16	113263	10.28
27	TINSUKIA	107817.56	2578.92	40135.93	1772.98	152305.39	27419.66	124885.73	4331.04	41.04	2043.34	6415.41	2146.38	118367.28	5.14
28	UDALGURI	48850.36	2535.4	22147.2	665.18	74198.14	23238.07	50960.07	4569.6	62.68	1515.63	6147.88	1560.71	44767.13	12.06
	Total(Ham)	1929002.43	80659.82	653019.73	62580.79	2725262.77	632109.85	2093152.92	206043.6	1167.82	55359.44	262570.94	58461.77	1827479.65	12.54
	Total(Bcm)	19.29	0.81	6.53	0.63	27.25	6.3210985	20.93	2.06	0.01	0.55	2.63	0.58	18.27	12.54

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
BIHAR															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Araria	71874.22	43086.41	7485.44	28501.4	150947.47	13767.72	137179.75	26373.62	114	9289.55	35777.16	9930.12	100762.02	26.08
2	Arwal	10951.37	6450.24	0	3277.68	20679.29	1673.62	19005.67	5561.32	129	2532.87	8223.18	2707.53	10607.82	43.27
3	Aurangabad	52370.97	54078.6	1116.5	28766.31	136332.38	13511.18	122821.2	19647.43	2630.1	8583.46	30861.03	9175.33	91452.59	25.13
4	Banka	41945.92	15362.93	915.09	7030.29	65254.23	6008.2	59246.03	11331.27	94.12	6607.92	18033.31	7063.57	40757.08	30.44
5	Begusarai	44232.03	2869.53	2724.84	5043.06	54869.46	5486.91	49382.55	22021.73	73.2	9122.88	31217.81	9751.95	17535.66	63.22
6	Bhagalpur	58705.56	7440.78	6287.29	4599.15	77032.78	7703.3	69329.49	17599.23	1104.84	6664.16	25368.22	7123.72	43501.71	36.59
7	Bhojpur	46112.84	24563.91	1103.52	17402.46	89182.73	8905.56	80277.16	28673.57	715.45	8532.48	37921.51	9120.84	42211.99	47.24
8	Buxar	32650.03	18778.67	626.77	12913.39	64968.86	6317.64	58651.22	19272.33	486.95	5152.92	24912.2	5508.25	33383.7	42.48
9	Darbhanga	55514.21	8449.48	4990.37	6486.88	75440.94	7336.83	68104.12	22006.67	793.6	12847.21	35647.5	13733.09	31570.74	52.34
10	East Champaran	95333.37	57911.27	5352.08	33725.09	192321.81	18988.8	173333	51125.81	7176.69	16656.38	74958.88	18240.72	98256.75	43.25
11	Gaya	89395.82	21304.31	2497.4	11161.01	124358.54	11949.97	112408.56	39563.56	364.68	14115.09	54043.27	15088.38	57392.01	48.08
12	Gopalganj	46590.93	33086.33	1553.12	20246.47	101476.85	9664.27	91812.58	36196.74	511.21	8485.39	45193.39	9070.51	47888.13	49.22
13	Jamui	32684.06	7892.25	1686.34	4324.27	46586.92	3797.86	42789.06	8057.04	8.45	5906.21	13971.72	6313.45	29788.17	32.65
14	Jehanabad	17128.59	8065.28	462.46	6116.29	31772.62	3177.25	28595.37	20029.64	0	3478.81	23508.45	3718.69	6457.75	82.21
15	Kaimur	47242.02	19309.87	900.77	12566.08	80018.74	7917.35	72101.38	21918.9	32.67	5301.1	27252.65	5666.63	44688.37	37.8
16	Katihar	81870.63	21874.76	7209.24	15424.77	126379.4	11969.66	114409.74	51373.99	120.78	9393.91	60888.69	10041.67	52935.07	53.22
17	Khagaria	39977.95	2112.96	1883.05	4667.24	48641.2	4864.13	43777.08	20747.5	17.79	5290.43	26055.72	5655.24	17356.56	59.52
18	Kishanganj	62021.55	3212.26	5300.16	3613.52	74147.49	5515.29	68632.2	19352.99	298.5	5317.98	24969.48	5684.67	43296.03	36.38
19	Lakhisarai	21987.35	11622.51	1279.31	6733.6	41622.77	3937.22	37685.55	10576.92	4.2	3222.16	13803.27	3444.33	23778.51	36.63
20	Madhepura	43021.78	34951.07	3931.72	23909.39	105813.96	10581.42	95232.53	32371.51	124.2	6542.17	39037.84	6993.29	62385.47	40.99
21	Madhubani	77386.52	30607.22	8011.77	21141.55	137147.06	13462.99	123684.06	28520.58	9132.6	14582.38	52235.54	15587.92	71148.06	42.23
22	Munger	26217.8	8286.18	1545.83	2688.62	38738.43	3873.85	34864.58	6004.08	735.18	4382.62	11121.89	4684.81	23554.22	31.9
23	Muzaffarpur	72298.61	23652.52	4231.9	18197.33	118380.36	11483.72	106896.64	55501.95	1279.35	15242.84	72024.15	16293.9	34932.7	67.38
24	Nalanda	44440.24	8576.31	1283.24	7593.4	61893.19	6007.14	55886.05	31400.15	1852.01	9023.03	42275.19	9645.24	14909.04	75.65
25	Nawada	45557.71	12126.63	2056.28	8376.18	68116.8	6381.72	61735.07	24664.5	65.4	5733.56	30463.47	6128.91	30941.87	49.35
26	Patna	75889.63	16387.72	1990.62	13742.71	108010.68	10181.64	97875.01	41773.94	420.12	15885.77	58079.83	16981.15	39454.67	59.34
27	Purnea	87864.55	45993.42	8812.19	30159.96	172830.12	15901.54	156928.58	40342.46	1031.3	10046.13	51419.9	10738.84	107124.72	32.77
28	Rohtas	69338.3	33336.82	1554.07	21417.44	125846.63	12584.72	113261.9	36123.43	194.4	9263.5	45581.33	9902.25	68245.94	40.24
29	Saharsa	51434.24	13086.12	4221.66	8888.83	77630.85	7696.19	69934.66	18586.21	63	5780.78	24430.02	6179.39	45106.03	34.93
30	Samastipur	68077.24	9887.42	3001.88	7623.21	88589.75	8858.96	79730.79	41098.05	264.3	13532.46	54894.82	14465.58	24186.11	68.85
31	Saran	53852.68	31321.02	2193.7	19080.64	106448.04	9571.87	96876.16	38139.93	170.35	12507.08	50817.35	13369.51	47887.94	52.46
32	Sheikhpura	12807.78	2381.9	610.19	1865.76	17665.63	1603.86	16061.77	6732.45	2.4	2023.49	8758.33	2163.02	7206.88	54.53
33	Sheohar	12102.72	3858.91	844.06	1459.57	18265.26	1826.53	16438.72	7958.25	7	2142.75	10108	2290.5	6182.96	61.49
34	Sitamarhi	57089.04	4486.75	4163.59	3715.83	69455.21	6403.32	63051.89	20928.82	88	10852.21	31869.05	11600.5	30434.55	50.54
35	Siwan	50160.15	31263.81	887.5	22238.82	104550.28	10017.95	94532.32	40819.44	19.2	10452.01	51290.64	11172.74	42520.97	54.26
36	Supaul	52276.62	30623.15	4815.78	25292.11	113007.66	10971.7	102035.95	26411.81	71.3	7052.25	33535.38	7538.55	68014.28	32.87
37	Vaishali	49515.84	17370.34	1783.69	10470.35	79140.22	7914.02	71226.21	36169.24	2263.29	11038.9	49471.41	11800.07	23657.69	69.46
38	West Champaran	101589.63	45987.43	4241.96	30797.38	182616.4	16529.53	166086.88	27704.9	4396	12928.52	45029.4	13820	120187.89	27.11
	Total(Ham)	1999710.5	771657.09	113555.38	511258.04	3396181.01	324345.43	3071881.48	1012681.94	36855.62	325513.33	1375051	348394.86	1701702.65	44.76
	Total(Bcm)	20	7.72	1.14	5.11	33.96	3.24	30.72	10.13	0.37	3.26	13.75	3.48	17.02	44.76

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
CHHATISGARH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Balod	15852.66	10272.46	0	12660.34	38785.46	3487.54	35297.92	23093.45	61.98	2227.76	25383.18	2356.22	10192.6	71.91
2	Baloda Bazar	25093.26	23926.27	412.24	8557.11	57988.88	5539.34	52449.54	19906.01	1183.96	4378.8	25468.78	5644.19	26941.21	48.56
3	Balrampur	44878.89	1568.02	309.07	2365.2	49121.18	4267.72	44853.46	7861.56	7.11	2039.4	9908.07	2200.65	34784.14	22.09
4	Bastar	21496.22	989.79	1752.02	2048.01	26286.04	2297.36	23988.68	5001.44	69.46	2266.3	7337.23	2400.33	16517.42	30.59
5	Bemetara	17197	13002.28	0	19666.13	49865.41	4700.03	45165.38	39585.47	102.07	2396.31	42083.83	2889.52	6818.17	93.18
6	Bijapur	49859.36	478.68	214.88	1386.26	51939.18	5193.92	46745.26	3059.84	1.72	671.9	3733.45	711.88	42971.82	7.99
7	Bilaspur	19944	15173.85	414.06	11993.49	47525.4	4282.42	43242.98	21349.51	591.25	5552.89	27493.64	6529.12	17345.66	63.58
8	Dantewada	25283.02	322.14	342.85	1346.37	27294.38	2729.44	24564.94	2801.46	187	768.55	3757.02	820	20756.47	15.29
9	Dhamtari	19403.57	18081.41	0	33500.99	70985.97	6663.24	64322.73	48161.52	62.3	2091.84	50315.64	2180.05	19973.45	78.22
10	Durg	14658.31	18579.99	0	11752.7	44991	4239.29	40751.71	25723.92	421.73	4901.88	31047.54	5135.19	10704.22	76.19
11	Gariaband	21086.5	7004.54	0	9165.85	37256.89	3563.66	33693.23	19833.14	11.5	1697.95	21542.56	1877.55	12001.7	63.94
	Gourela-Pendra-														
12	Marwahi	11478.09	1288.68	545.15	1285.14	14597.06	1277.59	13319.47	3720.68	1.68	1117.18	4839.55	1324.53	8272.57	36.33
13	Janjgir-Champa	11902.08	14090.13	153.04	11754.58	37899.83	3465.99	34433.84	7390.16	238.93	2810.49	10439.53	3060.17	23744.63	30.32
14	Jashpur	26678.31	1960.69	873.6	3631.52	33144.12	2772.64	30371.48	10846.65	20.62	2217.09	13084.37	2320.47	17183.73	43.08
15	Kabirdham	30184.35	5832.57	5611.29	9656.61	51284.82	4638.41	46646.41	27935.68	61.96	2519.06	30516.72	2837.22	15949.35	65.42
16	Kanker	57507.98	2081.89	2224.16	7710.24	69524.27	5731.21	63793.07	19413.75	31.62	2027.16	21472.56	2150.07	42197.6	33.66
	Khairagarh-														
	Chhuikhadan_Ganda														
17	i	8226.19	6287.45	98.12	6963.88	21575.64	1554.2	20021.44	14578.5	11.42	1065.43	15655.38	1161.58	4269.91	78.19
18	Kondagaon	28476	1516.66	2064.15	2289.1	34345.91	1831.05	32514.87	10398.22	20.64	1564.48	11983.32	1658.78	20689.5	36.85
19	Korba	38409.53	3955.18	676.81	5639.65	48681.17	2837.67	45843.51	9308.64	2768.33	3581.35	15658.32	3879.21	29901.1	34.16
20	Korea	9055.87	3134.99	3312.22	1962.97	17466.05	1137.44	16328.61	5567.81	151.89	655.66	6375.36	683.63	9925.28	39.04
21	Mahasamund	42455.75	13423.89	325.68	14234.88	70440.2	4952.53	65487.67	36296.5	87.77	2870.5	39254.77	3077.95	26025.46	59.94
	Manendragarh-														
	Chirmiri_Bharatpur	48108.19	1322.47	244.3	1852.8	51527.76	4396.77	47130.99	5998.95	424.78	1090.03	7513.76	1136.16	39571.09	15.94
	Mohla-														
	Manpur_Ambagarhc														
23	howki	12357.67	1853.22	144.29	2815.98	17171.16	1717.11	15454.05	4801.86	37.62	733.73	5573.22	767.82	9846.77	36.06
24	Mungeli	8526.88	5361.69	0	4989.62	18878.19	1790.31	17087.88	7652.85	28.09	1868.09	9549.04	2236.98	7169.95	55.88
25	Narayanpur	24792.42	327.67	772.79	509.63	26402.51	2640.25	23762.26	630.2	12.74	386.68	1029.61	412.02	22707.31	4.33
26	Raigarh	37523.45	2430.6	405.7	3434.35	43794.1	3877.86	39916.24	10086.68	3156.54	3096.59	16339.79	3302.28	23370.75	40.94
27	Raipur	18941.34	18835.68	42.18	11959.21	49778.41	4692.58	45085.83	20004.13	1727.45	6025.47	27757.07	6815.31	16702.68	61.56
28	Rajnandgaon	19352.23	7819.38	236.55	11227.79	38635.95	3464.29	35171.66	21191.23	193.47	3129	24513.71	4080.63	9706.32	69.7
29	Sakti	9029.17	10505.03	101.69	14071.24	33707.13	3232.67	30474.46	11768.55	5.25	1901.82	13675.64	2086.47	16614.16	44.88
30	Sarangarh-Bilairagh	14765.66	7011.1	361.15	3294.96	25432.87	1986.72	23446.14	6647.62	25.1	1809.97	8482.67	2028	14745.44	36.18
31	Sukma	43875.39	635.22	0	924.25	45434.86	4128.2	41306.66	1082.87	0.84	616.55	1700.25	636.6	39586.36	4.12
32	Surajpur	27888.37	2799.73	217.28	9882.33	40787.71	3230.81	37556.9	21995.88	781.11	2154.37	24931.37	2298.05	12481.83	66.38
33	Surguja	34351.56	1923.21	885.79	4610.16	41770.72	3627.62	38143.1	12958.14	986.09	2296.91	16241.16	2436.01	21762.84	42.58
	Total(Ham)	838639.27	223796.56	22741.06	249143.34	1334320.23	115947.88	1218372.37	486652.87	13474.02	74531.19	574658.11	83134.64	651431.49	47.17
	Total (Bcm)	8.39	2.24	0.23	2.49	13.34	1.16	12.18	4.87	0.13	0.75	5.75	0.83	6.51	47.17

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
DELHI															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Central	248	704.6	105.61	1393.29	2451.5	245.15	2206.35	244.79	0	1496.18	1740.96	2087.35	487.11	78.91
2	East	84.21	508.93	41.13	1001.76	1636.03	163.62	1472.41	110.55	0.2	1282.15	1392.91	1439.42	79.5	94.6
3	Nazul Land	224.11	65.89	109.46	110.43	509.89	50.99	458.9	228	0	86.04	314.04	86.04	144.86	68.43
4	New Delhi	660.52	653.9	353.23	1245.39	2913.04	291.3	2621.74	686.87	2.2	2923.44	3612.52	2923.45	0	137.79
5	North	1629.66	819.07	636.08	1590.9	4675.71	467.57	4208.14	489.77	50.31	4052.92	4592.99	4084.62	208.08	109.15
6	North East	98.6	546.49	46.38	1083.76	1775.23	177.52	1597.71	176.76	0	1513.62	1690.38	1513.62	107.5	105.8
7	North West	794.88	858.02	358.56	1702.12	3713.58	259.42	3454.16	499	0.56	1778.74	2278.3	2378.75	1175.86	65.96
8	Shahdara	78.31	505.77	36.03	988	1608.11	160.81	1447.3	338.61	0.5	1330	1669.1	1375.51	4.27	115.33
9	South	732.45	1132.75	402.33	2206.93	4474.46	447.44	4027.02	733.13	0	3807.97	4541.1	3807.97	1.75	112.77
10	South East	401.17	676.31	220.36	1328.14	2625.98	262.6	2363.38	220.17	12.74	2075.35	2308.26	2075.35	55.12	97.67
11	South West	2270.74	1573.09	988.66	2883.6	7716.09	771.61	6944.48	4002.81	0	2496.6	6499.41	3020.21	360.84	93.59
12	West	1067.65	870.1	416.57	1698.61	4052.93	405.29	3647.64	731.98	0.6	2778	3510.58	2778	245.11	96.24
	Total(Ham)	8290.3	8914.92	3714.4	17232.93	38152.55	3703.32	34449.23	8462.44	67.11	25621.01	34150.55	27570.29	2870	99.13
	Total(Bcm)	0.08	0.09	0.04	0.17	0.38	0.04	0.34	0.08	0.0007	0.26	0.34	0.28	0.03	99.13

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
GOA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Goa North	14723.07	329.14	53.52	1409.27	16515	3302.99	13212.01	1558.44	96.1	1674.38	3328.93	1755.09	9802.37	25.2
2	South Goa	20887.06	464.61	287.17	1470.58	23109.42	4621.87	18487.55	926.37	375.44	2144.48	3446.29	2247.86	14937.87	18.64
	Total(Ham)	35610.13	793.75	340.69	2879.85	39624.42	7924.86	31699.56	2484.81	471.53	3818.86	6775.22	4002.95	24740.24	21.37
	Total(Bcm)	0.356	0.008	0.003	0.029	0.396	0.079	0.317	0.025	0.005	0.038	0.068	0.040	0.247	21.370

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
GUJARAT															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Ahmedabad	23822.27	8230.94	0	13896.99	45950.2	3521.59	42428.61	32678.1	3350.94	1020.99	37050.03	-1022.17	12073.57	87.32
2	Amreli	138927.37	6893.14	0	10529.44	156349.95	7817.53	148532.42	73577.7	54.77	1198.3	74830.77	1192.32	73669.8	50.38
3	Anand	31512.49	37179.88	0	47598.47	116290.84	8790.39	107500.45	20627	375.33	3548.55	24550.86	3161.87	82808.29	22.84
4	Arvali	79638.71	3393.73	0	7191.68	90224.12	4511.2	85172.92	33871.9	25.39	2032.84	35930.13	2144.33	49671.3	41.92
5	Banaskantha	97992.88	14866.25	0	16376.18	129235.31	12509.5	116725.81	130515.1	143.9	4185.04	134844.05	3694.49	14499.03	115.52
6	Bharuch	40835.84	8682.27	0	19756.16	69274.27	6392.3	62881.97	16951.2	668.92	1816.17	19436.28	1255.96	43370.14	30.91
7	Bhavnagar	90842.4	7677.03	0	13459.42	111978.85	5598.94	106379.91	42332.1	31.05	3150.66	45513.82	2576.98	60694.55	42.78
8	Botad	40474.71	2346.01	0	3958.45	46779.17	2338.94	44440.22	21423.8	16.67	895.11	22335.57	827.25	22055.9	50.26
9	Chhota Udepur	40295.86	6586.33	0	12823.26	59705.45	4914.82	54790.63	19679.5	0.18	2211.15	21890.84	2312.02	32798.92	39.95
10	Dahod	16490.55	7050.35	0	10682.23	34223.13	3099.28	31123.85	10029.6	1.89	2260.84	12292.31	2524.79	18567.6	39.49
11	Dang	28529.01	892.19	0	1021.62	30442.82	3044.29	27398.53	2189.6	62.76	486.29	2738.65	522.81	24623.36	10
12	Devbhumi Dwarka	41008.34	2529.29	0	4249.6	47787.23	2389.36	45397.87	23978.5	107.72	1564.01	25650.24	1528.49	19680.86	56.5
13	Gandhinagar	44687.02	6658.26	0	11610.77	62956.05	5345.76	57610.28	50911.8	898.54	1365	53175.34	1807.11	7083.72	92.3
14	Gir Somnath	67039	2759.69	0	6209.24	76007.93	6039.17	69968.76	28708.6	400.56	2969.9	32079.05	3052.55	37777.69	45.85
15	Jamnagar	128719.54	7000.88	0	12389.09	148109.51	7405.49	140704.02	48804	43.08	2398.18	51245.27	2403.03	89356.38	36.42
16	Junagadh	148258.46	4780.88	0	9106.24	162145.58	8107.25	154038.31	61887.1	70.48	3131.48	65089.06	3274.25	88668.27	42.26
17	Kachchh	64718.36	16051.8	0	20115.7	100885.86	8875.03	92010.83	47619.5	1049.83	1058.16	49727.51	-1448.81	44594.58	54.05
18	Kheda	41353.66	13571.46	0	27631.96	82557.08	7696.03	74861.05	26939	401.08	2856.47	30196.52	2617.57	44548.74	40.34
19	Mahesana	48242.82	10424.06	0	19748.75	78415.63	7397.84	71017.8	74678.5	722.9	1436.6	76838.02	996.37	4786.05	108.2
20	Mahisagar	15894.3	5139.55	0	10741.71	31775.56	3177.55	28598.01	12580.9	17.23	893.43	13491.57	941.6	15058.27	47.18
21	Morbi	43746.95	9515.92	0	20352.29	73615.16	4744.55	68870.62	30045.3	126.43	1442.88	31614.6	1412.18	37160.9	45.9
22	Narmada	27832	4746.22	0	7959.67	40537.89	2700.29	37837.6	20534	37.09	539.12	21110.19	564.93	16701.61	55.79
23	Navsari	60214.28	5052.09	0	15814.22	81080.59	5388.16	75692.43	17732.2	140.24	2671.91	20544.35	2739.64	55080.36	27.14
24	Panchmahal	19574.95	14122.71	0	22709.22	56406.88	3755.11	52651.77	9869.8	96.42	1518.98	11485.2	1610.27	41075.29	21.81
25	Patan	24565.31	5757.97	0	9394.38	39717.66	3314.25	36403.41	34975.28	51.85	916.89	35944	476.86	4011.79	98.74
26	Porbandar	19759.9	1096.57	0	1953.06	22809.53	1523.73	21285.79	10037.5	108.8	518.58	10664.89	161.94	10606.15	50.1
27	Rajkot	143424.48	13946.61	0	23456	180827.09	9041.35	171785.74	105382.8	75.98	2515.47	107974.25	2687.82	63639.14	62.85
28	Sabarkantha	55291.99	9027.13	0	17968.11	82287.23	8228.72	74058.51	50497.16	283.06	2027.68	52807.92	2345.15	22467.11	71.31
29	Surat	95279.28	9940.3	0	38374.7	143594.28	11258.32	132335.96	29698.9	4539.06	18559.73	52797.68	21869.76	80658.02	39.9
30	Surendranagar	63492.91	7018.76	0	11819	82330.67	4783.4	77547.27	35473.2	255.28	1258.91	36987.39	-282.18	40494.33	47.7
31	Tapi	49059.82	4908.75	0	16606.63	70575.2	6912.88	63662.32	20404.4	29.99	499.5	20933.89	864.08	42363.84	32.88
32	Vadodara	60987.69	11681.11	0	31602.56	104271.36	6338.71	97932.65	54410.1	2095.01	6522.31	63027.42	6819.85	34607.67	64.36
33	Valsad	56040.73	5312.34	0	14570.68	75923.75	7592.36	68331.39	13538.9	307.81	4298.99	18145.69	4608.56	49876.14	26.56
	Total(Ham)	1948553.88	274840.47	0	511677.48	2735071.83	194554.09	2540517.71	1212583.03	16590.26	83770.13	1312943.4	80241.67	1286029.37	51.68
	Total(Bcm)	19.49	2.75	0	5.12	27.35	1.95	25.41	12.13	0.17	0.84	13.13	0.8	12.86	51.68

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
HARYANA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Ambala	24078.67	7930.23	5060.25	6816.8	43885.95	4388.6	39497.35	34025.58	7575	7003.16	48603.74	7003.16	2215.66	123.06
2	Bhiwani	18561.4	13002.37	1979.98	12460.14	46003.89	4078.61	41925.28	42053.54	1912	750	44715.54	780.08	8654.64	106.66
3	Charkhi Dadri	8998.4	5006.87	2507	4208.29	20720.56	2072.06	18648.5	22190.08	28	1253.5	23471.58	1265.99	4903.34	125.86
4	Faridabad	5732.81	3294.41	1003.9	3047.45	13078.57	1307.87	11770.7	14134.05	5076	4384.01	23594.05	4409.5	0	200.45
5	Fatehabad	13125.8	27661.28	1779.59	28905.98	71472.65	6772.48	64700.17	116059.67	131	1859.58	118050.26	1859.58	284.33	182.46
6	Gurgaon	9657.75	5120.79	3206.15	4345.38	22330.07	2145.93	20184.14	20951.93	17117.17	5124.38	43193.49	5124.38	0	214
7	Hisar	22226.03	15082.33	2222.87	20716.62	60247.85	4862.15	55385.7	48236.83	230.22	366.2	48833.25	366.2	14674	88.17
8	Jhajjar	13014.31	10853.33	1792.57	11200.73	36860.94	3467.56	33393.38	17595.93	115	367.38	18078.31	367.38	15315.07	54.14
9	Jind	19200.35	31434.07	7884.03	26434.44	84952.89	6438.12	78514.77	80311.67	612.26	1729.74	82653.67	2470.73	7705.77	105.27
10	Kaithal	15827.28	16510.73	2786.69	12108.78	47233.48	4471.87	42761.61	79545.65	633.75	2695.09	82874.49	3073.65	0	193.81
11	Karnal	27643.37	34373.93	4181.07	28604.73	94803.1	8804.79	85998.31	132525.44	7558.9	8629.27	148713.61	8629.27	524.28	172.93
12	Kurukshetra	16322.52	11944.77	2636.87	10326.51	41230.67	3906.58	37324.09	67254.48	12575.88	4635.75	84466.11	4635.75	0	226.3
13	Mahendragarh	8089.47	4220.93	2350.06	7611.54	22272	2227.21	20044.79	26081.16	31.08	3256	29368.24	3256	65.6	146.51
14	Mewat	6543.86	4169.94	2301.14	4756.18	17771.12	1777.13	15993.99	10747.57	19.91	2062.38	12829.87	2062.38	3950.3	80.22
15	Palwal	9303.04	12561.08	1088.83	15664.84	38617.79	3555.9	35061.89	30158.92	702.12	2222.25	33083.3	2222.25	6807.3	94.36
16	Panchkula	10220.74	1313.89	1650.97	1029.86	14215.46	911.26	13304.2	7149.5	90	1143.18	8382.68	1143.18	4921.52	63.01
17	Panipat	9387.87	11322.83	2072.12	10719.89	33502.71	3350.28	30152.43	55060.35	2440	2249.8	59750.16	2249.8	0	198.16
18	Rewari	9541.51	5555.22	3485.23	9828.24	28410.2	2000.86	26409.34	31590.68	1452	2032.56	35075.24	2032.56	359.53	132.81
19	Rohtak	11876.59	9879.57	2948.2	8883.7	33588.06	3358.82	30229.24	16044.35	166.06	471.18	16681.59	471.18	13547.65	55.18
20	Sirsa	19992.58	18591.56	1280.52	20698.07	60562.73	4546.83	56015.9	80452.79	266.07	2456.13	83174.99	2456.13	2245.61	148.48
21	Sonapat	17780.96	19504.85	3444.78	19526.62	60257.21	5712.56	54544.65	51059.46	939.29	2813.01	54811.76	2813.01	10433.17	100.49
22	Yamuna Nagar	20765.34	18099.41	5197.82	18792.06	62854.63	5661.93	57192.7	71959.7	2340	4928.26	79227.96	4928.26	3456.76	138.53
	Total(Ham)	317890.65	287434.39	62860.64	286686.85	954872.53	85819.4	869053.13	1055189.33	62011.71	62432.81	1179633.9	63620.42	100064.53	135.74
	Total(Bcm)	3.18	2.87	0.63	2.87	9.55	0.86	8.69	10.55	0.62	0.62	11.8	0.64	1	135.74

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
HIMACHAL PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Kangra	30927.94	8033.12	6602.99	9744.48	55308.53	5530.85	49777.68	5653.21	40.71	5888.95	11582.87	5888.95	38194.81	23.26920419
2	Mandi	3248.74	2156.3	1208.25	1773.33	8386.62	575.09	7811.53	262.92	0	849.91	1112.83	849.91	6698.69	14.24599278
3	Sirmaur	9256.12	102.81	594.89	121.78	10075.6	1007.56	9068.04	730.67	287.6	962.05	1980.33	962.05	7087.71	21.8385671
4	Solan	6062.93	4256.62	1567.81	4303.49	16190.85	809.54	15381.31	2651.37	4917.46	1213.01	8781.84	1213.01	6599.47	57.09422669
5	Una	12144.15	3186.59	2671.28	3527.17	21529.19	2114.62	19414.57	8793.22	168.33	3040.79	12002.35	3040.79	7412.22	61.82135376
	Total(Ham)	61639.88	17735.44	12645.22	19470.25	111490.79	10037.66	101453.13	18091.39	5414.1	11954.7	35460.22	11954.71	65992.9	34.95
	Total(Bcm)	0.62	0.18	0.13	0.19	1.11	0.1	1.01	0.18	0.05	0.12	0.35	0.12	0.66	34.95

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
JHARKHAND															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Bokaro	18003.58	1458.23	1993.99	1064.96	22520.76	1756.14	20764.62	2393	2057.92	4384.12	8835.07	4406.13	12501.03	42.55
2	Chatra	22639.53	2121.11	755.28	1932.44	27448.36	2102.74	25345.62	6112	869.94	1930.77	8912.73	1940.46	16423.19	35.16
3	Deoghar	12269.82	1395.26	1331.1	1457.67	16453.85	1008.03	15445.82	5334	35.56	2873.25	8242.79	2887.67	7188.62	53.37
4	Dhanbad	18784.16	3793.65	1409.48	3761.71	27749	2320.72	25428.28	2962	10049.83	5891.17	18902.97	5920.74	6641.04	74.34
5	Dumka	19905.07	2852.28	3265.87	1619.3	27642.52	2337.49	25305.03	3749.75	23.62	2453.34	6226.7	2465.65	19066.01	24.61
6	East Singhbhum	21716.91	1469.56	2752.11	1350.14	27288.72	2251.1	25037.62	1860	758.04	4995.34	7613.4	5020.41	18355.49	30.41
7	Garhwa	24398.42	2399.02	1295.9	2343.56	30436.9	2688.28	27748.62	7531.88	60.53	2328.13	9920.52	2339.79	17816.44	35.75
8	Giridih	33982.02	3009.81	2204.78	2546.32	41742.93	3206.12	38536.81	9022.88	955.96	4567.28	14546.1	4590.2	23967.8	37.75
9	Godda	18646.07	1757.05	1626.54	1032.54	23062.2	1686.28	21375.92	1869	258.6	2422.25	4549.84	2434.43	16813.91	21.28
10	Gumla	29031.65	707.35	3499.41	998.65	34237.06	2823.11	31413.95	3789.5	12.54	1801.04	5603.05	1810.09	25801.85	17.84
11	Hazaribagh	28025.99	2124.46	2209.45	2478.76	34838.66	3199.8	31638.86	7851.38	470.25	3323.59	11645.2	3340.24	19977	36.81
12	Jamtara	6004.74	1368.34	829.68	947.7	9150.46	727.73	8422.73	2280.25	10.16	1482.96	3773.33	1490.39	4641.96	44.8
13	Khunti	11024.24	658.81	1075.88	738.68	13497.61	962.17	12535.44	2385	12.59	993.2	3390.8	998.18	9139.67	27.05
14	Koderma	4954.73	374.86	434.49	623.1	6387.18	502.76	5884.42	2468.88	50.31	1390.63	3909.82	1397.61	1967.62	66.44
15	Latehar	18701.36	2498.15	1493.79	1915.24	24608.54	2121.88	22486.66	5109	105.74	1351.16	6565.91	1357.96	15913.95	29.2
16	Lohardaga	17366.91	505.26	1382.32	590.3	19844.79	1855.75	17989.04	1833.5	8.17	874.4	2716.07	878.78	15268.58	15.1
17	Pakur	21595.67	1425.7	2685.38	908.5	26615.25	2661.53	23953.72	1911.5	28.46	1525.58	3465.53	1533.24	20480.54	14.47
18	Palamau	23919.33	6359.2	1463.36	2515.88	34257.77	2888.52	31369.25	7094.5	217.36	3663.16	10975	3681.55	20375.86	34.99
19	Ramgarh	7781.61	1198.61	779.56	1265.21	11024.99	734.36	10290.63	1457	2958.23	1996.01	6411.24	2006.04	3909.66	62.3
20	Ranchi	31011.28	2660.83	3313.74	3354.56	40340.41	3300.93	37039.48	9584.63	1694.99	6107.66	17387.25	6138.3	19621.57	46.94
21	Sahebganj	24353.85	2920.8	2059.93	1390.49	30725.07	2931.48	27793.59	2207	50.29	2189.56	4446.84	2200.55	23335.75	16
22	Saraikela Kharsawan	14818.71	791.54	1677.91	525.2	17813.36	1542.76	16270.6	1099.5	527.18	2099.9	3726.6	2110.44	12533.45	22.9
23	Simdega	24077.31	569.18	737.13	626.96	26010.58	2059.51	23951.07	2034	0	1114.49	3148.47	1120.1	20796.99	13.15
24	West Singhbhum	43203.17	1471.81	5800.96	979.78	51455.72	4389.31	47066.41	2025.5	29.84	2865.28	4920.63	2879.66	42131.4	10.45
	Total(Ham)	496216.13	45890.87	46078.04	36967.65	625152.69	52058.5	573094.19	93965.63	21246.09	64624.25	179835.86	64948.61	394669.38	31.38
	Total(Bcm)	4.96	0.46	0.46	0.37	6.25	0.52	5.73	0.94	0.21	0.65	1.8	0.65	3.95	31.38

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
KARNATAKA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Bagalkot	21631.68	22330.06	1748.07	26367.4	72077.21	7207.74	64869.47	48589.44	28.29	4395.74	53013.48	4601.51	27266.76	81.72
2	Ballari	13976.06	40070.53	2093.77	12640.77	68781.13	6878.11	61903.02	14686.1	373.6	1935.81	16995.49	2108.96	45087	27.46
3	Belagavi	52574.7	24110.65	15457.87	33788.16	125931.38	11790.46	114140.93	64694.57	224.81	12363.56	77282.97	13928.72	40935.77	67.71
4	Bengaluru (Rural)	6192.02	2668.55	6607.73	5207.91	20676.21	1865.35	18810.86	25567.5	820.28	2581.28	28969.06	2771.15	0	154
5	Bengaluru (Urban)	12896.1	4308.32	407.19	6106.24	23717.85	2371.78	21346.07	20636.4	8025.9	3536.03	32198.34	3659.66	0	150.84
6	Bidar	31175.27	3568.32	50.07	2832.98	37626.64	3743.89	33882.75	15600.4	0	4264.98	19865.37	4416.03	13908.04	58.63
7	Chamarajanagara	20840.72	8409.78	5386.72	5282.48	39919.7	3678.34	36241.36	32264.69	27.02	2693.01	34984.71	3173.32	3876.96	96.53
8	Chikkaballapura	19438.1	4971.91	2571.38	7856.75	34838.14	3483.82	31354.32	45125.54	95.52	3008.42	48229.52	3173.68	0	153.82
9	Chikkamagaluru	32413.5	21149.89	2598.49	13667.56	69829.44	6982.95	62846.49	30960.21	0.15	2476.01	33436.36	2625.54	31378.58	53.2
10	Chitradurga	24985.26	9679.42	5314.75	6497.39	46476.82	4647.69	41829.13	51343.5	95.61	3878.19	55317.28	4073.87	937.46	132.25
11	Dakshina Kannada	53194.4	4172.62	9162.05	6800.43	73329.5	7332.96	65996.54	24371.36	40.16	5139.8	29551.31	5501.6	36083.43	44.78
12	Davanagere	15438.88	32654.75	3087.02	11427.46	62608.11	6260.82	56347.28	46245.8	228.05	3621.8	50095.67	3732.26	18487.56	88.91
13	Dharwad	14918.27	6807.63	3638.49	6951.27	32315.66	3231.57	29084.09	14569.69	76.16	1710.36	16356.21	1769.03	12669.21	56.24
14	Gadag	11516.25	10500.7	4716.6	8654.66	35388.21	3101.59	32286.62	23405.27	27.68	660.82	24093.78	732.18	8766.67	74.62
15	Hassan	30019.39	25652.84	2036.48	21589.1	79297.81	7929.79	71368.02	47882.71	0	3038.26	50920.97	3142.7	28276.84	71.35
16	Haveri	15113.86	33945.76	6570.64	10173.55	65803.81	6580.38	59223.42	34099.16	73.02	1947.17	36119.33	2184.68	25278.79	60.99
17	Kalburgi	56575.11	6220.58	835.2	8358.98	71989.87	6703.77	65286.1	19615.07	47.7	7142.53	26805.32	7653.22	38440.23	41.06
18	Kodagu	18743.31	3591.82	344.27	1998.45	24677.85	2467.79	22210.06	7953.69	94.88	922.58	8971.17	956.23	13205.23	40.39
19	Kolar	17117.14	7895.21	4241.97	16228.09	45482.41	4548.24	40934.17	66486.47	150.38	4097.33	70734.18	4297.6	0	172.8
20	Koppal	17042.03	30438.45	2300.28	15395.99	65176.75	6073.01	59103.74	33746.09	50.76	2753.44	36550.27	2926.84	26269.14	61.84
21	Mandya	19423.26	25157.3	2555.88	26261.12	73397.56	7202.19	66195.36	36219.99	66.85	3928.95	40215.79	4003.43	28841.47	60.75
22	Mysuru	28687.82	17886.44	3173.1	12631.79	62379.15	5996.61	56382.54	26852.6	85.98	4238.66	31177.25	4514.11	25386.68	55.3
23	Raichur	32447.04	33612.12	2772.65	8476.79	77308.6	7491.55	69817.05	27814.45	172.84	3240.05	31227.31	3589.07	40007.84	44.73
24	Ramanagara	9337.69	15539.06	7616.81	12767.3	45260.86	4526.08	40734.78	35196.42	722.88	3092.61	39011.9	3295.89	4224.52	95.77
25	Shivamogga	61937.02	27058.57	1291.5	16208.9	106495.99	9921.4	96574.59	36300.2	253.83	2678.67	39232.7	2749.97	59085.89	40.62
26	Tumakuru	43088.23	15074.71	9448.31	15406.17	83017.42	8301.74	74715.68	62774.52	71.03	5722.89	68568.46	5984.2	14452	91.77
27	Udupi	44705.43	2977.04	627.89	4065.13	52375.49	5237.57	47137.92	13778.54	35.92	2095.9	15910.35	2144.62	31178.85	33.75
28	Uttara Kannada	80697.72	3676.62	1196.29	7341.55	92912.18	9010.57	83901.61	23813.65	0	3126.83	26940.47	3194.97	56892.99	32.11
29	Vijayanagara	21482.69	8350.51	3441.07	7641.73	40916	3949.13	36966.86	28622.8	30.96	2209.38	30863.1	2326.63	8017.79	83.49
30	Vijayapura	71998.06	21398.03	561.19	12039.89	105997.17	10599.72	95397.45	33608.46	18.25	5012.5	38639.19	5237.46	57666.79	40.5
31	Yadgir	22412.41	20715.91	299.37	13160.11	56587.8	5396.68	51191.12	15705.35	882.11	2857.96	19445.4	3037.63	32559.1	37.99
	Total(Ham)	922019.42	494594.1	112153.1	363826.1	1892592.72	184513.29	1708079.4	1008530.65	12820.62	110371.51	1131722.7	117506.76	729181.59	66.26
	Total(Bcm)	9.22	4.95	1.12	3.64	18.93	1.85	17.08	10.09	0.13	1.1	11.32	1.18	7.29	66.26

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
KERALA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Alappuzha	28116.78	424.94	3337.35	6780.45	38659.52	2615.69	36043.83	3737.24	261.52	10178.12	14176.88	10454.89	21590.18	39.33
2	Ernakulam	36360.83	1264.41	6718.97	6919.52	51263.73	5016.04	46247.69	7946.47	213.8	14790.76	22951.01	19055.84	19031.6	49.63
3	Idukki	18146.98	312.21	635.78	1856.99	20951.96	2095.18	18856.78	6066.22	13.26	4141.9	10221.39	4141.91	8635.39	54.21
4	Kannur	38195.92	857.49	1464.22	3763.64	44281.27	4428.13	39853.14	8153.02	43.37	11628.57	19824.95	14322.08	17484.7	49.75
5	Kasaragod	28213.22	1169.33	1406.13	4120.29	34908.97	3490.9	31418.07	15371.64	22.76	7462.24	22856.64	11401.69	5529.4	72.75
6	Kollam	25616.89	836.88	6656.48	2708.07	35818.32	3483.55	32334.77	4843.89	22.28	11926.81	16793	12609.6	14858.98	51.93
7	Kottayam	29841.67	768.6	4635.87	5566.75	40812.89	3781.4	37031.49	4928.47	10.18	8805.41	13744.06	9194.25	22898.59	37.11
8	Kozhikkode	31007.37	454.75	1151.1	1417.87	34031.09	3403.12	30627.97	4328.71	7.09	14561.73	18897.53	20923.94	6781.84	61.7
9	Malappuram	40613.41	1011.82	4314.07	7722.78	53662.08	5228.02	48434.06	9214.83	5.85	25432.31	34652.96	55023.8	13781.1	71.55
10	Palakkad	30114.89	4226.85	3044.03	24801.02	62186.79	5418.61	56768.18	17855.8	612.77	15452.41	33921.03	22322.49	18220.22	59.75
11	Pathanamthitta	17008.01	490.12	3655.13	1916.88	23070.14	2199.76	20870.38	3776.15	3.85	4072.62	7852.62	4195.98	12894.39	37.63
12	Thiruvananthapuram	19144.03	586.09	6149.96	2660.63	28540.71	2759.07	25781.64	4892.46	7.09	12562.22	17461.79	13568.35	7313.72	67.73
13	Thrissur	45158.5	1063.61	1261.06	14414.41	61897.58	6017.07	55880.51	19901.98	39.11	14114.02	34055.11	17127.38	18812.01	60.94
14	Wayanad	21523.9	441.35	0	677.48	22642.73	2264.27	20378.46	1324.38	158.66	4154.74	5637.78	5047.47	13847.95	27.67
	Total(Ham)	409062.4	13908.45	44430.15	85326.78	552727.78	52200.81	500526.97	112341.24	1421.59	159283.85	273046.75	219389.67	201680.07	54.55
	Total(Bcm)	4.09	0.14	0.44	0.85	5.53	0.52	5.01	1.12	0.01	1.59	2.73	2.19	2.02	54.55

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
MADHYA PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Agar Malwa	31757.01	2604.03	0	9187.76	43548.8	3145.59	40403.21	34666.65	3.67	1666.65	36336.96	1766.32	6513.75	89.94
2	Alirajpur	18876.87	770.93	0	1842.27	21490.07	1559.87	19930.2	6722.33	0	1910.82	8633.15	2049.42	11158.44	43.32
3	Anuppur	26118.32	200.17	2107.1	400.77	28826.36	1832.62	26993.74	1483.55	3303.32	1562.47	6349.33	1623.03	20583.85	23.52
4	Ashoknagar	29228.49	2196.8	0	8067.76	39493.05	2668.71	36824.34	21381.39	1.41	1824.21	23207.03	1927.85	13513.68	63.02
5	Balaghat	69810.74	3960.44	224.2	3158.61	77153.99	5204.94	71949.04	12657.22	400.93	3851.18	16909.36	4018.37	54872.5	23.5
6	Barwani	32743.41	3706.25	0	19392.12	55841.78	3805.6	52036.18	33377.29	37.99	3727.85	37143.14	4139.91	19039.54	71.38
7	Betul	85090.59	3707.86	2418.12	13682.15	104898.72	7148.41	97750.31	44632.8	168.93	3726.52	48528.3	3917.52	49031.02	49.65
8	Bhind	82570.26	1679.99	0	13789.97	98040.22	8086.63	89953.59	25562.24	248.88	3562.49	29373.62	3758.17	60384.28	32.65
9	Bhopal	31677.21	2441.93	0	6631.29	40750.43	2801.68	37948.75	23916.38	686.41	5110.13	29712.91	5584.57	7761.4	78.3
10	Burhanpur	27844.06	1986.04	264.63	6586.68	36681.41	2718.56	33962.85	21940.49	35.42	1728.73	23704.63	1859.14	10127.82	69.8
11	Chhatarpur	64676.93	5042.92	0	17041.54	86761.39	5861.63	80899.76	49738.65	79.68	3105.27	52923.58	3324.12	27798.46	65.42
12	Chhindwara	86713.02	4167.05	604.31	13324.36	104808.74	7203.55	97605.19	55742.33	580.56	5400.1	61722.98	5674.98	35665.53	63.24
13	Damoh	27977.31	2179.31	0	9222.16	39378.78	2802.61	36576.17	18757.67	299.37	2331.94	21388.93	2735.18	14784	58.48
14	Datia	34922.82	908.75	0	7244.29	43075.86	2953.54	40122.32	12664.84	33.36	1766.56	14464.77	1894.54	25529.57	36.05
15	Dewas	66076.9	5016.1	0	15456.72	86549.72	5605.14	80944.58	60357.41	95.48	4300.72	64753.63	4579.59	18015.08	80
16	Dhar	86346.09	6948.91	0	45165.44	138460.44	10693.76	127766.67	76853.59	635.01	6069.37	83557.97	6648.4	55147.1	65.4
17	Dindori	33813.45	277.72	288.23	628.8	35008.2	1750.4	33257.8	2316.18	0	1848.41	4164.57	1986.42	28955.23	12.52
18	Guna	62490.49	4340.17	0	14851.05	81681.71	4367.12	77314.59	47608.79	78.24	2532.84	50219.89	2715.98	26911.56	64.96
19	Gwalior	56193.02	7877.46	0	18174.39	82244.87	6471.15	75773.72	18052.15	270.78	5484.37	23807.29	6003.22	51447.58	31.42
20	Harda	28181.73	2916.12	0	15859.07	46956.92	3009.31	43947.6	14405.04	16.17	1243.99	15665.19	1330.85	28195.56	35.65
21	Hoshangabad	130455.74	7570.29	0	41247.63	179273.66	15577.28	163696.36	40065.19	18.64	2251.42	42335.23	2355.8	121256.77	25.86
22	Indore	41623.6	4517.11	0	12608.31	58749.02	5312.66	53436.36	54421.57	1500.83	7870.51	63792.93	8966.3	2547.06	119.38
23	Jabalpur	54728.53	3205.37	0	8795.3	66729.2	5432.37	61296.83	25295.9	318.94	5834.34	31449.17	6466.18	29704.16	51.31
24	Jhabua	20152.36	1230.75	0	4700.23	26083.34	1802.86	24280.48	8065.63	0.44	2810.21	10878.28	3147.85	13066.56	44.79
25	Katni	34347.6	1827.32	0	4750.49	40925.41	2896.22	38029.19	14014.73	1116.18	2786.79	17917.68	2996.11	19902.19	47.12
26	Khandwa	56949.53	4252.59	0	52690.25	113892.37	8696.11	105196.25	40541.57	69.64	3025.19	43636.4	3243.92	61341.13	41.48
27	Khargone	54255.99	6263.73	0	36982.82	97502.54	5354.7	92147.84	37725.95	78.26	4518.09	42322.26	4866.61	49477.05	45.93
28	Mandla	43130.31	1059.93	865.06	4178.82	49234.12	2461.69	46772.43	7008.26	0.07	2537.96	9546.28	2690.49	37073.62	20.41
29	Mandsaur	47096.4	5924.83	0	16874.16	69895.39	6713.91	63181.48	62918.73	43.65	3105.12	66067.55	3244.75	6601.06	104.57
30	Morena	50183.87	1569.49	0	18057.95	69811.31	5195.77	64615.54	19963.18	86.34	5881.03	25930.52	6348.42	38217.62	40.13

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
MADHYA PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
31	Narsinghpur	104751.62	3201.53	0	15975.25	123928.4	11166.07	112762.33	72947.95	199.66	2347.59	75495.2	2452.96	37161.76	66.95
32	Neemuch	28918.55	2792.12	0	8454.47	40165.14	4016.51	36148.63	34072.98	29.85	1769.05	35871.88	1846.2	2846.5	99.23
33	Niwari	14459.5	1292.7	0	3891.47	19643.67	1523.55	18120.11	11520.12	5.79	1130.38	12656.29	1339.31	5254.88	69.85
34	Panna	47030.15	1424.67	0	6206.71	54661.53	4060.04	50601.49	15770.99	210.94	2477.82	18459.75	2635.57	31983.99	36.48
35	Raisen	79475.6	3545.99	0	10376.31	93397.9	6583.98	86813.92	42627.95	548.18	3417.8	46593.92	3727.52	39910.29	53.67
36	Rajgarh	71614.53	4550.51	0	15698.2	91863.24	5339.02	86524.22	73551.37	11.57	4120.76	77683.72	4534.9	9937.22	89.78
37	Ratlam	54707.36	7371.69	0	22937.37	85016.42	8113.75	76902.67	99438.31	37.38	4450.12	103925.81	6066.1	2377.85	135.14
38	Rewa	44966.31	2007.67	283.37	7324.72	54582.07	4761.11	49820.96	21372.19	185.73	5668.63	27226.55	6185.05	22077.99	54.65
39	Sagar	92434.64	3894.23	0	14470.03	110798.9	8427.56	102371.34	56806.95	80.78	3807.91	60695.66	4089.76	41393.84	59.29
40	Satna	56099.46	2691.5	1151.73	14527.88	74470.57	5452.29	69018.27	39418.38	1084.31	4766.96	45269.69	5077.31	25470.08	65.59
41	Sehore	55598.77	3823.16	0	14546.01	73967.94	6473.35	67494.59	39055.28	117.47	2527.11	41699.87	2714.97	25606.86	61.78
42	Seoni	61319.08	2229.07	2284.48	6595.87	72428.5	4034.98	68393.52	24964.82	4.91	3328.53	28298.24	3532.72	39891.08	41.38
43	Shahdol	53203.74	327.6	1305.53	1133.92	55970.79	2798.53	53172.26	3124.57	1673.31	2307.45	7105.33	2440.47	45933.91	13.36
44	Shajapur	41301.49	3338.58	0	11063.98	55704.05	4235.84	51468.21	52782.83	54.55	2182.07	55019.46	2288.53	2116.74	106.9
45	Sheopur	35367.05	1089.85	0	19374.62	55831.52	5166.95	50674.57	17631.34	44.79	1817.82	19493.95	1968.51	31029.92	38.47
46	Shivpuri	66541.87	3838.62	0	15047.29	85427.78	7107.83	78319.96	48288.67	42.99	4668.71	53000.39	5048.85	24939.43	67.67
47	Sidhi	27340.89	799.27	392.3	2837.24	31369.7	2157.43	29212.27	7552.41	88.26	2908.38	10549.05	3157.52	18414.08	36.11
48	Singrauli	33965.21	838.15	0	2519.96	37323.32	1866.17	35457.15	8979.76	2219.69	2657.3	13856.77	2945.75	21311.92	39.08
49	Tikamgarh	28753.79	2755.05	0	8434.69	39943.53	3514.7	36428.83	26734.19	0	3074.02	29808.19	3746.52	5948.14	81.83
50	Ujjain	72131.6	5918.96	0	21647.62	99698.18	8325.12	91373.06	95485.93	57.77	3895.58	99439.27	4104.22	8999.19	108.83
51	Umari	34464.53	416.86	659.44	1032.75	36573.58	2334.23	34239.35	4294.94	540.07	1571.36	6406.36	1714.96	27689.39	18.71
52	Vidisha	74063.34	3153.79	0	13676.72	90893.85	5450	85443.85	51046	13.93	3969.72	55029.63	4260.54	30123.4	64.4
	Total(Ham)	2694541.73	161651.93	12848.5	678366.24	3547408.4	262033.4	3285374.93	1740325.63	17460.5	172240.36	1930026.5	187742.25	1445041.63	58.75
	Total(Bcm)	26.95	1.62	0.13	6.78	35.47	2.62	32.85	17.4	0.17	1.72	19.3	1.88	14.45	58.75

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
MAHARASHTRA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Ahmednagar	86962.71	13325.98	14393.47	45925.63	160607.79	8100.99	152506.80	114588.35	0.00	6196.74	120785.1	6208.26	42632.77	79.20
2	Akola	28653.40	1473.19	207.45	8693.07	39027.11	2741.76	36285.36	21544.03	0.59	2254.58	23799.20	2375.60	12538.66	65.59
3	Amravati	53675.55	4839.13	1228.12	26844.89	86587.70	6273.28	80314.42	69502.23	0.00	4247.00	73749.28	5082.99	18803.37	91.83
4	Aurangabad	68056.45	7315.56	0.00	31620.12	106992.13	5355.70	101636.43	69352.38	0.00	3462.54	72814.94	3462.48	28821.50	71.64
5	Beed	81954.00	8594.96	6159.28	33297.23	130005.47	6500.25	123505.22	68330.52	39.65	4774.52	73144.76	4774.45	50360.46	59.22
6	Bhandara	32251.00	45075.55	417.80	15965.57	93709.92	6889.61	86820.31	22414.31	171.66	3649.06	26235.03	3649.06	60585.28	30.22
7	Buldhana	65759.62	5246.70	263.73	21549.48	92819.54	4853.05	87966.49	64437.13	0.00	3254.40	67691.65	3365.37	23288.68	76.95
8	Chandrapur	98750.59	5022.28	1471.98	11730.04	116974.89	6072.20	110902.69	14932.60	23.96	17563.49	32520.15	17563.49	78382.55	29.32
9	Dhule	44869.23	7165.66	0.00	20870.14	72905.03	3997.59	68907.44	33816.57	101.10	1756.46	35674.14	1756.46	33475.92	51.77
10	Gadchiroli	94742.17	3666.03	0.00	10617.42	109025.62	6162.19	102863.43	21155.06	1.55	3907.61	25064.28	3907.61	77799.15	24.37
11	Gondia	43144.40	6703.13	645.57	16408.51	66901.61	4534.67	62366.94	10153.58	318.71	5936.50	16408.77	5936.48	45958.17	26.31
12	Hingoli	52689.37	2968.56	7308.43	48217.51	111183.87	5578.66	105605.21	36287.09	2.53	2159.14	38448.77	2159.14	67250.19	36.41
13	Jalgaon	89072.55	6727.70	574.12	46117.48	142491.85	7507.21	134984.64	101248.72	175.27	4887.81	106311.8	4887.79	35036.34	78.76
14	Jalna	58298.04	3067.57	115.46	22711.20	84192.27	4226.41	79965.86	42443.79	68.84	1351.14	43863.77	5694.24	32937.85	54.85
15	Kolhapur	53581.01	10136.48	780.56	71662.02	136160.07	8374.31	127785.76	52167.22	0.00	2079.54	54246.75	2079.54	73539.01	42.45
16	Latur	45714.14	7150.57	0.00	16140.14	69004.85	3459.74	65545.11	33580.73	192.54	2199.63	35972.88	2199.62	30380.77	54.88
17	Nagpur	66123.47	9141.62	2573.37	22630.55	100469.00	5529.59	94939.41	35859.92	354.32	10247.46	46461.66	10247.49	48477.71	48.94
18	Nanded	102027.99	974.83	3718.96	17520.68	124242.46	6215.53	118026.93	34865.24	1.21	3344.05	38210.49	3344.07	79839.66	32.37
19	Nandurbar	42708.01	2843.73	1349.45	8990.28	55891.47	2907.51	52983.97	17183.93	0.00	2991.68	20175.64	2991.68	32827.13	38.08
20	Nashik	132610.54	13567.39	3785.82	48248.67	198212.42	10851.89	187360.53	104646.41	1202.37	3593.64	109442.4	3593.61	84378.50	58.41
21	Osmanabad	61164.17	6447.24	2583.65	15718.09	85913.15	4332.17	81580.98	48272.70	0.79	2315.87	50589.39	2315.85	31161.36	62.01
22	Palghar	18306.25	289.32	0.00	3360.50	21956.07	1398.58	20557.49	3886.53	43.80	973.19	4903.51	973.21	15653.98	23.85
23	Parbhani	58054.77	1785.50	645.43	26071.85	86557.55	4491.13	82066.42	36212.33	0.00	1950.18	38162.49	1950.17	43903.95	46.50
24	Pune	94222.19	19663.71	1192.62	68192.27	183270.79	10636.91	172633.88	112093.74	0.00	8151.54	120245.2	8504.83	60096.93	69.65
25	Raigad	31618.67	408.79	0.00	5510.82	37538.28	1915.10	35623.18	4352.55	0.00	2037.81	6390.37	2037.81	29232.81	17.94
26	Ratnagiri	38659.69	169.31	18.49	2180.49	41027.98	2301.44	38726.54	5386.73	0.00	1313.22	6699.91	1313.25	32026.63	17.30
27	Sangli	53003.49	21603.95	128.40	65489.45	140225.29	8957.41	131267.88	67823.88	0.00	3307.65	71131.54	3346.48	60395.41	54.19
28	Satara	52487.27	19022.28	3734.05	37067.04	112310.64	6867.84	105442.80	60640.59	0.00	4849.88	65490.52	4849.90	39996.20	62.11
29	Sindhudurg	20825.21	196.12	3.83	2232.15	23257.31	1170.52	22086.79	7351.30	0.00	2219.19	9570.46	2219.19	12516.33	43.33
30	Solapur	92306.09	10918.84	2954.03	40096.78	146275.74	7313.83	138961.91	102898.49	2.65	4853.01	107754.2	4853.01	38176.76	77.54
31	Thane	14800.32	288.56	0.00	2231.37	17320.25	964.43	16355.82	2397.66	0.00	720.82	3118.46	720.82	13237.36	19.07
32	Wardha	59795.81	1438.93	1463.96	21063.02	83761.72	4393.14	79368.58	38940.80	118.80	3444.76	42504.43	3444.80	36864.13	53.55
33	Washim	42953.07	2841.84	68.85	12869.21	58732.97	3061.21	55671.76	31438.19	8.51	2069.19	33515.97	2069.20	22155.79	60.20
34	Yawatmal	94609.18	12393.45	5825.78	28057.62	140886.03	7579.68	133306.35	37338.14	23.21	7628.05	44989.36	7628.05	88320.27	33.75
	Total(Ham)	2074450.42	262474.46	63612.67	875901.29	3276438.84	181515.52	3094923.32	1527543.44	2852.05	135691.36	1666087	141505.98	1481051.58	53.83
	Total(Bcm)	20.74	2.62	0.64	8.76	32.76	1.82	30.95	15.28	0.03	1.36	16.66	1.42	14.81	53.83

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
MANIPUR															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Bishnupur	9572.6	0.06	2257.53	83.68	11913.87	1191.387	10,722.48	327	0	282.96	609.96	290.93	10,104.55	5.69
2	Churachandpur	6707.1	0	1510.99	69	8287.09	828.709	7,458.38	270	0	191.11	461.11	192.05	6,996.33	6.18
3	Imphal East	11895.89	63.52	2713.54	274.26	14947.21	1494.721	13,452.49	573	12	500.32	1085.32	502.75	12,372.60	8.07
4	Imphal West	6297.13	0.01	2327.91	74.33	8699.38	869.938	7,829.44	285	12	568.28	865.28	571.06	6,006.62	11.05
5	Thoubal	5799.77	0.02	2075.4	62.27	7937.46	793.746	7,143.71	240	0	463.13	703.13	465.39	6,438.33	9.84
	Total (Ham)	40272.49	63.61	10885.37	563.54	51785.01	5178.501	46,606.51	1695	24	2005.8	3724.8	2022.18	41,918.43	7.99
	Total (Bcm)	0.40	0.001	0.11	0.01	0.52	0.05	0.47	0.02	0.0002	0.02	0.04	0.02	0.42	7.99

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
MEGHALAYA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	East Garo Hills	5944.69	574.89	1795.66	669.38	8984.62	898.46	8086.16	0	0	332.03	332.02	368.38	7717.78	4.11
2	East Jaintia Hills	12480.85	91.2	4292.83	88.71	16953.59	1695.37	15258.22	0	0	186.02	186.02	211.46	15046.76	1.22
3	East Khasi Hills	17237.26	386.76	5108.86	380.83	23113.71	2311.38	20802.33	0	2.1	589.56	591.64	673.59	20126.66	2.84
4	North Garo Hills	6013.23	2061.23	1325	568.96	9968.42	1617.61	8350.81	0	0	399.58	399.59	439.32	7911.47	4.79
5	Ri Bhoi	5042.91	133.03	1330.29	114.69	6620.92	662.1	5958.82	0	22.49	307.32	329.81	349.65	5586.68	5.53
6	South Garo Hills	16789.14	49.99	6616	46.25	23501.38	2350.15	21151.23	0	0	246.46	246.47	272.05	20879.17	1.17
7	South West Garo Hills	4684.43	165.38	1857.49	223.29	6930.59	3533.95	3396.64	511.92	0	249.59	761.51	258.33	2626.4	22.42
8	South West Khasi Hills	11468.86	202.88	2625.09	61.02	14357.85	1435.78	12922.07	0	0	132.31	132.32	147.29	12774.77	1.02
9	West Garo Hills	22130.06	398.92	6532.95	674.04	29735.97	13567.7	16168.27	1933.2	0.6	966.69	2900.49	1071.79	13162.68	17.94
10	West Jaintia Hills	7879.86	107.62	3194.72	74.17	11256.37	1125.64	10130.73	0	0	578.86	578.87	667.29	9463.43	5.71
11	West Khasi Hills	22567.36	1316.88	7018.54	803.08	31705.86	3170.59	28535.27	0	0	443.18	443.19	497.18	28038.08	1.55
	Total(Ham)	132238.65	5488.78	41697.43	3704.42	183129.28	32368.73	150760.55	2445.12	25.19	4431.61	6901.93	4956.33	143333.88	4.58
	Total(Bcm)	1.32	0.05	0.42	0.04	1.83	0.32	1.51	0.02	0.0003	0.04	0.07	0.05	1.43	4.58

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
MIZORAM															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Aizawl	1295.18	0	340.61	0	1635.79	163.58	1472.21	0	0	193.31	193.32	210.21	1261.99	13.13
2	Champhai	1448.21	0	261.16	0	1709.37	170.92	1538.45	0	0	43.4	43.4	45.72	1492.72	2.82
3	Kolasib	2276.22	0	504.44	0	2780.66	278.06	2502.6	0	0	30.43	30.43	33.36	2469.24	1.22
4	Lawngtlai	2958.07	0	289.74	0	3247.81	324.79	2923.02	0	0	99.46	99.47	113.37	2809.64	3.4
5	Lunglei	5011.78	0	468.08	0	5479.86	547.99	4931.87	0	0	187.46	187.46	194.72	4737.15	3.8
6	Mamit	4367.49	0	1241.52	0	5609.01	560.89	5048.12	0	0	97.79	97.79	112.9	4935.21	1.94
7	Saiha	723.99	0	84.81	0	808.8	80.88	727.92	0	0	39.19	39.19	41.84	686.08	5.38
8	Serchhip	785.47	0	116.21	0	901.68	90.18	811.5	0	0	46.78	46.78	49.83	761.67	5.76
	Total(Ham)	18866.41	0	3306.57	0	22172.98	2217.29	19955.69	0	0	737.82	737.84	801.95	19153.7	3.7
	Total(Bcm)	0.19	0	0.03	0	0.22	0.02	0.2	0	0	0.01	0.01	0.01	0.19	3.7

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
NAGALAND															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Dimapur	18113.25	1339.72	2358.73	99.9	21911.6	2191.17	19720.43	227	1.23	866.27	1094.5	937.33	18554.87	5.55
2	Kiphire	127.82	327.09	56.57	0	511.48	51.15	460.33	0	0	11.07	11.07	11.37	448.95	2.4
3	Kohima	2073.08	1832.68	340.8	95.99	4342.55	434.24	3908.31	0	0.6	227.74	228.34	245.17	3662.54	5.84
4	Longleng	1021.28	333.9	141.57	6.15	1502.9	150.3	1352.6	0	0	11.77	11.77	17.06	1335.54	0.87
5	Mokokchung	4294.87	765	1201.67	3.67	6265.21	626.52	5638.69	0	0	70.71	70.71	70.72	5567.98	1.25
6	Mon	3564.12	284.49	773.54	4.05	4626.2	462.61	4163.59	0	0	153.12	153.12	153.11	4010.47	3.68
7	Peren	3354.89	1678.38	917.28	26.19	5976.74	597.67	5379.07	0	0	85.32	85.33	86.69	5292.37	1.59
8	Phek	539.15	1140.93	163.85	15.33	1859.26	185.93	1673.33	0	0	40.36	40.35	41.64	1631.69	2.41
9	Tuensang	789.97	1871.29	220.51	0.05	2881.82	288.18	2593.64	0	0	96.85	96.85	98.6	2495.04	3.73
10	Wokha	5560	1614.58	1400.05	99.55	8674.18	867.41	7806.77	0	0.54	183.06	183.59	185.19	7621.05	2.35
11	Zunheboto	701.11	812.85	196.18	44.55	1754.69	175.48	1579.21	0	0	64.48	64.49	64.47	1514.72	4.08
	Total(Ham)	40139.54	12000.91	7770.75	395.43	60306.63	6030.66	54275.97	227	2.37	1810.75	2040.12	1911.35	52135.22	3.76
	Total(Bcm)	0.4	0.12	0.08	0.004	0.6	0.06	0.54	0.002	0.00002	0.02	0.02	0.02	0.52	3.76

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
ODISHA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Angul	37702.38	9229.59	3946.79	5891.32	56770.08	3785.8	52984.28	22464.85	1177.93	4481.78	28124.55	4916.11	24425.41	53.08
2	Balasore	56580.97	34805.59	17271.26	32040.24	140698.06	11556.32	129141.74	67541.91	1027.65	6417.48	74987.07	6734.34	53837.82	58.07
3	Bargarh	40536.4	12533.97	136.35	12967.88	66174.6	4345.38	61829.22	28921.56	360.23	4336.83	33618.61	4490.12	28295.55	54.37
4	Bhadrak	18039.51	16635.41	4479.06	20330.89	59484.87	5948.49	53536.37	29183.71	338.13	2752.05	32273.9	2883.62	21130.91	60.28
5	Bolangir	44699.75	7310.78	898.79	8270.11	61179.43	4750.85	56428.58	22122.48	256.36	5630.72	28009.54	6244.53	27805.24	49.64
6	Boudh	18001.53	3103.3	449.44	4292.25	25846.52	2124.4	23722.12	9250.2	50.83	1429.59	10730.61	1516.93	12904.17	45.23
7	Cuttack	39157.44	16060.77	9049.06	11533.1	75800.37	6909.9	68890.45	23503.86	875.16	7083.62	31462.64	7400.62	37110.79	45.67
8	Deogarh	20164.27	5587.95	1223.73	6368.55	33344.5	2947.24	30397.26	16206.61	285.09	967.04	17458.75	1009.97	12895.58	57.44
9	Dhenkanal	29034.42	9924.25	5442.13	3913.08	48313.88	3540.21	44773.67	13294.59	340.34	3763.35	17398.3	3895.5	27243.24	38.86
10	Gajapati	12783.46	2061.23	4946.35	2387.83	22178.87	2217.88	19960.99	5336.11	119.34	1714.79	7170.22	1771.04	12734.51	35.92
11	Ganjam	44245.01	27445.92	17236.17	14820.78	103747.88	9170.28	94577.6	25834.17	1600.04	11218.56	38652.81	12092.84	55050.5	40.87
12	Jagatsinghpur	16296.43	16701.24	4390.92	12192.92	49581.51	4851.94	44729.57	22746.73	550.29	2412.09	25709.12	2461.26	18971.29	57.48
13	Jajpur	31920.88	10535.38	7361.3	7844.26	57661.82	4375.75	53286.07	29715.65	587.86	4834.22	35137.74	5010.44	17972.11	65.94
14	Jharsuguda	17006.82	1582.33	221.62	2071.71	20882.48	1555.62	19326.86	6500.27	961.35	2480.16	9941.78	2717.15	9148.1	51.44
15	Kalahandi	45234.65	10257.29	1926.12	9327.9	66745.96	5299.69	61446.27	19917.08	751.4	5021.57	25689.99	5323.94	35453.91	41.81
16	Kandhamal	26668.31	2296.23	4436.19	3114.31	36515.04	2920.26	33594.78	7672.74	172.38	2310.25	10155.36	2396.49	23353.18	30.23
17	Kendrapara	7084.42	4866.88	1847.1	4414.51	18212.91	1481.8	16731.11	9325.86	152.49	1171.84	10650.19	1213.74	6039.02	63.66
18	Keonjhar	55764.43	13732.6	11495.85	10848.16	91841.04	8278.87	83562.16	30359.31	618.8	6244.45	37222.57	6604.91	45979.12	44.54
19	Khurda	23140.47	8311.33	6000.27	9533.9	46985.97	4136.21	42849.75	16908.11	2130.44	7178.11	26216.62	7983.59	17057.95	61.18
20	Koraput	41875.66	4227.1	4155.74	6212.25	56470.75	4391.21	52079.54	7146.82	603.33	4536.2	12286.38	4827.2	39502.17	23.59
21	Malkangiri	26615.31	4422.44	1152.11	4336.71	36526.57	3120.13	33406.44	3514.95	0	2097.66	5612.59	2256.78	27634.72	16.8
22	Mayurbhanj	84291.78	19728.6	18391.17	24836.1	147247.65	10825.41	136422.24	50713.03	223.21	7921.38	58857.64	8297.08	77188.91	43.14
23	Nabarangapur	48129.54	3335.78	3944.31	4206.09	59615.72	5443.41	54172.31	16095.47	159.12	3905.75	20160.33	4141.86	33775.88	37.22
24	Nayagarh	21835.55	4914.78	5223.7	6532.51	38506.54	2958.8	35547.74	12209.09	44.2	3393.89	15647.17	8151.34	19847.95	44.02
25	Nuapada	22938.85	4998.89	706.75	4684.05	33328.54	2699.55	30628.99	16720.94	101.66	1935.48	18758.09	2030.79	11775.58	61.24
26	Puri	30409.99	11283.32	7134.83	17181.49	66009.63	5173.57	60836.05	26813.41	0	5043.69	31857.14	5336.4	28686.21	52.37
27	Rayagada	24570.1	3788.96	4565.28	3003.26	35927.6	2749.22	33178.38	7291.83	718.25	3046.15	11056.21	3199.55	21968.77	33.32
28	Sambalpur	46108.19	7100.81	311.16	11228.76	64748.92	5507.91	59241.01	13365.82	1067.43	3238.56	17671.78	3356.47	41451.3	29.83
29	Subarnapur	18974.02	3614.68	155.55	4570.4	27314.65	2018.67	25295.98	10366.12	59.67	1913.44	12339.26	1988.05	12940.83	48.78
30	Sundargarh	69207.42	8276.05	2487.11	7092.69	87063.27	6266.61	80796.66	24838.82	2236.52	6230.72	33306.05	6671.02	47050.3	41.22
	Total(Ham)	1019017.96	288673.45	150986.21	276048.01	1734725.63	141351.38	1593374.19	595882.1	17569.5	124711.41	738163.01	136923.68	849231.02	46.33
	Total(Bcm)	10.19	2.89	1.51	2.76	17.35	1.41	15.94	5.96	0.18	1.25	7.39	1.37	8.49	46.33

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
PUNJAB															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Amritsar	29099.88	83283.51	5345.17	30294.65	148023.21	14802.3	133220.91	230451.39	438.41	6391.81	237281.59	6453.16	0	178.11
2	Barnala	12217.41	25795.05	1268.74	16138.89	55420.09	5542	49878.09	108961.74	43.94	2515.45	111521.14	2539.61	0	223.59
3	Bathinda	18559.13	63638.64	3246.33	35254.63	120698.73	12069.89	108628.84	107855.46	347.69	5858.75	114061.9	5915	21623.42	105
4	Faridkot	8450.88	36530.76	960.97	17211.36	63153.97	6315.4	56838.57	70534.83	66.46	2607.05	73208.33	2632.09	0	128.8
5	Fatehgarh Sahib	14525.56	14987.18	1670.85	8164.73	39348.32	3934.83	35413.49	71237.87	2588.59	2530.3	76356.77	2554.59	0	215.61
6	Fazilka	8415.22	45176.88	1206.71	23280.99	78079.8	7807.99	70271.81	48438.84	44.13	5069.51	53552.49	5118.19	31435.32	76.21
7	Firozpur	18481.38	84523.19	2443.07	41727.85	147175.49	14717.55	132457.94	171085.47	134.21	3480.63	174700.31	3514.05	6579.1	131.89
8	Gurdaspur	35836.79	92976.76	6344.47	35258.71	170416.73	16873.56	153543.17	210840.39	110.52	7070.62	218021.5	7138.49	4117.53	141.99
9	Hoshiarpur	45979.34	24531.81	7725.46	9402.09	87638.7	7882.02	79756.69	86971.07	131.51	6676.97	93779.58	6741.1	9742.69	117.58
10	Jalandhar	28762.31	31366.59	4285.85	15713.04	80127.79	8012.79	72115	173831.12	2750.65	13512.39	190094.14	13642.14	0	263.6
11	Kapurthala	18016.2	36189.75	2772.39	10040.41	67018.75	6701.88	60316.87	137922.59	1822.72	3449.31	143194.61	3482.43	0	237.4
12	Ludhiana	37582.37	78611.97	5679.53	37455.88	159329.75	15933	143396.75	293750.94	8200.97	15013.51	316965.39	15157.64	0	221.04
13	Malerkotla	7710.33	8276.57	1054.35	4533.19	21574.44	2157.45	19416.99	56174.26	541.98	1998.2	58714.44	2017.39	0	302.39
14	Mansa	13692.09	33984.15	1850.78	22057.15	71584.17	7158.41	64425.76	60442.22	54.43	3243.2	63739.82	3274.33	14864.11	98.94
15	Moga	17671.46	44509.14	2427.44	18625.44	83233.48	8323.35	74910.13	173419.46	122.01	4157.36	177698.82	4197.28	0	237.22
16	Muktsar	6640	50959.42	1329.55	33781.89	92710.86	9271.07	83439.79	16255.7	73.16	3808.03	20136.86	3844.59	63266.38	24.13
17	Pathankot	12563.17	20589.02	2901.77	11457.11	47511.07	4480.16	43030.91	19213.85	88.87	2845.98	22148.71	2873.3	20854.88	51.47
18	Patiala	38873.34	30147.53	5223.56	18455.3	92699.73	9269.98	83429.75	170481.95	677.87	7982.56	179142.4	8059.22	0	214.72
19	Rupnagar	20001.14	12178.13	3087.2	7487.35	42753.82	3910.11	38843.71	34744.54	656.95	2882.68	38284.16	2910.36	6435.1	98.56
20	Sas Nagar	13808.96	4765.13	2030.85	1966.6	22571.54	2257.15	20314.39	18758.47	3490.03	4160.04	26408.54	4199.99	919.18	130
21	Sbs Nagar	16370.95	27285.72	2216.48	8570.02	54443.17	5286.14	49157.03	57719.22	269.45	2591.67	60580.33	2616.56	2199.58	123.24
22	Sangrur	25945.63	28662.51	3091.36	12989.78	70689.28	7068.93	63620.35	192859.49	1554.64	4980.67	199394.81	5028.49	0	313.41
23	Tarn Taran	22784.91	28117.61	3901	13428.62	68232.14	6823.21	61408.93	126574.22	102.06	4725.03	131401.31	4770.39	0	213.98
	Total(Ham)	471988.45	907087.02	72063.88	433295.68	1884435.03	186599.17	1697835.87	2638525.07	24311.24	117551.74	2780388	118680.39	182037.29	163.76
	Total(Bcm)	4.72	9.07	0.72	4.33	18.84	1.87	16.98	26.39	0.24	1.18	27.8	1.19	1.82	163.76

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
RAJASTHAN															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Ajmer	28350.64	1938.3	107.28	7562.79	37959.01	3795.9	34163.11	47462.83	176	1184.34	48823.19	1184.35	0	142.91
2	Alwar	71055.06	1061.76	2824.96	4734	79675.78	7967.58	71708.2	113255.21	3413.35	14469.75	131138.28	14469.73	0	182.88
3	Banswara	10143.43	276.91	0	12748.07	23168.41	2316.85	20851.56	11598.17	4.02	2417.18	14019.38	2417.19	6999.66	67.23
4	Baran	39760.35	5153.94	0	20068.11	64982.4	6054.71	58927.68	67411.74	102.57	8364.65	75878.95	8364.65	3291.77	128.77
5	Barmer	35541.7	683.04	74.74	2054.72	38354.2	3835.44	34518.77	37805.31	438	7406.28	45649.61	7406.29	1436.98	132.25
6	Bharatpur	31346.36	1691.88	1028.4	5602.54	39669.18	3402.44	36266.73	37331.9	71.85	6391.83	43795.62	6391.83	0	120.76
7	Bhilwara	31320.03	100.1	0	13689.26	45109.39	4494.81	40614.58	60213.29	735.87	5372.48	66321.65	5372.49	695.27	163.3
8	Bikaner	25174.63	694.75	3238.11	1775.08	30882.57	3012.06	27870.51	28462.85	71	9705.94	38239.79	9705.94	4973.02	137.21
9	Bundi	17768.55	1295.54	0	14001.81	33065.9	2643.75	30422.15	27292.16	66	3723.39	31081.54	3723.39	4746.68	102.17
10	Chittaurgarh	23505.07	1642.48	0	9405.73	34553.28	3455.31	31097.97	46512.33	107.23	2028.21	48647.78	2028.2	123.58	156.43
11	Churu	13980.01	21.8	1479.1	512.82	15993.73	1204.22	14789.51	15419.69	4.76	3185.95	18610.4	3185.95	1988.3	125.84
12	Dausa	24381.35	998.83	180.59	2366.68	27927.45	2792.76	25134.69	47521.68	3.19	11095.15	58620.01	11095.14	0	233.22
13	Dhaulpur	19964	1279.83	1078.04	5187.68	27509.55	2470.04	25039.51	29417.68	15.73	4615.56	34048.97	4615.56	606.35	135.98
14	Dungarpur	9063.13	1338.68	0	12064.61	22466.42	2224.83	20241.59	11227.75	1.11	885.25	12114.12	885.25	8127.47	59.85
15	Ganganagar	4771.87	16249.07	1003.31	25942.51	47966.76	4796.65	43170.1	16989.18	39	38.57	17066.75	38.57	26103.36	39.53
16	Hanumangarh	5212.91	7924.31	1029.84	8323.2	22490.26	2249.05	20241.22	11247.76	200	914.9	12362.66	914.9	7878.56	61.08
17	Jaipur	61524.41	2204.25	1088.9	7769.56	72587.12	7258.72	65328.4	107004.97	1662.63	38927.03	147594.63	38927.03	0	225.93
18	Jaisalmer	8488.83	380.23	538.02	1140.69	10547.77	1054.78	9492.99	30418.32	5.84	3941.1	34365.26	3941.1	0	362.01
19	Jalor	38666.31	1201.21	0	8081.32	47948.84	4166.86	43781.98	75036.44	2.58	4408.2	79447.23	4408.2	272.41	181.46
20	Jhalawar	39717.12	2899.9	0	13010.71	55627.73	5332.33	50295.4	54683.43	0.41	3956.82	58640.65	3956.82	4500.46	116.59
21	Jhunjhunu	21046.63	294.98	1734.62	1474.86	24551.09	2455.11	22095.98	35396.64	564.16	11912.02	47872.82	11912.02	0	216.66
22	Jodhpur	35479.98	994.78	736.55	2993.98	40205.29	3471.68	36733.61	78476.56	677.58	15154.96	94309.12	15154.96	298.22	256.74
23	Karauli	28079.55	472.76	205.27	5060.02	33817.6	3254.58	30563.02	43466.39	0.07	4836.85	48303.32	4836.86	1681.37	158.04
24	Kota	29039.29	3102.49	0	19433.4	51575.18	5157.51	46417.67	40190.84	180.93	8572.76	48944.54	8572.76	5680.3	105.44
25	Nagaur	56744.71	1077.11	1523.73	3330.84	62676.39	6032.61	56643.77	88158.52	1147.65	13604.42	102910.61	13604.42	466.56	181.68
26	Pali	27655.63	467.85	0	4027	32150.48	3215.07	28935.41	41633.64	17.58	4366.05	46017.27	4366.05	1920.74	159.03
27	Pratapgarh	15650.44	170.1	0	6943.7	22764.24	2275.87	20488.37	25665.32	19	643.83	26328.16	643.83	974.18	128.5
28	Rajsamand	8531.5	219.35	18.7	2815.47	11585.02	1158.54	10426.48	10057.26	391.64	2416.81	12865.72	2416.81	554.91	123.39
29	Sawai Madhopur	31728.1	2121.39	0	10378.56	44228.05	4422.8	39805.24	56358.79	0.22	7836.38	64195.43	7836.38	0	161.27
30	Sikar	31523.1	1794.93	1535.21	2046.21	36899.45	3689.92	33209.52	51368.58	221.34	12208.95	63798.89	12208.94	900.19	192.11
31	Sirohi	25608.25	172.5	0	3996.6	29777.35	2977.72	26799.63	29160.36	340.77	1840.64	31341.77	1840.64	889.75	116.95
32	Tonk	29191.09	3843.85	0	11194.13	44229.07	4197.53	40031.53	29959.39	36	10828.93	40824.35	10828.95	3244.39	101.98
33	Udaipur	21418.1	548.72	0	10287.18	32254	3225.43	29028.56	24219.28	2059.79	3449.6	29728.67	3449.61	1582.32	102.41
	Total(Ham)	901432.13	64317.62	19425.37	260023.84	1245198.96	120063.46	1125135.44	1430424.28	12777.86	230704.79	1673907.1	230704.81	89936.8	148.77
	Total(Bcm)	9.01	0.64	0.19	2.6	12.45	1.2	11.25	14.3	0.13	2.31	16.74	2.31	0.9	148.77

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
SIKKIM															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Gangtok	4685.22	114.05	2164.43	22.8	6986.5	698.65	6287.85	285.1	6.08	102.63	393.81	107.9	5888.77	6.26
2	Gyalshing	2720.72	99.35	954.85	2.96	3777.88	377.79	3400.09	206.1	0	19.2	225.3	19.84	3174.15	6.63
3	Mangan	2337.02	37.6	1497.3	3.36	3875.28	387.53	3487.75	83.6	0	11.96	95.56	12.21	3391.94	2.74
4	Namchi	2487.51	61.35	786.43	5.5	3340.79	334.08	3006.71	136.45	35.5	44.62	216.56	46.25	2788.52	7.2
5	Pakyong	3444.63	48.15	1591.32	9.72	5093.82	509.38	4584.44	120.6	61.2	18.99	200.78	19.96	4382.69	4.38
6	Soreng	882.88	28.15	309.85	2.6	1223.48	122.35	1101.13	62.8	0	16.46	79.26	17.01	1021.32	7.2
	Total(Ham)	16557.98	388.65	7304.18	46.94	24297.75	2429.78	21867.97	894.65	102.78	213.86	1211.27	223.17	20647.39	5.54
	Total(Bcm)	0.166	0.004	0.073	0.000	0.243	0.024	0.219	0.009	0.001	0.002	0.012	0.002	0.206	5.54

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
TAMIL NADU															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Ariyalur	15860.02	18903.42	2272.86	2066.82	39103.12	3581.87	35521.26	17284.99	70.24	1122.72	18477.96	1246.86	17067.19	52.02
2	Chengalpattu	19068.67	36751.40	5.33	2833.82	58659.22	5590.23	53069.00	36987.70	339.20	747.75	38074.66	1458.47	14488.17	71.75
3	Chennai	7914.34	1367.30	0.00	862.01	10143.65	923.10	9220.55	258.50	1189.50	10305.31	11753.26	10467.44	876.35	127.47
4	Coimbatore	21401.11	22355.35	3143.10	10104.02	57003.58	5359.39	51644.19	42528.58	1233.66	2215.96	45978.19	5887.66	10010.67	89.03
5	Cuddalore	37364.97	43246.89	19184.58	11802.06	111598.50	10486.36	101112.14	62317.57	68.29	2466.65	64852.50	4285.85	41518.54	64.14
6	Dharmapuri	21951.96	13054.29	2676.17	11441.83	49124.25	4912.46	44211.80	42885.56	31.90	756.66	43674.11	1771.38	6163.59	98.78
7	Dindigul	23739.88	24579.03	2717.22	10595.66	61631.79	6080.81	55550.97	61568.75	310.31	1828.97	63708.04	4081.05	9978.06	114.68
8	Erode	13967.21	46766.31	3515.21	10391.69	74640.42	7239.77	67400.65	52686.28	411.51	944.90	54042.71	18347.45	13057.27	80.18
9	Kallakurichchi	18265.42	30785.29	12216.95	9063.33	70330.99	6903.20	63427.79	49324.49	35.30	925.98	50285.78	1753.78	13422.92	79.28
10	Kancheepuram	16417.96	32820.73	0.00	6734.39	55973.08	5241.54	50731.54	24487.29	857.46	301.95	25646.71	939.35	24775.94	50.55
11	Kanniyakumari	7504.50	20153.09	1917.72	4719.35	34294.66	3429.50	30865.15	3716.00	101.36	981.63	4798.94	1187.47	25860.35	15.55
12	Karur	11739.40	18233.20	1543.66	2417.90	33934.16	3278.18	30655.98	29629.06	328.36	427.52	30384.92	1077.81	7621.83	99.12
13	Krishnagiri	18997.70	16829.77	2842.89	10629.65	49300.01	4684.04	44615.97	37671.75	348.50	424.42	38444.68	2084.61	9447.62	86.17
14	Madurai	22424.45	34406.28	3160.80	15814.19	75805.72	7154.62	70235.46	38935.35	4067.92	2938.11	45941.40	4388.96	24544.09	65.41
15	Mayiladuthurai	7066.21	26696.25	125.74	627.37	34515.57	3451.56	31064.01	41449.07	0.00	1301.41	42750.52	2989.41	2004.52	137.62
16	Nagapattinam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Namakkal	19693.81	26856.51	2626.58	6552.59	55729.49	5542.34	50187.15	53637.57	82.60	6098.85	59818.99	6613.39	9632.11	119.19
18	Perambalur	9119.11	12402.66	766.27	3060.31	25348.35	2534.84	22813.51	24443.07	33.10	480.42	24956.59	854.80	7513.62	109.39
19	Pudukkottai	35069.42	55274.76	4476.72	4450.27	99271.17	9617.22	89653.95	42882.29	503.90	852.50	44238.72	1925.95	44542.07	49.34
20	Ramanathapuram	25996.73	41039.59	4004.34	6632.19	77672.85	7767.31	69905.54	3816.15	89.68	664.64	4570.39	1425.46	64574.36	6.54
21	Ranipet	16889.86	8244.43	2682.69	6552.09	34369.07	3312.24	31056.83	24936.90	1040.26	860.31	26837.48	1528.23	4942.32	86.41
22	Salem	21290.93	28333.52	4004.06	5315.02	58943.53	5779.77	53163.76	70598.13	128.30	1384.34	72110.81	2943.16	10699.02	135.64
23	Sivagangai	27815.22	35302.31	2800.34	1283.75	67201.62	6720.20	60481.40	15655.55	233.40	1428.59	17317.56	2857.65	41734.78	28.63
24	Tenkasi	9920.35	40874.89	3589.95	6214.51	60599.70	6060.00	54539.68	39124.18	179.54	860.57	40164.30	860.57	33100.30	73.64
25	Thanjavur	61366.75	33350.31	3227.83	4571.39	102516.28	10251.70	92264.58	75804.07	684.20	18402.82	94891.09	18926.36	11300.68	102.85
26	The Nilgiris	8091.24	362.84	1279.14	161.24	9894.46	976.11	8918.35	625.50	52.40	188.98	866.86	2762.58	6968.45	9.72
27	Theni	6741.49	16492.54	3875.36	3423.26	30532.65	3053.32	27479.34	20129.21	91.69	646.27	20867.11	876.84	7933.19	75.94
28	Thiruvallur	7719.07	14727.74	372.59	741.22	23560.62	2356.06	21204.56	12706.80	19.95	1282.91	14009.65	3605.92	9018.08	66.07
29	Thoothukudi	19586.82	21975.19	3495.97	12285.44	57343.42	5685.65	51657.77	19248.45	389.40	446.77	20084.60	1501.64	30896.55	38.88
30	Tiruchirappalli	18443.20	51553.93	1918.59	8203.50	80119.22	8011.94	72107.27	52325.68	272.98	719.03	53317.69	9838.01	29629.97	73.94
31	Tirunelveli	27504.12	41017.10	6575.94	8377.77	83474.93	8233.05	75241.87	32059.80	87.24	719.47	32866.52	1213.45	42379.45	43.68
32	Tirupathur	4626.08	3385.16	512.20	3699.96	12223.40	1222.33	11001.07	15570.49	89.69	820.00	16480.16	1901.42	780.32	149.81
33	Tiruppur	16759.57	28962.08	4030.46	10790.80	60542.91	5759.86	54783.05	46857.71	283.09	528.30	47669.01	3104.66	9102.85	87.01
34	Tiruvallur	51255.18	25012.88	29.29	9821.47	86118.82	7562.28	78556.54	40020.76	1141.46	1955.70	43117.93	7141.07	30751.87	54.89
35	Tiruvannamalai	26710.11	70871.27	688.16	24725.98	122995.52	12118.85	110876.66	80995.91	210.10	7711.44	88917.42	7833.23	25342.14	80.19
36	Vellore	5309.44	9882.05	1098.86	4271.24	20561.59	1930.30	18631.29	18198.45	371.56	2390.94	20960.94	2931.12	1676.22	112.50
37	Villupuram	25915.75	48288.27	17570.47	13667.40	105441.89	10336.30	95105.59	81784.20	20.13	2083.21	83887.57	3736.06	14965.05	88.20
38	Virudhunagar	16780.77	34478.61	5326.69	11401.95	67988.02	6374.57	61613.45	34412.34	65.36	487.38	34965.12	487.38	27435.50	56.75
	Total(Ham)	726288.82	1035637.24	130274.73	266307.44	2158508.23	209522.87	1950569.67	1347564.14	15463.53	78703.39	1441730.89	146836.50	685756.01	73.91
	Total(Bcm)	7.26	10.36	1.30	2.66	21.59	2.10	19.51	13.48	0.15	0.79	14.42	1.47	6.86	73.91

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
TELANGANA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Adilabad	23965.88	23913.06	2035.44	23982.32	73896.70	7174.57	66722.08	15791.74	245.66	2833.68	18871.07	3450.09	47898.81	28.28
2	Bhadradi Kothagudem	52283.03	32305.56	8845.57	14229.78	107663.94	9987.91	97676.14	20583.68	3079.20	4124.61	27787.50	4157.04	72082.36	28.45
3	Hanumakonda	13420.48	17806.36	0.00	18183.61	49410.45	4730.19	44680.30	24519.62	1054.28	1345.60	26919.52	1345.59	18998.03	60.25
4	Hyderabad	768.78	1817.17	285.34	3582.45	6453.74	645.38	5808.35	0.00	190.40	5247.28	5437.69	5734.14	1100.06	93.62
5	Jagtial	17725.69	18607.23	2000.54	17004.60	55338.06	5354.07	49984.01	21121.78	665.48	304.25	22091.71	1609.64	26593.02	44.20
6	Jangaon	14477.91	12649.88	2547.61	9941.69	39617.09	3252.31	36364.81	17680.47	832.86	2016.83	20530.45	2233.66	15845.85	56.46
7	Jayashankar Bhupalapally	19755.11	8473.24	1197.57	15180.49	44606.41	4118.68	40487.75	13880.54	1108.70	627.79	15617.06	636.51	26214.89	38.57
8	Jogulamba Gadwal	8911.14	23026.77	2662.10	17308.06	51908.07	5063.50	46844.53	11053.98	108.07	201.26	11363.43	716.80	35007.41	24.26
9	Kamareddy	31944.14	16903.02	3559.28	17943.57	70350.01	6543.43	63806.54	29407.55	677.25	1072.44	31157.23	2046.25	37799.54	48.83
10	Karimnagar	14539.45	34351.39	2036.46	43899.67	94826.96	9084.17	85742.83	22597.50	844.98	389.63	23832.17	944.61	61837.79	27.79
11	Khammam	30687.21	64711.52	6251.83	38988.87	140639.43	13508.73	127130.71	36020.75	1259.99	3897.20	41177.94	4302.74	86450.82	32.39
12	Komarambheem Asifabad	30435.68	19080.87	2021.33	14872.32	66410.21	6485.86	59924.29	7759.69	533.71	425.06	8718.35	860.72	50868.58	14.55
13	Mahabubabad	30722.16	14719.84	411.68	17533.14	63386.82	6338.89	57047.86	26451.34	1480.90	1223.38	29155.70	1593.33	27727.09	51.11
14	Mahabubnagar	13712.85	8493.58	2664.62	12331.38	37202.43	3572.92	33629.47	18996.77	678.96	108.00	19783.78	1746.53	13230.59	58.83
15	Mancherial	33154.33	27518.23	1509.95	38921.37	101103.88	9817.95	91285.99	17837.17	2444.04	562.05	20843.26	681.92	67840.35	22.83
16	Medak	19758.98	12135.67	2482.22	17651.83	52028.70	5139.08	46889.72	20442.48	950.44	673.54	22066.07	1376.18	24499.80	47.06
17	Medchal Malkajgiri	4454.02	2487.01	956.46	1964.19	9861.68	982.53	8879.21	3028.80	1309.69	957.53	5296.13	3595.71	3943.35	59.65
18	Mulug	27583.50	12961.26	2078.39	15195.80	57818.96	5731.02	52087.93	11512.67	82.26	543.04	12137.97	822.51	37779.54	23.30
19	Nagarkurnool	27796.73	24791.41	7535.70	35887.15	96010.99	9329.91	86681.14	32790.57	352.61	885.22	34028.44	1745.52	52740.47	39.26
20	Nalgonda	33704.71	52040.10	8784.34	59091.18	153620.33	14730.02	138890.26	48147.21	4097.30	5173.53	57418.04	5173.53	83388.72	41.34
21	Narayanpet	10462.68	10543.50	2009.57	8880.32	31896.07	3123.05	28773.10	10839.27	376.47	127.63	11343.35	1117.56	16830.80	39.42
22	Nirmal	26747.08	19784.99	2126.74	18609.95	67268.76	6255.14	61013.61	17742.38	690.00	990.86	19423.32	1321.43	41334.03	31.83
23	Nizamabad	36182.61	26496.11	3458.20	40567.56	106704.48	9774.89	96929.62	50081.43	363.46	2763.98	53208.86	4197.91	36881.00	54.89
24	Peddapalle	16365.72	34019.73	1137.04	28464.68	79987.17	7801.64	72185.55	17495.02	795.76	951.16	19242.00	1572.12	52656.39	26.66
25	Rajanna Sircilla	12006.52	15770.42	2184.97	16817.13	46779.04	4290.19	42488.85	27056.89	1066.23	58.96	28182.06	226.63	14276.93	66.33
26	Rangareddy	26148.94	15117.16	6465.24	24000.44	71731.78	6863.73	64868.04	30103.03	1008.11	2895.99	34006.46	4354.45	30850.74	52.42
27	Sangareddy	29188.85	5132.44	4649.26	5872.17	44842.72	4073.88	40768.90	15689.53	1483.19	2162.71	19335.31	2812.16	21989.45	47.43
28	Siddipet	21790.34	21202.20	3978.85	20351.74	67323.13	6309.30	61013.81	37104.88	823.30	328.07	38256.53	341.08	22968.08	62.70
29	Suryapet	25497.25	66860.97	3750.24	60306.77	156415.23	15566.35	140848.91	22714.25	1040.00	1551.20	25305.44	2027.76	115266.49	17.97
30	Vikarabad	21087.21	13574.71	2654.99	16267.33	53584.24	5358.57	48225.62	17061.97	339.24	511.02	17912.36	1697.11	30144.02	37.14
31	Wanaparthy	8560.73	27413.84	1976.72	32026.13	69977.42	6762.53	63214.89	20830.70	256.75	233.10	21320.57	1173.17	41019.93	33.73
32	Warangal	11947.08	22906.56	1764.97	15895.28	52513.89	5008.81	47505.02	24876.31	1231.74	901.17	27009.20	1418.07	20852.97	56.86
33	Yadadri Bhuvanagiri	19417.99	35063.48	4444.56	33643.90	92569.93	8877.81	83692.14	33236.21	3924.58	2560.83	39721.64	2900.15	46314.22	47.46
	Total(Ham)	715204.79	742679.28	100467.79	755396.87	2313748.73	221657.00	2092091.98	724456.18	35395.61	48648.59	808500.61	69932.62	1283232.12	38.65
	Total(Bcm)	7.15	7.43	1.00	7.55	23.14	2.22	20.92	7.24	0.35	0.49	8.09	0.70	12.83	38.65

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
TRIPURA															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Dhalai	12147.64	941.03	6030.48	565.64	19684.79	4296.73	15388.06	135.3	0	939.91	1075.22	1012.2	14240.54	6.99
2	Gomati	13884.71	3321.95	4150.69	603.54	21960.89	4077.02	17883.87	164.19	0.96	893.27	1058.41	935.36	16783.37	5.92
3	Khowai	6212.26	1790.19	2928.53	596.38	11527.36	1443.58	10083.78	327.71	2.4	653.49	983.59	679.51	9074.17	9.75
4	North Tripura	7025.08	583.28	3824.23	704.7	12137.29	3638.62	8498.67	32.4	3.21	993.96	1029.58	1052.88	7410.17	12.11
5	Sepahijala	10650.71	3032.8	4176.73	1109.7	18969.94	3812.73	15157.21	761.2	1.68	1015.62	1778.47	1056.06	13338.3	11.73
6	South Tripura	16551.36	2948.1	4356.09	1335.74	25191.29	5177.23	20014.06	295.3	2.57	944.37	1242.2	988.86	18727.38	6.21
7	Unakoti	5280.53	1119.49	2899.46	432.73	9732.21	1501.75	8230.46	16.05	1.17	662.73	679.96	702.01	7511.22	8.26
8	West Tripura	9189.41	2313.76	3712.76	1379.91	16595.84	2446.68	14149.16	773.19	16.66	2211.48	3001.32	2315.68	11043.65	21.21
	Total(Ham)	80941.7	16050.6	32078.97	6728.34	135799.61	26394.34	109405.27	2505.35	28.65	8314.84	10848.75	8742.56	98128.8	9.92
	Total(Bcm)	0.81	0.16	0.32	0.07	1.36	0.26	1.09	0.03	0.0003	0.08	0.11	0.09	0.98	9.92

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
UTTAR PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Agra	37965.83	15903.1	547.66	34875.73	89292.32	8337.83	80954.49	83152.89	164.01	10897.89	94214.78	11662.91	4955.08	116.38
2	Aligarh	47244.28	16203.69	1597.97	33398.48	98444.42	8219.29	90225.13	60372.56	512.92	11667.78	72553.24	12629.69	19961.74	80.41
3	Ambedkar Nagar	51881.73	11826.45	387.87	15293.99	79390.04	7595.04	71795	38897.45	17.7	6304.17	45219.33	6670.83	26209.01	62.98
4	Amethi	38921.89	20870.39	891.9	26732.36	87416.54	7595.25	79821.29	46499.69	133.04	4942.25	51575	5243.71	27944.83	64.61
5	Amroha	58557.15	6256.17	2150.33	13712.52	80676.17	7309.67	73366.5	61661.15	836.58	4812.36	67310.1	5188.02	9285.09	91.75
6	Auraiya	27295.04	12563.11	286.67	26283.36	66428.18	6642.82	59785.36	30632.69	8.14	2912.67	33553.51	3041.69	26102.83	56.12
7	Ayodhya	48690.72	15531.38	447.72	29141.53	93811.35	9381.15	84430.2	45657.59	52.58	7117.68	52827.85	7822.51	30897.51	62.57
8	Azamgarh	72902.71	24631.24	136.21	36650.35	134320.51	11287.49	123033.02	61649.02	7.1	13572.22	75228.33	14836.82	46540.09	61.14
9	Bagpat	16395.8	7820.99	945.23	12116.4	37278.42	3727.84	33550.58	30024.02	43.23	2517.99	32585.21	2597.17	3880.84	97.12
10	Bahraich	81662.27	21912.34	2945.77	37261.64	143782.02	9524.66	134257.36	70723.9	131.4	9692.09	80547.41	10470.83	52931.19	59.99
11	Ballia	50141.86	15037.45	1799.62	23585.65	90564.58	7052.25	83512.33	45071.15	9.02	8125.49	53205.63	8772.29	29659.88	63.71
12	Balrampur	58790.79	11405.14	1398.21	19472.38	91066.52	6954.6	84111.92	43674.41	284.68	6157.91	50117.01	6750.02	33402.8	59.58
13	Banda	49322.1	8712.25	519.8	14079.69	72633.84	6197.71	66436.13	39960.02	0	3962.62	43922.63	4256.96	22219.16	66.11
14	Barabanki	69830.08	45243.9	1121.58	85684.29	201879.85	19115.12	182764.73	106367.98	40.06	8968.36	115376.4	9670.51	66686.18	63.13
15	Barilly	70400.18	20081.26	1401.51	31485.65	123368.6	9753.42	113615.18	67591.02	446.44	13333.52	81371.01	14209.9	33754.48	71.62
16	Basti	66457.64	4196.25	662.66	11343.53	82660.08	7219.82	75440.26	42819.04	209.08	6484.2	49512.33	6902.14	25509.99	65.63
17	Bijnor	90559.63	18437.04	3865.7	32456.01	145318.38	11877.85	133440.53	87196.22	790.19	7897.14	95883.56	8345.53	37108.59	71.85
18	Budaun	65960.27	6303.44	1631.21	10379.23	84274.15	7675.58	76598.57	55094.37	59.24	8506.12	63659.74	9105.51	14193.96	83.11
19	Bulandshahr	45581.95	43937.2	1160.71	68903.29	159583.15	14520.38	145062.77	131950.57	0	6678.17	138628.73	6972.13	14719.37	95.56
20	Chandauli	30753.45	16033.36	285.55	9124.28	56196.64	5521.14	50675.5	23197.45	0	4632.21	27829.66	4896.29	22581.76	54.92
21	Chitrakoot	30711.78	5551.8	305.36	7690.59	44259.53	4029.85	40229.68	30537.93	0	2579.95	33117.87	2834.09	6857.67	82.32
22	Deoria	49519.33	43812.39	1534.42	50540.84	145406.98	11791.72	133615.26	76152.64	0	7127.65	83280.31	7468.53	49994.07	62.33
23	Etah	27021.27	16466.83	530.17	38333.6	82351.87	6833.9	75517.97	50452.98	25.77	4606.85	55085.61	4840.12	20199.11	72.94
24	Etawah	27469.38	15078.32	313.59	28277.08	71138.37	6528.27	64610.1	29222.45	160.77	3235.19	32618.39	3431.04	31795.86	50.48
25	Farrukhabad	28940.09	3812.64	492.27	11402.25	44647.25	4464.73	40182.52	25807.91	0	3974.18	29782.09	4244.47	10130.14	74.12
26	Fatehpur	60547.59	21943.4	276.01	32781.18	115548.18	11554.83	103993.35	67962.88	2.02	7339.35	75304.26	7940.09	30474.16	72.41
27	Firozabad	31384.29	16069.75	449.69	32702.03	80605.76	8060.59	72545.17	69234.6	0.01	6714.68	75949.29	7151.21	9145.73	104.69
28	G.B.Nagar	15885.55	14188.32	401.64	21944.93	52420.44	5242.05	47178.39	47888.36	0	1552.14	49440.49	1602.73	2539.6	104.79
29	Ghaziabad	14514.13	10362.64	539.38	16259.15	41675.3	4167.54	37507.76	36881.78	2246.1	7063.48	46191.34	7937.73	1685.94	123.15
30	Ghazipur	57888.25	17539.52	445.32	28777.51	104650.5	9718.46	94932.14	49221.36	54.3	6905.93	56181.55	7362.55	38293.99	59.18
31	Gonda	77715.12	15965.74	1186.83	24866.58	119734.27	8862.72	110871.55	56400.31	488.51	9753.15	66641.95	10644.32	43338.44	60.11
32	Gorakhpur	69982.06	66123.77	2046.4	31616.39	169768.62	14376.46	155392.16	87020.02	2111.94	9412.26	98544.26	9998.11	56262.05	63.42
33	Hamirpur	32528.81	5863.36	84.22	6805.73	45282.12	4528.23	40753.89	25205.23	343.47	2193.8	27742.5	2268.15	12937.05	68.07
34	Hapur	17763.39	12782.22	647.33	19294.51	50487.45	4531.13	45956.32	45031.95	0	3.39	45035.34	3.56	1638.42	98
35	Hardoi	92431.54	29991.19	2042.14	50035.05	174499.92	16188.22	158311.7	89451.45	76.41	8614	98141.86	9183.18	59600.66	61.99
36	Hathras	18853.27	19243.38	442.05	32302.38	70841.08	5580.58	65260.5	57057.7	28.64	4146.14	61232.5	4390.96	8780.51	93.83
37	Jalaun	65650.98	12105.01	513.29	26382.84	104652.12	10465.23	94186.89	47635.33	7.3	4316.04	51958.68	4509.25	42035.01	55.17
38	Jaunpur	71785.81	20334.77	214.94	37197.96	129533.48	11710.07	117823.41	70450.69	0	13572.02	84022.71	14572.66	32800.07	71.31
39	Jhansi	29482.6	17751.38	0	23923.22	71157.2	6499.53	64657.67	40441.47	40.15	3189.47	43671.07	3439.34	20736.74	67.54
40	Kannauj	26050.71	10464.77	675.64	23749.33	60940.45	6094.06	54846.39	36787.93	15.79	4396.49	41200.25	4685.36	18773.43	75.12
41	Kanpur Dehat	41564.56	12556.86	684.58	25768.47	80574.47	7362.04	73212.43	49810.86	402.82	4049.65	54263.34	4202.93	18795.8	74.12
42	Kanpur Nagar	42677.77	13990.1	918.52	29910.55	87496.94	7705.5	79791.44	53988.75	385.67	7992.27	62366.66	8284.77	17132.27	78.16
43	Kasganj	28888.68	13193.69	557.66	32700.42	75340.45	6298.9	69041.55	42702.47	3.65	4000.13	46706.23	4325.08	22010.37	67.65
44	Kaushambi	29840.98	7611.03	271.18	11989.62	49712.81	4971.3	44741.51	32025	0	4540.43	36565.42	4995.9	9145.56	81.73
45	Kushi Nagar	46718.28	69136.54	2263.39	54208.55	172326.76	17232.7	155094.06	69450.17	1237.54	8689.64	79377.32	9454.67	74951.72	51.18
46	Lakhimpur Kheri	138123.91	33591.43	4730.12	54036.17	230481.63	20451.81	210029.82	115315.84	225.55	12140.68	127682.08	13690.09	80798.32	60.79
47	Lalitpur	16090.56	6145.48	0	18616.47	40852.1	4085.27	36767.24	27664.81	0	3456.04	31120.85	3775.9	5326.53	84.64

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
UTTAR PRADESH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
48	Lucknow	37675.7	15965.98	829.93	24735.76	79207.37	5717.83	73489.54	29879.96	6110.33	12469.87	48460.16	13872.83	24854.34	65.94
49	Mahoba	9564.34	9202.15	0	11988.24	30754.73	2797.19	27957.54	24406.7	2.01	1157.36	25566.08	1212.54	3346.56	91.45
50	Mahrajganj	66689.03	19836.15	1967.16	22902.63	111394.97	9141.22	102253.75	56831.29	7.7	7102.51	63941.51	7698.58	37716.19	62.53
51	Mainpuri	35335.92	20074.09	420.64	36080.26	91910.91	7977.98	83932.93	55422.01	1.06	4972.56	60395.61	5240.74	24930.57	71.96
52	Mathura	34937.7	34116.1	792.68	68325.58	138172.06	11412.38	126759.68	83916.46	114.23	6498.49	90529.17	6972	37103.44	71.42
53	Maunath Bhanjan	30993.97	8763.34	458.75	10907.44	51123.5	4493.58	46629.92	23744.21	7.36	6379.68	30131.23	7033.82	15844.54	64.62
54	Meerut	42153.18	15451.34	1783.44	23568.23	82956.19	7552.92	75403.27	47442.24	1304.2	9515.72	58262.16	9910.16	19195.23	77.27
55	Mirzapur	25556.47	16119.19	57.63	19459.4	61192.69	5412.94	55779.75	28124.47	40.71	6810.43	34975.63	7319.87	20331.2	62.7
56	Moradabad	36268.75	12052.42	1106.96	16636.63	66064.76	5764.43	60300.33	42545.4	223.21	10682.86	53451.47	11804.71	10027.51	88.64
57	Muzaffarnagar	43675.33	23665.46	3128.13	40398.18	110867.1	6666.32	104200.78	72329.04	341.38	6808.28	79478.72	7363.97	25321.28	76.27
58	Pilibhit	66500.48	15717.95	1250.07	28423.45	111891.95	8197.07	103694.88	61600	164.68	5411.95	67176.62	5768.94	36161.28	64.78
59	Pratapgarh	60943.12	31519.43	203.23	45789.96	138455.74	12033.55	126422.19	91157.06	32.85	8210.97	99400.89	8699.65	26560.49	78.63
60	Prayagraj	73165.81	28765.65	0	39394.2	141325.66	12904.13	128421.53	75451.95	1606.26	17040.33	94098.54	18139.56	35328.78	73.27
61	Raibareilly	54907.22	26131.73	225.36	41164.23	122428.54	10603.1	111825.44	58540.32	12.01	7101.83	65654.17	7673.42	45599.66	58.71
62	Rampur	42713.42	12399.03	1571.16	20126.69	76810.3	6474.1	70336.2	47015.01	299.45	5193.12	52507.57	5579.04	17442.69	74.65
63	Saharanpur	75855.33	21834.81	5463.56	37251.19	140404.89	9132.79	131272.1	123985.56	817.66	7281.19	132084.43	7702.09	15869.83	100.62
64	Sambhal	38075.84	3366.8	929.64	5471.97	47844.25	4577.13	43267.12	31535.6	494.47	5732.43	37762.49	6263.01	5052.96	87.28
65	Sant Kabir Nagar	42340.85	4018.87	764.46	7062.22	54186.4	5105.99	49080.41	26542.47	172.97	4322.7	31038.17	4631.67	17733.27	63.24
66	Sant Ravidas Nagar	16773.95	22080.41	184.7	46997	86036.06	8366.84	77669.22	58416.61	80.3	3478.76	61975.68	3648.85	15523.46	79.79
67	Shahjahanpur	86711.32	17662.93	2690.75	25362.56	132427.56	8412.6	124014.96	69274.2	1639.25	8526.36	79439.81	9322.62	43778.9	64.06
68	Shamli	21882.42	9051.43	1544.69	13746.32	46224.86	3189.53	43035.33	41103.54	394.47	3033.93	44531.93	3066.96	1000.2	103.48
69	Shrawasti	43057.31	4603.41	1187.29	7103.28	55951.29	4432.06	51519.23	26203.57	0	3237.06	29440.62	3632.46	21683.2	57.14
70	Siddharth Nagar	68612.81	10439.92	1324.31	15706.7	96083.74	9207.18	86876.56	47636.17	0.34	7366.84	55003.3	8079.37	31160.72	63.31
71	Sitapur	95088.42	39901.44	2012.06	63277.31	200279.23	18085.06	182194.17	80780.35	17352.1	11259.84	109392.3	12255.85	71805.87	60.04
72	Sonbhadra	15380.48	30026.53	129.25	11829.78	57366.04	5514.93	51851.11	21249.33	830.19	4315.1	26394.62	4730.88	25040.7	50.9
73	Sultanpur	47274.06	18704.21	174.63	26405.26	92558.16	7718.02	84840.14	46135.58	5.81	6177.35	52318.77	6567.92	32130.79	61.67
74	Unnao	62175.05	45294.97	966.14	62790.02	171226.18	14969.77	156256.41	87098.17	74.37	8623.82	95796.34	9372.65	59711.23	61.31
75	Varanasi	28751.27	9512.63	123.08	14607.17	52994.15	5027.04	47967.11	31394.08	114.06	10599.38	42107.54	10946.31	8968.05	87.78
	Total(Ham)	3572405.61	1400860.85	78039.72	2131605.42	7182911.6	625732.28	6557179.32	4091757.41	43845.24	504058.56	4639661.2	541792.72	2003946.54	70.76
	Total(Bcm)	35.72	14.01	0.78	21.32	71.83	6.26	65.57	40.92	0.44	5.04	46.4	5.42	20.04	70.76

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
UTTARAKHAND															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Dehradun	54373.43	1279.11	2937.08	1832.73	60422.35	6042.24	54380.11	10438.49	639.84	6402.94	17481.26	6402.94	36898.85	32.15
2	Haridwar	28334.15	5962.02	3519.38	9149.63	46965.18	3463.49	43501.69	21944.88	3447.6	3055.6	28448.08	3287.61	14821.61	65.4
3	Nainital	6279.71	5109.6	1601.95	5772.9	18764.16	1374.41	17389.75	4154.93	1591.74	3862.39	9609.05	3862.39	7780.7	55.26
4	Udhamsingh Nagar	41810.72	16755.35	2439.48	14890.09	75895.64	6473.75	69421.89	30022.72	6118.67	3795.27	39936.67	3846.94	29433.55	57.53
	Total(Ham)	130798.01	29106.08	10497.89	31645.35	202047.33	17353.89	184693.44	66561.02	11797.84	17116.2	95475.06	17399.88	88934.71	51.69
	Total(Bcm)	1.31	0.29	0.1	0.32	2.02	0.17	1.85	0.67	0.12	0.17	0.95	0.17	0.89	51.69

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
WEST BENGAL															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Alipurduar	108380.76	1129.37	21452.15	3720.79	134683.07	13468.33	121214.74	9366.1	161.99	3386.22	12914.32	3688.97	107997.67	10.65
2	Bankura	108112.58	16418.21	24870.58	28068.08	177469.45	14751.93	162717.52	50234.5	281.43	8620.58	59136.55	8983.35	104012.51	36.34
3	Birbhum	79139.98	8698.59	15231.27	16682.04	119751.88	10960.74	108791.14	24501.5	1306.14	8439.61	34247.24	8967.96	74015.57	31.48
4	Dakshin Dinajpur	65498.56	9179.63	12931.9	25943.2	113553.29	10101.86	103451.43	58067.8	172.93	3926.17	62166.92	4075.12	41135.56	60.09
5	Darjiling	34042.06	669.29	6278.83	995.72	41985.9	4198.6	37787.3	2132.7	420.92	3359.09	5912.72	3731.61	31502.07	15.65
6	Haora	15818.41	896.76	3325.09	1399.02	21439.28	1752.75	19686.52	1248	340.9	2652.56	4241.47	3101.86	14995.76	21.55
7	Hugli	80826.03	9604.44	16644.65	23542.43	130617.55	12664.68	117952.86	50788.6	2078.09	10516.29	63382.98	11180.2	54252.89	53.74
8	Jaipalguri	147175.46	1952.77	30717.68	5401.85	185247.76	18524.78	166722.97	12700.5	1482.43	6249.22	20432.12	8768.07	143772.01	12.26
9	Jhargram	74041.16	4441.66	15109.92	9454.55	103047.29	7819.31	95227.98	20429.6	250.5	2791.08	23471.17	2909.91	71637.98	24.65
10	Kalimpong	3156.89	189.21	473.47	98.37	3917.94	391.8	3526.14	0	2.45	62.33	64.77	62.82	3460.88	1.84
11	Koch Bihar	142420.16	9098.87	30837	31483.46	213839.49	21383.95	192455.54	79018.8	92.76	6883.64	85995.17	7285.72	106058.28	44.68
12	Kolkatta						0	0	0	0	0	0	0	0	0
13	Malda	80623.54	7134.43	13220.64	16329.5	117308.11	9891.17	107416.94	27805.5	260.65	10146.18	38212.3	11251.12	68099.7	35.57
14	Murshidabad	121052.83	14343.84	27520.69	40111.42	203028.78	16881.38	186147.4	90904.8	419.88	17932.17	109256.84	25470.77	74558.91	58.69
15	Nadia	97688.32	21137.11	22470.15	48156.69	189452.27	17889.55	171562.72	135236	457.49	11358.05	147051.53	12202.95	23666.3	85.71
16	North 24 Parganas	79235.18	14870.27	19096.05	41920.21	155121.71	11584.11	143537.6	84074.2	560.5	12826.78	97461.44	14196.58	44706.37	67.9
17	Paschim Barddhaman	16589	1922.65	3513.51	3311.51	25336.67	2296.89	23039.78	2602.84	4395.17	4891.18	11889.19	5288	10910.41	51.6
18	Paschim Medinipur	155954.34	13414.73	33401.81	39796.46	242567.34	23291.22	219276.12	103186.4	1202.09	11711.68	116100.16	12307.79	102645.78	52.95
19	Purba Barddhaman	121817.9	17338.63	25331.09	39055.36	203542.98	18439.51	185103.46	83940.2	999.18	11259.79	96199.14	11788.76	89847.56	51.97
20	Purba Medinipur	45870.98	3077.86	10246.14	7920.14	67115.12	6711.52	60403.6	17103.2	7.39	4799.9	21910.51	5247.87	38045.11	36.27
21	Puruliya	34375.56	8787.68	5742.81	10513.97	59420.02	5803.12	53616.9	2001.2	109.86	7141.56	9252.62	7635.53	43870.32	17.26
22	South 24 Parganas						0	0	0	0	0	0	0	0	0
23	Uttar Dinajpur	79109.5	6775.3	15478.61	19374.91	120738.32	10309.27	110429.05	43425.1	328.9	7989.97	51743.98	8742.15	57932.89	46.86
	Total(Ham)	1690929.2	171081.3	353894.04	413279.68	2629184.22	239116.47	2390067.71	898767.54	15331.62	156944.04	1071043.1	176887.11	1307124.53	44.81
	Total(Bcm)	16.91	1.71	3.54	4.13	26.29	2.39	23.9	8.99	0.15	1.57	10.71	1.77	13.07	44.81

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
ANDAMAN & NICOBAR ISLANDS															
3	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	N & M Andaman	8894.86	9.65	7481.5	2.41	16388.42	1638.86	14749.56	0.8	83.24	254.91	338.96	269.19	14396.32	2.3
2	Nicobar	14917.07	0.96	19746.09	0.24	34664.36	3466.44	31197.92	0.25	0.95	85.88	87.04	90.68	31106.07	0.28
3	South Andaman	5974.52	10.31	4802.74	2.57	10790.14	1079	9711.14	10.65	13.61	314.04	338.28	331.62	9355.28	3.48
	Total(Ham)	29786.45	20.92	32030.33	5.22	61842.92	6184.3	55658.62	11.7	97.8	654.82	764.28	691.49	54857.67	1.37
	Total(Bcm)	0.298	0.0002	0.320	0.0001	0.618	0.062	0.557	0.0001	0.001	0.007	0.008	0.007	0.549	1.37

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
CHANDIGARH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Chandigarh	965.08	1390.87	313	2710.52	5379.47	538	4,841.52	826.2	217.66	2606.95	3650.81	2,606.95	1,190.71	75.41
	Total(Ham)	965.08	1390.87	313	2710.52	5379.47	538	4,841.52	826.2	217.66	2606.95	3650.81	2,606.95	1,190.71	75.41
	Total(Bcm)	0.010	0.014	0.003	0.027	0.054	0.005	0.048	0.008	0.002	0.026	0.037	0.026	0.012	75.41

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
DADRA & NAGAR HAVELI															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Dadra Nagar Haveli	5810.58	661.93	329.73	1948.12	8750.36	579.49	8170.87	888.62	8565.98	1292.4	10747	1798.23	732.06	131.53
	Total(Ham)	5810.58	661.93	329.73	1948.12	8750.36	579.49	8170.87	888.62	8565.98	1292.4	10747	1798.23	732.06	131.53
	Total(Bcm)	0.06	0.01	0.03	0.02	0.09	0.01	0.08	0.01	0.09	0.01	0.11	0.02	0.01	131.53

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
DAMAN & DIU															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Daman	2822.95	41.21	0	71.91	2936.07	146.81	2789.26	215.1	4215.38	0	4430.48	1412.67	0	158.84
2	Diu	549.48	14.13	0	23.09	586.7	29.33	557.37	42.2	1239.89	0	1282.09	175.69	0	230.02
	Total(Ham)	3372.43	55.34	0	95	3522.77	176.14	3346.63	257.3	5455.27	0	5712.57	1588.36	0	170.7
	Total(Bcm)	0.030	0.001	0	0.001	0.035	0.002	0.033	0.003	0.055	0	0.057	0.016	0	170.7

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
JAMMU & KASHMIR															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Anantnag	4892.06	7761.42	12963.08	2013.1	27629.66	2762.96	24866.7	420.8	34.83	5098.32	5553.95	5098.32	19312.75	22.33
2	Bandipora	184.65	516.14	598.1	9.3	1308.19	130.82	1177.37	21.02	3.5	345.28	369.81	428.61	724.23	31.41
3	Baramulla	9157.5	19690.9	28836.22	6688.11	64372.73	6437.27	57935.46	714.82	20.9	7295.33	8031.05	7295.33	49904.41	13.86
4	Budgam	2604.32	18610.8	6605.85	3618.81	31439.78	3143.98	28295.8	188.96	29.3	5686.99	5905.25	5686.99	22390.55	20.87
5	Doda	96.31	661.15	187.19	161.07	1105.72	110.58	995.14	157.65	17.6	296.11	471.36	364.66	455.23	47.37
6	Ganderbal	107.76	528.9	273.35	287.82	1197.83	119.79	1078.04	420.48	10.43	126.14	557.06	553.82	93.3	51.67
7	Jammu	40664.23	41281.3	12172.41	7990.22	102108.16	8409.27	93698.89	19123.4	2848.21	10469.11	32440.72	10911.64	60815.64	34.62
8	Kathua	18699.68	13411.33	5710.04	10059.18	47880.23	4788.04	43092.19	4576.46	1292.98	7283.68	13153.11	7350.27	29872.49	30.52
9	Kishtwar	188.76	745	366.87	390	1690.63	169.07	1521.56	31.5	14	185.31	230.81	185.31	1290.75	15.17
10	Kulgam	1072.05	7787.4	2840.75	2121.38	13821.58	1382.16	12439.42	147.28	29.16	1776.81	1953.25	1776.81	10486.17	15.7
11	Kupwara	3329.04	17403.2	10783.08	5467.41	36982.73	3698.27	33284.46	31.54	35	5939.28	6005.81	5939.28	27278.65	18.04
12	Poonch	1591.22	10246.4	5615.96	2659.02	20112.6	2011.26	18101.34	717.5	17.5	1939.25	2674.26	1939.25	15427.08	14.77
13	Pulwama	2581.86	15025.21	6548.9	3376.43	27532.4	2753.24	24779.16	1854.45	17.28	4867.06	6738.79	4867.06	18040.37	27.2
14	Rajouri	10492.44	14807.3	4278.95	7557.19	37135.88	3713.59	33422.29	668.5	17.5	3462.84	4148.85	3516.65	29219.64	12.41
15	Ramban	120.08	665.55	423.81	349.63	1559.07	155.9	1403.17	59.5	17.5	381.08	458.08	409.66	916.51	32.65
16	Reasi	2404.71	2596.28	980.67	1117.29	7098.95	709.9	6389.05	178.7	73.58	1147.31	1399.6	1195.27	4941.49	21.91
17	Samba	8363.41	8264.01	3299.96	3476.67	23404.05	2340.4	21063.65	1147.57	126.12	2221.36	3495.05	2241.26	17548.69	16.59
18	Shopian	1742.08	8140.4	4616.21	3575.33	18074.02	1807.4	16266.62	129.6	27	2267.06	2423.66	2267.06	13842.96	14.9
19	Srinagar Urban	2966.34	472.42	7524.12	631.48	11594.36	1159.44	10434.92	87.28	662.13	7412.15	8161.56	8049.81	1635.7	78.21
20	Udhampur	6104.51	5708.02	3060.67	2850.41	17723.61	1642.35	16081.26	872.5	120.31	2859.1	3851.91	2923.74	12164.71	23.95
	Total(Ham)	117363.01	194323.13	117686.19	64399.85	493772.18	47445.69	446326.49	31549.52	5414.82	71059.55	108023.94	73000.8	336361.32	24.2
	Total(Bcm)	1.17	1.94	1.18	0.64	4.94	0.47	4.46	0.32	0.05	0.71	1.08	0.73	3.36	24.2

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
LADAKH															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Kargil	629.14	1071.66	1464.66	0	3165.46	316.57	2848.89	0	3.45	710.7	714.15	710.7	2134.74	25.07
2	Leh	683.3	4200.85	835.68	0	5719.83	571.96	5147.87	0	17.25	2231	2248.25	2231	2899.62	43.67
	Total(Ham)	1312.44	5272.51	2300.34	0	8885.29	888.53	7996.76	0	20.7	2941.7	2962.4	2941.7	5034.36	37.05
	Total(Bcm)	0.01	0.05	0.02	0	0.09	0.01	0.08	0	0.0002	0.03	0.03	0.03	0.05	37.05

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
LAKSHADWEEP															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Lakshadweep	1104.21	1.19	276.05	0.00	1381.45	834.64	546.81	0.00	0.00	337.50	337.51	339.05	207.77	61.72
	Total(Ham)	1104.21	1.19	276.05	0.00	1381.45	834.64	546.81	0.00	0.00	337.50	337.51	339.05	207.77	61.72
	Total(Bcm)	0.011	0.00001	0.003	0.000	0.014	0.008	0.005	0.000	0.000	0.003	0.003	0.003	0.002	61.72

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023															
PUDUCHERRY															
S. No.	Name of District	Ground Water Recharge				Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for Domestic Use as on	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season					Irrigation	Industrial	Domestic	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Puducherry	3804.66	7046.53	1429.10	3224.02	15504.31	1277.75	14226.56	6888.50	547.20	4184.44	11620.15	4484.28	2401.48	81.68
2	Karaikal	1267.60	2115.32	32.83	886.85	4302.60	430.27	3872.32	528.78	17.58	552.36	1098.72	194.68	2741.94	28.37
	Total(Ham)	5072.26	9161.85	1461.93	4110.87	19806.91	1708.02	18098.88	7417.28	564.78	4736.81	12718.87	4678.96	5143.42	70.27
	Total(Bcm)	0.05	0.09	0.01	0.04	0.20	0.02	0.18	0.07	0.01	0.05	0.13	0.05	0.05	70.27

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Annexure - III(A)

**State-Wise Categorization of Blocks/ Mandals/ Taluks in India
(as in 2023)**

CATEGORIZATION OF BLOCKS/ MANDALS/ TALUKAS IN INDIA (2023)												
S.No.	State/Union Territories	Total No. of Assessed Units	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
1	Andhra Pradesh	667	597	89.5	18	2.7	3	0.5	10	1.5	39	5.85
2	Arunachal Pradesh	42	42	100								
3	Assam	245	244	99.59	1	0.41						
4	Bihar	535	467	87.29	53	9.91	7	1.31	8	1.5		
5	Chhattisgarh	146	119	81.51	22	15.07	5	3.42				
6	Delhi	34	5	14.71	4	11.76	12	35.29	13	38.24		
7	Goa	12	12	100								
8	Gujarat	252	189	75	20	7.94	8	3.17	23	9.13	12	4.76
9	Haryana	143	35	24.48	9	6.29	11	7.69	88	61.54		
10	Himachal Pradesh	10	10	100								
11	Jharkhand	263	241	91.63	11	4.18	6	2.28	5	1.9		
12	Karnataka	234	146	62.39	32	13.68	12	5.13	44	18.8		
13	Kerala	152	119	78.29	30	19.74	3	1.97				
14	Madhya Pradesh	317	226	71.29	60	18.93	5	1.58	26	8.2		
15	Maharashtra	353	277	78.47	57	16.15	9	2.55	9	2.55	1	0.28
16	Manipur	9	9	100.00								
17	Meghalaya	39	39	100								
18	Mizoram	26	26	100								
19	Nagaland	52	52	100								
20	Odisha	314	299	95.22	9	2.87					6	1.91
21	Punjab	153	20	13.07	13	8.5	3	1.96	117	76.47		
22	Rajasthan	302	38	12.58	22	7.28	23	7.62	216	71.52	3	0.99
23	Sikkim	6	6	100								
24	Tamil Nadu	313	125	39.94	56	17.89	27	8.63	100	31.95	5	1.60
25	Telangana	612	530	86.60	61	9.97	10	1.63	11	1.80		
26	Tripura	59	59	100								
27	Uttar Pradesh	836	559	66.87	172	20.57	43	5.14	62	7.42		
28	Uttarakhand	18	14	77.78	4	22.22						
29	West Bengal	345	241	69.86	32	9.28	12	3.48			60	17.39
30	Andaman And Nicobar	9	9	100								
31	Chandigarh	1			1	100						
32	Dadra & Nagar Haveli	1							1	100		
	Daman & Diu	2							2	100		
33	Jammu And Kashmir	20	19	95	1	5						
34	Ladakh	18	12	66.67	6	33.33						
35	Lakshadweep	5	4	80	1	20						
36	Puducherry	8	3	37.50	3	37.50			1	12.50	1	12.50
	Grand Total	6553	4793	73.14	698	10.65	199	3.04	736	11.23	127	1.94

Note-

Blocks- Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Haryana, Jharkhand, Kerala, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Tripura, Uttar Pradesh, Uttarakhand, West Bengal, Andaman & Nicobar Island, Ladakh, Lakshadweep

Taluks- Goa, Gujarat, Karnataka, Maharashtra, Tamil Nadu, Puducherry

Mandals- Andhra Pradesh, Telangana

District- Sikkim, Dadra & Nagar Haveli, Daman & Diu, Jammu & Kashmir

Valley- Himachal Pradesh

UT- Chandigarh

Tehsil- Delhi

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Annexure - III(B)

**District-Wise Categorization of Blocks/ Mandals/ Taluks in India
(as in 2023)**

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ANDHRA PRADESH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Sri Potti Sriramulu	37	37	100.00								
2	Nandyal	29	29	100.00								
3	Srikakulam	30	27	90.00	1	3.33	1	3.33	1	3.33		
4	Vizianagaram	27	27	100.00								
5	Sri Sathya Sai	32	24	75.00	3	9.38	1	3.13	4	12.50		
6	Alluri Sitharama Raju	22	22	100.00								
7	Konaseema	22	15	68.18							7	31.82
8	Eluru	28	22	78.57							6	21.43
9	West Godavari	19	7	36.84							12	63.16
10	Bapatla	25	24	96.00							1	4.00
11	Palnadu	28	26	92.86			1	3.57	1	3.57		
12	Kakinada	21	19	90.48							2	9.52
13	Y.S.R Kadapa	36	34	94.44	1	2.78			1	2.78		
14	Ananthapuramu	31	30	96.77	1	3.23						
15	Chittoor	31	24	77.42	7	22.58						
16	East Godavari	19	18	94.74	1	5.26						
17	Guntur	17	15	88.24							2	11.76
18	Krishna	25	16	64.00							9	36.00
19	Kurnool	25	25	100.00								
20	Prakasam	38	33	86.84	2	5.26			3	7.89		
21	Visakhapatnam	5	5	100.00								
22	Anakapalli	24	24	100.00								
23	Annamayya	30	28	93.33	2	6.67						
24	Ntr	17	17	100.00								
25	Parvathipuram Manyam	15	15	100.00								
26	Tirupati	34	34	100.00								
	Total	667	597	89.51	18	2.70	3	0.45	10	1.50	39	5.85

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ARUNACHAL PRADESH												
S.No	Name of District	Total No. of Assessed Units	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Changlang	5	5	100.00								
2	East Kameng	4	4	100.00								
3	East Siang	4	4	100.00								
4	Lohit	5	5	100.00								
5	Lower Dibang Valley	2	2	100.00								
6	Lower Subansiri	3	3	100.00								
7	Papum Pare	4	4	100.00								
8	Tirap	4	4	100.00								
9	Upper Subansiri	2	2	100.00								
10	West Kameng	5	5	100.00								
11	West Siang	4	4	100.00								
	Total	42	42	100.00								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
Assam												
S.No	Name of District	Total No. of Assessed Units	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Dhemaji	5	5	100.00								
2	Bongaigaon	5	5	100.00								
3	Jorhat	8	8	100.00								
4	Kokrajhar	11	11	100.00								
5	Kamrup (M) Rural	3	3	100.00								
6	Darrang	7	7	100.00								
7	Hailakandi	5	5	100.00								
8	Kamrup (M) Urban	1			1	100.00						
9	Kamrup	14	14	100.00								
10	Karbi Anglong	11	11	100.00								
11	Nalbari	7	7	100.00								
12	Sonitpur	14	14	100.00								
13	Tinsukia	7	7	100.00								
14	Sibsagar	9	9	100.00								
15	Lakhimpur	9	9	100.00								
16	Dhubri	15	15	100.00								
17	Morigaon	7	7	100.00								
18	Nagaon	20	20	100.00								
19	Dima Hasao	5	5	100.00								
20	Chirang	5	5	100.00								
21	Karimganj	7	7	100.00								
22	Baksa	10	10	100.00								
23	Goalpara	8	8	100.00								
24	Udalguri	10	10	100.00								
25	Barpeta	12	12	100.00								
26	Cachar	15	15	100.00								
27	Dibrugarh	7	7	100.00								
28	Golaghat	8	8	100.00								
	Total	245	244	99.59	1	0.41						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
BIHAR												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Begusarai	18	14	77.78	4	22.22						
2	Supaul	11	11	100.00								
3	Banka	11	11	100.00								
4	Nawada	14	9	64.29	5	35.71						
5	Aurangabad	11	11	100.00								
6	Bhagalpur	16	16	100.00								
7	Kaimur	11	10	90.91	1	9.09						
8	Saharsa	10	10	100.00								
9	Bhojpur	14	10	71.43	4	28.57						
10	Sitamarhi	17	17	100.00								
11	Siwan	19	19	100.00								
12	West Champaran	18	18	100.00								
13	Araria	9	9	100.00								
14	Arwal	5	5	100.00								
15	Darbhanga	18	18	100.00								
16	East Champaran	27	27	100.00								
17	Gaya	24	20	83.33	4	16.67						
18	Jamui	10	10	100.00								
19	Jehanabad	7	2	28.57	3	42.86			2	28.57		
20	Katihar	16	16	100.00								
21	Khagaria	7	7	100.00								
22	Kishanganj	7	7	100.00								
23	Lakhisarai	7	7	100.00								
24	Madhepura	13	13	100.00								
25	Madhubani	21	21	100.00								
26	Munger	9	9	100.00								
27	Muzaffarpur	16	7	43.75	7	43.75	1	6.25	1	6.25		
28	Nalanda	20	8	40.00	10	50.00	1	5.00	1	5.00		
29	Patna	24	16	66.67	6	25.00	1	4.17	1	4.17		
30	Purnea	14	14	100.00								
31	Rohtas	19	17	89.47	2	10.53						
32	Samastipur	20	13	65.00	5	25.00	1	5.00	1	5.00		
33	Saran	20	20	100.00								
34	Sheikhpura	6	5	83.33			1	16.67				
35	Sheohar	5	5	100.00								
36	Vaishali	16	10	62.50	2	12.50	2	12.50	2	12.50		
37	Buxar	11	11	100.00								
38	Gopalganj	14	14	100.00								
	Total	535	467	87.29	53	9.91	7	1.31	8	1.50		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
CHHATISGARH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Balod	5	2	40.00	2	40.00	1	20.00				
2	Baloda Bazar	5	5	100.00								
3	Balrampur	6	6	100.00								
4	Bastar	7	7	100.00								
5	Bemetara	4			1	25.00	3	75.00				
6	Bijapur	4	4	100.00								
7	Bilaspur	4	2	50.00	2	50.00						
8	Dantewada	4	4	100.00								
9	Dhamtari	4	2	50.00	2	50.00						
10	Durg	3	1	33.33	2	66.67						
11	Gariaband	5	4	80.00	1	20.00						
12	Gourela-Pendra-Marwahi	3	3	100.00								
13	Janjgir-Champa	5	5	100.00								
14	Jashpur	8	8	100.00								
15	Kabirdham	4	3	75.00	1	25.00						
16	Kanker	7	6	85.71	1	14.29						
17	Khairagarh-Chhuikhadan_Gandai	2	1	50.00	1	50.00						
18	Kondagaon	5	5	100.00								
19	Korba	5	4	80.00	1	20.00						
20	Korea	2	2	100.00								
21	Mahasamund	5	4	80.00	1	20.00						
22	Manendragarh-Chirmiri Bharatpur	3	3	100.00								
23	Mohla-Manpur_Ambagarhchowki	3	3	100.00								
24	Mungeli	3	3	100.00								
25	Narayanpur	2	2	100.00								
26	Raigarh	7	5	71.43	2	28.57						
27	Raipur	4	3	75.00			1	25.00				
28	Rajnandgaon	4	1	25.00	3	75.00						
29	Sakti	4	4	100.00								
30	Sarangarh-Bilairagh	3	2	66.67	1	33.33						
31	Sukma	3	3	100.00								
32	Surajpur	6	5	83.33	1	16.67						
33	Surguja	7	7	100.00								
	Total	146	119	81.51	22	15.07	5	3.42				0.00

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
DELHI												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	North	3			1	33.33	1	33.33	1	33.33		
2	South East	3					3	100				
3	South West	3	1	33.33			1	33.33	1	33.33		
4	East	3					3	100				
5	Nazul Land	1	1	100								
6	South	3					1	33.33	2	66.67		
7	Central	3	1	33.33			1	33.33	1	33.33		
8	New Delhi	3							3	100		
9	North West	3	2	66.67	1	33.33						
10	West	3			1	33.33	1	33.33	1	33.33		
11	North East	3			1	33.33			2	66.67		
12	Shahdara	3					1	33.33	2	66.67		
	Total	34	5	14.71	4	11.76	12	35.29	13	38.24		

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DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
GOA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Goa North	5	5	100								
2	South Goa	7	7	100								
	Total	12	12	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
GUJARAT												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Ahmedabad	10	4	40	1	10	2	20	1	10	2	20
2	Amreli	11	10	90.91	1	9.09						
3	Anand	8	8	100								
4	Arvalli	6	6	100								
5	Banaskantha	14	2	14.29	1	7.14			8	57.14	3	21.43
6	Bharuch	9	9	100								
7	Bhavnagar	10	10	100								
8	Botad	4	4	100								
9	Chhota Udepur	6	6	100								
10	Dahod	9	9	100								
11	Dang	3	3	100								
12	Devbhumi Dwarka	4	4	100								
13	Gandhinagar	4			2	50			2	50		
14	Gir Somnath	6	6	100								
15	Jamnagar	6	6	100								
16	Junagadh	9	9	100								
17	Kachchh	10	6	60			1	10	2	20	1	10
18	Kheda	10	10	100								
19	Mahesana	10			3	30	1	10	6	60		
20	Mahisagar	6	6	100								
21	Morbi	5	4	80							1	20
22	Narmada	5	4	80	1	20						
23	Navsari	6	6	100								
24	Panchmahal	7	7	100								
25	Patan	9			1	11.11	1	11.11	2	22.22	5	55.56
26	Porbandar	3	3	100								
27	Rajkot	12	7	58.33	4	33.33	1	8.33				
28	Sabarkantha	8	4	50	3	37.5			1	12.5		
29	Surat	10	9	90					1	10		
30	Surendranagar	10	9	90	1	10						
31	Tapi	7	7	100								
32	Vadodara	9	5	55.56	2	22.22	2	22.22				
33	Valsad	6	6	100								
	Total	252	189	75	20	7.94	8	3.17	23	9.13	12	4.76

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
HARYANA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Rohtak	5	5	100.00								
2	Karnal	8					1	12.50	7	87.50		
3	Kaithal	7							7	100.00		
4	Jind	8	2	25.00	1	12.50			5	62.50		
5	Kurukshetra	7							7	100.00		
6	Bhiwani	7	3	42.86					4	57.14		
7	Ambala	6			2	33.33	1	16.67	3	50.00		
8	Fatehabad	7					2	28.57	5	71.43		
9	Gurgaon	5							5	100.00		
10	Charkhi Dadri	4	2	50.00					2	50.00		
11	Faridabad	4							4	100.00		
12	Hisar	9	6	66.67	1	11.11	1	11.11	1	11.11		
13	Jhajjar	7	7	100.00								
14	Mahendragarh	8					2	25.00	6	75.00		
15	Mewat	7	3	42.86	1	14.29	1	14.29	2	28.57		
16	Palwal	6	2	33.33	1	16.67	1	16.67	2	33.33		
17	Panchkula	3	2	66.67			1	33.33				
18	Panipat	6							6	100.00		
19	Rewari	7					1	14.29	6	85.71		
20	Sirsa	7			1	14.29			6	85.71		
21	Sonapat	8	3	37.50					5	62.50		
22	Yamuna Nagar	7			2	28.57			5	71.43		
	Total	143	35	24.48	9	6.29	11	7.69	88	61.54		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
HIMACHAL PRADESH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Kangra	2	2	100								
2	Mandi	2	2	100								
3	Sirmaur	2	2	100								
4	Solan	1	1	100								
5	Una	3	3	100								
	Total	10	10	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
JHARKHAND												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Godda	9	9	100								
2	Giridih	13	12	92.31	1	7.69						
3	Simdega	10	10	100								
4	Garhwa	19	18	94.74	1	5.26						
5	Pakur	6	6	100								
6	Ramgarh	6	4	66.67			1	16.67	1	16.67		
7	Sahebganj	9	9	100								
8	Dumka	10	10	100								
9	East Singhbhum	12	10	83.33					2	16.67		
10	Bokaro	9	8	88.89					1	11.11		
11	Chatra	12	12	100								
12	Deoghar	10	7	70	3	30						
13	Dhanbad	9	4	44.44	2	22.22	2	22.22	1	11.11		
14	Gumla	12	12	100								
15	Hazaribagh	16	15	93.75	1	6.25						
16	Jamtara	6	6	100								
17	Khunti	6	6	100								
18	Koderma	6	4	66.67	1	16.67	1	16.67				
19	Latehar	9	9	100								
20	Lohardaga	7	7	100								
21	Palamau	21	21	100								
22	Ranchi	19	15	78.95	2	10.53	2	10.53				
23	Saraikela Kharsawan	9	9	100								
24	West Singhbhum	18	18	100								
	Total	263	241	91.63	11	4.18	6	2.28	5	1.9		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
KARNATAKA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Bagalkot	9	2	22.22	5	55.56	1	11.11	1	11.11		
2	Ballari	5	5	100.00								
3	Belagavi	15	7	46.67	5	33.33	2	13.33	1	6.67		
4	Bengaluru (Rural)	4							4	100.00		
5	Bengaluru (Urban)	6							6	100.00		
6	Bidar	8	6	75.00	2	25.00						
7	Chamarajanagara	5			3	60.00	1	20.00	1	20.00		
8	Chikkaballapura	6							6	100.00		
9	Chikkamagaluru	9	7	77.78					2	22.22		
10	Chitradurga	6	1	16.67					5	83.33		
11	Dakshina Kannada	7	7	100.00								
12	Davanagere	6	3	50.00			1	16.67	2	33.33		
13	Dharwad	8	8	100.00								
14	Gadag	7	3	42.86	2	28.57	1	14.29	1	14.29		
15	Hassan	8	6	75.00			1	12.50	1	12.50		
16	Haveri	8	5	62.50	3	37.50						
17	Kalburgi	11	10	90.91	1	9.09						
18	Kodagu	5	5	100.00								
19	Kolara	6							6	100.00		
20	Koppal	7	4	57.14	2	28.57	1	14.29				
21	Mandya	7	6	85.71	1	14.29						
22	Mysuru	8	8	100.00								
23	Raichur	7	6	85.71	1	14.29						
24	Ramanagara	5			2	40.00	2	40.00	1	20.00		
25	Shivamogga	7	7	100.00								
26	Tumakuru	10	3	30.00	1	10.00	1	10.00	5	50.00		
27	Udupi	7	7	100.00								
28	Uttara Kannada	12	12	100.00								
29	Vijayanagara	6	2	33.33	1	16.67	1	16.67	2	33.33		
30	Vijayapura	13	12	92.31	1	7.69						
31	Yadgir	6	4	66.67	2	33.33						
	Total	234	146	62.39	32	13.68	12	5.13	44	18.80		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
KERALA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Kottayam	11	11	100								
2	Idukki	8	6	75	2	25						
3	Wayanad	4	4	100								
4	Ernakulam	14	14	100								
5	Thiruvananthapuram	11	5	45.45	6	54.55						
6	Thrissur	16	13	81.25	3	18.75						
7	Pathanamthitta	8	8	100								
8	Kannur	11	8	72.73	3	27.27						
9	Malappuram	15	7	46.67	8	53.33						
10	Kozhikkode	12	9	75	3	25						
11	Kollam	11	9	81.82	2	18.18						
12	Kasargod	6	4	66.67	1	16.67	1	16.67				
13	Alappuzha	12	12	100								
14	Palakkad	13	9	69.23	2	15.38	2	15.38				
	Total	152	119	78.29	30	19.74	3	1.97				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MADHYA PRADESH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Agar Malwa	4	1	25	1	25			2	50		
2	Alirajpur	6	6	100								
3	Anuppur	4	3	75	1	25						
4	Ashoknagar	4	2	50	2	50						
5	Balaghat	10	10	100								
6	Barwani	7	5	71.43	1	14.29			1	14.29		
7	Betul	10	8	80	2	20						
8	Bhind	6	6	100								
9	Bhopal	3			3	100						
10	Burhanpur	2	1	50	1	50						
11	Chhatarpur	8	4	50	4	50						
12	Chhindwara	11	8	72.73	2	18.18	1	9.09				
13	Damoh	7	6	85.71	1	14.29						
14	Datia	3	3	100								
15	Dewas	6	3	50	1	16.67			2	33.33		
16	Dhar	13	9	69.23			1	7.69	3	23.08		
17	Dindori	7	7	100								
18	Guna	5	5	100								
19	Gwalior	5	4	80	1	20						
20	Harda	3	3	100								
21	Hoshangabad	7	6	85.71	1	14.29						
22	Indore	5			1	20	1	20	3	60		
23	Jabalpur	8	7	87.5	1	12.5						
24	Jhabua	6	5	83.33	1	16.67						
25	Katni	6	6	100								
26	Khandwa	7	6	85.71	1	14.29						
27	Khargone	9	8	88.89	1	11.11						
28	Mandla	9	9	100								
29	Mandsaur	5			3	60			2	40		
30	Morena	7	7	100								
31	Narsinghpur	6	5	83.33	1	16.67						
32	Neemuch	3			1	33.33			2	66.67		
33	Niwari	2	1	50	1	50						
34	Panna	5	5	100								
35	Raisen	7	6	85.71	1	14.29						
36	Rajgarh	6			4	66.67	1	16.67	1	16.67		
37	Ratlam	6			2	33.33			4	66.67		
38	Rewa	9	8	88.89	1	11.11						
39	Sagar	11	11	100								
40	Satna	8	4	50	4	50						
41	Sehore	5	4	80			1	20				
42	Seoni	8	8	100								
43	Shahdol	5	5	100								
44	Shajapur	4			1	25			3	75		
45	Sheopur	3	2	66.67	1	33.33						
46	Shivpuri	8	3	37.5	5	62.5						
47	Sidhi	5	5	100								
48	Singrauli	3	3	100								
49	Tikamgarh	4			4	100						
50	Ujjain	6			3	50			3	50		
51	Umaria	3	3	100								
52	Vidisha	7	5	71.43	2	28.57						
	Total	317	226	71.29	60	18.93	5	1.58	26	8.2		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MAHARASHTRA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Buldhana	13	4	30.77	7	53.85			2	15.38		
2	Gondia	8	8	100								
3	Osmanabad	8	6	75	2	25						
4	Satara	11	9	81.82	2	18.18						
5	Jaigaon	15	3	20	10	66.67			2	13.33		
6	Beed	11	11	100								
7	Nashik	15	9	60	3	20	3	20				
8	Nandurbar	6	6	100								
9	Sangli	10	9	90	1	10						
10	Parbhani	9	9	100								
11	Aurangabad	9	2	22.22	7	77.78						
12	Jalna	8	8	100								
13	Latur	10	9	90	1	10						
14	Nagpur	13	12	92.31	1	7.69						
15	Ahmednagar	14	4	28.57	5	35.71	4	28.57	1	7.14		
16	Akola	7	6	85.71	1	14.29						
17	Amravati	14	6	42.86	3	21.43	1	7.14	3	21.43	1	7.14
18	Bhandara	7	7	100								
19	Chandrapur	15	15	100								
20	Dhule	4	4	100								
21	Gadchiroli	12	12	100								
22	Hingoli	5	5	100								
23	Nanded	16	16	100								
24	Palghar	8	8	100								
25	Pune	13	5	38.46	7	53.85	1	7.69				
26	Raigad	15	15	100								
27	Ratnagiri	9	9	100								
28	Sindhudurg	8	8	100								
29	Solapur	11	3	27.27	7	63.64			1	9.09		
30	Thane	7	7	100								
31	Wardha	8	8	100								
32	Washim	6	6	100								
33	Yawatmal	16	16	100								
34	Kolhapur	12	12	100								
	Total	353	277	78.47	57	16.15	9	2.55	9	2.55	1	0.28

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MANIPUR												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Bishnupur	2	2	100.00								
2	Churachandpur	1	1	100.00								
3	Imphal East	2	2	100.00								
4	Imphal West	2	2	100.00								
5	Thoubal	2	2	100.00								
	Total	9	9	100.00								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MEGHALAYA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	South West Khasi Hills	2	2	100								
2	South West Garo Hills	2	2	100								
3	West Garo Hills	6	6	100								
4	East Garo Hills	3	3	100								
5	East Jaintia Hills	2	2	100								
6	West Khasi Hills	4	4	100								
7	Ri Bhoi	3	3	100								
8	South Garo Hills	4	4	100								
9	West Jaintia Hills	3	3	100								
10	East Khasi Hills	8	8	100								
11	North Garo Hills	2	2	100								
	Total	39	39	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MIZORAM												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Champhai	4	4	100								
2	Aizawl	5	5	100								
3	Serchhip	2	2	100								
4	Lunglei	4	4	100								
5	Saiha	2	2	100								
6	Kolasib	2	2	100								
7	Lawngtlai	4	4	100								
8	Mamit	3	3	100								
	Total	26	26	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
NAGALAND												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Kiphire	3	3	100								
2	Zunheboto	6	6	100								
3	Wokha	5	5	100								
4	Kohima	4	4	100								
5	Longleng	2	2	100								
6	Mon	6	6	100								
7	Peren	3	3	100								
8	Phek	5	5	100								
9	Dimapur	4	4	100								
10	Tuensang	8	8	100								
11	Mokokchung	6	6	100								
	Total	52	52	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2022												
ODISHA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Angul	8	7	87.5	1	12.5						
2	Balasore	12	11	91.67	1	8.33						
3	Bargarh	12	12	100								
4	Bhadrak	7	6	85.71							1	14.29
5	Bolangir	14	14	100								
6	Boudh	3	3	100								
7	Cuttack	14	14	100								
8	Deogarh	3	3	100								
9	Dhenkanal	8	8	100								
10	Gajapati	7	7	100								
11	Ganjam	22	22	100								
12	Jagatsinghpur	8	7	87.5							1	12.5
13	Jajpur	10	9	90	1	10						
14	Jharsuguda	5	4	80	1	20						
15	Kalahandi	13	13	100								
16	Kandhamal	12	12	100								
17	Kendrapara	9	5	55.56							4	44.44
18	Keonjhar	13	13	100								
19	Khurda	10	7	70	3	30						
20	Koraput	14	14	100								
21	Malkangiri	7	7	100								
22	Mayurbhanj	26	26	100								
23	Nabarangapur	10	10	100								
24	Nayagarh	8	7	87.5	1	12.5						
25	Nuapada	5	4	80	1	20						
26	Puri	11	11	100								
27	Rayagada	11	11	100								
28	Sambalpur	9	9	100								
29	Subarnapur	6	6	100								
30	Sundargarh	17	17	100								
	Total	314	299	95.22	9	2.87					6	1.91

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
PUNJAB												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fazilka	5	3	60	1	20			1	20		
2	Pathankot	6	4	66.67	2	33.33						
3	Sas Nagar	3			1	33.33	1	33.33	1	33.33		
4	Muktsar	4	4	100								
5	Kapurthala	5							5	100		
6	Hoshiarpur	10	1	10	3	30			6	60		
7	Amritsar	10							10	100		
8	Barnala	3							3	100		
9	Sangrur	8							8	100		
10	Malerkotla	2							2	100		
11	Jalandhar	12							12	100		
12	Mansa	5	2	40	1	20			2	40		
13	Bathinda	9	2	22.22	1	11.11	1	11.11	5	55.56		
14	Fatehgarh Sahib	5							5	100		
15	Faridkot	3							3	100		
16	Rupnagar	5	2	40	1	20			2	40		
17	Moga	5							5	100		
18	Tarn Taran	8							8	100		
19	Patiala	9							9	100		
20	Sbs Nagar	5	1	20			1	20	3	60		
21	Ludhiana	14							14	100		
22	Firozpur	6			2	33.33			4	66.67		
23	Gurdaspur	11	1	9.09	1	9.09			9	81.82		
	Total	153	20	13.07	13	8.5	3	1.96	117	76.47		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
RAJASTHAN												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Dhaulpur	5							5	100		
2	Pratapgarh	5	1	20			1	20	3	60		
3	Alwar	14							14	100		
4	Dausa	6							6	100		
5	Bikaner	8	3	37.5	1	12.5			3	37.5	1	12.50
6	Karauli	6			1	16.67			5	83.33		
7	Chittaurgarh	11							11	100		
8	Ajmer	10							10	100		
9	Bharatpur	10							10	100		
10	Jalor	8					1	12.5	7	87.5		
11	Baran	7			1	14.29	2	28.57	4	57.14		
12	Udaipur	18			1	5.56	11	61.11	6	33.33		
13	Jaisalmer	4							4	100		
14	Sirohi	5			1	20	1	20	3	60		
15	Tonk	6	1	16.67	1	16.67	1	16.67	3	50		
16	Rajsamand	7					2	28.57	5	71.43		
17	Jaipur	16							16	100		
18	Ganganagar	9	9	100								
19	Dungarpur	10	8	80	2	20						
20	Bhilwara	12							12	100		
21	Sawai Madhopur	6							6	100		
22	Jhunjhunu	8							8	100		
23	Bundi	5	1	20	1	20			3	60		
24	Jodhpur	17			1	5.88	1	5.88	15	88.24		
25	Barmer	17	1	5.88	2	11.76			14	82.35		
26	Jhalawar	8	1	12.5			2	25	5	62.5		
27	Churu	7	1	14.29					5	71.43	1	14.29
28	Hanumangarh	7	5	71.43	1	14.29					1	14.29
29	Banswara	11	6	54.55	5	45.45						
30	Sikar	9			1	11.11			8	88.89		
31	Pali	10	1	10	1	10			8	80		
32	Kota	6			2	33.33			4	66.67		
33	Nagaur	14					1	7.14	13	92.86		
	Total	302	38	12.58	22	7.28	23	7.62	216	71.52	3	0.99

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
SIKKIM												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Mangan	1	1	100								
2	Soreng	1	1	100								
3	Namchi	1	1	100								
4	Pakyong	1	1	100								
5	Gangtok	1	1	100								
6	Gyalshing	1	1	100								
	Total	6	6	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
TAMIL NADU												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Ariyalur	4	3	75.00	1	25.00	0	0.00	0	0.00	0	0.00
2	Chengalpattu	8	5	62.50	3	37.50	0	0.00	0	0.00	0	0.00
3	Chennai	16	2	12.50	1	6.25	0	0.00	13	81.25	0	0.00
4	Coimbatore	11	1	9.09	1	9.09	2	18.18	7	63.64	0	0.00
5	Cuddalore	10	5	50.00	0	0.00	2	20.00	3	30.00	0	0.00
6	Dharmapuri	7	1	14.29	1	14.29	1	14.29	4	57.14	0	0.00
7	Dindigul	10	2	20.00	0	0.00	1	10.00	7	70.00	0	0.00
8	Erode	10	2	20.00	4	40.00	1	10.00	3	30.00	0	0.00
9	Kallakurichchi	6	3	50.00	1	16.67	2	33.33	0	0.00	0	0.00
10	Kancheepuram	5	4	80.00	1	20.00	0	0.00	0	0.00	0	0.00
11	Kanniyakumari	6	6	100.00	0	0.00	0	0.00	0	0.00	0	0.00
12	Karur	7	0	0.00	1	14.29	2	28.57	4	57.14	0	0.00
13	Krishnagiri	8	3	37.50	1	12.50	2	25.00	2	25.00	0	0.00
14	Madurai	11	7	63.64	3	27.27	1	9.09	0	0.00	0	0.00
15	Mayiladuthurai	4	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
16	Nagapattinam	4	0	0.00	0	0.00	0	0.00	0	0.00	4	100.00
17	Namakkal	8	1	12.50	1	12.50	0	0.00	6	75.00	0	0.00
18	Perambalur	4	1	25.00	0	0.00	0	0.00	3	75.00	0	0.00
19	Pudukkottai	12	9	75.00	3	25.00	0	0.00	0	0.00	0	0.00
20	Ramanathapuram	9	9	100.00	0	0.00	0	0.00	0	0.00	0	0.00
21	Ranipet	6	0	0.00	4	66.67	1	16.67	1	16.67	0	0.00
22	Salem	14	1	7.14	0	0.00	1	7.14	12	85.71	0	0.00
23	Sivagangai	9	9	100.00	0	0.00	0	0.00	0	0.00	0	0.00
24	Tenkasi	8	3	37.50	3	37.50	0	0.00	2	25.00	0	0.00
25	Thanjavur	9	0	0.00	1	11.11	4	44.44	4	44.44	0	0.00
26	The Nilgiris	6	6	100.00	0	0.00	0	0.00	0	0.00	0	0.00
27	Theni	5	2	40.00	2	40.00	1	20.00	0	0.00	0	0.00
28	Thiruvarur	8	4	50.00	0	0.00	0	0.00	3	37.50	1	12.50
29	Thoothukudi	10	9	90.00	1	10.00	0	0.00	0	0.00	0	0.00
30	Tiruchirappalli	11	6	54.55	1	9.09	0	0.00	4	36.36	0	0.00
31	Tirunelveli	8	6	75.00	2	25.00	0	0.00	0	0.00	0	0.00
32	Tirupathur	4	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
33	Tiruppur	9	0	0.00	4	44.44	2	22.22	3	33.33	0	0.00
34	Tiruvallur	9	7	77.78	2	22.22	0	0.00	0	0.00	0	0.00
35	Tiruvannamalai	12	2	16.67	6	50.00	2	16.67	2	16.67	0	0.00
36	Vellore	6	0	0.00	1	16.67	0	0.00	5	83.33	0	0.00
37	Villupuram	9	2	22.22	2	22.22	1	11.11	4	44.44	0	0.00
38	Virudhunagar	10	4	40.00	5	50.00	1	10.00	0	0.00	0	0.00
	Total	313	125	39.94	56	17.89	27	8.63	100	31.95	5	1.60

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
TELANGANA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Jagtial	20	18	90.00	2	10.00						
2	Karimnagar	16	15	93.75	1	6.25						
3	Kamareddy	24	20	83.33	4	16.67						
4	Medak	21	18	85.71	3	14.29						
5	Nirmal	19	19	100.00								
6	Mahabubnagar	17	15	88.24	2	11.76						
7	Narayanpet	13	13	100.00								
8	Suryapet	23	23	100.00								
9	Adilabad	18	16	88.89			1	5.56	1	5.56		
10	Khammam	21	20	95.24	1	4.76						
11	Jayashankar Bhupalapally	11	11	100.00								
12	Nalgonda	32	25	78.13	7	21.88						
13	Wanaparthy	14	14	100.00								
14	Rangareddy	27	23	85.19	4	14.81						
15	Rajanna Siricilla	13	10	76.92	3	23.08						
16	Komarambheem Asifabad	15	15	100.00								
17	Mulug	9	9	100.00								
18	Hyderabad	16			4	25.00	6	37.50	6	37.50		
19	Peddapalle	14	14	100.00								
20	Bhadradi Kothagudem	23	20	86.96	3	13.04						
21	Jangaon	12	11	91.67	1	8.33						
22	Jogulamba Gadwal	12	11	91.67	1	8.33						
23	Mahabubabad	18	17	94.44	1	5.56						
24	Mancherial	18	18	100.00								
25	Medchal Malkajgiri	15	10	66.67	2	13.33			3	20.00		
26	Nagarkurnool	20	19	95.00	1	5.00						
27	Nizamabad	33	26	78.79	6	18.18			1	3.03		
28	Sangareddy	28	23	82.14	4	14.29	1	3.57				
29	Siddipet	26	19	73.08	6	23.08	1	3.85				
30	Vikarabad	20	20	100.00								
31	Warangal	13	13	100.00								
32	Hanumakonda	14	9	64.29	4	28.57	1	7.14				
33	Yadadri Bhuvanagiri	17	16	94.12	1	5.88						
	Total	612	530	86.60	61	9.97	10	1.63	11	1.80		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
TRIPURA												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Dhalai	8	8	100								
2	North Tripura	8	8	100								
3	Khowai	6	6	100								
4	Gomati	8	8	100								
5	West Tripura	10	10	100								
6	Unakoti	4	4	100								
7	South Tripura	8	8	100								
8	Sepahijala	7	7	100								
	Total	59	59	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
UTTAR PRADESH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Lalitpur	6			6	100.00						
2	Saharanpur	11	1	9.09	6	54.55			4	36.36		
3	Banda	8	4	50.00	4	50.00						
4	Mathura	10	7	70.00			2	20.00	1	10.00		
5	Shamli	5			1	20.00	2	40.00	2	40.00		
6	Chandauli	9	9	100.00								
7	Mirzapur	12	7	58.33	3	25.00	1	8.33	1	8.33		
8	Unnao	16	16	100.00								
9	Bagpat	6			3	50.00			3	50.00		
10	Kanpur Dehat	10	3	30.00	7	70.00						
11	Chitrakoot	5	1	20.00	3	60.00	1	20.00				
12	Shahjahanpur	15	15	100.00								
13	Pilibhit	7	7	100.00								
14	Jaunpur	21	12	57.14	7	33.33	2	9.52				
15	Mahrajanj	12	12	100.00								
16	Ambedkar Nagar	9	8	88.89	1	11.11						
17	Maunath Bhanjan	9	9	100.00								
18	Kaushambi	8	2	25.00	4	50.00			2	25.00		
19	Raibareli	18	18	100.00								
20	Auraiya	7	7	100.00								
21	Etawah	8	8	100.00								
22	Mahoba	4			2	50.00			2	50.00		
23	Sitapur	19	19	100.00								
24	Hathras	7	1	14.29	2	28.57	1	14.29	3	42.86		
25	Budaun	15	5	33.33	6	40.00	2	13.33	2	13.33		
26	Bulandshahar	16	1	6.25	5	31.25	4	25.00	6	37.50		
27	Amethi	13	12	92.31	1	7.69						
28	Bareilly	16	11	68.75	4	25.00			1	6.25		
29	Gonda	16	16	100.00								
30	Jhansi	8	4	50.00	4	50.00						
31	Aligarh	13	5	38.46	6	46.15	1	7.69	1	7.69		
32	Bijnor	11	6	54.55	4	36.36	1	9.09				
33	G.B.Nagar	3			1	33.33	1	33.33	1	33.33		
34	Gorakhpur	20	20	100.00								
35	Kannauj	8	3	37.50	2	25.00	1	12.50	2	25.00		
36	Etah	8	3	37.50	5	62.50						
37	Varanasi	9	2	22.22	3	33.33	1	11.11	3	33.33		
38	Lucknow	9	8	88.89					1	11.11		
39	Firozabad	9			3	33.33	1	11.11	5	55.56		
40	Azamgarh	22	22	100.00								
41	Deoria	16	16	100.00								
42	Balrampur	9	9	100.00								
43	Basti	14	14	100.00								
44	Ayodhya	11	11	100.00								
45	Agra	16			5	31.25	1	6.25	10	62.50		
46	Hapur	4			1	25.00	2	50.00	1	25.00		
47	Pratapgarh	17	4	23.53	9	52.94	4	23.53				
48	Bahraich	14	14	100.00								
49	Mainpuri	9	6	66.67	2	22.22			1	11.11		
50	Kushi Nagar	14	14	100.00								
51	Meerut	13	4	30.77	6	46.15	2	15.38	1	7.69		
52	Ghaziabad	5			1	20.00			4	80.00		
53	Fatehpur	13	7	53.85	5	38.46			1	7.69		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
UTTAR PRADESH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
54	Kasganj	7	4	57.14	3	42.86						
55	Moradabad	9	1	11.11	6	66.67	1	11.11	1	11.11		
56	Barabanki	15	15	100.00								
57	Sambhal	8	1	12.50	3	37.50	4	50.00				
58	Sant Kabir Nagar	9	9	100.00								
59	Lakhimpur Kheri	15	15	100.00								
60	Sant Ravidas Nagar	6			6	100.00						
61	Shrawasti	5	5	100.00								
62	Amroha	6			3	50.00	2	33.33	1	16.67		
63	Kanpur Nagar	11	3	27.27	6	54.55	2	18.18				
64	Siddharth Nagar	14	14	100.00								
65	Ghazipur	16	15	93.75	1	6.25						
66	Sonbhadra	10	9	90.00	1	10.00						
67	Hamirpur	7	5	71.43	2	28.57						
68	Ballia	17	17	100.00								
69	Farrukhabad	7	3	42.86	4	57.14						
70	Hardoi	19	19	100.00								
71	Jalaun	9	9	100.00								
72	Muzaffarnagar	9	4	44.44	2	22.22	2	22.22	1	11.11		
73	Prayagraj	24	13	54.17	8	33.33	2	8.33	1	4.17		
74	Rampur	6	1	16.67	5	83.33						
75	Sultanpur	14	14	100.00								
	Total	836	559	66.87	172	20.57	43	5.14	62	7.42		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
UTTARAKHAND												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Dehradun	3	3	100								
2	Haridwar	6	4	66.67	2	33.33						
3	Nainital	2	1	50	1	50						
4	Udhamsingh Nagar	7	6	85.71	1	14.29						
	Total	18	14	77.78	4	22.22						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
WEST BENGAL												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Purba Barddhaman	23	19	82.61	4	17.39						
2	Murshidabad	26	20	76.92	5	19.23	1	3.85				
3	Jhargram	8	8	100								
4	North 24 Parganas	22	9	40.91	5	22.73	3	13.64			5	22.73
5	Koch Bihar	12	12	100								
6	Malda	15	14	93.33	1	6.67						
7	Paschim Barddhaman	8	7	87.5	1	12.5						
8	Kalimpong	3	3	100								
9	Alipurduar	6	6	100								
10	Uttar Dinajpur	9	9	100								
11	South 24 Parganas	29									29	100
12	Darjiling	9	9	100								
13	Hugli	18	15	83.33	3	16.67						
14	Puruliya	20	20	100								
15	Kolkatta	1									1	100
16	Haora	14	5	35.71							9	64.29
17	Bankura	22	22	100								
18	Jalpaiguri	9	9	100								
19	Dakshin Dinajpur	8	6	75	2	25						
20	Nadia	18	2	11.11	8	44.44	8	44.44				
21	Birbhum	19	19	100								
22	Purba Medinipur	25	9	36							16	64
23	Paschim Medinipur	21	18	85.71	3	14.29						
	Total	345	241	69.86	32	9.28	12	3.48			60	17.39

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ANDAMAN & NICOBAR ISLANDS												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	N & M Andaman	3	3	100.00								
2	Nicobar	3	3	100.00								
3	South Andaman	3	3	100.00								
	Total	9	9	100.00								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
CHANDIGARH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Chandigarh	1			1	100.00						
	Total	1			1	100.00						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2022												
DADRA & NAGAR HAVELI												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Dadra Nagar Haveli	1							1	100		
	Total	1							1	100		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
DAMAN & DIU												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Daman	1								1	100	
2	Diu	1								1	100	
3	Total	2								2	100	

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
JAMMU & KASHMIR												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Bandipora	1	1	100.00								
2	Ganderbal	1	1	100.00								
3	Doda	1	1	100.00								
4	Anantnag	1	1	100.00								
5	Ramban	1	1	100.00								
6	Srinagar Urban	1			1	100.00						
7	Budgam	1	1	100.00								
8	Jammu	1	1	100.00								
9	Pulwama	1	1	100.00								
10	Reasi	1	1	100.00								
11	Samba	1	1	100.00								
12	Kathua	1	1	100.00								
13	Kishtwar	1	1	100.00								
14	Kulgam	1	1	100.00								
15	Kupwara	1	1	100.00								
16	Poonch	1	1	100.00								
17	Mirpur											
18	Rajouri	1	1	100.00								
19	Shopian	1	1	100.00								
20	Baramulla	1	1	100.00								
	Total	20	19	95.00	1	5.00						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
LADAKH												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Leh	9	3	33.33	6	66.67						
2	Kargil	9	9	100.00								
	Total	18	12	66.67	6	33.33						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
LAKSHADWEEP												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Lakshadweep	5	4	80.00	1	20.00						
	Total	5	4	80.00	1	20.00						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
PUDUCHERRY												
S.No	Name of District	Total No. of Assessed Units	Safe		SemiCritical		Critical		OverExploited		Saline	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Puducherry	6	1	16.67	3	50.00			1	16.67	1	16.66
2	Karaikal	2	2	100.00								
	Total	8	3	37.50	3	37.50			1	12.50	1	12.50

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Annexure - III(C)

**State-Wise Annual Extractable Ground Water Resource
of Assessment Units under Different Category in India
(as in 2023)**

ANNUAL EXTRACTABLE RESOURCE OF ASSESSMENT UNITS UNDER DIFFERENT CATEGORIES IN INDIA(2023)										
S.No.	State/Union Territories	Total Annual Extractable Resource of Assessed Units (in mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Total Annual Extractable Resource (in mcm)	%	Total Annual Extractable Resource (in mcm)	%	Total Annual Extractable Resource (in mcm)	%	Total Annual Extractable Resource (in mcm)	%
1	Andhra Pradesh	26445.91	25656.64	97.02	489.85	1.85	77.62	0.29	221.80	0.84
2	Arunachal Pradesh	4163.11	4163.11	100						
3	Assam	20931.53	20890.06	99.8	41.47	0.2				
4	Bihar	30718.81	28029.03	91.24	2168.92	7.06	237.4	0.77	283.46	0.92
5	Chhattisgarh	12183.72	9427.94	77.38	2288.8	18.79	466.98	3.83		
6	Delhi	344.49	73.44	21.32	46.94	13.63	102	29.61	122.11	35.45
7	Goa	317	317	100						
8	Gujarat	25405.18	20506.66	80.72	2050.16	8.07	743.01	2.92	2105.34	8.29
9	Haryana	8690.53	1917.52	22.06	697.24	8.02	587.66	6.76	5488.11	63.15
10	Himachal Pradesh	1014.53	1014.53	100						
11	Jharkhand	5730.94	5314.85	92.74	221.95	3.87	133.06	2.32	61.08	1.07
12	Karnataka	17080.79	11165.14	65.37	2245.55	13.15	948.56	5.55	2721.54	15.93
13	Kerala	5005.27	4107.22	82.06	761.3	15.21	136.74	2.73		
14	Madhya Pradesh	32853.75	22772.77	69.32	6119.62	18.63	537.1	1.63	3424.26	10.42
15	Maharashtra	30949.23	22810.91	73.70	6283.84	20.30	1037.96	3.35	816.52	2.64
16	Manipur	466.07	466.07	100.00						
17	Meghalaya	1507.61	1507.61	100						
18	Mizoram	199.56	199.56	100						
19	Nagaland	542.76	542.76	100						
20	Odisha	15933.74	15434.01	96.86	499.73	3.14				
21	Punjab	16978.36	2513.95	14.81	1360.17	8.01	309.67	1.82	12794.57	75.36
22	Rajasthan	11251.35	1222.65	10.87	935.81	8.32	857.87	7.62	8235.03	73.19
23	Sikkim	218.68	218.68	100						
24	Tamil Nadu	19505.70	8927.94	45.77	3776.07	19.36	2029.09	10.40	4772.59	24.47
25	Telangana	20920.92	19534.85	93.37	1268.76	6.06	97.23	0.46	20.08	0.10
26	Tripura	1094.05	1094.05	100						
27	Uttar Pradesh	65571.79	45401.02	69.24	12977.06	19.79	3276.41	5	3917.31	5.97
28	Uttarakhand	1846.93	1486.07	80.46	360.87	19.54				
29	West Bengal	23900.68	20075.68	84	2488.15	10.41	1336.84	5.59		
30	Andaman And Nicobar	556.59	556.59	100						
31	Chandigarh	48.41			48.41	100				
32	Dadra & Nagar Haveli	81.71							81.71	100
	Daman & Diu	33.47							33.47	100
33	Jammu And Kashmir	4463.26	4358.92	97.66	104.35	2.34				
34	Ladakh	79.97	56.41	70.54	23.56	29.46				
35	Lakshadweep	5.47	4.135	75.594	1.335	24				
36	Puducherry	180.99	40.89	22.59	116.03	64.11			24.06	13.30
	Grand Total	407222.85	301808.67	74.11	47375.95	11.63	12915.20	3.17	45123.05	11.08

Annexure - III(D)

**District-Wise Annual Extractable Ground Water Resource
of Assessment Units under Different Category in India
(as in 2023)**

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DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
ANDHRA PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Alluri Sitharama Raju	888.44	888.44	100.00						
2	Anakapalli	761.35	761.35	100.00						
3	Ananthapuramu	1171.45	1141.64	97.46	29.81	2.54				
4	Annamayya	845.99	813.65	96.18	32.34	3.82				
5	Bapatla	713.69	713.69	100.00						
6	Chittoor	885.07	683.95	77.28	201.12	22.72				
7	East Godavari	1065.70	1012.98	95.05	52.72	4.95				
8	Eluru	1577.37	1577.37	100.00						
9	Guntur	550.78	550.78	100.00						
10	Kakinada	974.80	974.80	100.00						
11	Konaseema	1076.96	1076.96	100.00						
12	Krishna	1901.61	1901.61	100.00						
13	Kurnool	732.34	732.34	100.00						
14	Nandyal	1011.23	1011.23	100.00						
15	Ntr	691.63	691.63	100.00						
16	Palnadu	952.86	904.75	94.95			30.69	3.22	17.43	1.83
17	Parvathipuram Manyam	897.56	897.56	100.00						
18	Prakasam	861.41	790.22	91.73	47.61	5.68			23.58	2.81
19	Sri Potti Sriramulu Nellore	2457.00	2457.00	100.00						
20	Sri Sathya Sai	1121.29	890.74	79.44	69.57	6.20	21.78	1.94	139.20	12.41
21	Srikakulam	847.45	750.87	88.60	41.08	4.85	25.16	2.97	30.34	3.58
22	Tirupati	1518.91	1518.91	100.00						
23	Visakhapatnam	130.00	130.00	100.00						
24	Vizianagaram	1222.63	1222.63	100.00						
25	West Godavari	571.77	571.77	100.00						
26	Y.S.R Kadapa	1016.62	989.77	97.36	15.60	1.53			11.25	1.11
	Total	26445.91	25656.64	97.02	489.85	1.85	77.62	0.29	221.80	0.84

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
ARUNACHAL PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Changlang	694.99	694.99	100						
2	East Kameng	141.97	141.97	100						
3	East Siang	764.74	764.74	100						
4	Lohit	1017.18	1017.18	100						
5	Lower Dibang Valley	769.31	769.31	100						
6	Lower Subansiri	44.21	44.21	100						
7	Papum Pare	187.61	187.61	100						
8	Tirap	72.41	72.41	100						
9	Upper Subansiri	127.87	127.87	100						
10	West Kameng	169.77	169.77	100						
11	West Siang	173.06	173.06	100						
	Total	4163.11	4163.11	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
ASSAM										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Dhemaji	903.99	903.99	100						
2	Bongaigaon	445.34	445.34	100						
3	Jorhat	564.54	564.54	100						
4	Kokrajhar	1588.44	1588.44	100						
5	Darrang	504.04	504.04	100						
6	Kamrup (M) Rural	182.31	182.31	100						
7	Hailakandi	208.76	208.76	100						
8	Kamrup (M) Urban	41.47			41.47	100				
9	Kamrup	766.98	766.98	100						
10	Karbi Anglong	1063.42	1063.42	100						
11	Nalbari	313.05	313.05	100						
12	Sonitpur	1264.66	1264.66	100						
13	Tinsukia	1248.86	1248.86	100						
14	Sibsagar	911.2	911.2	100						
15	Lakhimpur	719.39	719.39	100						
16	Dhubri	983.32	983.32	100						
17	Morigaon	429.39	429.39	100						
18	Nagaon	1016.14	1016.14	100						
19	Dima Hasao	566.63	566.63	100						
20	Chirang	972.52	972.52	100						
21	Golaghat	969.96	969.96	100						
22	Goalpara	586.56	586.56	100						
23	Baksa	1404.81	1404.81	100						
24	Karimganj	326.23	326.23	100						
25	Dibrugarh	1247.76	1247.76	100						
26	Cachar	416.21	416.21	100						
27	Udalguri	509.6	509.6	100						
28	Barpeta	775.99	775.99	100						
	Total	20931.53	20890.06	99.8	41.47	0.2				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
BIHAR										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Begusarai	493.83	412.62	83.55	81.21	16.45				
2	Supaul	1020.36	1020.36	100						
3	Banka	592.46	592.46	100						
4	Nawada	617.35	471.57	76.39	145.78	23.61				
5	Aurangabad	1228.21	1228.21	100						
6	Bhagalpur	693.29	693.29	100						
7	Kaimur	721.01	651.95	90.42	69.06	9.58				
8	Saharsa	699.35	699.35	100						
9	Bhojpur	802.77	648.03	80.72	154.74	19.28				
10	Sitamarhi	630.52	630.52	100						
11	Siwan	945.32	945.32	100						
12	West Champaran	1660.87	1660.87	100						
13	Araria	1371.8	1371.8	100						
14	Arwal	190.06	190.06	100						
15	Darbhanga	681.04	681.04	100						
16	East Champaran	1733.33	1733.33	100						
17	Gaya	1124.09	906.5	80.64	217.59	19.36				
18	Jamui	427.89	427.89	100						
19	Jehanabad	285.95	105.35	36.84	105.34	36.84			75.26	26.32
20	Katihar	1144.1	1144.1	100						
21	Khagaria	437.77	437.77	100						
22	Kishanganj	686.32	686.32	100						
23	Lakhisarai	376.86	376.86	100						
24	Madhepura	952.33	952.33	100						
25	Madhubani	1236.84	1236.84	100						
26	Munger	348.65	348.65	100						
27	Muzaffarpur	1068.97	574.43	53.74	391.27	36.6	63.32	5.92	39.94	3.74
28	Nalanda	558.86	219.84	39.34	292.63	52.36	24.15	4.32	22.25	3.98
29	Patna	978.75	688.76	70.37	245.27	25.06	20.11	2.05	24.6	2.51
30	Purnea	1569.29	1569.29	100						
31	Rohtas	1132.62	997.66	88.08	134.96	11.92				
32	Samastipur	797.31	476.02	59.7	267.46	33.55	30.77	3.86	23.06	2.89
33	Saran	968.76	968.76	100						
34	Sheikhpura	160.62	136.12	84.75			24.5	15.25		
35	Sheohar	164.39	164.39	100						
36	Vaishali	712.26	475.76	66.8	63.6	8.93	74.55	10.47	98.35	13.81
37	Buxar	586.51	586.51	100						
38	Gopalganj	918.13	918.13	100						
	Total	30718.81	28029.03	91.24	2168.92	7.06	237.4	0.77	283.46	0.92

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
CHHATISGARH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Balod	352.98	150.77	42.71	137.95	39.08	64.26	18.2		
2	Baloda Bazar	524.5	524.5	100						
3	Balrampur	448.53	448.53	100						
4	Bastar	239.89	239.89	100						
5	Bemetara	451.65			135.12	29.92	316.53	70.08		
6	Bijapur	467.45	467.45	100						
7	Bilaspur	432.43	155.9	36.05	276.53	63.95				
8	Dantewada	245.65	245.65	100						
9	Dhantari	643.23	186.23	28.95	456.99	71.05				
10	Durg	407.52	145.49	35.7	262.03	64.3				
11	Gariaband	336.93	250.86	74.45	86.08	25.55				
12	Gourela-Pendra-Marwahi	133.19	133.19	100						
13	Janjgir-Champa	344.34	344.34	100						
14	Jashpur	303.71	303.71	100						
15	Kabirdham	466.46	367.8	78.85	98.67	21.15				
16	Kanker	637.93	564.25	88.45	73.68	11.55				
17	Khairagarh-Chhuikhadan Gandai	200.21	92.88	46.39	107.34	53.61				
18	Kondagaon	325.15	325.15	100						
19	Korba	458.44	398.17	86.85	60.27	13.15				
20	Korea	163.29	163.29	100						
21	Mahasamund	654.88	558.01	85.21	96.86	14.79				
22	Manendragarh-Chirmiri Bharatpur	471.31	471.31	100						
23	Mohla-Manpur_Ambagarhchowki	154.54	154.54	100						
24	Mungeli	170.88	170.88	100						
25	Narayanpur	237.62	237.62	100						
26	Raigarh	399.16	319.25	79.98	79.92	20.02				
27	Raipur	450.86	364.66	80.88			86.19	19.12		
28	Rajnandgaon	351.72	102.49	29.14	249.23	70.86				
29	Sakti	304.74	304.74	100						
30	Sarangarh-Bilairagh	234.46	163.26	69.63	71.2	30.37				
31	Sukma	413.07	413.07	100						
32	Surajpur	375.57	278.63	74.19	96.94	25.81				
33	Surguja	381.43	381.43	100						
	Total	12183.72	9427.94	77.38	2288.81	18.79	466.98	3.83	0.00	0.00

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
DELHI										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	North	42.08			18.06	42.93	5.36	12.73	18.66	44.34
2	South East	23.63					23.63	100		
3	South West	69.44	24.94	35.92			22.8	32.83	21.7	31.25
4	East	14.72					14.72	100		
5	Nazul Land	4.59	4.59	100						
6	South	40.27					9.73	24.15	30.54	75.85
7	Central	22.06	14.21	64.4			6.35	28.8	1.5	6.8
8	New Delhi	26.22							26.22	100
9	North West	34.54	29.7	85.98	4.84	14.02				
10	West	36.48			16.79	46.04	14.46	39.64	5.22	14.32
11	North East	15.98			7.24	45.34			8.73	54.66
12	Shahdara	14.47					4.95	34.19	9.52	65.81
	Total	344.49	73.44	21.32	46.94	13.63	102	29.61	122.11	35.45

GOA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Goa North	132.12	132.12	100						
2	South Goa	184.88	184.88	100						
	Total	317.00	317.00	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
GUJARAT										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Ahmedabad	424.29	167.69	39.52	94.55	22.28	34.92	8.23	127.13	29.96
2	Amreli	1485.32	1443.03	97.15	42.29	2.85				
3	Anand	1075	1075	100						
4	Arvali	857.13	857.13	100						
5	Banaskantha	1167.26	203.94	17.47	153.33	13.14			809.98	69.39
6	Bharuch	628.82	628.82	100						
7	Bhavnagar	1063.8	1063.8	100						
8	Botad	444.4	444.4	100						
9	Chhota Udepur	547.91	547.91	100						
10	Dahod	311.24	311.24	100						
11	Dang	273.99	273.99	100						
12	Devbhumi Dwarka	453.98	453.98	100						
13	Gandhinagar	576.1			286.52	49.73			289.58	50.27
14	Gir Somnath	699.69	699.69	100						
15	Jamnagar	1407.04	1407.04	100						
16	Junagadh	1540.38	1540.38	100						
17	Kachchh	920.11	683.52	74.29			55.77	6.06	180.82	19.65
18	Kheda	748.61	748.61	100						
19	Mahesana	710.18			219.71	30.94	118	16.62	372.47	52.45
20	Mahisagar	285.98	285.98	100						
21	Morbi	688.71	688.71	100						
22	Narmada	378.38	203.12	53.68	175.25	46.32				
23	Navsari	756.92	756.92	100						
24	Panchmahal	526.52	526.52	100						
25	Patan	364.03			119.72	32.89	124.93	34.32	119.39	32.8
26	Porbandar	212.86	212.86	100						
27	Rajkot	1717.86	1127.55	65.64	430.41	25.06	159.9	9.31		
28	Sabarkantha	740.59	297.26	40.14	371.06	50.1			72.27	9.76
29	Surat	1323.36	1189.66	89.9					133.7	10.1
30	Surendranagar	775.47	728.15	93.9	47.32	6.1				
31	Tapi	636.62	636.62	100						
32	Vadodara	979.33	619.83	63.29	110	11.23	249.49	25.48		
33	Valsad	683.31	683.31	100						
	Total	25405.18	20506.66	80.72	2050.16	8.07	743.01	2.92	2105.34	8.29

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
HARYANA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Rohtak	302.29	302.29	100						
2	Karnal	859.98					128.35	14.92	731.63	85.08
3	Kaithal	427.62							427.62	100
4	Jind	785.15	134.13	17.08	68.19	8.69			582.83	74.23
5	Kurukshetra	373.24							373.24	100
6	Bhiwani	419.25	214.82	51.24					204.43	48.76
7	Ambala	394.97			111.82	28.31	86.45	21.89	196.71	49.8
8	Fatehabad	647					107.75	16.65	539.25	83.35
9	Gurgaon	201.84							201.84	100
10	Charkhi Dadri	186.49	85.84	46.03					100.65	53.97
11	Faridabad	117.71							117.71	100
12	Hisar	553.86	325.87	58.84	99.06	17.89	60.1	10.85	68.82	12.43
13	Jhajjar	333.93	333.93	100						
14	Mahendragarh	200.45					23.85	11.9	176.6	88.1
15	Mewat	159.94	56.78	35.5	16.37	10.23	32.79	20.5	54	33.76
16	Palwal	350.62	152.1	43.38	75.81	21.62	58.11	16.57	64.59	18.42
17	Panchkula	133.04	96.37	72.43			36.68	27.57		
18	Panipat	301.52							301.52	100
19	Rewari	264.09					53.58	20.29	210.51	79.71
20	Sirsa	560.16			109.53	19.55			450.63	80.45
21	Sonipat	545.45	215.38	39.49					330.07	60.51
22	Yamuna Nagar	571.93			216.47	37.85			355.46	62.15
	Total	8690.53	1917.52	22.06	697.24	8.02	587.66	6.76	5488.11	63.15

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
HIMACHAL PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Kangra	497.78	497.78	100						
2	Mandi	78.11	78.11	100						
3	Sirmaur	90.68	90.68	100						
4	Solan	153.81	153.81	100						
5	Una	194.15	194.15	100						
	Total	1014.53	1014.53	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
JHARKHAND										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Godda	213.76	213.76	100						
2	Giridih	385.37	357.33	92.73	28.03	7.27				
3	Simdega	239.51	239.51	100						
4	Garhwa	277.49	250.18	90.16	27.31	9.84				
5	Pakur	239.54	239.54	100						
6	Ramgarh	102.91	92.14	89.54			6.93	6.73	3.83	3.72
7	Sahebganj	277.94	277.94	100						
8	Dumka	253.05	253.05	100						
9	East Singhbhum	250.38	222.13	88.72					28.25	11.28
10	Bokaro	207.65	192.92	92.91					14.73	7.09
11	Chatra	253.46	253.46	100						
12	Deoghar	154.46	120.7	78.14	33.76	21.86				
13	Dhanbad	254.28	87.93	34.58	92.82	36.5	59.26	23.3	14.28	5.61
14	Gumla	314.14	314.14	100						
15	Hazaribagh	316.39	306.74	96.95	9.65	3.05				
16	Jamtara	84.23	84.23	100						
17	Khunti	125.35	125.35	100						
18	Koderma	58.84	42.3	71.89	8.17	13.89	8.37	14.22		
19	Latehar	224.87	224.87	100						
20	Lohardaga	179.89	179.89	100						
21	Palamau	313.69	313.69	100						
22	Ranchi	370.39	289.69	78.21	22.2	5.99	58.51	15.8		
23	Saraikeela Kharsawan	162.71	162.71	100						
24	West Singhbhum	470.66	470.66	100						
	Total	5730.94	5314.85	92.74	221.95	3.87	133.06	2.32	61.08	1.07

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
KARNATAKA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	Bagalkot	648.69	117.4	18.1	344.6	53.12	72.73	11.21	113.96	17.57
2	Ballari	619.03	619.03	100						
3	Belagavi	1141.41	563.65	49.38	402.11	35.23	120.75	10.58	54.91	4.81
4	Bengaluru (Rural)	188.11							188.11	100
5	Bengaluru (Urban)	213.46							213.46	100
6	Bidar	338.83	247.65	73.09	91.17	26.91				
7	Chamarajanagara	362.41			160	44.15	120.76	33.32	81.65	22.53
8	Chikkaballapura	313.54							313.54	100
9	Chikkamagaluru	628.46	487.96	77.64					140.5	22.36
10	Chitradurga	418.29	28.99	6.93					389.3	93.07
11	Dakshina Kannada	659.97	659.97	100						
12	Davanagere	563.47	299.64	53.18			94.93	16.85	168.91	29.98
13	Dharwad	290.84	290.84	100						
14	Gadag	322.87	94.45	29.25	169.67	52.55	37.36	11.57	21.38	6.62
15	Hassan	713.68	486.55	68.17			140.41	19.67	86.72	12.15
16	Haveri	592.23	463.5	78.26	128.73	21.74				
17	Kalburgi	652.86	587.18	89.94	65.68	10.06				
18	Kodagu	222.1	222.1	100						
19	Kolar	409.34							409.34	100
20	Koppal	591.04	404.3	68.4	116.12	19.65	70.62	11.95		
21	Mandya	661.95	522.47	78.93	139.48	21.07				
22	Mysuru	563.83	563.83	100						
23	Raichur	698.17	590.07	84.52	108.1	15.48				
24	Ramanagara	407.35			193.29	47.45	151.38	37.16	62.67	15.39
25	Shivamogga	965.75	965.75	100						
26	Tumakuru	747.16	243.1	32.54	61.64	8.25	49.69	6.65	392.73	52.56
27	Udupi	471.38	471.38	100						
28	Uttara Kannada	839.02	839.02	100						
29	Vijayanagara	369.67	108.45	29.34	86.92	23.51	89.93	24.33	84.37	22.82
30	Vijayapura	953.97	915.29	95.95	38.68	4.05				
31	Yadgir	511.91	372.56	72.78	139.35	27.22				
	Total	17080.79	11165.14	65.37	2245.55	13.15	948.56	5.55	2721.54	15.93

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
KERALA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Kottayam	370.31	370.31	100						
2	Idukki	188.57	144.9	76.84	43.67	23.16				
3	Wayanad	203.78	203.78	100						
4	Ernakulam	462.48	462.48	100						
5	Thiruvananthapuram	257.82	164.78	63.91	93.04	36.09				
6	Thrissur	558.81	462.24	82.72	96.56	17.28				
7	Pathanamthitta	208.7	208.7	100						
8	Kannur	398.53	338.41	84.91	60.12	15.09				
9	Malappuram	484.34	259.04	53.48	225.3	46.52				
10	Kozhikkode	306.28	226.61	73.99	79.67	26.01				
11	Kollam	323.35	271.53	83.97	51.82	16.03				
12	Kasargod	314.18	210.51	67	58.65	18.67	45.02	14.33		
13	Alappuzha	360.44	360.44	100						
14	Palakkad	567.68	423.49	74.6	52.47	9.24	91.73	16.16		
	Total	5005.27	4107.22	82.06	761.3	15.21	136.74	2.73		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
MADHYA PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	Agar Malwa	404.03	108.3	26.81	104.57	25.88			191.16	47.31
2	Alirajpur	199.3	199.3	100						
3	Anuppur	269.94	224.12	83.03	45.82	16.97				
4	Ashoknagar	368.24	217.8	59.15	150.44	40.85				
5	Balaghat	719.49	719.49	100						
6	Barwani	520.36	356.7	68.55	102.51	19.7			61.16	11.75
7	Betul	977.5	722.52	73.91	254.99	26.09				
8	Bhind	899.54	899.54	100						
9	Bhopal	379.49			379.49	100				
10	Burhanpur	339.63	165.32	48.68	174.31	51.32				
11	Chhatarpur	809	434.9	53.76	374.1	46.24				
12	Chhindwara	976.05	665.39	68.17	211.48	21.67	99.18	10.16		
13	Damoh	365.76	308.65	84.39	57.11	15.61				
14	Datia	401.22	401.22	100						
15	Dewas	809.45	436.49	53.92	120.47	14.88			252.49	31.19
16	Dhar	1277.67	831.03	65.04			79.74	6.24	366.9	28.72
17	Dindori	332.58	332.58	100						
18	Guna	773.15	773.15	100						
19	Gwalior	757.74	708.4	93.49	49.34	6.51				
20	Harda	439.48	439.48	100						
21	Hoshangabad	1636.96	1453.86	88.81	183.1	11.19				
22	Indore	534.36			106.83	19.99	59	11.04	368.53	68.97
23	Jabalpur	612.97	580.94	94.78	32.03	5.22				
24	Jhabua	242.8	222.34	91.57	20.46	8.43				
25	Katni	380.29	380.29	100						
26	Khandwa	1051.96	933.15	88.71	118.81	11.29				
27	Khargone	921.48	864.84	93.85	56.64	6.15				
28	Mandla	467.72	467.72	100						
29	Mandsaur	631.81			315.37	49.91			316.45	50.09
30	Morena	646.16	646.16	100						
31	Narsinghpur	1127.62	916.14	81.25	211.48	18.75				
32	Neemuch	361.49			113.02	31.26			248.47	68.74
33	Niwari	181.2	112.16	61.9	69.04	38.1				
34	Panna	506.01	506.01	100						
35	Raisen	868.14	776.26	89.42	91.88	10.58				
36	Rajgarh	865.24			563.65	65.14	167.34	19.34	134.26	15.52
37	Ratlam	769.03			117.5	15.28			651.53	84.72
38	Rewa	498.21	461.18	92.57	37.03	7.43				
39	Sagar	1023.71	1023.71	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
MADHYA PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
40	Satna	690.18	368.78	53.43	321.4	46.57				
41	Sehore	674.95	543.1	80.47			131.84	19.53		
42	Seoni	683.94	683.94	100						
43	Shahdol	531.72	531.72	100						
44	Shajapur	514.68			121.84	23.67			392.84	76.33
45	Sheopur	506.75	412.39	81.38	94.35	18.62				
46	Shivpuri	783.2	322.2	41.14	461	58.86				
47	Sidhi	292.12	292.12	100						
48	Singrauli	354.57	354.57	100						
49	Tikamgarh	364.29			364.29	100				
50	Ujjain	913.73			473.26	51.79			440.47	48.21
51	Umariya	342.39	342.39	100						
52	Vidisha	854.44	632.4	74.01	222.04	25.99				
	Total	32853.75	22772.77	69.32	6119.62	18.63	537.1	1.63	3424.26	10.42

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
MAHARASHTRA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Buldhana	879.66	313.62	35.65	472.82	53.75			93.22	10.60
2	Gondia	623.67	623.67	100.00						
3	Osmanabad	815.81	565.57	69.33	250.24	30.67				
4	Satara	1054.43	806.25	76.46	248.18	23.54				
5	Jalgaon	1349.85	234.94	17.40	932.45	69.08			182.46	13.52
6	Beed	1235.05	1235.05	100.00						
7	Nashik	1873.61	1125.60	60.08	356.85	19.05	391.15	20.88		
8	Nandurbar	529.84	529.84	100.00						
9	Sangli	1312.68	1199.69	91.39	112.99	8.61				
10	Parbhani	820.66	820.66	100.00						
11	Aurangabad	1016.36	206.91	20.36	809.45	79.64				
12	Jaina	799.66	799.66	100.00						
13	Latur	655.45	557.24	85.02	98.21	14.98				
14	Nagpur	949.39	861.64	90.76	87.75	9.24				
15	Ahmednagar	1525.07	460.29	30.18	562.93	36.91	422.48	27.70	79.37	5.20
16	Akola	362.85	307.43	84.73	55.42	15.27				
17	Amravati	803.14	258.33	32.16	203.88	25.39	75.04	9.34	265.90	33.11
18	Bhandara	868.20	868.20	100.00						
19	Chandrapur	1109.03	1109.03	100.00						
20	Dhule	689.07	689.07	100.00						
21	Gadchiroli	1028.63	1028.63	100.00						
22	Hingoli	1056.05	1056.05	100.00						
23	Nanded	1180.27	1180.27	100.00						
24	Palghar	205.57	205.57	100.00						
25	Pune	1726.34	377.43	21.86	1199.62	69.49	149.28	8.65		
26	Raigad	356.23	356.23	100.00						
27	Ratnagiri	387.27	387.27	100.00						
28	Sindhudurg	220.87	220.87	100.00						
29	Solapur	1389.62	301.02	21.66	893.03	64.26			195.57	14.07
30	Thane	163.56	163.56	100.00						
31	Wardha	793.69	793.69	100.00						
32	Washim	556.72	556.72	100.00						
33	Yawatmal	1333.06	1333.06	100.00						
34	Kolhapur	1277.86	1277.86	100.00						
	Total	30949.23	22810.91	73.70	6283.84	20.30	1037.96	3.35	816.52	2.64

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
MANIPUR										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Bishnupur	107.22	107.22	100.00						
2	Churachandpur	74.58	74.58	100.00						
3	Imphal East	134.52	134.52	100.00						
4	Imphal West	78.29	78.29	100.00						
5	Thoubal	71.44	71.44	100.00						
	Total	466.07	466.07	100.00						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
MEGHALAYA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	South West Khasi Hills	129.22	129.22	100						
2	South West Garo Hills	33.97	33.97	100						
3	West Garo Hills	161.68	161.68	100						
4	East Garo Hills	80.86	80.86	100						
5	East Jaintia Hills	152.58	152.58	100						
6	West Khasi Hills	285.35	285.35	100						
7	Ri Bhoi	59.59	59.59	100						
8	South Garo Hills	211.51	211.51	100						
9	West Jaintia Hills	101.31	101.31	100						
10	East Khasi Hills	208.02	208.02	100						
11	North Garo Hills	83.51	83.51	100						
	Total	1507.61	1507.61	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
MIZORAM										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Champhai	15.38	15.38	100						
2	Aizawl	14.72	14.72	100						
3	Serchhip	8.12	8.12	100						
4	Lunglei	49.32	49.32	100						
5	Saiha	7.28	7.28	100						
6	Kolasib	25.03	25.03	100						
7	Lawngtlai	29.23	29.23	100						
8	Mamit	50.48	50.48	100						
	Total	199.56	199.56	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
NAGALAND										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Kiphire	4.6	4.6	100						
2	Zunheboto	15.79	15.79	100						
3	Wokha	78.07	78.07	100						
4	Kohima	39.08	39.08	100						
5	Longleng	13.53	13.53	100						
6	Mon	41.64	41.64	100						
7	Peren	53.79	53.79	100						
8	Phek	16.73	16.73	100						
9	Dimapur	197.2	197.2	100						
10	Tuensang	25.94	25.94	100						
11	Mokokchung	56.39	56.39	100						
	Total	542.76	542.76	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2022										
ODISHA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Angul	529.84	499.21	94.22	30.63	5.78				
2	Balasore	1291.42	1227.75	95.07	63.67	4.93				
3	Bargarh	618.29	618.29	100						
4	Bhadrak	535.36	535.36	100						
5	Bolangir	564.29	564.29	100						
6	Boudh	237.22	237.22	100						
7	Cuttack	688.9	688.9	100						
8	Deogarh	303.97	303.97	100						
9	Dhenkanal	447.74	447.74	100						
10	Gajapati	199.61	199.61	100						
11	Ganjam	945.78	945.78	100						
12	Jagatsinghpur	447.3	447.3	100						
13	Jajpur	532.86	436.09	81.84	96.77	18.16				
14	Jharsuguda	193.27	154.18	79.78	39.09	20.22				
15	Kalahandi	614.46	614.46	100						
16	Kandhamal	335.95	335.95	100						
17	Kendrapara	167.31	167.31	100						
18	Keonjhar	835.62	835.62	100						
19	Khurda	428.5	285.27	66.57	143.23	33.43				
20	Koraput	520.8	520.8	100						
21	Malkangiri	334.06	334.06	100						
22	Mayurbhanj	1364.22	1364.22	100						
23	Nabarangapur	541.72	541.72	100						
24	Nayagarh	355.48	316.23	88.96	39.25	11.04				
25	Nuapada	306.29	219.19	71.56	87.1	28.44				
26	Puri	608.36	608.36	100						
27	Rayagada	331.78	331.78	100						
28	Sambalpur	592.41	592.41	100						
29	Subarnapur	252.96	252.96	100						
30	Sundargarh	807.97	807.97	100						
	Total	15933.74	15434.01	96.86	499.73	3.14				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
PUNJAB										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Fazilka	702.72	455.57	64.83	58.69	8.35			188.46	26.82
2	Pathankot	430.31	352.49	81.91	77.82	18.09				
3	Sas Nagar	203.14			42.19	20.77	70.13	34.52	90.82	44.71
4	Muktsar	834.4	834.4	100						
5	Kapurthala	603.17							603.17	100
6	Hoshiarpur	797.57	52.68	6.6	243.48	30.53			501.41	62.87
7	Amritsar	1332.21							1332.21	100
8	Barnala	498.78							498.78	100
9	Sangrur	636.2							636.2	100
10	Malerkotla	194.17							194.17	100
11	Jalandhar	721.15							721.15	100
12	Mansa	644.26	188.3	29.23	233.3	36.21			222.65	34.56
13	Bathinda	1086.29	372.92	34.33	176.19	16.22	127.08	11.7	410.1	37.75
14	Fatehgarh Sahib	354.13							354.13	100
15	Faridkot	568.39							568.39	100
16	Rupnagar	388.44	150.53	38.75	75.63	19.47			162.28	41.78
17	Moga	749.1							749.1	100
18	Tarn Taran	614.09							614.09	100
19	Patiala	834.3							834.3	100
20	Sbs Nagar	491.57	30.05	6.11			112.45	22.88	349.07	71.01
21	Ludhiana	1433.97							1433.97	100
22	Firozpur	1324.58			420.93	31.78			903.65	68.22
23	Gurdaspur	1535.43	77.01	5.02	31.94	2.08			1426.47	92.9
	Total	16978.36	2513.95	14.81	1360.17	8.01	309.67	1.82	12794.57	75.36

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
RAJASTHAN										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Dhaulpur	250.4							250.4	100
2	Pratapgarh	204.88	30.25	14.77			17.21	8.4	157.42	76.83
3	Alwar	717.08							717.08	100
4	Dausa	251.35							251.35	100
5	Bikaner	278.71	78.98	28.34	37.71	13.53			162.01	58.13
6	Karauli	305.63			29.51	9.66			276.12	90.34
7	Chittaurgarh	310.98							310.98	100
8	Ajmer	341.63							341.63	100
9	Bharatpur	362.67							362.67	100
10	Jalor	437.82					69.78	15.94	368.04	84.06
11	Baran	589.28			120.92	20.52	192.16	32.61	276.2	46.87
12	Udaipur	290.29			18.64	6.42	174.75	60.2	96.89	33.38
13	Jaisalmer	94.93							94.93	100
14	Sirohi	268			57.61	21.5	64.87	24.21	145.52	54.3
15	Tonk	400.32	52.66	13.16	70.81	17.69	103.54	25.87	173.3	43.29
16	Rajsamand	104.26					39.91	38.28	64.36	61.72
17	Jaipur	653.28							653.28	100
18	Ganganagar	431.7	431.7	100						
19	Dungarpur	202.42	142.25	70.28	60.16	29.72				
20	Bhilwara	406.15							406.15	100
21	Sawai Madhopur	398.05							398.05	100
22	Jhunjhunu	220.96							220.96	100
23	Bundi	304.22	43.01	14.14	78.77	25.89			182.44	59.97
24	Jodhpur	367.34			21.43	5.83	32.34	8.8	313.57	85.36
25	Barmer	345.19	28.65	8.3	23.57	6.83			292.96	84.87
26	Jhalawar	502.95	67.75	13.47			104.24	20.73	330.97	65.8
27	Churu	147.9	51.09	34.55					96.8	65.45
28	Hanumangarh	202.41	165.2	81.62	37.21	18.38				
29	Banswara	208.52	127.86	61.32	80.66	38.68				
30	Sikar	332.1			50.31	15.15			281.78	84.85
31	Pali	289.35	3.23	1.12	10.11	3.49			276.01	95.39
32	Kota	464.18			238.37	51.35			225.81	48.65
33	Nagaur	566.44					59.08	10.43	507.36	89.57
	Total	11251.35	1222.65	10.87	935.81	8.32	857.87	7.62	8235.03	73.19

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
SIKKIM										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Mangan	34.88	34.88	100						
2	Soreng	11.01	11.01	100						
3	Namchi	30.07	30.07	100						
4	Pakyong	45.84	45.84	100						
5	Gangtok	62.88	62.88	100						
6	Gyalshing	34	34	100						
	Total	218.68	218.68	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
TAMIL NADU										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	Ariyalur	355.21	319.22	89.87	36.00	10.13	0.00	0.00	0.00	0.00
2	Chengalpattu	530.69	217.22	40.93	313.47	59.07	0.00	0.00	0.00	0.00
3	Chennai	92.21	20.12	21.82	8.49	9.20	0.00	0.00	63.60	68.98
4	Coimbatore	516.44	130.18	25.21	21.67	4.20	139.56	27.02	225.03	43.57
5	Cuddalore	1011.12	607.64	60.10	0.00	0.00	160.79	15.90	242.69	24.00
6	Dharmapuri	442.12	87.84	19.87	40.18	9.09	63.06	14.26	251.04	56.78
7	Dindigul	555.51	74.33	13.38	0.00	0.00	89.68	16.14	391.49	70.47
8	Erode	674.01	233.38	34.63	227.82	33.80	47.48	7.04	165.33	24.53
9	Kallakurichchi	634.28	259.13	40.85	152.71	24.08	222.44	35.07	0.00	0.00
10	Kancheepuram	507.32	369.97	72.93	137.34	27.07	0.00	0.00	0.00	0.00
11	Kanniyakumari	308.65	308.65	100.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Karur	306.56	0.00	0.00	83.07	27.10	90.91	29.65	132.58	43.25
13	Krishnagiri	446.16	147.67	33.10	39.17	8.78	104.14	23.34	155.18	34.78
14	Madurai	702.35	454.24	64.67	230.82	32.86	17.29	2.46	0.00	0.00
15	Mayiladuthurai	310.64	0.00	0.00	0.00	0.00	0.00	0.00	310.64	100.00
16	Namakkal	501.87	21.68	4.32	46.52	9.27	0.00	0.00	433.67	86.41
17	Perambalur	228.14	59.24	25.97	0.00	0.00	0.00	0.00	168.89	74.03
18	Pudukkottai	896.54	759.44	84.71	137.10	15.29	0.00	0.00	0.00	0.00
19	Ramanathapuram	699.06	699.06	100.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Ranipet	310.57	0.00	0.00	212.85	68.54	50.39	16.22	47.33	15.24
21	Salem	531.64	11.82	2.22	0.00	0.00	34.52	6.49	485.29	91.28
22	Sivagangai	604.81	604.81	100.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Tenkasi	545.40	234.07	42.92	187.52	34.38	0.00	0.00	123.81	22.70
24	Thanjavur	922.65	0.00	0.00	67.67	7.33	535.65	58.06	319.33	34.61
25	The Nilgiris	89.18	89.18	100.00	0.00	0.00	0.00	0.00	0.00	0.00
26	Theni	274.79	73.99	26.92	146.61	53.35	54.20	19.72	0.00	0.00
27	Thiruvarur	212.05	143.37	67.61	0.00	0.00	0.00	0.00	68.68	32.39
28	Thoothukudi	516.58	467.53	90.51	49.04	9.49	0.00	0.00	0.00	0.00
29	Tiruchirappalli	721.07	407.78	56.55	44.27	6.14	0.00	0.00	269.03	37.31
30	Tirunelveli	752.42	639.31	84.97	113.11	15.03	0.00	0.00	0.00	0.00
31	Tirupathur	110.01	0.00	0.00	0.00	0.00	0.00	0.00	110.01	100.00
32	Tiruppur	547.83	0.00	0.00	353.02	64.44	101.56	18.54	93.25	17.02
33	Tiruvallur	785.57	718.26	91.43	67.31	8.57	0.00	0.00	0.00	0.00
34	Tiruvannamalai	1108.77	276.46	24.93	495.13	44.66	207.89	18.75	129.28	11.66
35	Vellore	186.31	0.00	0.00	42.97	23.06	0.00	0.00	143.34	76.94
36	Villupuram	951.06	221.79	23.32	225.00	23.66	61.17	6.43	443.09	46.59
37	Virudhunagar	616.13	270.58	43.92	297.21	48.24	48.34	7.85	0.00	0.00
	Total	19505.70	8927.94	45.77	3776.07	19.36	2029.09	10.40	4772.59	24.47

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
TELANGANA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Jagtial	499.84	467.69	93.57	32.15	6.43				
2	Karimnagar	857.43	833.77	97.24	23.65	2.76				
3	Kamareddy	638.07	580.97	91.05	57.10	8.95				
4	Medak	468.90	408.98	87.22	59.91	12.78				
5	Nirmal	610.14	610.14	100.00						
6	Mahabubnagar	336.29	293.60	87.31	42.69	12.69				
7	Narayanpet	287.73	287.73	100.00						
8	Suryapet	1408.49	1408.49	100.00						
9	Adilabad	667.22	661.29	99.11			3.71	0.56	2.22	0.33
10	Khammam	1271.31	1240.84	97.60	30.47	2.40				
11	Jayashankar Bhupalapally	404.88	404.88	100.00						
12	Nalgonda	1388.90	1203.23	86.63	185.68	13.37				
13	Wanaparthy	632.15	632.15	100.00						
14	Rangareddy	648.68	602.15	92.83	46.53	7.17				
15	Rajanna Sircilla	424.89	333.43	78.48	91.46	21.52				
16	Komarambheem Asifabad	599.24	599.24	100.00						
17	Mulug	520.88	520.88	100.00						
18	Hyderabad	58.08			23.22	39.98	22.59	38.89	12.27	21.13
19	Peddapalle	721.86	721.86	100.00						
20	Bhadradi Kothagudem	976.76	873.20	89.40	103.56	10.60				
21	Jangaon	363.65	337.71	92.87	25.94	7.13				
22	Jogulamba Gadwal	468.45	452.39	96.57	16.06	3.43				
23	Mahabubabad	570.48	551.69	96.71	18.78	3.29				
24	Mancherial	912.86	912.86	100.00						
25	Medchal Malkajgiri	88.79	73.32	82.57	10.85	12.22			4.63	5.21
26	Nagarkurnool	866.81	830.98	95.87	35.83	4.13				
27	Nizamabad	969.30	781.45	80.62	186.89	19.28			0.96	0.10
28	Sangareddy	407.69	346.63	85.02	43.42	10.65	17.63	4.32		
29	Siddipet	610.14	467.97	76.70	112.73	18.48	29.44	4.82		
30	Vikarabad	482.26	482.26	100.00						
31	Warangal	475.05	475.05	100.00						
32	Hanumakonda	446.80	337.21	75.47	85.72	19.19	23.87	5.34		
33	Yadadri Bhuvanagiri	836.92	800.81	95.69	36.11	4.31				
	Total	20920.92	19534.85	93.37	1268.76	6.06	97.23	0.46	20.08	0.10

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
TRIPURA										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Dhalai	153.88	153.88	100						
2	North Tripura	84.99	84.99	100						
3	Khowai	100.84	100.84	100						
4	Gomati	178.84	178.84	100						
5	West Tripura	141.49	141.49	100						
6	Unakoti	82.3	82.3	100						
7	South Tripura	200.14	200.14	100						
8	Sepahijala	151.57	151.57	100						
	Total	1094.05	1094.05	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
UTTAR PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	Lalitpur	367.67			367.67	100				
2	Saharanpur	1312.72	115.29	8.78	701.72	53.46			495.71	37.76
3	Banda	664.36	367.5	55.32	296.86	44.68				
4	Mathura	1267.6	901.84	71.15			227.67	17.96	138.08	10.89
5	Shamli	430.35			76.8	17.85	177.18	41.17	176.38	40.98
6	Chandauli	506.75	506.75	100						
7	Mirzapur	557.8	401.46	71.97	111.43	19.98	30.75	5.51	14.16	2.54
8	Unnao	1562.56	1562.56	100						
9	Bagpat	335.51			191.87	57.19			143.63	42.81
10	Kanpur Dehat	732.12	184.47	25.2	547.65	74.8				
11	Chitrakoot	402.3	93.95	23.35	201.53	50.1	106.81	26.55		
12	Shahjahanpur	1240.15	1240.15	100						
13	Pilibhit	1036.95	1036.95	100						
14	Jaunpur	1178.23	755.01	64.08	313.9	26.64	109.32	9.28		
15	Mahrajganj	1022.54	1022.54	100						
16	Ambedkar Nagar	717.95	636.91	88.71	81.04	11.29				
17	Maunath Bhanjan	466.3	466.3	100						
18	Kaushambi	447.42	132.95	29.72	249.39	55.74			65.07	14.54
19	Raibareli	1118.25	1118.25	100						
20	Auraiya	597.85	597.85	100						
21	Etawah	646.1	646.1	100						
22	Mahoba	279.58			171.45	61.33			108.13	38.67
23	Sitapur	1821.94	1821.94	100						
24	Hathras	652.61	158.73	24.32	241.6	37.02	76.49	11.72	175.78	26.94
25	Budaun	765.99	240.29	31.37	338.45	44.18	94.63	12.35	92.62	12.09
26	Bulandshahar	1450.63	92.95	6.41	560.49	38.64	343.11	23.65	454.07	31.3
27	Amethi	798.21	763.91	95.7	34.3	4.3				
28	Bareilly	1136.15	915.16	80.55	200.96	17.69			20.03	1.76
29	Gonda	1108.72	1108.72	100						
30	Jhansi	646.58	405.19	62.67	241.38	37.33				
31	Aligarh	902.25	391.5	43.39	435.77	48.3	56.92	6.31	18.06	2
32	Bijnor	1334.41	756.92	56.72	463.85	34.76	113.64	8.52		
33	G.B.Nagar	471.78			100.06	21.21	254.58	53.96	117.15	24.83
34	Gorakhpur	1553.92	1553.92	100						
35	Kannauj	548.46	330.66	60.29	102.75	18.73	43.71	7.97	71.35	13.01
36	Etah	755.18	273.99	36.28	481.19	63.72				
37	Varanasi	479.67	124.37	25.93	170.12	35.47	49.67	10.36	135.51	28.25
38	Lucknow	734.9	659.43	89.73					75.46	10.27
39	Firozabad	725.45			348.7	48.07	57.75	7.96	319	43.97

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
UTTAR PRADESH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
40	Azamgarh	1230.33	1230.33	100						
41	Deoria	1336.15	1336.15	100						
42	Balrampur	841.12	841.12	100						
43	Basti	754.4	754.4	100						
44	Ayodhya	844.3	844.3	100						
45	Agra	809.54			299.43	36.99	48.8	6.03	461.31	56.98
46	Hapur	459.56			83.75	18.22	212.46	46.23	163.35	35.54
47	Pratapgarh	1264.22	381.07	30.14	575.84	45.55	307.31	24.31		
48	Bahraich	1342.57	1342.57	100						
49	Mainpuri	839.33	614.65	73.23	180.39	21.49			44.29	5.28
50	Kushi Nagar	1550.94	1550.94	100						
51	Meerut	754.03	244.68	32.45	409.18	54.27	82.65	10.96	17.52	2.32
52	Ghaziabad	375.08			119.27	31.8			255.81	68.2
53	Fatehpur	1039.93	562.84	54.12	361.73	34.78			115.37	11.09
54	Kasganj	690.42	445.6	64.54	244.81	35.46				
55	Moradabad	603	98.12	16.27	436.56	72.4	51.76	8.58	16.56	2.75
56	Barabanki	1827.65	1827.65	100						
57	Sambhal	432.67	58.9	13.61	157.55	36.41	216.22	49.97		
58	Sant Kabir Nagar	490.8	490.8	100						
59	Lakhimpur Kheri	2100.3	2100.3	100						
60	Sant Ravidas Nagar	776.69			776.69	100				
61	Shrawasti	515.19	515.19	100						
62	Amroha	733.66			393.32	53.61	233.85	31.87	106.49	14.51
63	Kanpur Nagar	797.91	211.35	26.49	452.58	56.72	133.98	16.79		
64	Siddharth Nagar	868.77	868.77	100						
65	Ghazipur	949.32	884.13	93.13	65.19	6.87				
66	Sonbhadra	518.51	479.64	92.5	38.87	7.5				
67	Hamirpur	407.54	285.26	70	122.28	30				
68	Ballia	835.12	835.12	100						
69	Farrukhabad	401.83	195.71	48.71	206.11	51.29				
70	Hardoi	1583.12	1583.12	100						
71	Jalaun	941.87	941.87	100						
72	Muzaffarnagar	1042.01	644.97	61.9	137.33	13.18	166.64	15.99	93.08	8.93
73	Prayagraj	1284.22	766.97	59.72	413.42	32.19	80.48	6.27	23.34	1.82
74	Rampur	703.36	231.56	32.92	471.8	67.08				
75	Sultanpur	848.4	848.4	100						
	Total	65571.79	45401.02	69.24	12977.06	19.79	3276.41	5	3917.31	5.97

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
UTTARAKHNAD										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Dehradun	543.8	543.8	100						
2	Haridwar	435.02	248.33	57.09	186.69	42.91				
3	Nainital	173.9	95.38	54.85	78.52	45.15				
4	Udhamsingh Nagar	694.22	598.56	86.22	95.66	13.78				
	Total	1846.93	1486.07	80.46	360.87	19.54				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
WEST BENGAL										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Purba Barddhaman	1851.03	1524.67	82.37	326.37	17.63				
2	Murshidabad	1861.47	1438.95	77.3	338.09	18.16	84.44	4.54		
3	Jhargram	952.28	952.28	100						
4	North 24 Parganas	1435.38	611.72	42.62	459.85	32.04	363.8	25.35		
5	Koch Bihar	1924.56	1924.56	100						
6	Malda	1074.17	1038.28	96.66	35.89	3.34				
7	Paschim Barddhaman	230.4	209.66	91	20.74	9				
8	Kalimpong	35.26	35.26	100						
9	Alipurduar	1212.15	1212.15	100						
10	Uttar Dinajpur	1104.29	1104.29	100						
11	South 24 Parganas									
12	Darjiling	377.87	377.87	100						
13	Hugli	1179.53	988.55	83.81	190.98	16.19				
14	Puruliya	536.17	536.17	100						
15	Kolkatta									
16	Haora	196.87	196.87	100						
17	Bankura	1627.18	1627.18	100						
18	Jalpaiguri	1667.23	1667.23	100						
19	Dakshin Dinajpur	1034.51	841.79	81.37	192.73	18.63				
20	Nadia	1715.63	163.78	9.55	663.25	38.66	888.6	51.79		
21	Birbhum	1087.91	1087.91	100						
22	Purba Medinipur	604.04	604.04	100						
23	Paschim Medinipur	2192.76	1932.49	88.13	260.27	11.87				
	Total	23900.68	20075.68	84	2488.15	10.41	1336.84	5.59		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
ANDAMAN & NICOBAR ISLAND										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	N & M Andaman	147.5	147.5	100						
2	Nicobar	311.98	311.98	100						
3	South Andaman	97.11	97.11	100						
	Total	556.59	556.59	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
CHANDIGARH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Chandigarh	48.41			48.41	100				
	Total	48.41			48.41	100				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
DADRA & NAGAR HAVELI										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	Dadra Nagar Haveli	81.71								
	Total	81.71							81.71	100

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
DAMAN & DIU										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%						
1	Daman	27.89								100
2	Diu	5.57								100
	Total	33.47								100

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
JAMMU & KASHMIR										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Bandipora	11.77	11.77	100						
2	Ganderbal	10.78	10.78	100						
3	Doda	9.95	9.95	100						
4	Anantnag	248.67	248.67	100						
5	Ramban	14.03	14.03	100						
6	Srinagar Urban	104.35			104.35	100				
7	Budgam	282.96	282.96	100						
8	Jammu	936.99	936.99	100						
9	Pulwama	247.79	247.79	100						
10	Reasi	63.89	63.89	100						
11	Samba	210.64	210.64	100						
12	Kathua	430.92	430.92	100						
13	Kishtwar	15.22	15.22	100						
14	Kulgam	124.39	124.39	100						
15	Kupwara	332.84	332.84	100						
16	Poonch	181.01	181.01	100						
17	Udhampur	160.81	160.81	100						
18	Rajouri	334.22	334.22	100						
19	Shopian	162.67	162.67	100						
20	Baramulla	579.35	579.35	100						
	Total	4463.26	4358.92	97.66	104.35	2.34				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
LADAKH										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Leh	51.48	27.92	54.24	23.56	45.76				
2	Kargil	28.49	28.49	100						
	Total	79.97	56.41	70.54	23.56	29.46				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
LAKSHADWEEP										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Lakshadweep	5.47	4.135	75.59414991	1.335	24				
	Total	5.47	4.135	75.59414991	1.335	24				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023										
PUDUCHERRY										
S.No	Name of District	Total Annual Extractable Resource of Assessed Units (in Mcm)	Safe		Semi-Critical		Critical		Over-Exploited	
			Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%	Annual Extractable Resource (in Mcm)	%
1	Puducherry	142.27	2.17	1.53	116.03	81.56			24.06	16.91
2	Karaikal	38.72	38.72	100.00						
	Total	180.99	40.89	22.59	116.03	64.11			24.06	13.30

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Annexure - III(E)
State-Wise Recharge worthy Area of
Assessment Unit under Different Category in India
(as in 2023)

AREA OF ASSESSMENT UNITS UNDER DIFFERENT CATEGORIES IN INDIA (2023)												
S.No.	States/Union Territories	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area (in sq.km)	%	Recharge Worthy Area (in sq.km)	%	Recharge Worthy Area (in sq.km)	%	Recharge Worthy Area (in sq.km)	%	Recharge Worthy Area (in sq.km)	%
1	Andhra Pradesh	139599.85	126905.28	90.91	3936.09	2.82	775.78	0.56	1886.36	1.35	6096.33	4.37
2	Arunachal Pradesh	5721.38	5721.38	100								
3	Assam	68817.93	68617.51	99.71	200.42	0.29						
4	Bihar	90348.7	81259.91	89.94	7417.08	8.21	803.91	0.89	867.8	0.96		
5	Chhattisgarh	106078.71	88972.3	83.87	13987.35	13.19	3119.06	2.94				
6	Delhi	1487.61	330.23	22.2	233.73	15.71	306.4	20.6	617.25	41.49		
7	Goa	2209.59	2209.59	100								
8	Gujarat	162778.14	118697.61	72.92	11487.16	7.06	5258.1	3.23	18448.47	11.33	8886.8	5.46
9	Haryana	43205.82	12097.86	28	2558.1	5.92	2590.43	6	25959.44	60.08		
10	Himachal Pradesh	3468	3468	100								
11	Jharkhand	60646.73	56945.2	93.9	2169.13	3.58	1068.48	1.76	463.92	0.76		
12	Karnataka	170463.35	103043.09	60.45	22695.74	13.31	10443.17	6.13	34281.35	20.11		
13	Kerala	27047.53	22059.01	81.56	4211.15	15.57	777.38	2.87				
14	Madhya Pradesh	269333.27	190725.58	70.81	51803.76	19.23	4249.07	1.58	22554.86	8.37		
15	Maharashtra	259914.03	186285.52	71.67	56959.43	21.91	8857.49	3.41	7034.69	2.71	776.89	0.30
16	Manipur	2559	2559	100.00								
17	Meghalaya	8171.35	8171.35	100								
18	Mizoram	3149.41	3149.41	100								
19	Nagaland	3855.07	3855.07	100								
20	Odisha	121593.15	116071.86	95.46	3339.96	2.75					2181.33	1.79
21	Punjab	50175.27	8159.54	16.26	4307.45	8.58	1192.98	2.38	36515.3	72.78		
22	Rajasthan	317010.74	46451	14.65	19080.79	6.02	19808.7	6.25	222734.36	70.26	8935.89	2.82
23	Sikkim	1496	1496	100								
24	Tamil Nadu	108690.63	44392.74	40.84	19482.71	17.92	11773.78	10.83	31129.84	28.64	1911.56	1.76
25	Telangana	105777.24	96504.46	91.23	8510.64	8.05	605.70	0.57	156.44	0.15		
26	Tripura	6197.84	6197.84	100								
27	Uttar Pradesh	229555.18	151205.64	65.87	51620.24	22.49	11777.16	5.13	14952.13	6.51		
28	Uttarakhand	4993.04	4042.1	80.95	950.94	19.05						
29	West Bengal	79765.77	61634.14	77.27	5886.51	7.38	2737.02	3.43			9508.1	11.9
30	Andaman And Nicobar	2120.07	2120.07	100								
31	Chandigarh	114			114	100						
32	Dadra & Nagar Haveli	416							416	100		
	Daman & Diu	110.9							110.9	100		
33	Jammu And Kashmir	8664.25	7789.25	89.9	875	10.1						
34	Ladakh	963	632	65.63	331	34.37						
35	Lakshadweep	26.21	19.87	75.811	6.34	24						
36	Puducherry	483	170	35.20	252.35	52.25			40.65	8.42	20.00	4.14
	Grand Total	2467007.76	1631959.41	66.15	292417.07	11.85	86144.61	3.49	418169.76	16.95	38316.90	1.55

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Annexure - III(F)

**District-Wise Recharge Worthy Area of Assessment Unit
under Different Category in India
(as in 2023)**

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ANDHRA PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Sri Potti Sriramulu Nellore	9941.78	9941.78	100.00								
2	Nandyal	7061.82	7061.82	100.00								
3	Srikakulam	4466.89	3985.73	89.23	156.53	3.50	113.71	2.55	210.93	4.72		
4	Vizianagaram	4009.47	4009.47	100.00								
5	Sri Sathya Sai	7636.24	6225.54	81.53	492.87	6.45	122.97	1.61	794.86	10.41		
6	Alluri Sitharama Raju	6392.35	6392.35	100.00								
7	Konaseema	2079.95	1320.07	63.47							759.88	36.53
8	Eluru	6591.85	5627.11	85.36							964.74	14.64
9	West Godavari	2178.42	690.71	31.71							1487.71	68.29
10	Bapatla	3801.18	3638.93	95.73							162.25	4.27
11	Palnadu	6516.56	5641.54	86.57			539.10	8.27	335.92	5.15		
12	Kakinada	2881.24	2362.46	81.99							518.78	18.01
13	Y.S.R Kadapa	8804.66	8411.73	95.54	230.86	2.62			162.07	1.84		
14	Ananthapuramu	9464.79	9216.06	97.37	248.73	2.63						
15	Chittoor	6004.51	4792.75	79.82	1211.76	20.18						
16	East Godavari	2545.53	2300.61	90.38	244.92	9.62						
17	Guntur	2423.33	2165.85	89.38							257.48	10.62
18	Krishna	3880.56	1935.06	49.87							1945.50	50.13
19	Kurnool	7558.63	7558.63	100.00								
20	Prakasam	10231.91	8911.48	87.09	937.85	9.17			382.58	3.74		
21	Visakhapatnam	1001.67	1001.67	100.00								
22	Anakapalli	3459.23	3459.23	100.00								
23	Annamayya	6660.66	6248.08	93.81	412.58	6.19						
24	Ntr	3063.24	3063.24	100.00								
25	Parvathipuram Manyam	3318.11	3318.11	100.00								
26	Tirupati	7625.27	7625.27	100.00								
	Total	139599.85	126905.28	90.91	3936.09	2.82	775.78	0.56	1886.36	1.35	6096.33	4.37

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ARUNACHAL PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Changlang	530	530	100								
2	East Kameng	312.5	312.5	100								
3	East Siang	1101	1101	100								
4	Lohit	2000	2000	100								
5	Lower Dibang Valley	1200	1200	100								
6	Lower Subansiri	101.35	101.35	100								
7	Papum Pare	178.19	178.19	100								
8	Tirap	125	125	100								
9	Upper Subansiri	7	7	100								
10	West Kameng	61.75	61.75	100								
11	West Siang	104.59	104.59	100								
	Total	5721.38	5721.38	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ASSAM												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Dhemaji	3151.56	3151.56	100								
2	Bongaigaon	997.3	997.3	100								
3	Jorhat	2794.08	2794.08	100								
4	Kokrajhar	3270.3	3270.3	100								
5	Darrang	1576.54	1576.54	100								
6	Kamrup (M) Rural	458.7	458.7	100								
7	Hailakandi	1049.81	1049.81	100								
8	Kamrup (M) Urban	200.42			200.42	100						
9	Kamrup	2630.24	2630.24	100								
10	Karbi Anglong	6560.9	6560.9	100								
11	Nalbari	1036.3	1036.3	100								
12	Sonitpur	5132.24	5132.24	100								
13	Tinsukia	3717.57	3717.57	100								
14	Sibsagar	2644.59	2644.59	100								
15	Lakhimpur	2249.3	2249.3	100								
16	Dhubri	2143.92	2143.92	100								
17	Morigaon	1490.66	1490.66	100								
18	Nagaon	3773.41	3773.41	100								
19	Dima Hasao	2343	2343	100								
20	Chirang	1917.94	1917.94	100								
21	Golaghat	3481.4	3481.4	100								
22	Goalpara	1719.83	1719.83	100								
23	Baksa	2448.73	2448.73	100								
24	Karimganj	1676.48	1676.48	100								
25	Dibrugarh	3346.88	3346.88	100								
26	Cachar	2733.58	2733.58	100								
27	Udalguri	2001.69	2001.69	100								
28	Barpeta	2270.56	2270.56	100								
	Total	68817.93	68617.51	99.71	200.42	0.29						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
BIHAR												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Begusarai	1891.31	1595	84.33	296.31	15.67						
2	Supaul	2410.26	2410.26	100								
3	Banka	2673	2673	100								
4	Nawada	2456.58	1835.76	74.73	620.82	25.27						
5	Aurangabad	3090.54	3090.54	100								
6	Bhagalpur	2602.55	2602.55	100								
7	Kaimur	2980.4	2769.86	92.94	210.54	7.06						
8	Saharsa	1661.28	1661.28	100								
9	Bhojpur	2275.3	1690.43	74.29	584.87	25.71						
10	Sitamarhi	2185.2	2185.2	100								
11	Siwan	2223.07	2223.07	100								
12	West Champaran	3871.81	3871.81	100								
13	Araria	2789.37	2789.37	100								
14	Arwal	636.83	636.83	100								
15	Darbhanga	2504.29	2504.29	100								
16	East Champaran	3958.87	3958.87	100								
17	Gaya	4909.78	4108.82	83.69	800.96	16.31						
18	Jamui	2551.14	2551.14	100								
19	Jehanabad	932.57	340.83	36.55	334.92	35.91			256.82	27.54		
20	Katihar	3009.91	3009.91	100								
21	Khagaria	1485.72	1485.72	100								
22	Kishanganj	1911.43	1911.43	100								
23	Lakhisarai	1144.94	1144.94	100								
24	Madhepura	1788.4	1788.4	100								
25	Madhubani	3486.45	3486.45	100								
26	Munger	1331.42	1331.42	100								
27	Muzaffarpur	3042.77	1538.21	50.55	1148.01	37.73	236.58	7.78	119.97	3.94		
28	Nalanda	2316.46	973.78	42.04	1186.45	51.22	80.93	3.49	75.3	3.25		
29	Patna	3200.84	2238.81	69.94	787.81	24.61	65.35	2.04	108.87	3.4		
30	Purnea	3202.39	3202.39	100								
31	Rohtas	3751.43	3372.29	89.89	379.14	10.11						
32	Samastipur	2612.87	1596.96	61.12	852.82	32.64	95.16	3.64	67.93	2.6		
33	Saran	2629.57	2629.57	100								
34	Sheikhpura	662.59	569.13	85.89			93.46	14.11				
35	Sheohar	442.99	442.99	100								
36	Vaishali	1995.18	1309.41	65.63	214.43	10.75	232.43	11.65	238.91	11.97		
37	Buxar	1710.06	1710.06	100								
38	Gopalganj	2019.13	2019.13	100								
	Total	90348.7	81259.91	89.94	7417.08	8.21	803.91	0.89	867.8	0.96		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
CHHATISGARH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Balod	2614.7	1292.95	49.45	984.95	37.67	336.8	12.88				
2	Baloda Bazar	4067.48	4067.48	100								
3	Balrampur	5661.31	5661.31	100								
4	Bastar	3835.33	3835.33	100								
5	Bemetara	2854.81			724.86	25.39	2129.95	74.61				
6	Bijapur	4377.29	4377.29	100								
7	Bilaspur	3175.95	1572.65	49.52	1603.3	50.48						
8	Dantewada	3118.66	3118.66	100								
9	Dhamtari	2487.06	1215.81	48.89	1271.25	51.11						
10	Durg	2319.99	762.33	32.86	1557.66	67.14						
11	Gariaband	2631.4	2036.1	77.38	595.3	22.62						
12	Gourela-Pendra-Marwahi	1651.23	1651.23	100								
13	Janjgir-Champa	2152.58	2152.58	100								
14	Jashpur	4510.05	4510.05	100								
15	Kabirdham	4239.63	3123.17	73.67	1116.46	26.33						
16	Khairagarh-Chhuikhadan_Gandai	1490.38	689.15	46.24	801.23	53.76						
17	Kanker	6260.36	5805.01	92.73	455.35	7.27						
18	Kondagaon	3722.41	3722.41	100								
19	Korba	4314.3	3843.14	89.08	471.16	10.92						
20	Korea	726.47	726.47	100								
21	Mahasamund	4597.2	3954.2	86.01	643	13.99						
22	Manendragarh-Chirmiri_Bharatpur	3298.4	3298.4	100								
23	Mohla-Manpur_Ambagarhchowki	1548.82	1548.82	100								
24	Mungeli	1639.42	1639.42	100								
25	Narayanpur	3510.43	3510.43	100								
26	Raigarh	3859.19	3110.89	80.61	748.3	19.39						
27	Raipur	2891.98	2239.67	77.44			652.31	22.56				
28	Rajnandgaon	2597.32	747.87	28.79	1849.45	71.21						
29	Sakti	1543.89	1543.89	100								
30	Sarangarh-Bilairagh	2276.38	1676.04	73.63	600.34	26.37						
31	Sukma	5211.99	5211.99	100								
32	Surajpur	2637.88	2073.14	78.59	564.74	21.41						
33	Surguja	4254.42	4254.42	100								
	Total	106078.71	88972.30	83.87	13987.35	13.19	3119.06	2.94				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
DELHI												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	North	291.14			118.18	40.59	25.38	8.72	147.58	50.69		
2	South East	103.52					103.52	100				
3	South West	305.16	128.53	42.12			67.84	22.23	108.79	35.65		
4	East	31.6					31.6	100				
5	Nazul Land	25.79	25.79	100								
6	South	157.85					24.72	15.66	133.13	84.34		
7	Central	79.31	54.54	68.77			19.64	24.77	5.13	6.46		
8	New Delhi	158.09							158.09	100		
9	North West	154.36	121.37	78.63	32.99	21.37						
10	West	110.54			73.6	66.58	26.46	23.94	10.48	9.48		
11	North East	35.67			8.96	25.11			26.71	74.89		
12	Shahdara	34.59					7.24	20.94	27.34	79.06		
	Total	1487.61	330.23	22.2	233.73	15.71	306.4	20.6	617.25	41.49		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
GOA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Goa North	989.87	989.87	100								
2	South Goa	1219.72	1219.72	100								
	Total	2209.59	2209.59	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
GUJARAT												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Ahmedabad	7077.26	2993.62	42.3	779.52	11.01	983.36	13.89	473.59	6.69	1847.17	26.1
2	Amreli	7478.47	6630.87	88.67	847.6	11.33						
3	Anand	3041.19	3041.19	100								
4	Arvalli	3103.72	3103.72	100								
5	Banaskantha	10501.35	1311.14	12.49	792.79	7.55			6164.31	58.7	2233.12	21.27
6	Bharuch	5462.98	5462.98	100								
7	Bhavnagar	7281.48	7281.48	100								
8	Botad	2484.8	2484.8	100								
9	Chhota Udepur	3264.93	3264.93	100								
10	Dahod	3519.71	3519.71	100								
11	Dang	1449.22	1449.22	100								
12	Devbhumi Dwarka	4206.37	4206.37	100								
13	Gandhinagar	2155.21			859.59	39.88			1295.62	60.12		
14	Gir Somnath	3285.88	3285.88	100								
15	Jamnagar	6423.48	6423.48	100								
16	Junagadh	5471.24	5471.24	100								
17	Kachchh	20491.36	12264.11	59.85			1480.74	7.23	6528	31.86	218.51	1.07
18	Kheda	3437.64	3437.64	100								
19	Mahesana	4407.48			1598.19	36.26	682.26	15.48	2127.03	48.26		
20	Mahisagar	2459.01	2459.01	100								
21	Morbi	4992.7	4236.59	84.86							756.1	15.14
22	Narmada	2509.95	1950.65	77.72	559.3	22.28						
23	Navsari	2167.82	2167.82	100								
24	Panchmahal	3254.74	3254.74	100								
25	Patan	5686.51			471.22	8.29	374.78	6.59	1008.62	17.74	3831.89	67.39
26	Porbandar	2305.41	2305.41	100								
27	Rajkot	7762.59	4479.54	57.71	2506.28	32.29	776.76	10.01				
28	Sabarkantha	4073.78	1634.11	40.11	2031.58	49.87			408.09	10.02		
29	Surat	4212.4	3769.19	89.48					443.21	10.52		
30	Surendranagar	9276.07	8753.08	94.36	522.99	5.64						
31	Tapi	3085.5	3085.5	100								
32	Vadodara	4063.99	2585.68	63.62	518.11	12.75	960.2	23.63				
33	Valsad	2383.88	2383.88	100								
	Total	162778.14	118697.58	72.92	11487.17	7.06	5258.1	3.23	18448.47	11.33	8886.79	5.46

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
HARYANA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Rohtak	1669.07	1669.07	100								
2	Karnal	2470.52					243.01	9.84	2227.51	90.16		
3	Kaithal	2274.14							2274.14	100		
4	Jind	2750.91	684.67	24.89	215.5	7.83			1850.75	67.28		
5	Kurukshehra	1684.2							1684.2	100		
6	Bhiwani	3286.95	1828.3	55.62					1458.66	44.38		
7	Ambala	1509.05			552.73	36.63	193.18	12.8	763.14	50.57		
8	Fatehabad	2525.12					749.44	29.68	1775.69	70.32		
9	Gurgaon	1222.46							1222.46	100		
10	Charkhi Dadri	1371.61	797.22	58.12					574.38	41.88		
11	Faridabad	655.61							655.61	100		
12	Hisar	4075.27	2829.19	69.42	506.33	12.42	329.89	8.1	409.85	10.06		
13	Jhajjar	1934.65	1934.65	100								
14	Mahendragarh	1917.88					405.55	21.15	1512.32	78.85		
15	Mewat	1369.06	578.78	42.28	171.5	12.53	208.39	15.22	410.4	29.98		
16	Palwal	1358.26	558.47	41.12	300.54	22.13	154.6	11.38	344.65	25.37		
17	Panchkula	506.72	398.44	78.63			108.28	21.37				
18	Panipat	1302.73							1302.73	100		
19	Rewari	1461.68					198.1	13.55	1263.58	86.45		
20	Sirsa	4269.93			533.84	12.5			3736.08	87.5		
21	Sonipat	2157.22	819.08	37.97					1338.15	62.03		
22	Yamuna Nagar	1432.77			277.65	19.38			1155.12	80.62		
	Total	43205.82	12097.87	28	2558.1	5.92	2590.44	6	25959.42	60.08		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
HIMACHAL PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Kangra	1476.00	1476.00	100								
2	Mandi	159.00	159.00	100								
3	Sirmaur	358.00	358.00	100								
4	Solan	336.00	336.00	100								
5	Una	1139.00	1139.00	100								
	Total	3468	3468	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
JHARKHAND												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Godda	1664.02	1664.02	100								
2	Giridih	4400.79	4019.38	91.33	381.41	8.67						
3	Simdega	3090.6	3090.6	100								
4	Garhwa	2916.43	2706.62	92.81	209.81	7.19						
5	Pakur	1277.59	1277.59	100								
6	Ramgarh	1112.67	985.86	88.6			80	7.19	46.81	4.21		
7	Sahebganj	1144.09	1144.09	100								
8	Dumka	2813.67	2813.67	100								
9	East Singhbhum	2509.93	2306.69	91.9					203.24	8.1		
10	Bokaro	2624.43	2531.73	96.47					92.7	3.53		
11	Chatra	3260.87	3260.87	100								
12	Deoghar	1906.98	1554.72	81.53	352.26	18.47						
13	Dhanbad	1976.73	838.35	42.41	670.9	33.94	346.31	17.52	121.17	6.13		
14	Gumla	4071.15	4071.15	100								
15	Hazaribagh	3526.62	3416.42	96.88	110.2	3.12						
16	Jamtara	983.46	983.46	100								
17	Khunti	1670.05	1670.05	100								
18	Koderma	909.02	622.11	68.44	146.34	16.1	140.57	15.46				
19	Latehar	2385.13	2385.13	100								
20	Lohardaga	1275.63	1275.63	100								
21	Palamau	3473.44	3473.44	100								
22	Ranchi	3743.08	2943.27	78.63	298.21	7.97	501.6	13.4				
23	Saraikela Kharsawan	2028.01	2028.01	100								
24	West Singhbhum	5882.34	5882.34	100								
	Total	60646.73	56945.2	93.9	2169.13	3.58	1068.48	1.76	463.92	0.76		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
KARNATAKA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Bagalkot	6283.8	1482.52	23.59	2871.01	45.69	1060.16	16.87	870.11	13.85		
2	Ballari	3758.91	3758.91	100								
3	Belagavi	12956.29	5829.54	44.99	4785.49	36.94	1581.68	12.21	759.58	5.86		
4	Bengaluru (Rural)	2236.51							2236.51	100		
5	Bengaluru (Urban)	2130.26							2130.26	100		
6	Bidar	5453.14	4116.6	75.49	1336.54	24.51						
7	Chamarajanagara	3609.4			1415.42	39.21	1047.26	29.01	1146.72	31.77		
8	Chikkaballapura	3734.82							3734.82	100		
9	Chikkamagaluru	4234.94	2537.18	59.91					1697.76	40.09		
10	Chitradurga	8004.61	627.43	7.84					7377.18	92.16		
11	Dakshina Kannada	3308.67	3308.67	100								
12	Davanagere	4095.52	1225.87	29.93			947.99	23.15	1921.66	46.92		
13	Dharwad	4163.28	4163.28	100								
14	Gadag	4359.87	1288.84	29.56	1782.51	40.88	871.1	19.98	417.42	9.57		
15	Hassan	5962.97	3764.93	63.14			1040.78	17.45	1157.26	19.41		
16	Haveri	4737.54	3565.79	75.27	1171.75	24.73						
17	Kalburgi	10962.67	9653.24	88.06	1309.43	11.94						
18	Kodagu	2025.83	2025.83	100								
19	Kolara	3827.63							3827.63	100		
20	Koppal	5398.66	3435.96	63.64	1305.4	24.18	657.3	12.18				
21	Mandya	4817.43	4092.71	84.96	724.72	15.04						
22	Mysuru	6116.45	6116.45	100								
23	Raichur	8386.67	7649.31	91.21	737.36	8.79						
24	Ramanagara	2739.98			1174.07	42.85	1268.55	46.3	297.36	10.85		
25	Shivamogga	6747.31	6747.31	100								
26	Tumakuru	9915.97	2823.96	28.48	1203.95	12.14	598.58	6.04	5289.48	53.34		
27	Udupi	2869.98	2869.98	100								
28	Uttara Kannada	6585.48	6585.48	100								
29	Vijayanagara	5397.53	1697.85	31.46	912.31	16.9	1369.77	25.38	1417.6	26.26		
30	Vijayapura	10488.41	10122.45	96.51	365.96	3.49						
31	Yadgir	5152.82	3553	68.95	1599.82	31.05						
	Total	170463.35	103043.09	60.45	22695.74	13.31	10443.17	6.13	34281.35	20.11		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
KERALA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Kottayam	1970.88	1970.88	100								
2	Idukki	1088.91	854.63	78.48	234.28	21.52						
3	Wayanad	1427.62	1427.62	100								
4	Ernakulam	2269.47	2269.47	100								
5	Thiruvananthapuram	1942.97	1350.69	69.52	592.28	30.48						
6	Thrissur	2366.85	1977.08	83.53	389.77	16.47						
7	Pathanamthitta	1296.65	1296.65	100								
8	Kannur	2323.96	2002.78	86.18	321.18	13.82						
9	Malappuram	2541.81	1327.05	52.21	1214.76	47.79						
10	Kozhikkode	1661.8	1188.82	71.54	472.98	28.46						
11	Kollam	2112	1837.06	86.98	274.94	13.02						
12	Kasargod	1648.3	1058.18	64.2	331.36	20.1	258.76	15.7				
13	Alappuzha	1414.03	1414.03	100								
14	Palakkad	2982.28	2084.06	69.88	379.6	12.73	518.62	17.39				
	Total	27047.53	22059	81.56	4211.15	15.57	777.38	2.87				

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MADHYA PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Agar Malwa	2515.76	654.46	26.01	700.83	27.86			1160.47	46.13		
2	Alirajpur	3054	3054	100								
3	Anuppur	2942	2602	88.44	340	11.56						
4	Ashoknagar	4622.44	2462.59	53.27	2159.85	46.73						
5	Balaghat	8917.93	8917.93	100								
6	Barwani	3668.31	2646.15	72.14	730.36	19.91			291.8	7.95		
7	Betul	8564.5	6663.5	77.8	1901	22.2						
8	Bhind	4459	4459	100								
9	Bhopal	2648			2648	100						
10	Burhanpur	2570.5	1400.5	54.48	1170	45.52						
11	Chhatarpur	7904.34	3938.28	49.82	3966.06	50.18						
12	Chhindwara	8847.77	6631.89	74.96	1580.72	17.87	635.16	7.18				
13	Damoh	4746.19	3842.82	80.97	903.37	19.03						
14	Datia	2662	2662	100								
15	Dewas	5770.82	3313.7	57.42	876.31	15.19			1580.81	27.39		
16	Dhar	8126.4	5169	63.61			534	6.57	2423.4	29.82		
17	Dindori	4560	4560	100								
18	Guna	6175.14	6175.14	100								
19	Gwalior	4283	3859.65	90.12	423.35	9.88						
20	Harda	2700.9	2700.9	100								
21	Hoshangabad	5583.52	4914.52	88.02	669	11.98						
22	Indore	3818.97			1020.92	26.73	530	13.88	2268.05	59.39		
23	Jabalpur	4438.68	4070.28	91.7	368.4	8.3						
24	Jhabua	3112.53	2699.53	86.73	413	13.27						
25	Katni	4666.48	4666.48	100								
26	Khandwa	5814.46	4953.46	85.19	861	14.81						
27	Khargone	6568.97	6074.57	92.47	494.4	7.53						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MADHYA PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
28	Mandla	5739.9	5739.9	100								
29	Mandsaur	4956.4			2438.83	49.21			2517.57	50.79		
30	Morena	4384.89	4384.89	100								
31	Narsinghpur	4791	3947	82.38	844	17.62						
32	Neemuch	3757.44			1153	30.69			2604.44	69.31		
33	Niwari	1525.62	939.62	61.59	586	38.41						
34	Panna	6624.75	6624.75	100								
35	Raisen	6609.4	5745	86.92	864.4	13.08						
36	Rajgarh	6154.98			3881.98	63.07	1368	22.23	905	14.7		
37	Ratlam	4616			973	21.08			3643	78.92		
38	Rewa	5937.6	5490.3	92.47	447.3	7.53						
39	Sagar	9254.18	9254.18	100								
40	Satna	6721.06	3576.89	53.22	3144.17	46.78						
41	Sehore	4639.72	3457.81	74.53			1181.91	25.47				
42	Seoni	8050.2	8050.2	100								
43	Shahdol	4978	4978	100								
44	Shajapur	3406.17			883.07	25.93			2523.1	74.07		
45	Sheopur	5334.8	3697.8	69.31	1637	30.69						
46	Shivpuri	9770.49	4354.54	44.57	5415.95	55.43						
47	Sidhi	3604.05	3604.05	100								
48	Singrauli	4512.6	4512.6	100								
49	Tikamgarh	3355.38			3355.38	100						
50	Ujjain	5939.33			3302.11	55.6			2637.22	44.4		
51	Umariā	4219	4219	100								
52	Vidisha	6707.7	5056.7	75.39	1651	24.61						
	Total	269333.27	190725.58	70.81	51803.76	19.23	4249.07	1.58	22554.86	8.37		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MAHARASHTRA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Buldhana	8206.15	2952.63	35.98	4195.07	51.12			1058.45	12.9		
2	Gondia	4597.05	4597.05	100								
3	Osmanabad	6716.28	4671.26	69.55	2045.02	30.45						
4	Satara	8775.07	6080.85	69.3	2694.22	30.7						
5	Jalgaon	11378.83	1777.93	15.62	7824.14	68.76			1776.76	15.61		
6	Beed	10352.05	10352.05	100								
7	Nashik	13488.56	7485.45	55.49	3096.05	22.95	2907.06	21.55				
8	Nandurbar	4152.78	4152.78	100								
9	Sangli	8427.58	7678.05	91.11	749.53	8.89						
10	Parbhani	6214	6214	100								
11	Aurangabad	9501.74	1889.75	19.89	7611.99	80.11						
12	Jalna	7718	7718	100								
13	Latur	6635.48	5724.75	86.27	910.73	13.73						
14	Nagpur	7990.42	7437.49	93.08	552.93	6.92						
15	Ahmednagar	15624.75	5172.01	33.1	5972.85	38.23	3825.41	24.48	654.48	4.19		
16	Akola	5141.65	4458.17	86.71	683.47	13.29						
17	Amravati	8392.39	2819.41	33.59	2105.96	25.09	638.12	7.6	2052.01	24.45	776.89	9.26
18	Bhandara	3964.97	3964.97	100								
19	Chandrapur	10476.57	10476.57	100								
20	Dhule	6421.32	6421.32	100								
21	Gadchiroli	8866.49	8866.49	100								
22	Hingoli	4662.41	4662.41	100								
23	Nanded	10177.71	10177.71	100								
24	Palghar	2760.86	2760.86	100								
25	Pune	12757.28	3018.35	23.66	8252.02	64.68	1486.91	11.66				
26	Raigad	3747.59	3747.59	100								
27	Ratnagiri	5113.07	5113.07	100								
28	Sindhudurg	2793.05	2793.05	100								
29	Solapur	14838.9	3080.47	20.76	10265.44	69.18			1492.99	10.06		
30	Thane	2334.47	2334.47	100								
31	Wardha	5812.16	5812.16	100								
32	Washim	4811.96	4811.96	100								
33	Yawatmal	11440.67	11440.67	100								
34	Kolhapur	5621.76	5621.76	100								
	Total	259914.03	186285.52	71.67	56959.43	21.91	8857.49	3.41	7034.69	2.71	776.89	0.3

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MANIPUR												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Bishnupur	496	496	100.00								
2	Churachandpur	321	321	100.00								
3	Imphal East	709	709	100.00								
4	Imphal West	519	519	100.00								
5	Thoubal	514	514	100.00								
	Total	2559	2559	100.00								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MEGHALAYA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	South West Khasi Hills	485.37	485.37	100								
2	South West Garo Hills	425.2	425.2	100								
3	West Garo Hills	1277.84	1277.84	100								
4	East Garo Hills	502.15	502.15	100								
5	East Jaintia Hills	827.35	827.35	100								
6	West Khasi Hills	1239.7	1239.7	100								
7	Ri Bhoi	688.78	688.78	100								
8	South Garo Hills	659.57	659.57	100								
9	West Jaintia Hills	791.86	791.86	100								
10	East Khasi Hills	903.22	903.22	100								
11	North Garo Hills	370.31	370.31	100								
	Total	8171.35	8171.35	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
MIZORAM												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Champhai	286.73	286.73	100								
2	Aizawl	217.34	217.34	100								
3	Serchhip	161.66	161.66	100								
4	Lunglei	744.87	744.87	100								
5	Saiha	106.6	106.6	100								
6	Kolasib	395.15	395.15	100								
7	Lawngtlai	520.75	520.75	100								
8	Mamit	716.31	716.31	100								
	Total	3149.41	3149.41	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
NAGALAND												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Kiphire	35.76	35.76	100								
2	Zunheboto	89.85	89.85	100								
3	Wokha	669.21	669.21	100								
4	Kohima	282.64	282.64	100								
5	Longleng	128.9	128.9	100								
6	Mon	615.12	615.12	100								
7	Peren	638.38	638.38	100								
8	Phek	113.09	113.09	100								
9	Dimapur	630.46	630.46	100								
10	Tuensang	101.23	101.23	100								
11	Mokokchung	550.43	550.43	100								
	Total	3855.07	3855.07	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ODISHA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Angul	5085.85	4797.19	94.32	288.66	5.68						
2	Balasore	3564.77	3299.7	92.56	265.07	7.44						
3	Bargarh	5251.77	5251.77	100								
4	Bhadrak	2522.36	1901.92	75.4							620.44	24.6
5	Bolangir	6297.77	6297.77	100								
6	Boudh	2140.98	2140.98	100								
7	Cuttack	3400.69	3400.69	100								
8	Deogarh	2185.29	2185.29	100								
9	Dhenkanal	3978.75	3978.75	100								
10	Gajapati	1424.58	1424.58	100								
11	Ganjam	6104.2	6104.2	100								
12	Jagatsinghpur	1889.88	1513.89	80.11							375.99	19.89
13	Jajpur	2662.13	2333.95	87.67	328.18	12.33						
14	Jharsuguda	2118.42	1699.25	80.21	419.17	19.79						
15	Kalahandi	5581.37	5581.37	100								
16	Kandhamal	4473.71	4473.71	100								
17	Kendrapara	2263.44	1078.54	47.65							1184.9	52.35
18	Keonjhar	6847.9	6847.9	100								
19	Khurda	2607.17	1607.13	61.64	1000.04	38.36						
20	Koraput	6006.06	6006.06	100								
21	Malkangiri	3398.99	3398.99	100								
22	Mayurbhanj	8340.16	8340.16	100								
23	Nabarangapur	5344.64	5344.64	100								
24	Nayagarh	2578.45	2381.27	92.35	197.18	7.65						
25	Nuapada	3083.04	2241.38	72.7	841.66	27.3						
26	Puri	2586.11	2586.11	100								
27	Rayagada	3659.73	3659.73	100								
28	Sambalpur	5670.92	5670.92	100								
29	Subarnapur	2320.54	2320.54	100								
30	Sundargarh	8203.48	8203.48	100								
	Total	121593.15	116071.86	95.46	3339.96	2.75					2181.33	1.79

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
PUNJAB												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Fazilka	2739.54	1933.1	70.56	328.37	11.99			478.07	17.45		
2	Pathankot	781.36	538.44	68.91	242.92	31.09						
3	Sas Nagar	1093.83			280.64	25.66	422.75	38.65	390.44	35.69		
4	Muktsar	2634.28	2634.28	100								
5	Kapurthala	1628.75							1628.75	100		
6	Hoshiarpur	3368.71	225.73	6.7	1162.94	34.52			1980.04	58.78		
7	Amritsar	2676.4							2676.4	100		
8	Barnala	1413.01							1413.01	100		
9	Sangrur	2857.96							2857.96	100		
10	Malerkotla	745.29							745.29	100		
11	Jalandhar	2629.99							2629.99	100		
12	Mansa	2168.62	682.61	31.48	725.9	33.47			760.11	35.05		
13	Bathinda	3374.24	1055.74	31.29	332.58	9.86	445.59	13.21	1540.33	45.65		
14	Fatehgarh Sahib	1142.46							1142.46	100		
15	Faridkot	1475.98							1475.98	100		
16	Rupnagar	1376.53	724.28	52.62	320.31	23.27			331.94	24.11		
17	Moga	2230.96							2230.96	100		
18	Tarn Taran	2418.35							2418.35	100		
19	Patiala	3318.47							3318.47	100		
20	Sbs Nagar	1259.61	168.02	13.34			324.64	25.77	766.95	60.89		
21	Ludhiana	3707.15							3707.15	100		
22	Firozpur	2519.53			804.59	31.93			1714.94	68.07		
23	Gurdaspur	2614.25	197.34	7.55	109.2	4.18			2307.71	88.27		
	Total	50175.27	8159.54	16.26	4307.45	8.58	1192.98	2.38	36515.3	72.78		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
RAJASTHAN												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Dhaulpur	2485.26								2485.26	100	
2	Pratapgarh	2950.39	483.5	16.39				458.56	15.54	2008.33	68.07	
3	Alwar	7201.61								7201.61	100	
4	Dausa	3085.62								3085.62	100	
5	Bikaner	30381.77	14440.01	47.53	1912.89	6.3				8575.63	28.23	5453.24
6	Karauli	3902.42			571.06	14.63				3331.36	85.37	
7	Chittaurgarh	5833.89								5833.89	100	
8	Ajmer	7466.76								7466.76	100	
9	Bharatpur	4751.52								4751.52	100	
10	Jalor	10251.53					1817.85	17.73	8433.68	82.27		
11	Baran	6892.21			949	13.77	2892.66	41.97	3050.55	44.26		
12	Udaipur	7770.92			389.44	5.01	4566.83	58.77	2814.65	36.22		
13	Jaisalmer	38145								38145	100	
14	Sirohi	4075.7			882.9	21.66	1103.05	27.06	2089.75	51.27		
15	Tonk	5881.74	911.14	15.49	1242.09	21.12	1378.9	23.44	2349.61	39.95		
16	Rajsamand	3540.09					1212.42	34.25	2327.67	65.75		
17	Jaipur	10334.72							10334.72	100		
18	Ganganagar	11141.59	11141.59	100								
19	Dungarpur	2634.13	2026.5	76.93	607.63	23.07						
20	Bhilwara	9354.85							9354.85	100		
21	Sawai Madhopur	4328.5							4328.5	100		
22	Jhunjhunu	5393.47							5393.47	100		
23	Bundi	4240.18	462.53	10.91	1152.88	27.19			2624.77	61.9		
24	Jodhpur	22189.72			1978.95	8.92	3833.9	17.28	16376.87	73.8		
25	Barmer	28578.58	1802.75	6.31	2094.66	7.33			24681.17	86.36		
26	Jhalawar	6096.26	978.04	16.04			1404.45	23.04	3713.77	60.92		
27	Churu	13793.01	3860.8	27.99					8121.81	58.88	1810.4	13.13
28	Hanumangarh	9579.6	6779.33	70.77	1128.02	11.78					1672.25	17.46
29	Banswara	3979.96	2186.91	54.95	1793.05	45.05						
30	Sikar	7356.92			1291.23	17.55			6065.69	82.45		
31	Pali	10551.39	1377.9	13.06	1279.91	12.13			7893.58	74.81		
32	Kota	5123.17			1807.08	35.27			3316.09	64.73		
33	Nagaur	17718.26					1140.08	6.43	16578.18	93.57		
	Total	317010.74	46451	14.65	19080.79	6.02	19808.7	6.25	222734.36	70.26	8935.89	2.82

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
SIKKIM												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Mangan	200	200	100								
2	Soreng	98	98	100								
3	Namchi	280	280	100								
4	Pakyong	261	261	100								
5	Gangtok	355	355	100								
6	Gyalshing	302	302	100								
	Total	1496	1496	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
TAMIL NADU												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Ariyalur	1926.59	1639.13	85.08	287.46	14.92	0.00	0.00	0.00	0.00	0.00	0.00
2	Chengalpattu	2424.15	1135.23	46.83	1288.92	53.17	0.00	0.00	0.00	0.00	0.00	0.00
3	Chennai	446.28	106.80	23.93	17.71	3.97	0.00	0.00	321.77	72.10	0.00	0.00
4	Coimbatore	3674.78	417.15	11.35	268.61	7.31	1076.88	29.30	1912.14	52.03	0.00	0.00
5	Cuddalore	3636.73	1546.18	42.52	0.00	0.00	659.93	18.15	1430.62	39.34	0.00	0.00
6	Dharmapuri	2812.87	640.56	22.77	231.84	8.24	498.99	17.74	1441.48	51.25	0.00	0.00
7	Dindigul	4877.41	788.32	16.16	0.00	0.00	697.38	14.30	3391.71	69.54	0.00	0.00
8	Erode	3448.82	849.17	24.62	966.17	28.01	405.75	11.76	1227.72	35.60	0.00	0.00
9	Kallakurichchi	2579.23	1112.07	43.12	597.46	23.16	869.70	33.72	0.00	0.00	0.00	0.00
10	Kancheepuram	1667.94	1246.02	74.70	421.92	25.30	0.00	0.00	0.00	0.00	0.00	0.00
11	Kanniyakumari	1130.45	1130.45	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Karur	2833.70	0.00	0.00	490.41	17.31	1006.43	35.52	1336.85	47.18	0.00	0.00
13	Krishnagiri	3103.26	1264.54	40.75	356.95	11.50	563.84	18.17	917.93	29.58	0.00	0.00
14	Madurai	3256.47	1923.40	59.06	1268.13	38.94	64.94	1.99	0.00	0.00	0.00	0.00
15	Mayiladuthurai	1162.56	0.00	0.00	0.00	0.00	0.00	0.00	1162.56	100.00	0.00	0.00
16	Nagapattinam	1538.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1538.44	100.00
17	Namakkal	2924.55	208.26	7.12	159.74	5.46	0.00	0.00	2556.55	87.42	0.00	0.00
18	Perambalur	1594.54	417.99	26.21	0.00	0.00	0.00	0.00	1176.55	73.79	0.00	0.00
19	Pudukkottai	4427.94	3521.69	79.53	906.25	20.47	0.00	0.00	0.00	0.00	0.00	0.00
20	Ramanathapuram	4074.87	4074.87	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Ranipet	1755.84	0.00	0.00	1217.02	69.31	287.02	16.35	251.81	14.34	0.00	0.00
22	Salem	3915.35	152.49	3.89	0.00	0.00	272.91	6.97	3489.95	89.13	0.00	0.00
23	Sivagangai	4032.62	4032.62	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Tenkasi	2442.44	734.10	30.06	872.06	35.70	0.00	0.00	836.28	34.24	0.00	0.00
25	Thanjavur	3394.70	0.00	0.00	333.57	9.83	1967.86	57.97	1093.27	32.21	0.00	0.00
26	The Nilgiris	1119.08	1119.08	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	Theni	1894.17	590.34	31.17	911.19	48.11	392.64	20.73	0.00	0.00	0.00	0.00
28	Thiruvallur	2072.57	1068.28	51.54	0.00	0.00	0.00	0.00	631.17	30.45	373.12	18.00
29	Thoothukudi	4597.12	4242.76	92.29	354.36	7.71	0.00	0.00	0.00	0.00	0.00	0.00
30	Tiruchirappalli	4036.10	1547.41	38.34	370.63	9.18	0.00	0.00	2118.06	52.48	0.00	0.00
31	Tirunelveli	3043.87	2419.93	79.50	623.95	20.50	0.00	0.00	0.00	0.00	0.00	0.00
32	Tirupathur	1208.37	0.00	0.00	0.00	0.00	0.00	0.00	1208.37	100.00	0.00	0.00
33	Tiruppur	4713.91	0.00	0.00	2424.85	51.44	1289.33	27.35	999.73	21.21	0.00	0.00
34	Tiruvallur	3042.19	2708.05	89.02	334.14	10.98	0.00	0.00	0.00	0.00	0.00	0.00
35	Tiruvannamalai	4773.45	838.28	17.56	1954.62	40.95	1055.82	22.12	924.72	19.37	0.00	0.00
36	Vellore	1333.11	0.00	0.00	274.73	20.61	0.00	0.00	1058.38	79.39	0.00	0.00
37	Villupuram	3772.29	959.10	25.42	885.01	23.46	285.96	7.58	1642.22	43.53	0.00	0.00
38	Virudhunagar	4001.89	1958.48	48.94	1665.03	41.61	378.38	9.45	0.00	0.00	0.00	0.00
	Total	108690.63	44392.74	40.84	19482.71	17.92	11773.78	10.83	31129.84	28.64	1911.56	1.76

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
TELANGANA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Jagtial	2667.15	2428.19	91.04	238.96	8.96						
2	Karimnagar	2066.96	1934.30	93.58	132.66	6.42						
3	Kamareddy	3488.32	3134.77	89.86	353.54	10.14						
4	Medak	2545.57	2188.42	85.97	357.15	14.03						
5	Nirmal	3264.37	3264.37	100.00								
6	Mahabubnagar	2542.63	2212.64	87.02	330.00	12.98						
7	Narayanpet	2318.11	2318.11	100.00								
8	Suryapet	3607.50	3607.50	100.00								
9	Adilabad	3809.49	3740.51	98.19			43.10	1.13	25.88	0.68		
10	Khammam	4281.59	4091.87	95.57	189.72	4.43						
11	Jayashankar Bhupalapally	2305.20	2305.20	100.00								
12	Nalgonda	7046.73	5289.41	75.06	1757.32	24.94						
13	Wanaparthy	2081.70	2081.70	100.00								
14	Rangareddy	4826.98	4450.00	92.19	376.97	7.81						
15	Rajanna Sircilla	1731.39	1329.65	76.80	401.74	23.20						
16	Komarambheem Asifabad	3768.16	3768.16	100.00								
17	Mulug	2837.31	2837.31	100.00								
18	Hyderabad	217.82			87.09	39.98	84.71	38.89	46.02	21.13		
19	Peddapalle	1940.64	1940.64	100.00								
20	Bhadradi Kothagudem	7108.43	6470.80	91.03	637.63	8.97						
21	Jangaon	2107.13	1928.87	91.54	178.26	8.46						
22	Jogulamba Gadwal	2603.69	2427.45	93.23	176.24	6.77						
23	Mahabubabad	3344.59	3241.63	96.92	102.97	3.08						
24	Mancherial	3983.25	3983.25	100.00								
25	Medchal Malkajgiri	1038.07	821.59	79.15	134.65	12.97			81.82	7.88		
26	Nagarkurnool	6172.65	5948.54	96.37	224.11	3.63						
27	Nizamabad	4129.91	3172.14	76.81	955.05	23.13			2.72	0.07		
28	Sangareddy	4110.61	3455.89	84.07	479.82	11.67	174.90	4.25				
29	Siddipet	3407.27	2548.04	74.78	689.55	20.24	169.68	4.98				
30	Vikarabad	3672.96	3672.96	100.00								
31	Warangal	1713.37	1713.37	100.00								
32	Hanumakonda	1604.85	949.78	59.18	521.75	32.51	133.31	8.31				
33	Yadadri Bhuvanagiri	3432.82	3247.38	94.60	185.44	5.40						
	Total	105777.24	96504.46	91.23	8510.64	8.05	605.70	0.57	156.44	0.15		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
TRIPURA												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Dhalai	995.81	995.81	100								
2	North Tripura	543.82	543.82	100								
3	Khowai	495.6	495.6	100								
4	Gomati	1098.28	1098.28	100								
5	West Tripura	782.82	782.82	100								
6	Unakoti	428.78	428.78	100								
7	South Tripura	981.03	981.03	100								
8	Sepahijala	871.7	871.7	100								
	Total	6197.84	6197.84	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
UTTAR PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Lalitpur	3819.42			3819.42	100						
2	Saharanpur	3689.41	260.96	7.07	2067.9	56.05			1360.55	36.88		
3	Banda	4404.6	2159.49	49.03	2245.11	50.97						
4	Mathura	3360.78	2345.15	69.78			674.24	20.06	341.39	10.16		
5	Shamli	1361.26			234.4	17.22	503.29	36.97	623.57	45.81		
6	Chandauli	1884.69	1884.69	100								
7	Mirzapur	2954.37	2137.01	72.33	603.47	20.43	117.19	3.97	96.7	3.27		
8	Unnao	4602.34	4602.34	100								
9	Bagpat	1351.39			692.82	51.27			658.57	48.73		
10	Kanpur Dehat	3237.37	943.68	29.15	2293.69	70.85						
11	Chitrakoot	3006.65	1041.84	34.65	1410.8	46.92	554.01	18.43				
12	Shahjahanpur	4581.31	4581.31	100								
13	Pilibhit	3369.59	3369.59	100								
14	Jaunpur	3990.94	2522.77	63.21	1072.14	26.86	396.03	9.92				
15	Mahrajganj	2477.6	2477.6	100								
16	Ambedkar Nagar	2458.98	2158.67	87.79	300.31	12.21						
17	Maunath Bhanjan	1716.24	1716.24	100								
18	Kaushambi	1780.01	484.65	27.23	1015.97	57.08			279.39	15.7		
19	Raibareli	3924.58	3924.58	100								
20	Auraiya	2094.27	2094.27	100								
21	Etawah	2403.01	2403.01	100								
22	Mahoba	2293.41			1417.74	61.82			875.67	38.18		
23	Sitapur	5746.95	5746.95	100								
24	Hathras	1837.99	327.4	17.81	556.14	30.26	272.77	14.84	681.68	37.09		
25	Budaun	4237.88	1372.45	32.39	1854.39	43.76	489.02	11.54	522.02	12.32		
26	Bulandshahar	3609.47	152.46	4.22	1258.17	34.86	1002.49	27.77	1196.35	33.14		
27	Amethi	2329.92	2228.16	95.63	101.76	4.37						
28	Bareilly	4120	3244.34	78.75	742.83	18.03			132.83	3.22		
29	Gonda	3996.09	3996.09	100								
30	Jhansi	4619.37	2644.95	57.26	1974.42	42.74						
31	Aligarh	3808.43	1471.8	38.65	1932.29	50.74	246.37	6.47	157.97	4.15		
32	Bijnor	4589.03	2809.11	61.21	1398.84	30.48	381.08	8.3				
33	G. B. Nagar	1442.73			473.82	32.84	636.66	44.13	332.25	23.03		
34	Gorakhpur	3210.87	3210.87	100								
35	Kannauj	2143.46	996.35	46.48	468.08	21.84	305.17	14.24	373.86	17.44		
36	Etah	2427.57	869.07	35.8	1558.5	64.2						
37	Varanasi	1605.32	353.7	22.03	536.03	33.39	195.99	12.21	519.6	32.37		
38	Lucknow	2452.86	2142.76	87.36					310.1	12.64		
39	Firozabad	2419.53			891.92	36.86	202.61	8.37	1325	54.76		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
UTTAR PRADESH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
40	Azamgarh	4171.19	4171.19	100								
41	Deoria	2538	2538	100								
42	Balrampur	3348.57	3348.57	100								
43	Basti	2938.07	2938.07	100								
44	Ayodhya	2522.01	2522.01	100								
45	Agra	3947.17			1427.26	36.16	279.46	7.08	2240.45	56.76		
46	Hapur	1144.81			238.01	20.79	560.55	48.96	346.25	30.25		
47	Pratapgarh	3717.43	976.01	26.25	1782.15	47.94	959.27	25.8				
48	Bahraich	4387.25	4387.25	100								
49	Mainpuri	2760.72	1944.47	70.43	605.9	21.95			210.35	7.62		
50	Kushi Nagar	2873.78	2873.78	100								
51	Meerut	2810.49	726.68	25.86	1457.45	51.86	381.47	13.57	244.89	8.71		
52	Ghaziabad	1169.14			228.16	19.52			940.98	80.48		
53	Fatehpur	4252.55	2270.83	53.4	1637.54	38.51			344.18	8.09		
54	Kasganj	1993.88	1342.45	67.33	651.43	32.67						
55	Moradabad	2249.44	317.95	14.13	1585.16	70.47	269.08	11.96	77.25	3.43		
56	Barabanki	3891.32	3891.32	100								
57	Sambhal	2415.2	304.73	12.62	868.27	35.95	1242.2	51.43				
58	Sant Kabir Nagar	1646.99	1646.99	100								
59	Lakhimpur Kheri	6555.05	6555.05	100								
60	Sant Ravidas Nagar	983.05			983.05	100						
61	Shrawasti	1857.82	1857.82	100								
62	Amroha	2149.03			1078.66	50.19	720.65	33.53	349.72	16.27		
63	Kanpur Nagar	3094.83	695.86	22.48	1905.53	61.57	493.44	15.94				
64	Siddharth Nagar	2895.03	2895.03	100								
65	Ghazipur	3300.52	3082.02	93.38	218.5	6.62						
66	Sonbhadra	2414.59	2231.52	92.42	183.07	7.58						
67	Hamirpur	3815.4	2718.29	71.25	1097.11	28.75						
68	Ballia	2927	2927	100								
69	Farrukhabad	2206.23	1063.82	48.22	1142.41	51.78						
70	Hardoi	5948.43	5948.43	100								
71	Jalaun	4565.83	4565.83	100								
72	Muzaffarnagar	2756.66	1469.32	53.3	468.39	16.99	580.22	21.05	238.73	8.66		
73	Prayagraj	4996.3	3144.72	62.94	1365.85	27.34	313.9	6.28	171.83	3.44		
74	Rampur	2297.9	522.51	22.74	1775.39	77.26						
75	Sultanpur	2653.81	2653.81	100								
	Total	229555.18	151205.64	65.87	51620.24	22.49	11777.16	5.13	14952.13	6.51		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
UTTARAKHAND												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Dehradun	1255.44	1255.44	100								
2	Haridwar	1568.35	915.35	58.36	653	41.64						
3	Nainital	236.43	123.66	52.3	112.77	47.7						
4	Udhamsingh Nagar	1932.82	1747.65	90.42	185.17	9.58						
	Total	4993.04	4042.1	80.95	950.94	19.05						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
WEST BENGAL												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Purba Barddhaman	5432.69	4558.62	83.91	874.07	16.09						
2	Murshidabad	5133.38	4116.12	80.18	846.19	16.48	171.07	3.33				
3	Jhargram	3020.6	3020.6	100								
4	North 24 Parganas	3872.33	1403.61	36.25	887.89	22.93	650.63	16.8			930.2	24.02
5	Koch Bihar	3396.37	3396.37	100								
6	Malda	3238.86	3137.57	96.87	101.29	3.13						
7	Paschim Barddhaman	1591.65	1508.38	94.77	83.27	5.23						
8	Kalimpong	210.71	210.71	100								
9	Alipurduar	2375.97	2375.97	100								
10	Uttar Dinajpur	3192.83	3192.83	100								
11	South 24 Parganas	5513.01									5513.01	100
12	Darjiling	1084.72	1084.72	100								
13	Hugli	3003.71	2566.73	85.45	436.98	14.55						
14	Puruliya	6193.13	6193.13	100								
15	Kolkatta	187									187	100
16	Haora	1323.55	606.06	45.79							717.49	54.21
17	Bankura	6880.01	6880.01	100								
18	Jalpaiguri	3402.19	3402.19	100								
19	Dakshin Dinajpur	2240.36	1838.93	82.08	401.43	17.92						
20	Nadia	3797.89	405.12	10.67	1477.45	38.9	1915.32	50.43				
21	Birbhum	4548.09	4548.09	100								
22	Purba Medinipur	3809.95	1649.55	43.3							2160.4	56.7
23	Paschim Medinipur	6316.77	5538.83	87.68	777.94	12.32						
	Total	79765.77	61634.14	77.27	5886.51	7.38	2737.02	3.43			9508.1	11.92

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
ANDAMAN & NICOBAR ISLANDS												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	N & M Andaman	580.4	580.4	100								
2	Nicobar	1224.43	1224.43	100								
3	South Andaman	315.24	315.24	100								
	Total	2120.07	2120.07	100								

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
CHANDIGARH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Chandigarh	114			114	100						
	Total	114			114	100						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
DADRA & NAGAR HAVELI												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Dadra Nagar Haveli	416							416	100		
	Total	416							416	100		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
DAMAN & DIU												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Daman	70.9							70.9	100		
2	Diu	40							40	100		
	Total	110.9							110.9	100		

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
JAMMU & KASHMIR												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Bandipora	33.28	33.28	100								
2	Ganderbal	24	24	100								
3	Doda	22.45	22.45	100								
4	Anantnag	657.11	657.11	100								
5	Ramban	18.31	18.31	100								
6	Srinagar Urban	875			875	100						
7	Budgam	580	580	100								
8	Jammu	1652.11	1652.11	100								
9	Pulwama	575	575	100								
10	Reasi	70	70	100								
11	Samba	447.89	447.89	100								
12	Kathua	775	775	100								
13	Kishtwar	20	20	100								
14	Kulgam	144	144	100								
15	Kupwara	600	600	100								
16	Poonch	242.63	242.63	100								
17	Udhampur	218.47	218.47	100								
18	Rajouri	350	350	100								
19	Shopian	234	234	100								
20	Baramulla	1125	1125	100								
	Total	8664.25	7789.25	89.9	875	10.1						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
LADAKH												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Leh	714	383	53.64	331	46.36						
2	Kargil	249	249	100								
	Total	963	632	65.63	331	34.37						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
LAKSHADWEEP												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Lakshadweep	26.21	19.87	75.81	6.34	24						
	Total	26.21	19.87	75.81	6.34	24						

DYNAMIC GROUND WATER RESOURCES OF INDIA, 2023												
PUDUCHERRY												
S.No	Name of District	Total Recharge Worthy Area of Assessed Units (in sq.km)	Safe		Semi-Critical		Critical		Over-Exploited		Saline	
			Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%	Recharge Worthy Area of Assessed Units (in sq.km)	%
1	Puducherry	322	9	2.80	252.35	78.37			40.65	12.62	20.00	6.21
2	Karaikal	161	161	100								
	Total	483	170	35.20	252.35	52.25			40.65	8.42	20.00	4.14

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Annexure - IV(A)

**State-wise Categorization of Blocks/ Mandals/ Taluks in India
(as in 2023)**

CATEGORIZATION of ASSESSMENT UNITS, 2023							
ANDHRA PRADESH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Ananthapuramu	1	Narpala				
2	Annamayya	1	Chitvel				
		2	Chinnamandem				
3	Chittoor	1	Pedda Panjani				
		2	Rama Kuppam				
		3	Venkataqiri Kota				
		4	Thavanampalle				
		5	Gudi Palle				
		6	Nindra				
		7	Puthalapattu				
4	East Godavari	1	Nallajerla				
5	Palnadu			1	Bollapalle	1	Veldurthi
6	Prakasam	1	Pullalacheruvu			1	Racherla
		2	Giddaluru			2	Pedaaraveedu
						3	Cumbum
7	Sri Sathya Sai	1	Gudibanda	1	Aqali	1	Tanakal
		2	Nallacheruvu			2	Hindupur
		3	Amadagur			3	Rolla
						4	Gandlapenta
8	Srikakulam	1	Gara	1	Laveru	1	Ranastalam
9	Y.S.R Kadapa	1	Vemula			1	Pulivendla
ABSTRACT							
Total No. of Assessed Units	Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units		
667	18		3		10		

CATEGORIZATION of ASSESSMENT UNITS, 2023							
ASSAM							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Kamrup (M) Urban	1	Kamrup (M) Urban				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
245		1		0		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
BIHAR							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Begusarai	1	Navkothi				
		2	Birpur				
		3	Khudabandpur				
		4	Bachwara				
2	Bhojpur	1	Bihiya				
		2	Shahpur				
		3	Ara Sadar				
		4	Koilwar				
3	Gaya	1	Tekari				
		2	Belagani				
		3	Khizar Sarai				
		4	Gaya Sadar				
4	Jehanabad	1	Ghoshi			1	Ratni Faridpur
		2	Modanganj			2	Kako
		3	Jehanabad				
5	Kaimur	1	Kudra				
6	Muzaffarpur	1	Gaighat	1	Minapur	1	Mushahari
		2	Kurhani				
		3	Bandra				
		4	Muraul (Dholi)				
		5	Bochahan				
		6	Sakra				
		7	Kanti				
7	Nalanda	1	Ekanqarsarai	1	Giriyak	1	Nagarnausa
		2	Hilsa				
		3	Parwalpur				
		4	Asthawan				
		5	Chandi				
		6	Karai Parsarai				
		7	Rajgir				
		8	Harnaut				
		9	Sarmera				
		10	Bind				
8	Nawada	1	Hisua				
		2	Narhat				
		3	Meskaur				
		4	Akbarpur				
		5	Nardiganj				
9	Patna	1	Phulwari Sharif	1	Sampatchak	1	Patna Urban
		2	Masaurhi				
		3	Athmalgola				
		4	Dhanarua				
		5	Fatuha				
		6	Punpun				
10	Rohtas	1	Kochas				
		2	Dehri				
11	Samastipur	1	Ujvarpur	1	Dalsingsarai	1	Tajpur
		2	Sarairanjan				
		3	Bibhutipur				
		4	Vidyapatinaqar				
		5	Kalyanpur				
12	Sheikhpura			1	Barbigaha		
13	Vaishali	1	Mahnar	1	Jandaha	1	Patepur
		2	Bidupur	2	Raja Pakar	2	Hajipur
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
535		53		7		8	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
CHHATISGARH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Balod	1	Balod	1	Gurur		
		2	Gunderdehi				
2	Bemetara	1	Saja	1	Nawagarh		
				2	Bemetara		
				3	Berla		
3	Bilaspur	1	Takhatpur				
		2	Belha				
4	Dhamtari	1	Dhamtari				
		2	Kurud				
5	Durg	1	Durg				
		2	Dhamdha				
6	Gariaband	1	Rajim/Fingeshwar				
7	Kabirdham	1	Pandariya				
8	Kanker	1	Charama				
9	Khairagarh-Chhuikhad	1	Khairagarh				
10	Korba	1	Katghora				
11	Mahasamund	1	Basna				
12	Raigarh	1	Tamnar				
		2	Pusaur				
13	Raipur			1	Dharsiwa		
14	Rajnandgaon	1	Rajnandgaon				
		2	Dongargaon				
		3	Dongargarh				
15	Sarangarh-Bilairagh	1	Baramkela				
16	Surajpur	1	Surajpur				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
146		22		5		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
DELHI							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Central			1	Kotwali	1	Karol Bagh
2	East			1	Gandhi Nagar		
				2	Mayur Vihar		
				3	Preet Vihar		
3	New Delhi					1	Delhi Cantonment
						2	Chanakyapuri
						3	Vasant Vihar
4	North	1	Alipur	1	Model Town	1	Narela
5	North East	1	Seelampur			1	Yamuna Vihar
						2	Karawal Nagar
6	North West	1	Saraswati Vihar				
7	Shahdara			1	Seemapuri	1	Vivek Vihar
						2	Shahdara
8	South			1	Hauz Khas	1	Mehrauli
						2	Saket
9	South East			1	Kalkaji		
				2	Defence Colony		
				3	Sarita Vihar		
10	South West			1	Dwarka	1	Kapashera
11	West	1	Punjabi Bagh	1	Patel Nagar	1	Rajouri Garden
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
34		4		12		13	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
GUJARAT							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Ahmedabad	1	Bavla	1	Mandal	1	Ahmedabad City & Das
				2	Ahmedabad Urban		
2	Amreli	1	Rajula				
3	Banaskantha	1	Palanpur			1	Dantiwada
						2	Dhanera
						3	Kankrej
						4	Lakhani
						5	Vadgam
						6	Deodar
						7	Deesa
						8	Tharad
4	Gandhinagar	1	Kalol			1	Gandhinagar
		2	Mansa			2	Dehgam
5	Kachchh			1	Mandvi	1	Bhachau
						2	Bhuj
6	Mahesana	1	Unjha	1	Mahesana	1	Vadnagar
		2	Kadi			2	Kheralu
		3	Visnagar			3	Becharaji
						4	Vijapur
						5	Jotana
						6	Satlasana
7	Narmada	1	Nandod				
8	Patan	1	Patan	1	Sidhpur	1	Sarsvati(Patan)
						2	Chanasma
9	Rajkot	1	Dhoraji	1	Jasdan		
		2	Upleta				
		3	Paddhari				
		4	Vinchchiya				
10	Sabarkantha	1	Vadali			1	Prantij
		2	Idar				
		3	Himatnagar				
11	Surat					1	Surat Urban
12	Surendranagar	1	Chuda				
13	Vadodara	1	Desar	1	Padra		
		2	Sinor	2	Vadodara		
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
252		20		8		23	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
HARYANA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Ambala	1	Ambala-II	1	Ambala-I	1	Barara
		2	Shahzadpur			2	Naraingarh
						3	Saha
2	Bhiwani					1	Loharu
						2	Kairu
						3	Tosham
						4	Behal
3	Charkhi Dadri					1	Jhoihu
						2	Badhra
4	Faridabad					1	Faridabad
						2	Tigaon
						3	Faridabad Urban
						4	Ballabgarh
5	Fatehabad			1	Bhattu Kalan	1	Fatehabad
				2	Bhuna	2	Ratia
						3	Nagpur
						4	Tohana
						5	Jakhal
6	Gurgaon					1	Farrukh Nagar
						2	Gurgaon
						3	Pataudi
						4	Sohna
						5	Gurgaon Urban
7	Hisar	1	Barwala	1	Agroha	1	Namaund
8	Jind	1	Pillukhera			1	Safidon
						2	Jind
						3	Uchana
						4	Ujhana
						5	Alewa
9	Kaithal					1	Pundri
						2	Dhand
						3	Kalayath
						4	Guhla
						5	Kaithal
						6	Rajound
						7	Siwan
10	Karnal			1	Indri	1	Nissing At Chirao
						2	Nilokheri
						3	Karnal
						4	Munak
						5	Kunjapura
						6	Assandh
						7	Gharaunda (Part)
11	Kurukshetra					1	Thanesar
						2	Babain
						3	Ladwa
						4	Ismailabad
						5	Pipli
						6	Shahbad
						7	Pehowa
12	Mahendragarh			1	Satnali	1	Kanina
				2	Nizampur	2	Nangal Chaudhry
						3	Sihma
						4	Mahendragarh
						5	Narnaul
						6	Ateli Nangal

CATEGORIZATION of ASSESSMENT UNITS, 2023							
HARYANA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
13	Mewat	1	Indri	1	Punahana	1	Taoru
						2	Ferozepur Jhirka
14	Palwal	1	Hodal	1	Hassanpur	1	Prithla
						2	Badoli
15	Panchkula			1	Raipur Rani		
16	Panipat					1	Israna
						2	Bapoli
						3	Sanauli Khurd
						4	Madlauda
						5	Panipat
						6	Samalkha
17	Rewari			1	Dahina	1	Rewari
						2	Dharuhera
						3	Bawal
						4	Nahar
						5	Jatusana
						6	Khol At Rewari
18	Sirsa	1	Baragudha			1	Odhan
						2	Nathusari Chopta
						3	Rania
						4	Sirsa
						5	Ellenabad
						6	Dabwali
19	Sonipat					1	Rai
						2	Sonipat
						3	Ganaur
						4	Mundlana
						5	Murthal
20	Yamuna Nagar	1	Khizrabad			1	Jaqadhri
		2	Chhachhrauli			2	Sadaura (Part)
						3	Bilaspur
						4	Radaur
						5	Mustafabad
ABSTRACT							
Total No. of Assessed Units	Number of Semicritical Assessment Unit		Number of Critical Assessment Unit		Number of Over Exploited Assessment Unit		
143	9		11		88		

CATEGORIZATION of ASSESSMENT UNITS, 2023							
JHARKHAND							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Bokaro					1	Bermo
2	Deoghar	1	Karon				
		2	Sarwan				
		3	Sonaraitadhi				
3	Dhanbad	1	Gobindpur	1	Topchanchi	1	Baliapur
		2	Dhanbad	2	Dhanbad Urban		
4	East Singhbhum					1	Golmuri Cum Juqsalai
						2	Jamshedpur Urban
5	Garhwa	1	Bhawanathpur				
6	Giridih	1	Giridih				
7	Hazaribagh	1	Daru				
8	Koderma	1	Koderma	1	Jainagar		
9	Ramgarh			1	Ramgarh	1	Chitarpur
10	Ranchi	1	Khelari	1	Silli		
		2	Ormanjhi	2	Ranchi Urban		
ABSTRACT							
Total No. of Assessed Units	Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units		
263	11		6		5		

CATEGORIZATION of ASSESSMENT UNITS, 2023							
KARNATAKA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Bagalkot	1	Guledagudda	1	Badami	1	Bagalkote
		2	Mudhol				
		3	Hungund				
		4	Ilkal				
		5	Rabakavi Banahatti				
2	Belagavi	1	Athani	1	Kagavada	1	Bailhongal
		2	Yaragatti				
		3	Chikkodi				
		4	Gokak				
		5	Hukkeri				
3	Bengaluru (Rural)					1	Nelamangala
						2	Doddaballapura
						3	Devanahalli
						4	Hoskote
4	Bengaluru (Urban)					1	Bangalore City
						2	Anekal
						3	Yelahanka
						4	Bangalore-East
						5	Bangalore (North)
						6	Bangalore-South
5	Bidar	1	Bhalki				
		2	Hulasuru				
6	Chamarajanagara	1	Kollegala	1	Chamarajanagara	1	Gundlupet
		2	Kollegala(Hanur)				
		3	Yalandur				
7	Chikkaballapura					1	Shidlagatta
						2	Chinthamani
						3	Bagepalli
						4	Chikballapur
						5	Gudibande
						6	Gauribidanur
8	Chikkamagaluru					1	Ajjampura
						2	Kadur
9	Chitradurga					1	Challakere
						2	Hosadurga
						3	Chitradurga
						4	Holalkere
						5	Hiriyur
10	Davanagere			1	Davanagere	1	Channagiri
						2	Jagaluru
11	Gadag	1	Gadag	1	Rona	1	Gajendraquad
		2	Mundargi				
12	Hassan			1	Channarayapatna	1	Arsikere
13	Haveri	1	Hirekerur				
		2	Byadagi				
		3	Rattehalli				
14	Kalburgi	1	Afzalpur				

CATEGORIZATION of ASSESSMENT UNITS, 2023							
KARNATAKA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
15	Kolar					1	Kolar
						2	K.G.F
						3	Malur
						4	Srinivaspura
						5	Bangarpet
						6	Mulabagilu
16	Koppal	1	Yelburga	1	Kukanuru		
		2	Kanakagiri				
17	Mandya	1	Malavalli				
18	Raichur	1	Sirivara				
19	Ramanagara	1	Channapatna	1	Maqadi	1	Harohalli
		2	Kanakpura	2	Ramanagar		
20	Tumakuru	1	Pavaqada	1	Koratagere	1	Madhugiri
						2	Sira
						3	Chiknayakanahalli
						4	Tiptur
						5	Tumkur
21	Vijayanagara	1	Hadaqali	1	Harapanahalli	1	Hagaribommanahalli
						2	Kotturu
22	Vijayapura	1	Nidagundi				
23	Yadgir	1	Gurumithakala				
		2	Yadgir				
ABSTRACT							
Total No. of Assessed Units	Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units		
234	32		12		44		

CATEGORIZATION of ASSESSMENT UNITS, 2023							
KERALA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Idukki	1	Kattappana				
		2	Nedumkandam				
2	Kannur	1	Thalassery				
		2	Kannur				
		3	Panur				
3	Kasargod	1	Manjeswar	1	Kasaraqod		
4	Kollam	1	Mukhathala				
		2	Sasthamkotta				
5	Kozhikkode	1	Kozhikode				
		2	Kunnamangalam				
		3	Ballussery				
6	Malappuram	1	Kondotty				
		2	Mankada				
		3	Malappuram				
		4	Tirur				
		5	Thriurangadi				
		6	Kuttippuram				
		7	Thanur				
		8	Vengara				
7	Palakkad	1	Pattambi	1	Chittur		
		2	Thrithala	2	Malampuzha		
8	Thiruvananthapuram	1	Varkala				
		2	Nedumangad				
		3	Athiyannur				
		4	Pothencode				
		5	Parassala				
		6	Chirayinkil				
9	Thrissur	1	Chowannur				
		2	Mathilakom				
		3	Thalikkulam				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
152		30		3		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023								
MADHYA PRADESH								
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units	
1	Agar Malwa	1	Badod			1	Nalkheda	
						2	Susner	
2	Anuppur	1	Kotma					
3	Ashoknagar	1	Isagarh					
			2	Chanderi				
4	Barwani	1	Rajpur			1	Pansemal	
5	Betul	1	Betul					
			2	Multai				
6	Bhopal	1	Berasia					
			2	Bhopal Urban				
			3	Phanda				
7	Burhanpur	1	Burhanpur					
8	Chhatarpur	1	Buxwaha					
			2	Chhatarpur				
			3	Bijawar				
			4	Nowgaon				
9	Chhindwara	1	Mohkheda	1	Chhindwara			
			2	Pandhurna				
10	Damoh	1	Patharia					
11	Dewas	1	Khategaon			1	Sonkutch	
						2	Dewas	
12	Dhar			1	Tirfa	1	Nalchha	
						2	Dhar	
						3	Badnawar	
13	Gwalior	1	Gwalior Urban					
14	Hoshangabad	1	Bankhedi					
15	Indore	1	Mhow	1	Indore Urban	1	Depalpur	
						2	Indore	
						3	Sawer	
16	Jabalpur	1	Jabalpur Urban					
17	Jhabua	1	Jhabua					
18	Khandwa	1	Chhegaon Makhan					
19	Khargone	1	Khargone					
20	Mandsaur	1	Malhargarh			1	Mandsaur	
			2	Bhanpura			2	Sitamau
			3	Garoth				

CATEGORIZATION of ASSESSMENT UNITS, 2023							
MADHYA PRADESH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
21	Narsinghpur	1	Narsinghpur				
22	Neemuch	1	Manasa			1	Neemuch
						2	Jawad
23	Niwari	1	Niwari				
24	Raisen	1	Obedullaganj				
25	Rajgarh	1	Rajgarh	1	Narsinghgarh	1	Sarangpur
		2	Biaora				
		3	Jirapur				
		4	Khilchipur				
26	Ratlam	1	Sailana			1	Alot
		2	Bajna			2	Ratlam
						3	Piploda
						4	Jaora
27	Rewa	1	Mauganj				
28	Satna	1	Rampur-Baghelan				
		2	Maihar				
		3	Amarpatan				
		4	Sohawal				
29	Sehore			1	Ashta		
30	Shajapur	1	Shajapur			1	Kalapipal
						2	Moman Badodiya
						3	Shujalpur
31	Sheopur	1	Vijaypur				
32	Shivpuri	1	Badarwas				
		2	Kolaras				
		3	Pichhore				
		4	Khaniyadhana				
		5	Narwar				
33	Tikamgarh	1	Palera				
		2	Baldeogarh				
		3	Jatara				
		4	Tikamgarh				
34	Ujjain	1	Tarana			1	Ghatia
		2	Mahidpur			2	Badnagar
		3	Khchrod			3	Ujjain
35	Vidisha	1	Gyaraspur				
		2	Kurwai				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
317		60		5		26	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
MAHARASHTRA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Ahmednagar	1	Akola	1	Sangamner	1	Rhata
		2	Newasa	2	Kopargaon		
		3	Shevgaon	3	Shrirampur		
		4	Shrigonda	4	Rahuri		
		5	Pathardi				
2	Akola	1	Barsi Takli				
3	Amravati	1	Amravati	1	Achlapur	1	Chandur Bazar
		2	Dhamangaon Railway			2	Warud
		3	Nandgaon			3	Morshi
4	Aurangabad	1	Gangapur				
		2	Fulambre				
		3	Aurangabad				
		4	Paithan				
		5	Vaijapur				
		6	Sillod				
		7	Khuldabad				
5	Buldhana	1	Nandura			1	Jalgaon
		2	Buldhana			2	Sangrampur
		3	Chikhali				
		4	Malakapur				
		5	Deulgaon Raja				
		6	Motala				
		7	Sinkhedraja				
6	Jalgaon	1	Bhadgaon			1	Yawal
		2	Pachora			2	Raver
		3	Chalisgaon				
		4	Amalner				
		5	Parola				
		6	Bodwad				
		7	Bhusawal				
		8	Chopda				
		9	Muktainagar				
		10	Jamner				
7	Latur	1	Latur				
8	Nagpur	1	Katol				
9	Nashik	1	Baglan Satana	1	Niphad		
		2	Chandwad	2	Deola		
		3	Yeola	3	Sinnar		
10	Osmanabad	1	Osmanabad				
		2	Kalamb				
11	Pune	1	Khed	1	Shirur		
		2	Indapur				
		3	Purandhar				
		4	Ambegaon				
		5	Junnar				
		6	Baramati				
		7	Daund				
12	Sangli	1	Kavathe Mahankal				
13	Satara	1	Khatav				
		2	Man				
14	Solapur	1	Madha			1	Malshiras
		2	Mangalwedha				
		3	Barshi				
		4	Sangola				
		5	Pandharpur				
		6	Karmala				
		7	Mohol				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
353		57		9		9	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
ODISHA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Angul	1	Talcher				
2	Balasore	1	Baliapal				
3	Jajpur	1	Korei				
4	Jharsuguda	1	Jharsuguda				
5	Khurda	1	Bologarh				
		2	Khurda				
		3	Bhubaneswar				
6	Nayagarh	1	Nayagarh				
7	Nuapada	1	Nuapada				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
314		9		0		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
PUNJAB							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Amritsar					1	Tarsikka
						2	Attari
						3	Rayya
						4	Majitha
						5	Chogawan
						6	Jandiala Guru
						7	Verka
						8	Amritsar Urban
						9	Harsha Chhina
						10	Ainala
2	Barnala					1	Sehna
						2	Barnala
						3	Mahal Kalan
3	Bathinda	1	Rampura	1	Bathinda	1	Goniana Mandi
						2	Maur
						3	Nathana
						4	Phul
						5	Bhagta Bhai Ka
4	Faridkot					1	Kot Kapura
						2	Faridkot
						3	Jaicon
5	Fatehgarh Sahib					1	Khamanon
						2	Sirhind
						3	Amloh
						4	Khera
						5	Bassi Pathanan
6	Fazilka	1	Arniwala Sheikh Subanpur			1	Jalalabad
7	Ferozpur	1	Guruhar Sahai Makhu			1	Mamdota
						2	Ferozpur
						3	Zira
						4	Ghall Khurd
8	Gurdaspur	1	Doranjala			1	Kahnuwan
						2	Kalanaur
						3	Sri Hargobindpur
						4	Dhariwal
						5	Fatehgarh Churian
						6	Gurdaspur
						7	Batala
						8	Dera Baba Nanak
						9	Qadian
9	Hoshiarpur	1	Bhunga Hajipur Hoshiarpur-2			1	Garh Shankar
						2	Hoshiarpur-1
						3	Dasuya
						4	Mahilpur
						5	Tanda
						6	Mukerian
10	Jalandhar					1	Lohian
						2	Nur Mahal
						3	Bhogpur
						4	Jalandhar East
						5	Jalandhar West
						6	Rurka Kalan
						7	Jalandhar City
						8	Phillaur
						9	Nakodar
						10	Mehatpur
						11	Adampur
						12	Shahkot
11	Kapurthala					1	Phagwara
						2	Dhilwan
						3	Kapurthala
						4	Nadala
						5	Sultanpur Lodhi
12	Ludhiana					1	Raikot
						2	Pakhowal
						3	Dehlon
						4	Samrala
						5	Machhiwara
						6	Ludhiana-2
						7	Jagraon
						8	Sudhar
						9	Ludhiana-1
						10	Sidhwan Bet
						11	Maloud
						12	Khanna
						13	Ludhiana City
						14	Doraha
13	Malerkotla					1	Malerkotla-1
						2	Malerkotla-2

CATEGORIZATION of ASSESSMENT UNITS, 2023							
PUNJAB							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
14	Mansa	1	Budhlada			1	Bhikhi
						2	Mansa
15	Moga					1	Nihal Singh Wala
						2	Moga-1
						3	Kot Ise Khan At Dharamkot
						4	Moga-2
						5	Bagha Purana
16	Pathankot	1	Narot Jaimal Singh				
		2	Bamial				
17	Patiala					1	Nabha
						2	Ghanaur
						3	Patiala
						4	Shambu Kalan
						5	Sanaur
						6	Rajpura
						7	Patran
						8	Bhunarheri
						9	Samana
18	Rupnagar	1	Anandpur Sahib			1	Morinda
						2	Chamkaur Sahib
19	SAS Nagar	1	Majri	1	Kharar	1	Derabassi
20	SBS Nagar			1	Balachaur	1	Aur
						2	Banga
						3	Nawan Shahr
21	Sangrur					1	Sangrur
						2	Lehra Gaga
						3	Andana
						4	Bhawaniharh
						5	Dhuri
						6	Dirba
						7	Sunam
						8	Sher Pur
22	Tarn Taran					1	Tarn Taran
						2	Gandiwind Tatla
						3	Naushera Pannuan
						4	Chohla Sahib
						5	Khadur Sahib
						6	Valtoha
						7	Bhikhiwind
						8	Patti
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Unit		Number of Critical Assessment Unit		Number of Over Exploited Assessment Unit	
153		13		3		117	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
RAJASTHAN							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Ajmer					1	Ajmer Urban
						2	Masooda
						3	Sarwar
						4	Kekri
						5	Shrinagar Rural
						6	Kishangarh
						7	Arain
						8	Jawaja
						9	Peesangan Rural
						10	Bhinay
2	Alwar					1	Rajgarh
						2	Tijara
						3	Kathumar
						4	Mandawar
						5	Umren
						6	Bansur
						7	Behror
						8	Laxmangarh
						9	Neemrana
						10	Kishangarh Bas
						11	Kotkasim
						12	Ramgarh
						13	Reni
						14	Thanagazi
3	Banswara	1	Anandpuri				
		2	Gangar Talai				
		3	Garhi				
		4	Kushalgarh				
		5	Bagidora				
4	Baran	1	Antah	1	Shahbad	1	Baran
				2	Kishanganj	2	Chhipabarod
						3	Chhabra
						4	Atru
5	Barmer	1	Patodi			1	Sheo
		2	Kalyanpur			2	Barmer
						3	Gadraroad
						4	Gudhamalani
						5	Samdari
						6	Dhanaoo
						7	Serwa
						8	Baytoo
						9	Siwana
						10	Dhorimanna
						11	Gira
						12	Balotra
						13	Sindhari
						14	Ramsar
6	Bharatpur					1	Rupbas
						2	Nadbai
						3	Kaman
						4	Sewar
						5	Deeg
						6	Kumher
						7	Nagar
						8	Pahari
						9	Weir
						10	Bayana
7	Bhilwara					1	Banera
						2	Hurda
						3	Bijolijan
						4	Kotri
						5	Suwana
						6	Asind
						7	Shahpura
						8	Rajpur
						9	Mandal
						10	Jahazpur
						11	Mandalgarh
						12	Sahara
8	Bikaner	1	Panchoo			1	Dungargarh
						2	Nokha
						3	Bikaner Rural

CATEGORIZATION of ASSESSMENT UNITS, 2023							
RAJASTHAN							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
9	Bundi	1	Keshorai Patan			1	Bundi
						2	Nainwa
						3	Hindoli
10	Chittaurgarh					1	Bhainsrorgarh
						2	Bhopalsagar
						3	Bhadesar
						4	Gangrar
						5	Begun
						6	Kapasan
						7	Nimbahera
						8	Bari Sadri
						9	Chittaurgarh
						10	Rashmi
						11	Dungla
11	Churu					1	Churu
						2	Bidasar
						3	Sujangarh
						4	Rajgarh
						5	Ratangarh
12	Dausa					1	Sikrai
						2	Lalsot
						3	Lawan
						4	Bandikui
						5	Dausa
						6	Mahwa
13	Dhaulpur					1	Saipu
						2	Bari
						3	Rajakhera
						4	Baseri
						5	Dhaulpur
14	Dungarpur	1	Sagwara				
		2	Dovra				
15	Hanumangarh	1	Pilibanga				
16	Jaipur					1	Phagi
						2	Jaisoo
						3	Govindgarh
						4	Sanganer Rural
						5	Jhotwara Rural
						6	Kotputli
						7	Amber Rural
						8	Bassi
						9	Jamwa Ramgarh
						10	Sambhar
						11	Chaksu
						12	Viratnagar
						13	Shahpura
						14	Dudu
						15	Jaipur Urban
						16	Pacta
17	Jaisalmer					1	Sankra
						2	Jaisalmer Urban
						3	Sam
						4	Jaisalmer Rural
18	Jalor			1	Chitalwana	1	Sanchore
						2	Savla
						3	Bhinmal
						4	Raniwara
						5	Ahore
						6	Jaswantpura
						7	Jalore
19	Jhalawar			1	Aklera	1	Manohar Thana
				2	Bhawani Mandi	2	Jhalrapatan
						3	Khanpur
						4	Dag
						5	Bakani

CATEGORIZATION of ASSESSMENT UNITS, 2023							
RAJASTHAN							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
20	Jhunjhunu					1	Udaipurwati
						2	Surajgarh
						3	Chirawa
						4	Khetri
						5	Jhunjhunun
						6	Alsisar
						7	Buhana
						8	Nawalgarh
21	Jodhpur	1	Luni	1	Bap	1	Shekhala
						2	Tiwari
						3	Balesar
						4	Phalodi
						5	Jodhpur Urban
						6	Shergarh
						7	Dechoo
						8	Osian
						9	Bapini
						10	Bhopalgarh
						11	Lohawat
						12	Mandor Rural
						13	Baori
						14	Bilara
						15	Pipar City
22	Karauli	1	Nadoti			1	Mandrail
						2	Sapotra
						3	Todabhim
						4	Karauli
						5	Hindaun
23	Kota	1	Itawa			1	Khairabad
		2	Sultanpur			2	Sangod
						3	Kota Urban
						4	Ladpura Rural
24	Nagaur			1	Makrana	1	Ladnu
						2	Kheenvsar
						3	Molasar
						4	Dezana
						5	Didwana
						6	Riyan Bari
						7	Merta
						8	Jayal
						9	Nawa
						10	Parbatsar
						11	Nagaur
						12	Kuchaman City
						13	Mundwa

CATEGORIZATION of ASSESSMENT UNITS, 2023							
RAJASTHAN							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
25	Pali	1	Pali			1	Rani Station
						2	Sumerpur
						3	Bali
						4	Raipur
						5	Sojat
						6	Kharchi (Marwar Junction)
						7	Desuri
						8	Jaitaran
26	Pratapgarh			1	Dhariawad	1	Pratapgarh
						2	Chhoti Sadri
						3	Amod
27	Rajsamand			1	Khamnor	1	Deogarh
				2	Kumbhalgarh	2	Railmagra
						3	Bhim
						4	Rajsamand
						5	Amet
28	Sawai Madhopur					1	Gangapur
						2	Sawai Madhopur
						3	Chauth Ka Barwara
						4	Khandar
						5	Bonli
						6	Bamanwas
29	Sikar	1	Fatehpur			1	Neem Ka Thana
						2	Dhond
						3	Khandela
						4	Srimadhapur
						5	Lachhmanagarh
						6	Patan
						7	Piprali
						8	Danta Ramgarh
30	Sirohi	1	Pindwara	1	Sirohi	1	Abu Road
						2	Reodar
						3	Sheoganj
31	Tonk	1	Deoli	1	Tonk	1	Uniara
						2	Malpura
						3	Niwai
32	Udaipur	1	Jhalara	1	Girwa Rural	1	Kotra
				2	Bhindar	2	Mavli
				3	Phalasiya	3	Kherwara
				4	Salumbar	4	Rishabhdev
				5	Udaipur Urban	5	Bargaon
				6	Gogunda	6	Lasadiya
				7	Kurawar		
				8	Semari		
				9	Jhadol		
				10	Sarada		
				11	Sayra		
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
302		22		23		216	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
TAMIL NADU							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Ariyalur	1	Andimadam				
2	Chengalpattu	1	Chengalpattu				
		2	Thirukkalukundram				
		3	Madhurantakam				
3	Chennai	1	Alandur			1	Perambur
						2	Guindy
						3	Ambattur
						4	Velacheri
						5	Purasaivakkam
						6	Thiruvottivur
						7	Egmore
						8	Tondiarpet
						9	Mambalam
						10	Mylapore
						11	Aminjikarai
						12	Ayanavaram
						13	Maduravoyal
4	Coimbatore	1	Madukarai	1	Pollachi	1	Annur
				2	Sulur	2	Coimbatore North
						3	Coimbatore South
						4	Kinathukadavu
						5	Mettupalayam
						6	Perur
						7	Valparai
5	Cuddalore			1	Cuddalore	1	Vridhachalam
				2	Veppur	2	Titagudi
						3	Panrutti
6	Dharmapuri	1	Dharmapuri	1	Pennagaram	1	Pappireddipatti
						2	Karimangalam
						3	Palacode
						4	Nallampalli
7	Dindigul			1	Palani	1	Dindigul West
						2	Athoor
						3	Dindigul East
						4	Gujilamparai
						5	Nilakottai
						6	Oddenchatram
						7	Vedasandur
8	Erode	1	Erode	1	Anthiyur	1	Sathyamangalam
		2	Modakurichi			2	Nambiyur
		3	Kodumudi			3	Perundurai
		4	Thalavadi				
9	Kallakurichchi	1	Ulundurpet	1	Chinna Selam		
				2	Kallakurichchi		
10	Kancheepuram	1	Uthiramerur				
11	Karur	1	Kulithalai	1	Krishnarayapuram	1	Manmangalam
				2	Aravakurichi	2	Kadavur
						3	Karur
						4	Pugalur
12	Krishnagiri	1	Hosur	1	Pochampalli	1	Uthangarai
				2	Bargur	2	Krishnagiri
13	Madurai	1	Peraiyur	1	Madurai West		
		2	Tirumangalam				
		3	Usilampatti				
14	Mayiladuthurai					1	Mayiladuthurai
						2	Tharangambadi
						3	Kuthalam
						4	Sirkazhi
15	Namakkal	1	Kumarapalayam			1	Mohanur
						2	Namakkal
						3	Paramathi Velur
						4	Rasipuram
						5	Sendamangalam
						6	Tiruchengode
16	Perambalur					1	Alathur
						2	Perambalur
						3	Veppanthattai
17	Pudukkottai	1	Pudukkottai				
		2	Viralimalai				
		3	Ponnamaravathi				

CATEGORIZATION of ASSESSMENT UNITS, 2023								
TAMIL NADU								
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units	
18	Ranipet	1	Arakkonam	1	Walajapet	1	Arcot	
		2	Kalavai					
		3	Nemili					
		4	Sholingur					
19	Salem			1	Omalar	1	Valapady	
						2	Attur	
						3	Kadayampatti	
						4	Salem South	
						5	Edappady	
						6	Gangavalli	
						7	Mettur	
						8	Peddanayakkanpalayam	
						9	Salem	
						10	Salem West	
						11	Sankari	
						12	Thalaivasal	
20	Tenkasi	1	Alangulam			1	Sankarankovil	
		2	Kadayanallur				2	Thiruvengadam
		3	Virakeralampudur					
21	Thanjavur	1	Budalur	1	Orathanadu	1	Thiruvaiyaru	
				2	Thanjavur	2	Kumbakonam	
				3	Peravurani	3	Papanasam	
				4	Pattukkottai	4	Thiruvidaimarudhur	
22	Theni	1	Periyakulam	1	Aundipatti			
		2	Uthamapalayam					
23	Thiruvarur					1	Valangaiman	
						2	Kudavasal	
						3	Nannilam	
24	Thoothukudi	1	Sattankulam					
25	Tiruchirappalli	1	Mannachanallur			1	Manapparai	
						2	Marungapuri	
						3	Musiri	
						4	Thuraiyur	
26	Tirunelveli	1	Manur			1	Ambur	
		2	Tisaiyanvilai			2	Tirupattur	
						3	Vaniyambadi	
						4	Natrampalli	
27	Tiruppur	1	Tiruppur North	1	Avinashi	1	Uthukkuli	
		2	Dharapuram	2	Kangeyam	2	Palladam	
		3	Madathukkulam			3	Tiruppur South	
		4	Udumalpet					
28	Tiruvallur	1	Avadi					
		2	Rk Pettai					
29	Tiruvannamalai	1	Tiruvannamalai	1	Kilpennathur	1	Chengam	
		2	Ami	2	Vandavasi	2	Thandrapet	
		3	Chetpet					
		4	Jamunamarathur					
		5	Kalasapakkam					
		6	Polur					
30	Vellore	1	Katpadi			1	Anakkattu	
						2	Gudiyattam	
						3	K V Kuppam	
						4	Pernambut	
						5	Vellore	
31	Villupuram	1	Villupuram	1	Marakkanam	1	Tiruvannainallur	
		2	Vanur			2	Gingee	
						3	Melmalaianaur	
						4	Vikkiravandi	
32	Virudhunagar	1	Srivilliputhur	1	Vembakottai			
		2	Rajapalayam					
		3	Sivakasi					
		4	Varattiraviruppu					
		5	Virudhunagar					
ABSTRACT								
Total No. of Assessed Units		Number of Semicritical Assessment Unit		Number of Critical Assessment Unit		Number of Over Exploited Assessment Unit		
313		56		27		100		
<p>Note:- In Tamil Nadu State the Ground Water Resources are assessed Firka wise and for the 2023 Ground Water Resource Assessment, 1202 Firkas were assessed. For Uniformity in National Report the groundwater resources of the Firkas falling in a Taluka have been added to calculate the groundwater resources for the respective Talukas</p>								

CATEGORIZATION of ASSESSMENT UNITS, 2023							
TELANGANA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Adilabad			1	Mavala	1	Adilabad Urban
2	Bhadradi Kothagudem	1	Sujathanagar				
		2	Chunchupally				
		3	Dammapeta				
3	Hanumakonda	1	Velair	1	Bheemadevarapalle		
		2	Dharmasagar				
		3	Inole				
		4	Khazipet				
4	Hyderabad	1	Tirumalgiri	1	Amberpet	1	Charminar
		2	Bandlaguda	2	Maredpally	2	Golkonda
		3	Bahadurpura	3	Nampally	3	Asifnagar
		4	Musheerabad	4	Khairatabad	4	Saidabad
				5	Shaikpet	5	Ammerpet
				6	Secunderabad	6	Himayatnagar
5	Jagtial	1	Bheemaram				
		2	Kathlapur				
6	Jangaon	1	Jangaon				
7	Jogulamba Gadwal	1	Kaloor Timmanadoddi				
8	Kamareddy	1	Kamareddy				
		2	Bibipet				
		3	Palvancha				
		4	Domakonda				
9	Karimnagar	1	Ramadugu				
10	Khammam	1	Raghunadhapalem				
11	Mahabubabad	1	Danthalapalle				
12	Mahabubnagar	1	Hanwada				
		2	Balanagar				
13	Medak	1	Tupran				
		2	Manoharabad				
		3	Narsapur				
14	Medchal Malkajgiri	1	Kukatpally			1	Balanagar
		2	Muduchinthalapally			2	Quthbullapur
						3	Bachpalle
15	Nagarkurnool	1	Veldanda				
16	Nalgonda	1	Nalgonda				
		2	Chityala				
		3	Munugode				
		4	Marriguda				
		5	Chandur				
		6	Chinthapalle				
		7	Nampalle				

CATEGORIZATION of ASSESSMENT UNITS, 2023							
TELANGANA							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
17	Nizamabad	1	Sirkonda			1	Nizamabad South
		2	Aloor				
		3	Rudrur				
		4	Jakranpalle				
		5	Bheemgal				
		6	Amur				
18	Rajanna Siricilla	1	Konaraopeta				
		2	Rudrangi				
		3	Chandurthi				
19	Rangareddy	1	Chowdergudem				
		2	Kondurg				
		3	Serilingampally				
		4	Rajendranagar				
20	Sangareddy	1	Kandi	1	Patancheruvu		
		2	Sangareddy				
		3	Ameenapur				
		4	Zahirabad				
21	Siddipet	1	Kondapak	1	Dubbak		
		2	Narayanraopet				
		3	Komaravelly				
		4	Koheda				
		5	Mirdoddi				
		6	Wargal				
22	Yadadri Bhuvanagiri	1	Alair				
ABSTRACT							
Total No. of Assessed Units	Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units		
612	61		10		11		

CATEGORIZATION of ASSESSMENT UNITS, 2023							
UTTAR PRADESH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Agra	1	Pinahat	1	Bah	1	Agra City
		2	Achhnera			2	Etmadpur
		3	Kheragarh			3	Fatehabad
		4	Jaqner			4	Bichpuri
		5	Jaitpur Kalan			5	Khandauli
						6	Saiyana
						7	Fatehpur Sikri
						8	Barauli Ahir
						9	Akola
						10	Shamsabad
2	Aligarh	1	Gonda	1	Iglas	1	Aligarh City
		2	Khair				
		3	Lodha				
		4	Chandaus				
		5	Gangiri				
		6	Jawa Sikandairpur				
3	Ambedkar Nagar	1	Jalalpur				
4	Amethi	1	Sangrampur				
5	Amroha	1	Gangeshwari	1	Dhanaura	1	Joya
		2	Amroha	2	Gajraula		
		3	Hasanpur				
6	Bagpat	1	Baghpat			1	Pilana
		2	Baraut			2	Binauli
		3	Chhaprauli			3	Khekra
7	Banda	1	Bareru				
		2	Tindwari				
		3	Naraini				
		4	Jaspura				
8	Bareilly	1	Alampur Jafarabad			1	Bareilly City
		2	Ramnagar				
		3	Majhgawa				
		4	Fatehgani				
9	Bijnor	1	Seohara (Budhanpur)	1	Jaleelpur		
		2	Kotwali				
		3	Nehtaur (Aaku)				
		4	Noorpur				
10	Budaun	1	Sahaswan	1	Asafpur	1	Ambiapur
		2	Quadar Chowk	2	Bisauli	2	Islamnagar
		3	Jagat				
		4	Samrer				
		5	Miaon				
		6	Ujhani				
11	Bulandshahar	1	Pahasu	1	Arnia Khurd	1	Sikandrabad
		2	Debai	2	Khurja	2	Bulandshahar
		3	Anup Shahar	3	Shikarpur	3	Siana
		4	Jahangirabad	4	Unchagaon	4	Gulaothi
		5	Lakhaothi			5	Bhawan Bahadur Nagar
					6	Danpur	
12	Chitrakoot	1	Ramnagar	1	Karwi		
		2	Pahari				
		3	Mau				
13	Etah	1	Nidhauri Kalan				
		2	Aliganj				
		3	Jalesar				
		4	Jaithara				
		5	Shitalpur				
14	Farrukhabad	1	Mohamadabad				
		2	Barhpur				
		3	Nawabganj				
		4	Kamalganj				
15	Fatehpur	1	Telyani			1	Bhitaura
		2	Khajuiha				
		3	Malawan				
		4	Airaya				
		5	Arnauli				
16	Firozabad	1	Madanpur	1	Aron	1	Firozabad
		2	Eka			2	Shikohabad
		3	Jasrana			3	Khairgarh(Hathwant)
						4	Narkhi
						5	Tundla
17	G.B.Nagar	1	Dadri	1	Jewar	1	Bisrakh

CATEGORIZATION of ASSESSMENT UNITS, 2023							
UTTAR PRADESH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
18	Ghaziabad	1	Muradnagar			1	Ghaziabad City
						2	Bhojpur
						3	Razapur
						4	Loni
19	Ghaziipur	1	Saidpur				
20	Hamirpur	1	Sumerpur				
		2	Gohand				
21	Hapur	1	Dholana	1	Simbholi	1	Garh
				2	Hapur		
22	Hathras	1	Sikandra Rao	1	Hathras	1	Sahpau
		2	Sadabad			2	Mursan
						3	Sasni
23	Jaunpur	1	Kerakat	1	Badlapur		
		2	Sirkoni	2	Maharajganj		
		3	Ramnagar				
		4	Muftiganj				
		5	Karanja Kalan				
		6	Sikrara				
		7	Dharmapur				
24	Jhansi	1	Baragaon				
		2	Bangra				
		3	Babina				
		4	Mauranipur				
25	Kannauj	1	Gograpur	1	Kannauj	1	Jalalabad
		2	Chhibramau			2	Talgram
26	Kanpur Dehat	1	Akbarpur				
		2	Maitha				
		3	Jhinjhak				
		4	Sarwan Khera				
		5	Malsa				
		6	Derapur				
		7	Rasulabad				
27	Kanpur Nagar	1	Parara	1	Kanpur City		
		2	Sarsol	2	Chaubepur		
		3	Ghatampur				
		4	Bidhnu				
		5	Billhaur				
		6	Shivrajapur				
28	Kasganj	1	Ganjdundwara				
		2	Pativali				
		3	Kasganj				
29	Kaushambi	1	Manjhanpur			1	Chail
		2	Kara			2	Muratganj
		3	Sirathu				
		4	Newada				
30	Lalitpur	1	Talbehat				
		2	Birdha				
		3	Bar				
		4	Jakhora				
		5	Mahroni				
		6	Mandwara				
31	Lucknow					1	Lucknow City
32	Mahoba	1	Kabrai			1	Panwari
		2	Charkhari			2	Jaitpur
33	Mainpuri	1	Jagir			1	Barnahal
		2	Mainpuri				
34	Mathura			1	Baldeo	1	Raya
				2	Nohjhil		
35	Meerut	1	Rajpura	1	Machhra	1	Meerut City
		2	Meerut	2	Kharkhoda		
		3	Sarurpur				
		4	Hastinapur				
		5	Parichhatgarh				
		6	Mawana Kalan				
36	Mirzapur	1	City	1	Majhawan	1	Kon
		2	Chanbey				
		3	Sikhar				

CATEGORIZATION of ASSESSMENT UNITS, 2023							
UTTAR PRADESH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
37	Moradabad	1	Dilari	1	Bilari	1	Moradabad City
		2	Moradabad				
		3	Kundarki (Dengapur)				
		4	Bhaqatpur				
		5	Mundapandey				
		6	Chhajlet				
38	Muzaffarnagar	1	Shahpur	1	Charthawal	1	Bhaghara
		2	Muzaffarnagar	2	Budhana		
39	Pratapgarh	1	Lalganj	1	Shivgarh		
		2	Gaura	2	Sadar		
		3	Baba Belkhar Nath	3	Mandhata		
		4	Patti	4	Sandwa Chandika		
		5	Rampur-Sangramgarh				
		6	Lakshamanpur				
		7	Aspur Deosara				
		8	Kunda				
		9	Mangaraura				
40	Prayagraj	1	Bahadurpur	1	Chaka	1	Prayagraj City
		2	Holaqarh	2	Sahson		
		3	Saidabad				
		4	Mauaima				
		5	Phulpur				
		6	Pratappur				
		7	Shringverpur Dham				
		8	Dhanupur				
41	Rampur	1	Said Nagar				
		2	Chamrauwa				
		3	Shahabad				
		4	Saur				
		5	Milak				
42	Saharanpur	1	Deoband			1	Nakur
		2	Rampur Maniharan			2	Sarsawa
		3	Sadhuli Kadeem			3	Gangoh
		4	Ballia Kheri			4	Nagal
		5	Nanauta				
		6	Muzaffarabad				
43	Sambhal	1	Gunnaur	1	Sambhal		
		2	Janawai	2	Bahjoi		
		3	Asmoli	3	Pawansa		
				4	Baniakhera		
44	Sant Ravidas Nagar	1	Gyanpur				
		2	Deegh				
		3	Suriyawan				
		4	Abhaili				
		5	Aurai				
		6	Bhadohi				
45	Shamli	1	Thana Bhawan	1	Kairana	1	Shamli
				2	Kandhala	2	Un
46	Sonbhadra	1	Dudhi				
47	Varanasi	1	Sevapuri	1	Chirigaon	1	Varanasi City
		2	Pindra			2	Harahua
		3	Kashi Vidyapith			3	Araziline
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
836		172		43		62	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
UTTARAKHAND							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Haridwar	1	Bhagwanpur				
		2	Bahadradab				
2	Nainital	1	Haldwani				
3	Udhamsingh Nagar	1	Kashipur				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
18		4		0		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
WEST BENGAL							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Dakshin Dinajpur	1	Kushmundi				
		2	Hilli				
2	Hugli	1	Serampur Uttarpara				
		2	Balagarh				
		3	Goghat-II				
3	Malda	1	Ratua-II				
4	Murshidabad	1	Murshidabad Jiaqani	1	Raninagar-I		
		2	Ragunathganj-I				
		3	Bhagawangola-I				
		4	Nawda				
		5	Raninagar-II				
5	Nadia	1	Kaliganj	1	Ranaghat-II		
		2	Karimpur-I	2	Nakashipara		
		3	Hanskhali	3	Santipur		
		4	Haringhata	4	Krishnaganj		
		5	Nabadwip	5	Tehatta-I		
		6	Krishnanagar-II	6	Karimpur-II		
		7	Krishnanagar-I	7	Chapra		
		8	Kalyani	8	Tehatta-II		
6	North 24 Parganas	1	Habra-I	1	Basirhat-I		
		2	Gaighata	2	Bongaon		
		3	Barasat-I	3	Deganga		
		4	Bagda				
		5	Baduria				
7	Paschim Barddhaman	1	Raniganj				
8	Paschim Medinipur	1	Chandrakona-II				
		2	Kharagpur-II				
		3	Garbeta-I				
9	Purba Barddhaman	1	Burdwan-II				
		2	Memari-I				
		3	Purbasthali-II				
		4	Manteswar				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
345		32		12		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
CHANDIGARH							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Chandigarh	1	Chandigarh				
ABSTRACT							
Total No. of Assessed Units	Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units		
1	1		0		0		

CATEGORIZATION of ASSESSMENT UNITS, 2023							
DAMAN & DIU							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Daman					1	Daman
2	Diu					1	Diu
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
2		0		0		2	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
DADRA AND NAGAR HAVELI							
S.NO	Name of District	S.NO	Name of Semi-Critical Assessment Units	S.NO	Name of Critical Assessment Units	S.NO	Name of Over-Exploited Assessment Units
1	Dadra Nagar Haveli					1	DADRA NAGAR HAVELI
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
1		0		0		1	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
JAMMU AND KASHMIR							
S.NO	Name of District	S.NO	Name of Semi-Critical Assessment Units	S.NO	Name of Critical Assessment Units	S.NO	Name of Over-Exploited Assessment Units
1	Srinagar Urban	1	Srinagar Urban				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
20		1		0		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
LADAKH							
S.NO	Name of District	S.NO	Name of Semi-Critical Assessment Units	S.NO	Name of Critical Assessment Units	S.NO	Name of Over-Exploited Assessment Units
1	Leh	1	Leh				
		2	Nimoo				
		3	Thiksay				
		4	Saspol				
		5	Chuchot				
		6	Kharu				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
18		6		0		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023							
LAKSHADWEEP							
S. No	Name of District	S. No	Name of Semi-Critical Assessment Units	S. No	Name of Critical Assessment Units	S. No	Name of Over-Exploited Assessment Units
1	Lakshadweep	1	Kavaratti				
ABSTRACT							
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units	
5		1		0		0	

CATEGORIZATION of ASSESSMENT UNITS, 2023						
PUDUCHERRY						
S. No	Name of District	S. No	Name of Semi-Critical Assessment Unit	S. No	Name of Critical Assessment Unit	Name of Over-Exploited Assessment Unit
1	Puducherry	1	Ozhukarai			1
		2	Villianur			
		3	Bahour			
						PUDUCHERRY
ABSTRACT						
Total No. of Assessed Units		Number of Semicritical Assessment Units		Number of Critical Assessment Units		Number of Over Exploited Assessment Units
8		3		0		1

ANNEXURE - IV(B)
Quality Problems in Assessment Units
(as in 2023)

NOTE:

Only Assessment Units where the Quality Tag of As, F & Salinity have been reported are provided against respective districts and states.

The Assessment Units with "C", indicates the phreatic aquifer in the assessment unit is almost/ completely brackish /saline

The Quality Tag In Respect of As & F indicates Sporadic Occurrences.

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QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
ANDHRA PRADESH							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Bapatla					1	Karamchedu (C)
2	Eluru					1	Ganapavaram (C)
						2	Kaikalur (C)
						3	Kalidindi (C)
						4	Mandavalli (C)
						5	Mudinapalle (C)
						6	Nidamaru (C)
3	Guntur					1	Pedanandipadu (C)
						2	Vatticherukuru (C)
4	Kakinada					1	Karapa (C)
						2	Thallarevu (C)
5	Konaseema					1	Allavaram (C)
						2	I Polavaram (C)
						3	Katrenikona (C)
						4	Malikipuram (C)
						5	Mamidikuduru (C)
						6	Sakhinetipalle (C)
						7	Uppalaguptam (C)
6	Krishna					1	Bantumilli (C)
						2	Gudlavalleru (C)
						3	Gudur (Krishna) (C)
						4	Koduru (C)
						5	Kruthivennu (C)
						6	Machilipatnam (C)
						7	Nagavalanka (C)
						8	Nandivada (C)
						9	Pedana (C)
7	West Godavari					1	Akiveedu (C)
						2	Bheemavaram (C)
						3	Kalla (C)
						4	Moqalthur (C)
						5	Narasapuram (C)
						6	Palacole (C)
						7	Palakoderu (C)
						8	Pentapadu (C)
						9	Poduru (C)
						10	Undi (C)
						11	Veeravasaram (C)
						12	Yelamanchili (C)
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
667		0		0		39	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
ASSAM							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Cachar			1	Udarbond		
				2	Borkhola		
				3	Sonai		
				4	Katigorah		
				5	Narsingpur		
2	Hailakandi			1	Lala		
				2	Katicherra		
3	Morigaon			1	Mayang		
4	Nalbari			1	Madhupur		
				2	Tihu (Part)		
				3	Pub Nalbari		
				4	Barigaon Banbhag		
5	Karbi Anglong	1	Lumbajong				
		2	Langsomtepi				
		3	Bokajan				
		4	Howraghat				
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
245		4		12		0	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
BIHAR							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Aurangabad	1	Madanpur				
		2	Rafiqani				
		3	Kutumba				
		4	Goh				
		5	Nabinagar				
		6	Obra				
		7	Haspura				
		8	Deo				
		9	Aurangabad				
		10	Barun				
2	Banka	1	Rajoun				
		2	Barahat				
		3	Katoriya				
		4	Belhar				
		5	Shambhuganj				
		6	Amarpur				
		7	Dhoraiva				
		8	Banka				
		9	Chandan				
		10	Bounsi				
		11	Fullidumar				
3	Bequsarai			1	Navkothi		
				2	Mathani		
				3	Balia		
				4	Barauni		
				5	Sahebpur Kamal		
				6	Bachwara		
				7	Bequsarai		
4	Bhagalpur	1	Sanhoula				
		2	Kharik				
		3	Narayanpur				
		4	Naugachhia				
		5	Gauradih				
5	Bhojpur			1	Bihiya		
				2	Shahpur		
				3	Barhara		
				4	Udwanthnagar		
				5	Ara Sadar		
				6	Koilwar		
6	Buxar			1	Chakki		
				2	Brahmpur		
				3	Simri		
				4	Buxar		
7	Darbhanga			1	Biraul		
				2	Baheri		
8	Gaya	1	Tankuppa				
		2	Sherghati				
		3	Imamqani				
		4	Muhra				
		5	Barachatty				
		6	Atri				
		7	Paraiya				
		8	Neemchak Bathani				
		9	Guraru				
		10	Mohanpur				
		11	Tekari				
		12	Amas				
		13	Gurua				
		14	Manpur				
		15	Bodh Gaya				
		16	Belaqani				
		17	Khizar Sarai				
		18	Banke Bazar				
		19	Konch				
		20	Wazirganj				
		21	Gaya Sadar				
		22	Dumariva				
		23	Dobhi				
		24	Fatehpur				
9	Jamui	1	Khaira				
		2	Barhat				
		3	Sikandra				
		4	Laxmipur				
		5	Jamui				
		6	Sono				
		7	Islamnagar Aliganj				
		8	Chakai				
		9	Jhaiha				
		10	Gidhaur				

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
BIHAR							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
10	Jehanabad	1	Ratni Faridpur				
		2	Jehanabad				
		3	Hulasgunj				
11	Kaimur	1	Mohania				
		2	Chand				
		3	Nuaon				
		4	Durgawati				
		5	Kudra				
		6	Chainpur				
		7	Bhaowanpur				
		8	Ramgarh				
		9	Bhabhua				
		10	Rampur				
12	Katihar			1	Amdabad		
				2	Mansahi		
				3	Kursela		
				4	Manihari		
				5	Sarneli		
				6	Balrampur		
13	Khagaria			1	Parbatta		
				2	Goqri		
				3	Mansi		
				4	Khagaria		
14	Kishanganj			1	Bahadurganj		
				2	Kishanganj		
15	Lakhisarai	1	Ramgarh Chowk	1	Surajgarha		
				2	Lakhisarai		
				3	Piparia		
				4	Barahia		
16	Munger	1	Tetivabambar				
		2	Tarapura				
		3	Haveli Kharagpur				
		4	Asarganj				
		5	Sangrampur				
17	Nalanda	1	Noorsarai				
		2	Ekangarsarai				
		3	Islampur				
		4	Rahui				
		5	Hilsa				
		6	Biharsharif				
		7	Parwalpur				
		8	Asthawan				
		9	Chandi				
		10	Karai Parsarai				
		11	Rajgir				
		12	Harnaut				
		13	Ben				
		14	Sarmera				
		15	Silao				
		16	Bind				
		17	Nagarnausa				
		18	Giryak				
		19	Tharthari				
		20	Katrisarai				
18	Nawada	1	Warisaliganj				
		2	Nawada				
		3	Hisua				
		4	Rajauli				
		5	Kawakole				
		6	Govindpur				
		7	Roh				
		8	Pakanbarawan				
		9	Narhat				
		10	Kashchak				
		11	Meskaur				
		12	Akbarpur				
		13	Nardiganj				
		14	Sirdala				
19	Patna			1	Danapur		
				2	Barh		
				3	Maner		
				4	Bakhtiarpur		
20	Purnea			1	Purnea		
				2	Kasba		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
BIHAR							
S. No	Name of District	S. No	Name of Assessment Units	S. No	Name of Assessment Units	S. No	Name of Assessment Units
21	Rohtas	1	Karakat				
		2	Bikramgani				
		3	Sanjhauli				
		4	Kargahar				
		5	Nasrigani				
		6	Chenari				
		7	Akorhigola				
		8	Dinara				
		9	Sheosagar				
		10	Nokha				
		11	Dawath				
		12	Dehri				
22	Samastipur			1	Patori		
				2	Mohanpur		
				3	Mohiuddin Nagar		
				4	Vidyapatnagar		
23	Saran			1	Sonepur		
				2	Chapra Sadar		
				3	Dighwara		
				4	Rwlgani		
24	Sheikhpura	1	Sheikhpura				
		2	Ghat Kusumba				
		3	Chewara				
		4	Sheikhopur Sarai				
		5	Arivari				
		6	Barbigaha				
25	Vaishali			1	Sahdai		
				2	Hajipur		
				3	Desri		
				4	Raghopur		
				5	Bidupur		
ABSTRACT							
Total No. of Assessed Units	Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity		
535	131		54		0		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
CHHATISGARH							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Balrampur	1	Balrampur				
2	Gariaband	1	Chhura				
		2	Deobhog				
		3	Gariaband				
3	Gourela-Pendra-Marwahi	1	Marwahi				
4	Jashpur	1	Baqicha				
		2	Kunkuri				
		3	Pharsabaha				
5	Korea	1	Kartala				
		2	Katghora				
		3	Korba				
		4	Pali				
6	Mahasamund	1	Bagbahara				
7	Mohla-Manpur-Ambagarchowki			1	Ambagar Chowki		
8	Raigarh	1	Dharamjaigarh				
		2	Lailunga				
		3	Tamnara				
9	Sarangarh-Bilairagh	1	Sarangarh				
10	Surajpur	1	Pratappur				
		2	Premnagar				
		3	Ramanuinagar				
ABSTRACT							
Total No. of Assessed Units	Number of Assessment Unit affected by Fluoride		Number of Assessment Unit affected by Arsenic		Number of Assessment Unit affected by Salinity		
146	20		1		0		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
DELHI							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	New Delhi					1	Delhi Cantonment
						2	Vasant Vihar
2	North					1	Alipur
						2	Narela
						3	Model Town
3	North West					1	Saraswati Vihar
						2	Rohini
						3	Kanjhawala
4	South West					1	Najafgarh
						2	Kapashera
						3	Dwarka
5	West					1	Punjabi Bagh
						2	Rajouri Garden
						3	Patel Nagar
ABSTRACT							
Total No. of Assessed Units	Number of Assessment Unit affected by Fluoride		Number of Assessment Unit affected by Arsenic		Number of Assessment Unit affected by Salinity		
34	0		0		14		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
GUJARAT							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Ahmedabad	1	Bavla			1	Dhandhuka (C)
		2	Dholka			2	Dholera (C)
		3	Sanand				
2	Amreli	1	Dhari				
		2	Rajula				
3	Arvalli	1	Bayad				
		2	Bhiloda				
		3	Dhansura				
		4	Malpur				
		5	Meghrail				
		6	Modasa				
4	Banaskantha	1	Bhabhar			1	Bhabhar (C)
		2	Vav			2	Sulgam (C)
		3	Amirgadh			3	Vav (C)
		4	Dania				
		5	Dantwada				
		6	Deesa				
		7	Deodar				
		8	Dhanera				
		9	Kankrej				
		10	Lakhani				
		11	Palanpur				
		12	Tharad				
		13	Vadgam				
5	Bhavnagar	1	Mahuva				
		2	Talaja				
		3	Vallabhipur				
6	Botad	1	Barwala				
		2	Ranpur				
7	Devbhumi Dwarka	1	Kalvanpur				
		2	Okhamandal				
8	Gandhinagar	1	Mansa				
		2	Kodinar				
9	Kachchh	1	Abdasa			1	Gandhidham (C)
		2	Mundra				
		3	Nakhatrana				
10	Kheda	1	Kathlal				
11	Mahesana	1	Becharaji				
		2	Kadi				
		3	Kheralu				
		4	Mahesana				
		5	Sattasana				
		6	Unjha				
		7	Vadnagar				
		8	Vijapur				
		9	Visnagar				
12	Mahisagar	1	Santrampur				
		2	Virpur				
13	Morbi	1	Tankara			1	Maliva (C)
14	Navsari	1	Gandevi				
15	Patan	1	Harij			1	Harij (C)
		2	Sami			2	Sami (C)
		3	Chanasma			3	Santalpur (C)
		4	Patan			4	Radhanpur (C)
		5	Radhanpur			5	Sankheswar (C)
		6	Sankheswar				
16	Rajkot	1	Gondal				
17	Sabarkantha	1	Himatnagar				
		2	Idar				
		3	Khedbrahma				
		4	Talod				
		5	Vadali				
18	Surat	1	Mandvi				
		2	Palsana				
19	Surendranagar	1	Chuda				
		2	Dasada				
		3	Lakhtar				
		4	Limbd				
		5	Muji				
ABSTRACT							
Total No. of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
252		69		0		12	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
HARYANA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Bhiwani	1	Tosham			1	Siwani
						2	Bhiwani
						3	Bawani Khera
2	Charkhi Dadri					1	Baund
						2	Jhojhu
						3	Badhra
3	Faridabad	1	Ballabgarh				
4	Fatehabad	1	Fatehabad				
5	Gurgaon	1	Pataudi			1	Farrukh Nagar
6	Hisar					1	Uklana
						2	Narnaund
						3	Adampur
						4	Hansi
						5	Barwala
						6	Hisar-I
						7	Acroha
						8	Hansi-II
7	Jhajjar	1	Salhawas			1	Bahadurgarh
						2	Matannail
						3	Beri
8	Jind	1	Safidon			1	Narwana
		2	Jind				
		3	Uchana				
		4	Ujhana				
		5	Julana				
9	Kaithal	1	Raiound			1	Kalavat
						2	Guhla
						3	Kaithal
10	Mahendragarh					1	Kanina
						2	Mahendragarh
11	Mewat					1	Punahana
						2	Indri
						3	Nuh
						4	Nagina
						5	Ferozpur Jhirka
12	Palwal	1	Badoli			1	Hathin
						2	Hodal
						3	Palwal
13	Panipat	1	Madlauda	1	Israna		
		2	Panipat				
		3	Samalkha				
14	Rewari	1	Bawal	1	Rewari	1	Nahar
15	Rohtak	1	Kalanaur			1	Rohtak
		2	Lakhan Majra			2	Maham
		3	Sampla				
16	Sirsa	1	Sirsa	1	Ellenabad	1	Odhan
						2	Nathusari Chopta
						3	Rania
						4	Baragudha
						5	Dabwali
17	Sonipat	1	Gohana			1	Mundiana
						2	Kharkhoda
ABSTRACT							
Total No. of Assessed Units		Number of Assessment Unit affected by Fluoride		Number of Assessment Unit affected by Arsenic		Number of Assessment Unit affected by Salinity	
143		21		3		42	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
JHARKHAND							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Bokaro	1	Chandan Kiyari				
		2	Peterbar				
		3	Chas				
2	Dhanbad	1	Baliapur				
		2	Dhanbad				
3	Garhwa	1	Kandi				
		2	Bhandaria				
		3	Bhawanathpur				
		4	Dhurki				
		5	Rama				
		6	Maihaon				
		7	Garhwa				
		8	Dandai				
		9	China				
		10	Meral				
		11	Ramkanda				
		12	Untari				
		13	Ranka				
4	Giridih	1	Tisri				
		2	Giridih				
5	Godda	1	Pathargama				
		2	Godda				
		3	Porevahat				
		4	Mahagama				
		5	Boarjor				
6	Gumla	1	Dumri				
		2	Gumla				
		3	Ghaqhra				
7	Khunti	1	Murhu				
		2	Karra				
8	Koderma	1	Markachho				
		2	Jainagar				
		3	Chandwara				
		4	Koderma				
		5	Satgawan				
9	Pakur	1	Litipara				
		2	Amrapara				
		3	Pakuria				
10	Palamau	1	Leslieganj				
		2	Chhatarpur				
		3	Bishrampur				
		4	Hariharganj				
		5	Panki				
		6	Patan				
		7	Daltonganj				
		8	Chainpur				
		9	Satbarwa				
		10	Pandu				
		11	Manatu				
11	Ranchi	1	Sili				
		2	Namkum				
		3	Ormanihi				
12	Sahebganj	1	Barhait				
		2	Borio				
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
263		54		0		0	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
KARNATAKA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Bagalkot					1	Badami
						2	Hungund
						3	Jamakhadi
2	Ballari	1	Siraguppa			1	Siraguppa
		2	Ballari				
3	Chitradurga	1	Molakalmuru			1	Holalkere
4	Dharwad					1	Navalgund
5	Davanagere	1	Harihar				
		2	Davanagere				
6	Gadag					1	Gaiendragad
						2	Kukanuru
						3	Naragund
						4	Rona
						5	Shirahatti
7	Koppal					1	Yelburga
8	Kalburgi	1	Chincholi				
9	Kolara	1	Mulabagilu				
10	Raichur	1	Maski			1	Manvi
		2	Lingasugur			2	Sindhanur
		3	Devdurga				
11	Vijayanagara	1	Kudligi				
12	Vijayapura	1	Sindagi			1	Basavan Bagewadi
		2	Muddebihal			2	Muddebihal
						3	Sindagi
13	Yadgir	1	Shorapur				
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
234		14		0		17	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
KERALA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Malappuram	1	Areaacode				
2	Thrissur					1	Thalikkulam
ABSTRACT							
Total No. of Assessed Units		Number of Assessment Unit affected by Fluoride		Number of Assessment Unit affected by Arsenic		Number of Assessment Unit affected by Salinity	
152		1		0		1	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
MADHYA PRADESH							
S.NO	Name of District	S.NO	Name of Assessment Units affected by Fluoride	S.NO	Name of Assessment Units affected by Arsenic	S.NO	Name of Assessment Units affected by Salinity
1	Alirajpur	1	Alirajpur				
2	Bhind					1	Mehgaon
						2	Gohad
3	Chhindwara	1	Mohkheda				
		2	Chhindwara				
		3	Parasia				
		4	Bichhua				
		5	Chaurai				
		6	Tamia				
		7	Sausar				
		8	Jamai				
		9	Amarwara				
		10	Pandhuma				
4	Dhar	1	Tirla				
		2	Nalchha				
		3	Umarvan				
		4	Manawar				
		5	Dhar				
		6	Badnawar				
		7	Bach				
		8	Gandhwani				
		9	Nisarpur				
		10	Sardarpur				
		11	Dahi				
		12	Dharpuri				
5	Jhabua	1	Jhabua				
		2	Ranapur				
		3	Pellawad				
		4	Rama				
		5	Thandla				
6	Mandla	1	Mohgaon				
		2	Ghughari				
		3	Mandla				
7	Ratlam	1	Sailana				
		2	Bajna				
8	Sehore	1	Ashla				
		2	Sehore				
		3	Nasrullaganj				
		4	Ichhawar				
9	Seoni	1	Ghansaur				
		2	Kurai				
		3	Chhapara				
		4	Seoni				
		5	Keolari				
		6	Barghat				
10	Shajapur	1	Kalapipal				
		2	Moman Badodiya				
		3	Shajapur				
		4	Shujalpur				
11	Vidisha	1	Vidisha				
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
317		48		0		2	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
MAHARASHTRA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Ahmednagar					1	Nagar
						2	Newasa
						3	Parner
						4	Rahuri
						5	Shrigonda
2	Akola					1	Akola
						2	Akot
						3	Balapur
						4	Murtizapur
						5	Telhara
3	Amravati					1	Achlapur
						2	Amravati
						3	Anjanagaon Surji
						4	Bhatkuli
						5	Chandur Bazar
						6	Daryapur (C)
4	Buldhana					1	Jalgaon
						2	Nandura
						3	Sangrampur
						4	Shegaon
5	Pune					1	Baramati
						2	Daund
						3	Indapur
						4	Purandhar
6	Sangli					1	Miraj
						2	Palus
						3	Shirala
						4	Tasgaon
						5	Walwa
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
353		0		0		25	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
ODISHA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Balasore					1	Bahanaga
						2	Balasore
						3	Baliapal
						4	Basta
						5	Bhograi
						6	Remuna
2	Bhadrak					1	Basudevpur
						2	Chandbali(C)
						3	Dhamnagar
						4	Tihdi
3	Ganjam					1	Chhatrapur
						2	Chikiti
						3	Ganjam
						4	Khalkote
						5	Rangeliunda
4	Jagatsinghpur					1	Baikuda
						2	Ersama(C)
						3	Kujanga
						4	Naugaon
5	Jajpur					1	Bari
						2	Binjharpur
						3	Dasarathpur
6	Kendrapara					1	Aul
						2	Derabish
						3	Garadpur
						4	Kendrapara
						5	Mahakalpada(C)
						6	Marshaqhai(C)
						7	Pattamundai
						8	Raikanika (C)
						9	Rainagar (C)
7	Puri					1	Astarang
						2	Brahmagiri
						3	Delang
						4	Gop
						5	Kakatpur
						6	Kanas
						7	Krushnaprasad
						8	Nimapara
						9	Pipli
						10	Puri
						11	Satyabadi
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
314		0		0		42	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
PUNJAB							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Amritsar			1	Ajnala		
2	Barnala						
3	Bathinda	1	Nathana			1	Sangat
						2	Talwandi Sabo
						3	Bathinda
4	Faridkot					1	Faridkot
5	Fazilka					1	Fazilka
						2	Khuan Sarwar
						3	Abohar
						4	Jalalabad
6	Gurdaspur			1	Dera Baba Nanak		
7	Hoshiarpur			1	Mukerian		
8	Mansa	1	Bhikhi			1	Mansa
						2	Jhunir
						3	Budhlada
9	Moqa	1	Moqa-2				
10	Muktsar					1	Lambi
						2	Muktsar
						3	Malout
11	Rupnagar			1	Rupnagar		
12	Sangrur	1	Lehra Gaga				
13	Tarn Taran	1	Patti	1	Bhikhiwind		
ABSTRACT							
Total No. of Assessed Units	Number of Assessment Unit affected by Fluoride		Number of Assessment Unit affected by Arsenic		Number of Assessment Unit affected by Salinity		
153	5		5		14		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
RAJASTHAN							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Bikaner					1	Khajuwala (C)
2	Churu					1	Taranagar (C)
3	Dausa	1	Sikrai				
		2	Lawan				
		3	Bandikui				
		4	Dausa				
		5	Mahwa				
4	Hanumangarh					1	Rawatsar (C)
5	Jhalawar	1	Aklera				
		2	Dag				
		3	Bakani				
6	Karauli	1	Karauli				
		2	Hindaun				
7	Nagaur	1	Didwana				
		2	Parbatsar				
		3	Kuchaman City				
8	Sawai Madhopur	1	Gangapur				
		2	Sawai Madhopur				
		3	Chauth Ka Barwara				
		4	Khandar				
		5	Bonli				
		6	Bamanwas				
9	Sirohi	1	Abu Road				
		2	Reodar				
		3	Pindwara				
		4	Sirohi				
		5	Sheoganj				
ABSTRACT							
Total Number of Assessed Units	Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity		
302	24		0		3		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
TAMIL NADU							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Coimbatore	1	Saravanampatti				
2	Cuddalore	1	Thozhudur				
3	Dharmapuri	1	Bommidi				
		2	Dharmapuri				
		3	Hanur				
		4	Indur				
		5	Karimangalam				
		6	Marandhalli				
		7	Morappur				
		8	Nallampalli				
		9	Palacode				
		10	Pappireddipatty				
		11	Pennagaram				
		12	Pulikarai				
		13	Theerthamalai				
4	Dindigul	1	Vatlagundu				
5	Erode	1	Ammapettai				
		2	Sathyamangalam				
		3	Vaniputhur				
6	Kallakurichi	1	Thirukolur				
7	Karur	1	Chinnadharapuram				
		2	K.Paramathy				
		3	Pugalur				
8	Krishnagiri	1	Bagalur				
		2	Bargur				
		3	Barur				
		4	Hosur				
		5	Kelamangalam				
		6	Krishnagiri				
		7	Mathur				
		8	Pochampalli				
		9	Shoolagiri				
		10	Uthangarai				
		11	Veppanapalli				
9	Madurai	1	Melur				
		2	Neerathan				
		3	Othakkadai				
		4	T.Kallupatti				
		5	Thirumangalam				
10	Namakkal	1	Nallipalayam				
		2	Namakkal				
		3	Paramathi				
11	Nagapattinam					1	Valivalam
						2	Thalainayar
						3	Nagapattinam (C)
						4	Nirmulai
						5	Thillayadi
						6	Thirukkannapuram
						7	Thirukkuvilai (C)
						8	Kariyapattinam
						9	Thagatur
						10	Kilivelur (C)
						11	Kangalancheri
						12	Thirumarugal
						13	Keelavur
						14	Therkuppoigainallur
						15	Thevoor
						16	Vedaranyam (C)
						17	Velanganni
12	Perambalur	1	Varagur				
13	Pudukottai	1	Karavur			1	Perumaruthur
						2	Kottaipattinam
						3	Sinkavanam
14	Ranipet	1	Ranipet				
15	Ramanathapuram	1	Keelakkarai			1	Thirupullani
						2	Kadaladi
						3	Sikkal
						4	Mangalakudi
						5	Mudukulathur South
						6	Melachelvanur
						7	Thondi
						8	Sayalkudi
						9	S.Tharaikudi
16	Salem	1	Edappadi				
		2	Ernapuram				
		3	Gangavalli				
		4	Kadayampatti				
		5	Karippatti				
		6	Konganapuram				
		7	Mettur				
		8	Salem Town				
		9	Veerapandi				
		10	Vembadithalam				
17	Sivaganga	1	Kallal				
		2	Pallathur				
		3	Sivagangai				
18	Tenkasi	1	Alankulam				

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
TAMIL NADU							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
19	Tirupathur	1	Alangayam				
		2	Andiyappanur				
		3	Tirupathur				
		4	Vaniyambadi				
20	Theni	1	Cumbam				
		2	Devathanapatti				
21	Thiruvallur					1	Minjur
22	Thiruvarur					1	Muthupet
						2	Thiruthuraiipoondi (C)
						3	Edaivur
						4	Alathampadi
23	Tiruchirapalli	1	Trichy West Taluk-Tr				
		2	Trichy West Taluk-Tr				
24	Tiruppur	1	Avinashipalayam(S)				
		2	Kangeyam				
		3	Mulanur				
		4	Nallur				
		5	Tiruppur (S)				
		6	Vellakoil				
25	Tiruvannamalai	1	Melpallipattu				
26	Villupuram	1	Arasur				
		2	Avanipur				
ABSTRACT							
Total No. of Assessed Units	Number of Assessment Unit affected by Fluoride		Number of Assessment Unit affected by Arsenic		Number of Assessment Unit affected by Salinity		
1202	77		0		34		
<p>Note:- In Tamil Nadu State the Ground Water Resources are assessed Firka wise and for the 2023 Ground Water Resource Assessment, 1202 Firkas were assessed. For Uniformity in National Report the groundwater resources of the Firkas falling in a Taluka have been added to calculate the groundwater resources for the respective Talukas</p>							

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
TELANAGNA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Bhadradri Kothagudem	1	Bhadrachalam				
		2	Yellandu				
2	Jagtial	1	Kathlapur				
		2	Kodimal				
3	Jangaon	1	Lingalaghanpur				
4	Jogulamba Gadwal	1	Gadwal				
5	Kamareddy	1	Banswada				
6	Karimnagar	1	Manakondur				
		2	Ramadugu				
7	Khammam	1	Kalluru				
		2	Kamepalle				
		3	Khammam Rural				
		4	Konilerla				
		5	Madhira				
		6	Mudigonda				
		7	Penuballi				
		8	Raghunadhapalem				
		9	Singareni				
		10	Vemsoor				
		11	Wvra				
		12	Yerrupalem				
8	Komarambheem	1	Bejur				
		2	Dahegaon				
9	Mahabubabad	1	Bayyaram				
		2	Danthalapalle				
		3	Kuravi				
		4	Narsimhulapet				
		5	Nellikudur				
		6	Peddavangara				
		7	Inugurthy				
		8	Seerole				
10	Mahabubnagar	1	Nawabpet				
11	Mancherial	1	Bellampalle				
12	Medak	1	Chegunta				
13	Medchal Malkajgiri	1	Bachpalle				
		2	Balanagar				
		3	Dundigal Gandimalsamma				
		4	Ghatkesar				
		5	Malkajgiri				
		6	Medchel				
14	Mulug	1	Govindaraopet				
15	Nagarkurnool	1	Charakonda				
		2	Lingal				
		3	Peddakothapalle				
		4	Tadoor				
		5	Urkonda				
		6	Vangoor				
16	Nalgonda	1	Anumula Haliya				
		2	Chandur				
		3	Chinthapalle				
		4	Devarakonda				
		5	Kethapalle				
		6	Marriguda				
		7	Miryalaguda				
		8	Nakrekal				
		9	Peddavura				
		10	Vemulapalle				
		11	Gattuppal				
17	Narayanpet	1	Dhanwada				
		2	Krishna				
18	Nirmal	1	Kaddampeddur				
		2	Sarangapur				
19	Nizamabad	1	Rudrur				
20	Peddapalle	1	Julapalle				
21	Rajanna Siricilla	1	Yellareddyeta				
22	Rangareddy	1	Manchal				
		2	Yacharam				
23	Sangareddy	1	Sangareddy				
24	Siddipet	1	Bejjanki				
		2	Gaiwel				
		3	Mulug				
25	Suryapet	1	Chivemla				

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
TELANGANA							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
26	Warangal	1	Geesugonda				
		2	Khanapur				
		3	Nallabelly				
		4	Narsampet				
		5	Nekkonda				
		6	Khilla Warangal				
27	Hanumakonda	1	Parkal				
		2	Elkathurthi				
		3	Kamalapur				
28	Yadadri Bhuvanagiri	1	Rhongiri				
		2	Choutuppal				
		3	Yadagirigutta				
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
612		84		0		0	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
UTTAR PRADESH							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Agra	1	Saiyan			1	Achhnera
		2	Etmadpur			2	Akola
		3	Khandauli			3	Kheragarh
						4	Etmadpur
						5	Fatehpur Sikri
						6	Jagner
						7	Saiyan
2	Aligarh	1	Nama			1	Gonda
						2	Khair
3	Ayodhya			1	Bikapur		
				2	Harringtanganj		
4	Azamgarh	1	Palhana	1	Maharajganj		
5	Bahraich			1	Chittaura		
				2	Jarwal		
				3	Minipurwa		
				4	Mahasi		
				5	Nawabganj		
				6	Payagpur		
				7	Risiya		
6	Ballia			1	Dubahar		
				2	Reoti		
				3	Murali Chhapara		
				4	Belhari		
7	Balrampur			1	Tulsipur		
				2	Harraya Satgarhwa		
8	Barabanki			1	Suratganj		
9	Bareilly			1	Meerganj		
10	Basti			1	Bankati		
11	Bijnor			1	Dhampur (Alhepur)		
				2	Noorpur		
				3	Kiratpur		
				4	Nehtaur (Aaku)		
				5	Mohammadpur Deomal		
12	Budaun			1	Dataganj		
13	Bulandashar			1	Amarpur		
14	Deoria			1	Bhaluwani		
				2	Barhaj		
15	Etah					1	Jalesar
16	Fatehpur	1	Malwan			1	Malwan
		2	Teliyani				
17	Farrukhabad	1	Rajepur	1	Amritpur		
18	Firozabad	1	Tundla	1	Aron	1	Firozabad
19	G.B.Nagar					1	Bisrakh
						2	Zewar
20	Gonda			1	Belsar		
				2	Katra Bazar		
21	Gorakhpur			1	Gagaha		
22	Hamirpur					1	Sareela
						2	Rath
						3	Maudaha
23	Hapur			1	Simbholi		
24	Hardoi			1	Kacchauana		
				2	Tadiyawan		
25	Hathras	1	Mursan			1	Aharai
		2	Sasni				
26	J. P Nagar (Amroha)	1	Amroha				
27	Kanpur Dehat	1	Akbarpur				
28	Kannauj			1	Talagram		
29	Kushi Nagar			1	Sewarhi		
				2	Dudhai		
30	Lakhimpur Kheri			1	Nakaha		
				2	Nighasan		
				3	Ishanagar		
				4	Gola		
31	Lalitpur	1	Bar				

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
UTTAR PRADESH							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
32	Maharajganj			1	Ghughuli		
				2	Maharajganj		
				3	Nichlaul		
33	Mainpuri	1	Kishni				
		2	Katra Saman				
34	Mathura	1	Baldeo			1	Chaumuhan
		2	Chhata			2	Goverdhan
		3	Mant			3	Mant
		4	Raya			4	Nohjhil
		5	Goverdhan			5	Farah
						6	Raya
35	Mirzapur			1	Kon		
36	Moradabad			1	Moondha Pandey		
				2	Chhajlet		
				3	Bhagatpur Tanda		
37	Muzaffarnagar			1	Jansath		
38	Pratapgarh	1	Baba Belkhar Nath				
		2	Gaura				
39	Pilibhit			1	Barkhera		
40	Raibareli	1	Chhatoh	1	Khiron		
		2	Lalganj				
		3	Rohina				
41	Rampur	1	Milak				
		2	Said Nagar				
		3	Shahabad				
		4	Swar				
42	Sant Kabir Nagar			1	Paulli		
43	Shahjahanpur			1	Dadraul		
44	Siddharth Nagar			1	Uskabazar		
				2	Jogiya		
				3	Naugarh		
				4	Shoharatgarh		
45	Sitapur			1	Rampur Mathura		
46	Unnao					1	Asoha
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
836		31		60		25	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
WEST BENGAL							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No Name of Assessment Units affected by Salinity	
1	Bankura	1	Chhatna				
		2	Saltora				
		3	Hirbandh				
		4	Rajpur				
		5	Indpur				
		6	Simlapal				
		7	Bankura-II				
		8	Barjora				
		9	Gangajalghati				
		10	Taldangra				
2	Birbhum	1	Rainagar				
		2	Suri-II				
		3	Dubrajpur				
		4	Nalhati-I				
		5	Rampurhat-I				
		6	Mayureswar-I				
		7	Khowrasol				
3	Dakshin Dinajpur	1	Gangarampur				
		2	Kushmundi				
		3	Bansihari				
		4	Tapan				
		5	Kumarqanj				
4	Haora					1 Sankrail (C)	
						2 Uluberia-I (C)	
						3 Bagnan-II (C)	
						4 Uluberia-II (C)	
						5 Bally Jagachha (C)	
						6 Bagnan-I (C)	
						7 Shyampur-II (C)	
						8 Panchla (C)	
						9 Shyampur-I (C)	
5	Huqli			1	Balagarh		
6	Kolkatta					1 Kmc (C)	
7	Malda	1	Bamanqola	1	Manikchak		
					2	Kaliachak-III	
					3	English Bazar	
					4	Ratua-I	
					5	Kaliachak-I	
					6	Kaliachak-II	
8	Murshidabad			1	Lalgola		
				2	Samserqanj		
				3	Hariharpura		
				4	Murshidabad Jiaganj		
				5	Raounathqanj-I		
				6	Bhagawangola-I		
				7	Berhampore		
				8	Raninagar-I		
				9	Beldanga-II		
				10	Bhagawangola-II		
				11	Beldanga-I		
				12	Suti-II		
				13	Nawda		
				14	Jalangi		
				15	Domkal		
				16	Raninagar-II		
				17	Farakka		
				18	Raounathqanj-II		
				19	Suti-I		
9	Nadia			1	Ranaghat-II		
				2	Kaliganj		
				3	Nakashipara		
				4	Karimpur-I		
				5	Ranaghat-I		
				6	Santipur		
				7	Hanskhali		
				8	Krishnaganj		
				9	Tehatta-I		
				10	Haringhata		
				11	Nabadwip		
				12	Karimpur-II		
				13	Chapra		
				14	Tehatta-II		
				15	Krishnanagar-II		
				16	Krishnanagar-I		
				17	Chakdah		

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
WEST BENGAL							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
10	North 24 Parganas			1	Barasat-II	1	Minakhan (C)
				2	Haroa	2	Sandeshkhali-I (C)
				3	Basirhat-I	3	Hingalqani (C)
				4	Bongaon	4	Sandeshkhali-II (C)
				5	Habra-I	5	Hasnabad (C)
				6	Barrackpur-I		
				7	Gaighata		
				8	Amdanga		
				9	Deanga		
				10	Barasat-I		
				11	Bagda		
				12	Barrackpur-II		
				13	Baduria		
				14	Basirhat-II		
				15	Habra-II		
				16	Rajarhat		
				17	Swarupnagar		
11	Purba Bardhaman			1	Kalna-II		
				2	Katwa-I		
				3	Katwa-II		
				4	Purbasthali-II		
				5	Purbasthali-I		
12	Purba Medinipur					1	Ramnagar-I (C)
						2	Contai-II (C)
						3	Tamluk (C)
						4	Nandigram-I (C)
						5	Mahisadal (C)
						6	Ramnagar-II (C)
						7	Contai-III (C)
						8	Sutahata (C)
						9	Contai-I (C)
						10	Nandigram-II (C)
						11	Haldia (C)
						12	Sahid Matangini (C)
						13	Nanda Kumar (C)
						14	Khejuri-II (C)
						15	Nandigram-III (C)
						16	Khejuri-I (C)
13	Puruliya	1	Puncha				
		2	Para				
		3	Arsha				
		4	Kashipur				
		5	Purulia-II				
		6	Neturia				
		7	Balarampur				
		8	Santuri				
		9	Bagmundi				
		10	Purulia-I				
		11	Hura				
		12	Raghunathpur-I				
		13	Jhaldai-I				
		14	Manbazar-I				
		15	Jaipur				
		16	Raghunathpur-II				
		17	Barabazar				
14	South 24 Parganas					1	Bhangar-I (C)
						2	Kultali (C)
						3	Bishnupur-I (C)
						4	Magrahat-I (C)
						5	Budge Budge-II (C)
						6	Canning-II (C)
						7	Gosaba (C)
						8	Kakdwip (C)
						9	Mathurapur-I (C)
						10	Kulpi (C)
						11	Mathurapur-II (C)
						12	Namkhana (C)
						13	Diamond Harbour-II (C)
						14	Sagar (C)
						15	Thakurpukur Mahestala (C)
						16	Bhangar-II (C)
						17	Budge Budge-I (C)
						18	Jaynagar-II (C)
						19	Mandirbazar (C)
						20	Diamond Harbour-I (C)
						21	Basanti (C)
						22	Bishnupur-II (C)
						23	Patharpratima (C)
						24	Jaynagar-I (C)
						25	Sonarpur (C)
						26	Magrahat-II (C)
						27	Baruipur (C)
						28	Canning-I (C)
						29	Falta (C)
15	Uttar Dinajpur	1	Itahar				
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
345		41		65		60	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
ANDAMAN & NICOBAR ISLANDS							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Nicobar					1	Chowra (C)
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
9		0		0		1	
NOTE- In Andaman & Nicobar Islands, there are 9 blocks which can be further separated into 36 islands. Of the 36 islands, Chowra Island is saline							

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
PUDUCHERRY							
S. No	Name of District	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Puducherry					1	Yanam (C)
ABSTRACT							
Total Number of Assessed Units		Number of Assessment Units affected by Fluoride		Number of Assessment Units affected by Arsenic		Number of Assessment Units affected by Salinity	
8		0		0		1	

QUALITY PROBLEMS IN ASSESSMENT UNITS, 2023							
S. No	Name of State	S. No	Name of Assessment Units affected by Fluoride	S. No	Name of Assessment Units affected by Arsenic	S. No	Name of Assessment Units affected by Salinity
1	Arunachal Pradesh		0		0		0
2	Goa		0		0		0
3	Himachal Pradesh		0		0		0
4	Manipur		0		0		0
5	Meghalaya		0		0		0
6	Mizoram		0		0		0
7	Nagaland		0		0		0
8	Sikkim		0		0		0
9	Tripura		0		0		0
10	Uttarakhand		0		0		0
11	Chandigarh		0		0		0
12	Dadra & Nagar Haveli		0		0		0
13	Daman & Diu		0		0		0
14	Jammu and Kashmir		0		0		0
15	Ladakh		0		0		0
16	Lakshadweep		0		0		0

Annexure - V(A)

**State-wise Summary of Assessment units
Improved or deteriorated from 2022 to 2023 assessment**

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State-Wise Summary Of Assessment Units Improved Or Deteriorated From 2022 To 2023 Assessment							
S. No.	Name of States / Union Territories	Total Number of Assessed Units	Number of Assessment Units Improved	Number of Assessment Units Deteriorated	Number of Assessment Units With No Change	Number of Assessment Units Newly formed or Previous Assessment Units Reorganized	Remarks
1	Andhra Pradesh	667	8	9	650	0	
2	Arunachal Pradesh	42	0	0	42	0	No change in Categorization of Assessment units. (In the year 2022, assessments were made taking district as the unit, however, in 2023, assessment units are Blocks. As all the Blocks have been categorised under safe category, there is no change in the categorisation in comparison to previous year in which all Districts were categorised as Safe)
3	Assam	245	0	0	245	0	No change in Categorization of Assessment units. (In the year 2022, assessments were carried out considering district as the unit, however, in 2023, assessment units are Blocks. It may be noted that Kamrup Urban district which consists of only one Block i.e Kamrup Urban (Block) has been categorised as Semi-Critical in 2023 which was also categorised as Semi-Critical in year 2022)
4	Bihar	535	9	6	520	0	
5	Chhattisgarh	146	4	0	142	0	
6	Delhi	34	3	3	28	0	
7	Goa	12	0	0	12	0	
8	Gujarat	252	5	3	244	0	
9	Haryana	143	0	2	141	0	
10	Himachal Pradesh	10	0	0	10	0	
11	Jharkhand	263	0	0	264	0	
12	Karnataka	234	17	1	216	0	
13	Kerala	152	0	3	149	0	
14	Madhya Pradesh	317	0	0	317	0	
15	Maharashtra	353	8	1	344		
16	Manipur	9	0	0	9	0	
17	Meghalaya	39	0	0	39	0	No change in Categorization of Assessment units. (In the year 2022, assessments were made taking district as the unit, however, in 2023, assessment units are Blocks. As all the Blocks have been categorised under safe category, there is no change in the categorisation in comparison to previous year in which all Districts were categorised as Safe)
18	Mizoram	26	0	0	26	0	
19	Nagaland	52	0	0	52	0	No change in Categorization of Assessment units. (In the year 2022, assessments were made taking district as the unit, however, in 2023, assessment units are Blocks. As all the Blocks have been categorised under safe category, there is no change in the categorisation in comparison to previous year in which all Districts were categorised as Safe)
20	Odisha	314	1	2	311	0	
21	Punjab	153	10	6	137	0	

State-Wise Summary Of Assessment Units Improved Or Deteriorated From 2022 To 2023 Assessment							
S. No.	Name of States / Union Territories	Total Number of Assessed Units	Number of Assessment Units Improved	Number of Assessment Units Deteriorated	Number of Assessment Units With No Change	Number of Assessment Units Newly formed or Previous Assessment Units Reorganized	Remarks
22	Rajasthan	302	9	5	288	0	
23	Sikkim	6	0	0	6	0	
24	Tamil Nadu	1202	75	72	1018	37	It may noted that in the year 2023, assessments have been made with Taluka as the assessment, however, for sake of comparision of improvement/deteoration status, comparision has in respect of Firkas
25	Telangana	612	44	21	529	18	
26	Tripura	59	0	0	59	0	
27	Uttar Pradesh	836	12	4	820	0	
28	Uttarakhand	18	0	0	18		
29	West Bengal	345	21	2	322	0	
30	Andaman And Nicobar	9	0	0	9	0	No change in Categorization of Assessment units. The assessment for the year 2023 has been done with Block as the unit while the earlier assessment was done with islands as the unit. However, it may be noted that a total of 36 islands constitute the nine Blocks of the UT of A & N islands. Out of the 36 islands, one island falling in Nancowry Block is saline.
31	Chandigarh	1	0	0	1	0	
32	Dadra & Nagar Haveli	1	0	0	1	0	
	Daman & Diu	2	0	0	2	0	
33	Jammu And Kashmir	20	0	0	20	0	
34	Lakshadweep	5	0	0	5	0	No change in Categorization of Assessment units. The assessment for the year 2023 has been done with Block as the unit while the earlier assessment was done with islands as the unit. However, it may be noted that a total of 9 islands constitute the 5 Blocks in the UT of Lakshdweep. Out of the 9 islands, one island in Amini Block and one in Kavarati Block have been categorised as Semi-critical in both the assessments.
35	Puducherry	8	0	0	2	6	
36	Ladakh	18	0	0	18	0	No change in Categorization of Assessment units.The assessment for the year 2023 has been done with Block as the unit while the earlier assessment was done with Valleys as the unit of assesment.
	Grand Total	7442 *	226	140	7016	61	* In GWRA-2023 , the total number of assessment units in the country is 6553. For this annexure, in respect of Tamil Nadu 1202 Firkas has been compared.Accordingly,the total number of assessment units compared in the sheet is 7442 instead of 6553.

1904

Annexure - V(B)

Comparison of Categorization of assessment Units (2022 to 2023)

1906

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
ANDHRA PRADESH									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Sri Sathya Sai	Lepakshi	72.87	Semi Critical	Sri Sathya Sai	Lepakshi	69.51	Safe	Improved
2	Ananthapuramu	Yellanur	75.95	Semi Critical	Ananthapuramu	Yellanur	68.41	Safe	Improved
3	Chittoor	Nindra	90.73	Critical	Chittoor	Nindra	87.78	Semi Critical	Improved
4	Chittoor	Penumuru	72.63	Semi Critical	Chittoor	Penumuru	69.86	Safe	Improved
5	Chittoor	Srirangarajapuram	70.61	Semi Critical	Chittoor	Srirangarajapuram	65.77	Safe	Improved
6	Chittoor	Gudi Palle	91.26	Critical	Chittoor	Gudi Palle	72.66	Semi Critical	Improved
7	Prakasam	Markapur	77.49	Semi Critical	Prakasam	Markapur	66.08	Safe	Improved
8	Annamayya	Ramasamudram	75.58	Semi Critical	Annamayya	Ramasamudram	57.88	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
ANDHRA PRADESH									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Srikakulam	Gara	38.00	Safe	Srikakulam	Gara	76.85	Semi Critical	Deteriorated
2	Srikakulam	Laveru	27.79	Safe	Srikakulam	Laveru	91.82	Critical	Deteriorated
3	Srikakulam	Ranastalam	46.25	Safe	Srikakulam	Ranastalam	128.11	Over Exploited	Deteriorated
4	Sri Sathya Sai	Amadagur	69.69	Safe	Sri Sathya Sai	Amadagur	70.30	Semi Critical	Deteriorated
5	Sri Sathya Sai	Nallacheruvu	68.29	Safe	Sri Sathya Sai	Nallacheruvu	70.70	Semi Critical	Deteriorated
6	Y.S.R Kadapa	Pulivendla	81.25	Semi Critical	Y.S.R Kadapa	Pulivendla	102.23	Over Exploited	Deteriorated
7	Ananthapuramu	Narpala	68.34	Safe	Ananthapuramu	Narpala	70.40	Semi Critical	Deteriorated
8	Prakasam	Cumbum	67.02	Safe	Prakasam	Cumbum	106.37	Over Exploited	Deteriorated
9	Prakasam	Racherla	92.73	Critical	Prakasam	Racherla	107.85	Over Exploited	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
BIHAR									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Bhojpur	Koilwar	94.18	Critical	Bhojpur	Koilwar	84.08	Semi Critical	Improved
2	Nalanda	Ekangarsarai	92.17	Critical	Nalanda	Ekangarsarai	84.47	Semi Critical	Improved
3	Nalanda	Karai Parsarai	91.84	Critical	Nalanda	Karai Parsarai	87.60	Semi Critical	Improved
4	Patna	Athmalgola	98.05	Critical	Patna	Athmalgola	88.07	Semi Critical	Improved
5	Patna	Masaurhi	90.64	Critical	Patna	Masaurhi	80.62	Semi Critical	Improved
6	Patna	Patna Sadar	73.29	Semi Critical	Patna	Patna Sadar	67.66	Safe	Improved
7	Vaishali	Chehra Kalan	73.62	Semi Critical	Vaishali	Chehra Kalan	69.66	Safe	Improved
8	Vaishali	Goraul	82.97	Semi Critical	Vaishali	Goraul	65.51	Safe	Improved
9	Vaishali	Lalganj	76.09	Semi Critical	Vaishali	Lalganj	69.83	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
BIHAR									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Gaya	Gaya Sadar	55.91	Safe	Gaya	Gaya Sadar	78.20	Semi Critical	Deteriorated
2	Gaya	Khizar Sarai	66.74	Safe	Gaya	Khizar Sarai	71.82	Semi Critical	Deteriorated
3	Gaya	Tekari	67.63	Safe	Gaya	Tekari	70.12	Semi Critical	Deteriorated
4	Nalanda	Asthawan	60.23	Safe	Nalanda	Asthawan	76.51	Semi Critical	Deteriorated
5	Nalanda	Sarmera	68.21	Safe	Nalanda	Sarmera	74.38	Semi Critical	Deteriorated
6	Vaishali	Bidupur	56.88	Safe	Vaishali	Bidupur	79.58	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2022 AND 2023)									
CHHATISGARH									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Durg	Patan	73.32	Semi_Critical	Durg	Patan	63.86	Safe	Improved
2	Dhamtari	Dhamtari	94.62	Critical	Dhamtari	Dhamtari	86.02	Semi_Critical	Improved
3	Sakti	Dabhara	78.77	Semi_Critical	Sakti	Dabhara	58.61	Safe	Improved
4	Sakti	Malkharoda	77.07	Semi_Critical	Sakti	Malkharoda	48.66	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
DELHI									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	South	Hauz Khas	127.66	Over Exploited	South	Hauz Khas	99.82	Critical	Improved
2	South West	Dwarka	112.61	Over Exploited	South West	Dwarka	99.83	Critical	Improved
3	South West	Najafgarh	82.83	Semi Critical	South West	Najafgarh	69.58	Safe	Improved

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COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
DELHI									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Central	Kotwali	87.53	Semi Critical	Central	Kotwali	94.22	Critical	Deteriorated
2	East	Gandhi Nagar	87.49	Semi Critical	East	Gandhi Nagar	91.45	Critical	Deteriorated
3	East	Preet Vihar	87.08	Semi Critical	East	Preet Vihar	90.38	Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
GUJARAT									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Kheda	Galteshwar	72.81	Semi Critical	Kheda	Galteshwar	61.30	Safe	Improved
2	Junagadh	Bhesan	71.21	Semi Critical	Junagadh	Bhesan	64.65	Safe	Improved
3	Kachchh	Mandvi	102.02	Over Exploited	Kachchh	Mandvi	95.40	Critical	Improved
4	Amreli	Rajula	92.14	Critical	Amreli	Rajula	76.95	Semi Critical	Improved
5	Mahesana	Jotana	0.00	salinity	Mahesana	Jotana	124.06	Over Exploited	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
GUJARAT									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Ahmedabad	Mandal	87.13	Semi Critical	Ahmedabad	Mandal	96.65	Critical	Deteriorated
2	Rajkot	Paddhari	69.82	Safe	Rajkot	Paddhari	70.23	Semi Critical	Deteriorated
3	Rajkot	Upleta	69.94	Safe	Rajkot	Upleta	70.15	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
HARYANA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Mewat	Punahana	88.74	Semi Critical	Mewat	Punahana	93.36	Critical	Deteriorated
2	Mewat	Indri	68.71	Safe	Mewat	Indri	71.04	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2022 AND 2023)									
KARNATAKA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Chamarajanagara	Chamarajanagara	116.45	Over_Exploited	Chamarajanagara	Chamarajanagara	99.08	Critical	Improved
2	Chamarajanagara	Yalandur	98.04	Critical	Chamarajanagara	Yalandur	88.15	Semi_Critical	Improved
3	Vijayanagara	Harapanahalli	112.56	Over_Exploited	Vijayanagara	Harapanahalli	99.32	Critical	Improved
4	Davanagere	Honnali	74.23	Semi_Critical	Davanagere	Honnali	69.14	Safe	Improved
5	Mysuru	Mysuru	79.44	Semi_Critical	Mysuru	Mysuru	64.69	Safe	Improved
6	Ramanagara	Maqadi	103.13	Over_Exploited	Ramanagara	Maqadi	98.44	Critical	Improved
7	Vijayapura	Basavan Bagewadi	81.44	Semi_Critical	Vijayapura	Basavan Bagewadi	32.29	Safe	Improved
8	Vijayapura	Chadachana	83.35	Semi_Critical	Vijayapura	Chadachana	55.34	Safe	Improved
9	Vijayapura	Kolhara	72.32	Semi_Critical	Vijayapura	Kolhara	43.69	Safe	Improved
10	Vijayapura	Nidagundi	91.47	Critical	Vijayapura	Nidagundi	73.84	Semi_Critical	Improved
11	Vijayapura	Tikota	87.40	Semi_Critical	Vijayapura	Tikota	54.98	Safe	Improved
12	Gadag	Rona	117.80	Over_Exploited	Gadag	Rona	90.72	critical	Improved
13	Gadag	Shirahatti	77.12	Semi_Critical	Gadag	Shirahatti	65.99	Safe	Improved
14	Haveri	Ranebennur	80.06	Semi_Critical	Haveri	Ranebennur	62.66	Safe	Improved
15	Haveri	Ratteehalli	91.13	Critical	Haveri	Ratteehalli	82.07	Semi_Critical	Improved
16	Bagalkot	Badami	112.20	Over_Exploited	Bagalkot	Badami	96.83	Critical	Improved
17	Bagalkot	Guledaquadra	91.33	Critical	Bagalkot	Guledaquadra	89.93	Semi_Critical	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
KARNATAKA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
					Deteriorated				
1	Bagalkot	Ilkal	67.08	Safe	Bagalkot	Ilkal	74.31	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
KERALA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Thiruvananthapuram	Varkala	69.94	Safe	Thiruvananthapuram	Varkala	70.55	Semi Critical	Deteriorated
2	Kozhikkode	Kozhikode	69.82	Safe	Kozhikkode	Kozhikode	70.95	Semi Critical	Deteriorated
3	Kollam	Sasthamkotta	69.92	Safe	Kollam	Sasthamkotta	71.11	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
MAHARASHTRA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Buldhana	Khamgaon	71.31	Semi Critical	Buldhana	Khamgaon	68.51	Safe	Improved
2	Buldhana	Lonar	70.19	Semi Critical	Buldhana	Lonar	64.80	Safe	Improved
3	Satara	Phaltan	70.63	Semi Critical	Satara	Phaltan	66.66	Safe	Improved
4	Nashik	Sinnar	100.32	Over Exploited	Nashik	Sinnar	98.19	Critical	Improved
5	Nagpur	Saoner	70.06	Semi Critical	Nagpur	Saoner	69.32	Safe	Improved
6	Amravati	Achlapur	100.88	Over Exploited	Amravati	Achlapur	96.73	critical	Improved
7	Amravati	Tiwsa	70.32	Semi Critical	Amravati	Tiwsa	67.32	Safe	Improved
8	Wardha	Karanja	72.84	Semi Critical	Wardha	Karanja	68.54	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
MAHARASHTRA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Jalgaon	Muktainagar	68.51	Safe	Jalgaon	Muktainagar	74.11	Semi Critical	Deteriorated

1922

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
ODISHA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Kendrapara	Garadpur	73.9	Semi Critical	Kendrapara	Garadpur	68.52	Safe	Improved

1923

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
ODISHA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
					Deteriorated				
1	Jharsuguda	Jharsuguda	67.8	Safe	Jharsuguda	Jharsuguda	72.55	Semi Critical	Deteriorated
2	Khurda	Khurda	69.55	Safe	Khurda	Khurda	74.16	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
PUNJAB									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Pathankot	Gharota	70.81	Semi Critical	Pathankot	Gharota	64.72	Safe	Improved
2	SAS Nagar	Kharar	114.52	Over Exploited	SAS Nagar	Kharar	98.45	Critical	Improved
3	Mansa	Sardulgarh	87.58	Semi Critical	Mansa	Sardulgarh	56.92	Safe	Improved
4	Mansa	Budhlada	99.91	Critical	Mansa	Budhlada	75.27	Semi Critical	Improved
5	Bathinda	Sangat	72.35	Semi Critical	Bathinda	Sangat	61.13	Safe	Improved
6	Bathinda	Talwandi Sabo	75.17	Semi Critical	Bathinda	Talwandi Sabo	48.57	Safe	Improved
7	Bathinda	Bathinda	126.44	Over Exploited	Bathinda	Bathinda	94.97	Critical	Improved
8	Firozpur	Guruah Sahai	103.27	Over Exploited	Firozpur	Guruah Sahai	89.74	Semi Critical	Improved
9	Firozpur	Makhu	98.9	Critical	Firozpur	Makhu	78.19	Semi Critical	Improved
10	Gurdaspur	Dina Nagar	86.21	Semi Critical	Gurdaspur	Dina Nagar	53.95	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
PUNJAB									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	SAS Nagar	Majri	64.9	Safe	SAS Nagar	Majri	80.24	Semi Critical	Deteriorated
2	Hoshiarpur	Hajipur	64.34	Safe	Hoshiarpur	Hajipur	79.97	Semi Critical	Deteriorated
3	Hoshiarpur	Mahilpur	90.13	Critical	Hoshiarpur	Mahilpur	105.77	Over Exploited	Deteriorated
4	Hoshiarpur	Mukerian	89.69	Semi Critical	Hoshiarpur	Mukerian	102.96	Over Exploited	Deteriorated
5	SBS Nagar	Balachaur	89.55	Semi Critical	SBS Nagar	Balachaur	90.39	Critical	Deteriorated
6	Gurdaspur	Sri Hargobindpur	97.95	Critical	Gurdaspur	Sri Hargobindpur	100.69	Over Exploited	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2023)									
RAJASTHAN									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Karauli	Nadoti	90.73	Critical	Karauli	Nadoti	75.13	Semi Critical	Improved
2	Jalor	Chitalwana	101.47	Over Exploited	Jalor	Chitalwana	96.10	Critical	Improved
3	Udaipur	Sayra	100.42	Over Exploited	Udaipur	Sayra	99.58	Critical	Improved
4	Sirohi	Pindwara	91.69	Critical	Sirohi	Pindwara	87.54	Semi Critical	Improved
5	Sirohi	Sirohi	101.09	Over Exploited	Sirohi	Sirohi	97.35	Critical	Improved
6	Tonk	Todaraisingh	74.00	Semi Critical	Tonk	Todaraisingh	68.39	Safe	Improved
7	Jodhpur	Luni	93.36	Critical	Jodhpur	Luni	87.21	Semi Critical	Improved
8	Sikar	Fatehpur	113.83	Over Exploited	Sikar	Fatehpur	82.11	Semi Critical	Improved
9	Nagaur	Makrana	103.04	Over Exploited	Nagaur	Makrana	92.10	Critical	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2022 AND 2023)									
RAJASTHAN									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
					Deteriorated				
1	Bundi	Bundi	98.88	Critical	Bundi	Bundi	100.42	Over Exploited	Deteriorated
2	Jodhpur	Bap	89.49	Semi Critical	Jodhpur	Bap	99.25	Critical	Deteriorated
3	Jhalawar	Bhawani Mandi	86.03	Semi Critical	Jhalawar	Bhawani Mandi	93.18	Critical	Deteriorated
4	Churu	Churu	98.96	Critical	Churu	Churu	103.00	Over Exploited	Deteriorated
5	Hanumangarh	Pilibanga	67.52	Safe	Hanumangarh	Pilibanga	71.55	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2022 AND 2020)									
TAMIL NADU									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Coimbatore	Thirumalayampalayam	92.49	Critical	Coimbatore	Thirumalayampalayam	79.54	Semi Critical	Improved
2	Cuddalore	Kattumannarkoil	74.73	Semi Critical	Cuddalore	Kattumannarkoil	53.39	Safe	Improved
3	Cuddalore	Kullanchavadi	83.65	Semi Critical	Cuddalore	Kullanchavadi	56.47	Safe	Improved
4	Cuddalore	Udaiyarkudi	88.37	Semi Critical	Cuddalore	Udaiyarkudi	66.63	Safe	Improved
5	Dharmapuri	Dharmapuri	71.88	Semi Critical	Dharmapuri	Dharmapuri	62.41	Safe	Improved
6	Dharmapuri	Harur	83.11	Semi Critical	Dharmapuri	Harur	69.23	Safe	Improved
7	Dharmapuri	Pauparapatty	94.26	critical	Dharmapuri	Pauparapatty	87.74	Semi Critical	Improved
8	Dindigul	Dharmathupatti	106.61	Over Exploited	Dindigul	Dharmathupatti	93.00	Critical	Improved
9	Dindigul	Natham	75.89	Semi Critical	Dindigul	Natham	66.32	Safe	Improved
10	Dindigul	Oruthattu	102.41	Over Exploited	Dindigul	Oruthattu	91.00	Critical	Improved
11	Dindigul	Pillaiyar Natham	97.87	Critical	Dindigul	Pillaiyar Natham	89.96	Semi Critical	Improved
12	Erode	Erode West	87.04	Semi Critical	Erode	Erode West	69.97	Safe	Improved
13	Erode	Kasipalayam	75.15	Semi Critical	Erode	Kasipalayam	42.32	Safe	Improved
14	Kancheepuram	Kolapakkam	71.14	Semi Critical	Kancheepuram	Kolapakkam	65.52	Safe	Improved
15	Karur	Pugalur	101.35	Over Exploited	Karur	Pugalur	93.01	Critical	Improved
16	Karur	Velliannai	100.27	Over Exploited	Karur	Velliannai	97.72	Critical	Improved
17	Madurai	Kokkulam	90.89	Critical	Madurai	Kokkulam	84.28	Semi Critical	Improved
18	Madurai	Nagamalai Pudukottai	99.40	Critical	Madurai	Nagamalai Pudukottai	72.21	Semi Critical	Improved
19	Madurai	Sedapatti	90.79	Critical	Madurai	Sedapatti	88.79	Semi Critical	Improved
20	Madurai	Sholavandan	74.09	Semi Critical	Madurai	Sholavandan	53.57	Safe	Improved
21	Madurai	Thanichayam	77.26	Semi Critical	Madurai	Thanichayam	66.45	Safe	Improved
22	Madurai	Thenkarai	79.97	Semi Critical	Madurai	Thenkarai	44.29	Safe	Improved
23	Madurai	Thirumangalam	86.98	Semi Critical	Madurai	Thirumangalam	65.62	Safe	Improved
24	Madurai	Valandur	95.16	Critical	Madurai	Valandur	81.84	Semi Critical	Improved
25	Namakkal	Jedarpalayam	97.01	Critical	Namakkal	Jedarpalayam	87.65	Semi Critical	Improved
26	Namakkal	Pandamangalam	111.67	Over Exploited	Namakkal	Pandamangalam	97.82	Critical	Improved
27	Salem	Karupur	98.17	Critical	Salem	Karupur	87.36	Semi Critical	Improved
28	Tenkasi	Cuddalor(T)	94.11	Critical	Tenkasi	Cuddalor(T)	84.16	Semi Critical	Improved
29	Tenkasi	Kallurani	93.92	Critical	Tenkasi	Kallurani	89.89	Semi Critical	Improved
30	Tenkasi	Surandai	91.03	Critical	Tenkasi	Surandai	87.42	Semi Critical	Improved
31	Tenkasi	Uthumalai	109.31	Over Exploited	Tenkasi	Uthumalai	90.92	Critical	Improved
32	Tenkasi	Veerakeralampudur	72.10	Semi Critical	Tenkasi	Veerakeralampudur	55.83	Safe	Improved
33	Thanjavur	Kurichi(T)	74.28	Semi Critical	Thanjavur	Kurichi(T)	67.49	Safe	Improved
34	Thanjavur	Perambur(T)	76.58	Semi Critical	Thanjavur	Perambur(T)	54.83	Safe	Improved
35	Thanjavur	Thambikkottai	92.74	Critical	Thanjavur	Thambikkottai	73.38	Semi Critical	Improved
36	Thanjavur	Thekkur	73.00	Semi Critical	Thanjavur	Thekkur	67.86	Safe	Improved
37	Thanjavur	Ulur	91.40	critical	Thanjavur	Ulur	88.53	Semi Critical	Improved
38	Theni	Theni	82.92	Semi Critical	Theni	Theni	65.50	Safe	Improved
39	Theni	Uthamapalayam	83.36	Semi Critical	Theni	Uthamapalayam	68.25	Safe	Improved
40	Thiruvarur	Koothanallur	79.44	Semi Critical	Thiruvarur	Koothanallur	18.57	Safe	Improved
41	Thiruvarur	Sannanallur	77.90	Semi Critical	Thiruvarur	Sannanallur	49.85	Safe	Improved
42	Thoothukudi	Udangudi	97.67	Critical	Thoothukudi	Udangudi	86.62	Semi Critical	Improved
43	Tiruchirappalli	Sirugambur	76.35	Semi Critical	Tiruchirappalli	Sirugambur	64.81	Safe	Improved
44	Tirunelveli	Manur	74.34	Semi Critical	Tirunelveli	Manur	68.43	Safe	Improved
45	Tirunelveli	Pazhavor	93.88	Critical	Tirunelveli	Pazhavor	83.01	Semi Critical	Improved
46	Tiruppur	Avanashi East	98.61	Critical	Tiruppur	Avanashi East	82.25	Semi Critical	Improved
47	Tiruppur	Perumanallur	92.46	Critical	Tiruppur	Perumanallur	86.70	Semi Critical	Improved
48	Tiruppur	Pongalore	96.61	Critical	Tiruppur	Pongalore	78.15	Semi Critical	Improved
49	Tiruppur	Tiruppur North	78.58	Semi Critical	Tiruppur	Tiruppur North	60.92	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2022 AND 2020)									
TAMIL NADU									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
50	Tiruppur	Uhiyur	97.99	Critical	Tiruppur	Uhiyur	82.56	Semi_Critical	Improved
51	Tiruppur	Uthukkuli	95.73	Critical	Tiruppur	Uthukkuli	89.44	Semi_Critical	Improved
52	Tiruvallur	Kannigaiper	73.23	Semi_Critical	Tiruvallur	Kannigaiper	64.80	Safe	Improved
53	Tiruvallur	Manavur	70.51	Semi_Critical	Tiruvallur	Manavur	65.59	Safe	Improved
54	Tiruvallur	Morai	71.71	Semi_Critical	Tiruvallur	Morai	61.39	Safe	Improved
55	Tiruvallur	Velliyur	70.60	Semi_Critical	Tiruvallur	Velliyur	68.28	Safe	Improved
56	Tiruvallur	Vengathur	78.72	Semi_Critical	Tiruvallur	Vengathur	68.69	Safe	Improved
57	Tiruvannamalai	Annakavoor	74.77	Semi_Critical	Tiruvannamalai	Annakavoor	68.65	Safe	Improved
58	Tiruvannamalai	Devigapuram	85.00	Semi_Critical	Tiruvannamalai	Devigapuram	69.90	Safe	Improved
59	Tiruvannamalai	Kadaladi(T)	85.66	Semi_Critical	Tiruvannamalai	Kadaladi(T)	66.58	Safe	Improved
60	Tiruvannamalai	Kolappalur	95.23	Critical	Tiruvannamalai	Kolappalur	79.94	Semi_Critical	Improved
61	Tiruvannamalai	Mandakolathur	72.91	Semi_Critical	Tiruvannamalai	Mandakolathur	55.56	Safe	Improved
62	Tiruvannamalai	Mangalam(T)	109.58	Over Exploited	Tiruvannamalai	Mangalam(T)	91.52	critical	Improved
63	Tiruvannamalai	Nedungunam	93.26	critical	Tiruvannamalai	Nedungunam	86.67	Semi_Critical	Improved
64	Tiruvannamalai	Tiruvannamalai(North)	73.17	Semi_Critical	Tiruvannamalai	Tiruvannamalai(North)	57.15	Safe	Improved
65	Tiruvannamalai	Tiruvannamalai(South)	76.39	Semi_Critical	Tiruvannamalai	Tiruvannamalai(South)	56.18	Safe	Improved
66	Tiruvannamalai	Veraiyur	83.08	Semi_Critical	Tiruvannamalai	Veraiyur	53.77	Safe	Improved
67	Vellore	Kaniyambadi	99.12	Critical	Vellore	Kaniyambadi	89.90	Semi_Critical	Improved
68	Vellore	Katpadi	75.86	Semi_Critical	Vellore	Katpadi	63.73	Safe	Improved
69	Vellore	Valathur(V)	122.22	Over Exploited	Vellore	Valathur(V)	89.54	Semi_Critical	Improved
70	Villupuram	Brammadesam	106.73	Over Exploited	Villupuram	Brammadesam	97.81	Critical	Improved
71	Villupuram	Mugaiyur	70.25	Semi_Critical	Villupuram	Mugaiyur	67.72	Safe	Improved
72	Villupuram	Sathampadi	92.85	Critical	Villupuram	Sathampadi	89.00	Semi_Critical	Improved
73	Villupuram	Tindivanam	72.95	Semi_Critical	Villupuram	Tindivanam	52.23	Safe	Improved
74	Villupuram	Vadasiruvalur	91.68	Critical	Villupuram	Vadasiruvalur	80.91	Semi_Critical	Improved
75	Villupuram	Villupuram	71.35	Semi_Critical	Villupuram	Villupuram	66.87	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
TAMIL NADU									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Tiruvannamalai	Agarapalayam	64.89	Safe	Tiruvannamalai	Agarapalayam	79.09	Semi Critical	Deteriorated
2	Coimbatore	Alanthurai	94.99	Critical	Coimbatore	Alanthurai	104.98	Over Exploited	Deteriorated
3	Ariyalur	Andimadam	43.03	Safe	Ariyalur	Andimadam	82.62	Semi Critical	Deteriorated
4	Erode	Arasur(E)	97.84	Critical	Erode	Arasur(E)	101.71	Over Exploited	Deteriorated
5	Tiruppur	Avinashi West	98.15	Critical	Tiruppur	Avinashi West	116.03	Over Exploited	Deteriorated
6	Tiruvannamalai	Chengam	95.62	Critical	Tiruvannamalai	Chengam	113.89	Over Exploited	Deteriorated
7	Thanjavur	Chozhanmaligai	21.01	Safe	Thanjavur	Chozhanmaligai	70.14	Semi Critical	Deteriorated
8	Thanjavur	Eachankottai	56.78	Safe	Thanjavur	Eachankottai	73.76	Semi Critical	Deteriorated
9	Namakkal	Elachipalayam	80.88	Semi Critical	Namakkal	Elachipalayam	92.45	Critical	Deteriorated
10	Kallakurichchi	Eraiyr(K)	87.77	Semi Critical	Kallakurichchi	Eraiyr(K)	91.45	Critical	Deteriorated
11	Tiruvannamalai	Eraiyr(T)	96.00	Critical	Tiruvannamalai	Eraiyr(T)	107.50	Over Exploited	Deteriorated
12	Cuddalore	Kadampuliyur	87.70	Semi Critical	Cuddalore	Kadampuliyur	96.65	Critical	Deteriorated
13	Kancheepuram	Kaliyampoondi	69.73	Safe	Kancheepuram	Kaliyampoondi	71.92	Semi Critical	Deteriorated
14	Pudukkottai	Kallakottai	30.02	Safe	Pudukkottai	Kallakottai	71.21	Semi Critical	Deteriorated
15	Kallakurichchi	Kallakurichi	87.25	Semi Critical	Kallakurichchi	Kallakurichi	91.87	Critical	Deteriorated
16	Theni	Kandamanur	90.75	Critical	Theni	Kandamanur	102.08	Over Exploited	Deteriorated
17	Pudukkottai	Karaiyur	68.58	Safe	Pudukkottai	Karaiyur	70.06	Semi Critical	Deteriorated
18	Coimbatore	Karamadai	86.01	Semi Critical	Coimbatore	Karamadai	92.49	Critical	Deteriorated
19	Pudukkottai	Keeranur	55.91	Safe	Pudukkottai	Keeranur	73.43	Semi Critical	Deteriorated
20	Tiruvannamalai	Kilpennathur	91.33	Critical	Tiruvannamalai	Kilpennathur	104.76	Over Exploited	Deteriorated
21	Salem	Kolathur(S)	88.40	Semi Critical	Salem	Kolathur(S)	95.51	Critical	Deteriorated
22	Ariyalur	Kovagam	50.42	Safe	Ariyalur	Kovagam	80.46	Semi Critical	Deteriorated
23	Dharmapuri	Krishnapuram	89.76	Semi Critical	Dharmapuri	Krishnapuram	92.34	Critical	Deteriorated
24	Ariyalur	Kundaveli	66.67	Safe	Ariyalur	Kundaveli	71.10	Semi Critical	Deteriorated
25	Tiruppur	Madathukulam	49.55	Safe	Tiruppur	Madathukulam	71.70	Semi Critical	Deteriorated
26	Namakkal	Manickampalayam	65.55	Safe	Namakkal	Manickampalayam	74.66	Semi Critical	Deteriorated
27	Theni	Markayankottai	77.09	Semi Critical	Theni	Markayankottai	96.71	Critical	Deteriorated
28	Krishnagiri	Mathigiri	69.52	Safe	Krishnagiri	Mathigiri	75.87	Semi Critical	Deteriorated
29	Pudukkottai	Mathur	60.60	Safe	Pudukkottai	Mathur	75.06	Semi Critical	Deteriorated
30	Theni	Myladumparai	73.75	Semi Critical	Theni	Myladumparai	98.26	Critical	Deteriorated
31	Kallakurichchi	Nagalur	89.02	Semi Critical	Kallakurichchi	Nagalur	90.84	Critical	Deteriorated
32	Kallakurichchi	Nainarpalayam	98.14	Critical	Kallakurichchi	Nainarpalayam	102.63	Over Exploited	Deteriorated
33	Pudukkottai	Neerpalani	55.65	Safe	Pudukkottai	Neerpalani	72.61	Semi Critical	Deteriorated
34	Salem	Pachamalai	86.59	Semi Critical	Salem	Pachamalai	91.76	Critical	Deteriorated
35	Salem	Panamarathupatti	93.46	Critical	Salem	Panamarathupatti	110.75	Over Exploited	Deteriorated
36	Cuddalore	Panruti	79.91	Semi Critical	Cuddalore	Panruti	91.94	Critical	Deteriorated
37	Tiruvannamalai	Peranamallur	66.90	Safe	Tiruvannamalai	Peranamallur	70.53	Semi Critical	Deteriorated
38	Vellore	Pernambut	88.32	Semi Critical	Vellore	Pernambut	93.65	Critical	Deteriorated
39	Krishnagiri	Pochampalli	65.44	Safe	Krishnagiri	Pochampalli	80.70	Semi Critical	Deteriorated
40	Pudukkottai	Poovathakudi	66.74	Safe	Pudukkottai	Poovathakudi	83.55	Semi Critical	Deteriorated
41	Salem	Potanery	97.72	Critical	Salem	Potanery	125.18	Over Exploited	Deteriorated
42	Pudukkottai	Pudhunagar	57.23	Safe	Pudukkottai	Pudhunagar	74.09	Semi Critical	Deteriorated
43	Pudukkottai	Pudukkottai	49.92	Safe	Pudukkottai	Pudukkottai	74.15	Semi Critical	Deteriorated
44	Theni	Rajathani	95.55	Critical	Theni	Rajathani	103.73	Over Exploited	Deteriorated
45	Cuddalore	Rettichavadi	98.29	Critical	Cuddalore	Rettichavadi	101.77	Over Exploited	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
TAMIL NADU									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
									Deteriorated
46	Madurai	Sakkimangalam	52.50	Safe	Madurai	Sakkimangalam	71.28	Semi Critical	Deteriorated
47	Kallakurichchi	Sankarapuram	94.43	Critical	Kallakurichchi	Sankarapuram	103.94	Over Exploited	Deteriorated
48	Tiruvannamalai	Santhavasal	82.22	Semi Critical	Tiruvannamalai	Santhavasal	99.13	Critical	Deteriorated
49	Ariyalur	Sendurai(A)	75.58	Semi Critical	Ariyalur	Sendurai(A)	93.23	Critical	Deteriorated
50	Coimbatore	Sulur	65.60	Safe	Coimbatore	Sulur	71.84	Semi Critical	Deteriorated
51	Erode	Talavadi	50.03	Safe	Erode	Talavadi	71.07	Semi Critical	Deteriorated
52	Tiruvannamalai	Thandarampet	82.06	Semi Critical	Tiruvannamalai	Thandarampet	93.65	Critical	Deteriorated
53	Tiruvannamalai	Thanipadi	95.66	Critical	Tiruvannamalai	Thanipadi	116.69	Over Exploited	Deteriorated
54	Vellore	Thiruvalam	67.97	Safe	Vellore	Thiruvalam	86.03	Semi Critical	Deteriorated
55	Cuddalore	Thiruvanthipuram	94.05	Critical	Cuddalore	Thiruvanthipuram	102.77	Over Exploited	Deteriorated
56	Tiruppur	Thungavi	54.17	Safe	Tiruppur	Thungavi	71.94	Semi Critical	Deteriorated
57	Tiruvannamalai	Thurinjapuram	84.19	Semi Critical	Tiruvannamalai	Thurinjapuram	95.76	Critical	Deteriorated
58	Namakkal	Tiruchengode	97.72	Critical	Namakkal	Tiruchengode	136.36	Over Exploited	Deteriorated
59	Kallakurichchi	Tirukkoilur	56.53	Safe	Kallakurichchi	Tirukkoilur	77.04	Semi Critical	Deteriorated
60	Cuddalore	Titagudi(East)	96.84	Critical	Cuddalore	Titagudi(East)	106.90	Over Exploited	Deteriorated
61	Cuddalore	Titagudi(West)	88.86	Semi Critical	Cuddalore	Titagudi(West)	90.77	Critical	Deteriorated
62	Kallakurichchi	Ulundurpet	72.12	Semi Critical	Kallakurichchi	Ulundurpet	97.59	Critical	Deteriorated
63	Tiruchirappalli	Uppillyapuram	99.43	Critical	Tiruchirappalli	Uppillyapuram	109.52	Over Exploited	Deteriorated
64	Thiruvarur	Vadapathimangalam	95.77	Critical	Thiruvarur	Vadapathimangalam	108.29	Over Exploited	Deteriorated
65	Coimbatore	Vadavalli	4.51	Safe	Coimbatore	Vadavalli	73.46	Semi Critical	Deteriorated
66	Tiruvannamalai	Vanapuram	75.47	Semi Critical	Tiruvannamalai	Vanapuram	97.01	Critical	Deteriorated
67	Pudukkottai	Varappur(P)	46.14	Safe	Pudukkottai	Varappur(P)	72.07	Semi Critical	Deteriorated
68	Pudukkottai	Veerappatti	66.93	Safe	Pudukkottai	Veerappatti	71.11	Semi Critical	Deteriorated
69	Cuddalore	Veppur	82.59	Semi Critical	Cuddalore	Veppur	98.09	Critical	Deteriorated
70	Tiruvannamalai	Vettavalam	84.60	Semi Critical	Tiruvannamalai	Vettavalam	92.66	Critical	Deteriorated
71	Villupuram	Vikkiravandi	89.80	Semi Critical	Villupuram	Vikkiravandi	94.20	Critical	Deteriorated
72	Cuddalore	Vridhachalam North	95.92	Critical	Cuddalore	Vridhachalam North	106.86	Over Exploited	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
TELANGANA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Rangareddy	Serilingampally	99.86	Critical	Rangareddy	Serilingampally	84.86	Semi_Critical	Improved
2	Bhadradi Kothagudem	Dammapeta	93.51	Critical	Bhadradi Kothagudem	Dammapeta	71.79	Semi_Critical	Improved
3	Bhadradi Kothagudem	Chunchupally	91.74	Critical	Bhadradi Kothagudem	Chunchupally	82.00	Semi_Critical	Improved
4	Nagarkurnool	Veldanda	98.38	Critical	Nagarkurnool	Veldanda	76.50	Semi_Critical	Improved
5	Nizamabad	Rudrur	97.23	Critical	Nizamabad	Rudrur	73.84	Semi_Critical	Improved
6	Nizamabad	Amur	91.75	Critical	Nizamabad	Amur	86.21	Semi_Critical	Improved
7	Rangareddy	Havathnagar	141.92	Over Exploited	Rangareddy	Havathnagar	50.74	Safe	Improved
8	Hyderabad	Khairatabad	104.79	Over Exploited	Hyderabad	Khairatabad	97.77	Critical	Improved
9	Hyderabad	Bahadurpura	137.70	Over Exploited	Hyderabad	Bahadurpura	82.98	Semi_Critical	Improved
10	Hyderabad	Musheerabad	206.39	Over Exploited	Hyderabad	Musheerabad	87.69	Semi_Critical	Improved
11	Hyderabad	Secunderabad	112.13	Over Exploited	Hyderabad	Secunderabad	92.64	Critical	Improved
12	Karimnagar	Chigurumamidi	71.51	Semi Critical	Karimnagar	Chigurumamidi	30.41	Safe	Improved
13	Karimnagar	Gangadhara	82.64	Semi Critical	Karimnagar	Gangadhara	67.25	Safe	Improved
14	Kamareddy	Bhiknur	71.07	Semi Critical	Kamareddy	Bhiknur	66.77	Safe	Improved
15	Kamareddy	Rajampet	70.32	Semi Critical	Kamareddy	Rajampet	64.52	Safe	Improved
16	Medak	Nizampet	78.03	Semi Critical	Medak	Nizampet	67.35	Safe	Improved
17	Nirmal	Nirmal Rural	71.37	Semi Critical	Nirmal	Nirmal Rural	48.48	Safe	Improved
18	Mahabubnagar	Midjil	74.60	Semi Critical	Mahabubnagar	Midjil	69.86	Safe	Improved
19	Mahabubnagar	Musapet	71.57	Semi Critical	Mahabubnagar	Musapet	65.10	Safe	Improved
20	Mahabubnagar	Nawabpet	83.61	Semi Critical	Mahabubnagar	Nawabpet	61.56	Safe	Improved
21	Mahabubnagar	Rajapur	70.52	Semi Critical	Mahabubnagar	Rajapur	53.77	Safe	Improved
22	Narayanpet	Kosqi	79.51	Semi Critical	Narayanpet	Kosqi	68.89	Safe	Improved
23	Suryapet	Thirumalagiri	71.20	Semi Critical	Suryapet	Thirumalagiri	64.83	Safe	Improved
24	Suryapet	Maddirala	71.97	Semi Critical	Suryapet	Maddirala	63.08	Safe	Improved
25	Khammam	Kusumanchi	71.74	Semi Critical	Khammam	Kusumanchi	58.46	Safe	Improved
26	Khammam	Thirumalayapalem	78.80	Semi Critical	Khammam	Thirumalayapalem	64.01	Safe	Improved
27	Khammam	Vemsoor	77.22	Semi Critical	Khammam	Vemsoor	68.19	Safe	Improved
28	Nalgonda	Devarakonda	79.89	Semi Critical	Nalgonda	Devarakonda	59.56	Safe	Improved
29	Rangareddy	Maheshwaram	70.14	Semi Critical	Rangareddy	Maheshwaram	54.94	Safe	Improved
30	Rangareddy	Kothur	89.29	Semi Critical	Rangareddy	Kothur	68.33	Safe	Improved
31	Rangareddy	Kadthal	72.59	Semi Critical	Rangareddy	Kadthal	63.49	Safe	Improved
32	Rangareddy	Moinabad	72.26	Semi Critical	Rangareddy	Moinabad	58.13	Safe	Improved
33	Rangareddy	Saroonnagar	78.30	Semi Critical	Rangareddy	Saroonnagar	62.12	Safe	Improved
34	Bhadradi Kothagudem	Manuguru	87.82	Semi_Critical	Bhadradi Kothagudem	Manuguru	62.18	Safe	Improved
35	Medchal Malkajgiri	Medchel	73.00	Semi_Critical	Medchal Malkajgiri	Medchel	69.30	Safe	Improved
36	Nagarkurnool	Vangoor	74.38	Semi Critical	Nagarkurnool	Vangoor	49.32	Safe	Improved
37	Nagarkurnool	Urkonda	73.52	Semi Critical	Nagarkurnool	Urkonda	68.80	Safe	Improved
38	Nizamabad	Yergatla	71.89	Semi Critical	Nizamabad	Yergatla	59.96	Safe	Improved
39	Nizamabad	Chandur	72.32	Semi Critical	Nizamabad	Chandur	55.62	Safe	Improved
40	Nizamabad	Varni	75.08	Semi Critical	Nizamabad	Varni	57.26	Safe	Improved
41	Nizamabad	Mugpal	72.91	Semi Critical	Nizamabad	Mugpal	52.73	Safe	Improved
42	Siddipet	Markook	70.61	Semi Critical	Siddipet	Markook	64.18	Safe	Improved
43	Siddipet	Siddipet Urban	71.94	Semi Critical	Siddipet	Siddipet Urban	64.50	Safe	Improved
44	Siddipet	Maddur	76.09	Semi Critical	Siddipet	Maddur	60.67	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
TELANGANA									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
45	Karimnagar	Ramaduqu	61.35	Safe	Karimnagar	Ramaduqu	73.28	Semi Critical	Deteriorated
46	Nalgonda	Nampalle	69.44	Safe	Nalgonda	Nampalle	70.79	Semi Critical	Deteriorated
47	Nalgonda	Chandur	65.08	Safe	Nalgonda	Chandur	76.68	Semi Critical	Deteriorated
48	Rangareddy	Rajendranagar	59.66	Safe	Rangareddy	Rajendranagar	78.96	Semi Critical	Deteriorated
49	Rajanna Siricilla	Chandurthi	69.95	Safe	Rajanna Siricilla	Chandurthi	74.71	Semi Critical	Deteriorated
50	Rajanna Siricilla	Rudranqi	64.28	Safe	Rajanna Siricilla	Rudranqi	77.89	Semi Critical	Deteriorated
51	Hyderabad	Amberpet	57.88	Safe	Hyderabad	Amberpet	97.44	Critical	Deteriorated
52	Hyderabad	Bandlaguda	64.96	Safe	Hyderabad	Bandlaguda	87.65	Semi Critical	Deteriorated
53	Hyderabad	Shaikpet	59.53	Safe	Hyderabad	Shaikpet	95.45	Critical	Deteriorated
54	Hyderabad	Tirumalgiri	34.11	Safe	Hyderabad	Tirumalgiri	72.00	Semi Critical	Deteriorated
55	Sangareddy	Ameenapur	67.17	Safe	Sangareddy	Ameenapur	75.54	Semi Critical	Deteriorated
56	Hanumakonda	Khazipet	69.80	Safe	Hanumakonda	Khazipet	72.33	Semi Critical	Deteriorated
57	Yadadri Bhuvanagiri	Alair	62.56	Safe	Yadadri Bhuvanagiri	Alair	70.65	Semi_Critical	Deteriorated
58	Adilabad	Mavala	88.22	Semi Critical	Adilabad	Mavala	91.88	Critical	Deteriorated
59	Hyderabad	Ammerpet	70.10	Semi Critical	Hyderabad	Ammerpet	106.58	Over Exploited	Deteriorated
60	Hyderabad	Maredpally	86.69	Semi Critical	Hyderabad	Maredpally	90.42	Critical	Deteriorated
61	Hyderabad	Himayatnagar	85.50	Semi Critical	Hyderabad	Himayatnagar	103.54	Over Exploited	Deteriorated
62	Hyderabad	Nampally	75.47	Semi Critical	Hyderabad	Nampally	90.61	Critical	Deteriorated
63	Medchal Malkajgiri	Bachpalle	83.38	Semi Critical	Medchal Malkajgiri	Bachpalle	100.03	Over Exploited	Deteriorated
64	Sangareddy	Patancheruvu	78.18	Semi Critical	Sangareddy	Patancheruvu	97.54	Critical	Deteriorated
65	Hanumakonda	Bheemadevarapalle	89.44	Semi Critical	Hanumakonda	Bheemadevarapalle	91.47	Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
UTTAR PRADESH									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Shamli	Kandhala	102.13	Over Exploited	Shamli	Kandhala	99.41	Critical	Improved
2	Bagpat	Baghpat	93.35	Critical	Bagpat	Baghpat	88.34	Semi Critical	Improved
3	Jaunpur	Baksha	70.81	Semi Critical	Jaunpur	Baksha	69.22	Safe	Improved
4	Hathras	Sikandra Rao	90.35	Critical	Hathras	Sikandra Rao	89.61	Semi Critical	Improved
5	Budaun	Salarpur	70.71	Semi Critical	Budaun	Salarpur	68.32	Safe	Improved
6	Etah	Jalesar	90.36	Critical	Etah	Jalesar	88.98	Semi Critical	Improved
7	Varanasi	Pindra	90.64	Critical	Varanasi	Pindra	78.15	Semi Critical	Improved
8	Agra	Jaitpur Kalan	95.38	Critical	Agra	Jaitpur Kalan	87.93	Semi Critical	Improved
9	Sonbhadra	Nagawa	72.76	Semi Critical	Sonbhadra	Nagawa	67.28	Safe	Improved
10	Hamirpur	Rath	71.52	Semi Critical	Hamirpur	Rath	69.00	Safe	Improved
11	Hamirpur	Sarila	73.89	Semi Critical	Hamirpur	Sarila	69.15	Safe	Improved
12	Prayagraj	Baharia	70.78	Semi Critical	Prayagraj	Baharia	69.84	Safe	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
UTTAR PRADESH									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Budaun	Samrer	69.99	Safe	Budaun	Samrer	72.88	Semi Critical	Deteriorated
2	Aligarh	Gonda	69.90	Safe	Aligarh	Gonda	72.28	Semi Critical	Deteriorated
3	Meerut	Sarurpur	68.39	Safe	Meerut	Sarurpur	70.55	Semi Critical	Deteriorated
4	Rampur	Said Nagar	64.23	Safe	Rampur	Said Nagar	79.93	Semi Critical	Deteriorated

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
WEST BENGAL									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Improved									
1	Purba Barddhaman	Mangolkote	70.69	Semi_Critical	Purba Barddhaman	Mangolkote	67.31	Safe	Improved
2	Purba Barddhaman	Kalna-II	70.64	Semi_Critical	Purba Barddhaman	Kalna-II	68.80	Safe	Improved
3	Purba Barddhaman	Manteswar	91.37	Critical	Purba Barddhaman	Manteswar	85.04	Semi_Critical	Improved
4	Murshidabad	Hariharpara	71.64	Semi_Critical	Murshidabad	Hariharpara	64.08	Safe	Improved
5	Murshidabad	Berhampore	73.68	Semi_Critical	Murshidabad	Berhampore	68.73	Safe	Improved
6	Murshidabad	Beldanga-I	73.95	Semi_Critical	Murshidabad	Beldanga-I	68.69	Safe	Improved
7	North 24 Parganas	Gaighata	93.91	Critical	North 24 Parganas	Gaighata	84.39	Semi_Critical	Improved
8	North 24 Parganas	Habra-I	99.56	Critical	North 24 Parganas	Habra-I	89.20	Semi_Critical	Improved
9	North 24 Parganas	Bagda	98.31	Critical	North 24 Parganas	Bagda	87.41	Semi_Critical	Improved
10	North 24 Parganas	Swarupnagar	78.30	Semi_Critical	North 24 Parganas	Swarupnagar	67.71	Safe	Improved
11	Malda	Kaliachak-I	75.90	Semi_Critical	Malda	Kaliachak-I	68.50	Safe	Improved
12	Paschim Barddhaman	Raniganj	95.16	Critical	Paschim Barddhaman	Raniganj	88.32	Semi_Critical	Improved
13	Haora	Udaynarayanpur	74.44	Semi_Critical	Haora	Udaynarayanpur	35.99	Safe	Improved
14	Dakshin Dinajpur	Hilli	96.58	Critical	Dakshin Dinajpur	Hilli	82.64	Semi_Critical	Improved
15	Dakshin Dinajpur	Balurghat	72.32	Semi_Critical	Dakshin Dinajpur	Balurghat	64.32	Safe	Improved
16	Nadia	Karimpur-I	95.47	Critical	Nadia	Karimpur-I	82.25	Semi_Critical	Improved
17	Nadia	Nabadwip	98.70	Critical	Nadia	Nabadwip	82.86	Semi_Critical	Improved
18	Birbhum	Mayureswar-II	70.82	Semi_Critical	Birbhum	Mayureswar-II	67.96	Safe	Improved
19	Paschim Medinipur	Garbeta-I	95.63	Critical	Paschim Medinipur	Garbeta-I	81.55	Semi_Critical	Improved
20	Paschim Medinipur	Keshpur	73.09	Semi_Critical	Paschim Medinipur	Keshpur	64.81	Safe	Improved
21	Paschim Medinipur	Chandrakona-II	92.33	Critical	Paschim Medinipur	Chandrakona-II	83.03	Semi_Critical	Improved

COMPARISON OF CATEGORIZATION OF ASSESSMENT UNITS (2023 AND 2022)									
WEST BENGAL									
S. No	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2022	Categorization 2022	Name of District	Name of Assessment Unit	Stage of Ground Water Extraction (%) in 2023	Categorization 2023	Remark
Deteriorated									
1	Murshidabad	Raninagar-II	57.59	Safe	Murshidabad	Raninagar-II	74.18	Semi Critical	Deteriorated
2	Murshidabad	Ragunathganj-I	37.77	Safe	Murshidabad	Ragunathganj-I	75.69	Semi Critical	Deteriorated

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ABBREVIATIONS

ARDC	Agriculture Refinance and Development Corporation
CGWA	Central Ground Water Authority
CGWB	Central Ground Water Board
bcm	Billion cubic metre
CLEG	Central Level Expert Group for overall reassessment of ground water resource of the country
GEC-1997	Ground Water Resources Estimation Committee, 1997
GWRA- 2020	Ground Water Resources Assessment, 2020
GSDA	Ground Water Survey and Development Agency, Maharashtra
ham	Hectare metre
IMD	India Meteorological Department
LPA	Long Period Average
lps	Litres per second
m	Meter
m bgl	Meter below ground level
m ham	Million hectare metre
M.I.	Minor Irrigation
DOWR, RD & GR	Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, Govt. of India
NABARD	National Bank for Agricultural and Rural Development
NAQUIM	National Aquifer Mapping & Management Programme
UT	Union Territory

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JHARKHAND STATE POLLUTION CONTROL BOARD

REGIONAL OFFICE - CUM - LABORATORY, HIG-1, HOUSING COLONY, BARTAND, DHANBAD - 826001

Analysis report of Damodar river/Tributaries/Pond under NWMP of October, 2023

Lab Ref. No.	STN Code	Sampling Date	Sampling Time	Name Of Monitoring Location	Temp A/W in °C	D.O. mg/lt	pH	BOD mg/lt	Alk mg/lt	Cl- mg/lt	COD mg/lt	T.H. mg/lt	Ca++ mg/lt	Mg++ mg/lt	TDS mg/lt	TS mg/lt	TSS mg/lt
2774	2394	12/10/2023	8:50 AM	TOP CHANCHI LAKE	25/21	7.6	7.5	1.1	68	14	20	68	12.8	7.808	337	389	52
2775	2382	12/10/2023	11:00 AM	DAMODAR AT PHUSRO ROAD BRIDGE	27/22	7.4	7.5	1.0	72	18	40	116	30.4	13.18	339	395	56
2776	3557	12/10/2023	11:40 AM	DAMODAR RIVER NEAR BERMO RAILWAY STATION, BOKARO	27.5/23	7.5	7.5	1.3	76	24	44	120	24	15.128	309	368	59
2777	3555	12/10/2023	12:10 PM	DAMODAR RIVER NEAR ZARANGDIH BRIDGE, BOKARO	29/25	7.6	7.5	1.2	74	22	40	116	30.4	13.176	302	356	54
2778	2381	12/10/2023	12:20 PM	BOKARO AT ZARANGDIH BRIDGE	29/26	7.3	7.4	1.1	70	16	40	68	12.8	7.808	276	326	50
2779	3556	12/10/2023	12:30 PM	CONFLUENCE OF BOKARO & DAMODAR RIVER NEAR ZARANGDIH BRIDGE, BOKARO	29/25.5	7.5	7.5	1.2	72	20	40	116	24	13.176	295	348	53
2780	3554	12/10/2023	2:50 PM	KONAR RIVER NEAR SWANG COAL WASHERY, BOKARO	30/25.5	7.5	7.4	1.0	70	16	36	68	12.8	7.808	280	331	51
2781	2390	12/10/2023	5:00 PM	DAMODAR AT TENUGHAT DAM	28/24	7.6	7.7	0.9	68	14	20	68	12.8	7.808	206	242	36
2782	4740	14/10/2023	7:30 AM	LOCO TALAB) PUMPU TALAB), AT- BARMASIA, DHANBAD	26.5/24	3.8	7.2	3.0	82	64	204	172	36.8	19.52	370	456	86
2783	4000	14/10/2023	9:40 AM	GARGA RIVER NEAR TELMUCHO BRIDGE	27.5/25	7.2	7.5	1.0	82	22	32	116	30.4	13.176	312	381	69
2784	3553	14/10/2023	10:00 AM	DAMODAR RIVER NEAR TELMUCHO BRIDGE	28/23	7.6	7.5	1.2	88	30	52	132	24	15.128	349	418	69
2785	4738	14/10/2023	10:40 AM	JAMUNIA RIVER NEAR LOHAPATTI BRIDGE, MAHUDA, DHANBAD	28.5/24	7.3	7.5	1.5	98	36	76	172	30.4	13.176	350	429	79
2786	4739	14/10/2023	11:50 AM	KATRI RIVER, NEAR BHATINDA FALL, AT- TETENGABAD, M	29.5/25	6.8	7.5	1.4	90	32	56	132	30.4	13.176	362	436	74

[Handwritten Signature]

2787	2383	14/10/2023	12:30 PM	DAMODAR U/S JAMADOBA WATER WORKS	30/25.5	7.7	7.5	1.1	86	28	60	128	17.6	10.248	364	439	75
2788	2384	14/10/2023	1:55 PM	DAMODAR AT DOMGARH WATER WORKS D/S SINDRI	30/26	7.5	7.6	1.0	84	34	56	126	24	15.128	362	438	76
2789	2391	14/10/2023	3:00 PM	DAMODAR AT PANCHET DAM	29/24	7.8	7.6	0.9	80	32	48	122	29.6	13.664	289	349	60
2790	2392	14/10/2023	4:05 PM	BARAKAR AT MAITHAN DAM	27.5/23	7.5	7.6	0.9	74	26	48	116	30.4	13.18	281	331	50
2791	4741	14/10/2023	6:10 PM	RANIBANDH TALAB NEAR ISM, DHANBAD	26/22	4.2	7.3	3.0	98	36	208	188	33.6	13.7	373	468	95

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JHARKHAND STATE POLLUTION CONTROL BOARD
REGIONAL OFFICE-CUM-LABORATORY, M/B-15, NEW HOUSING COLONY
ADITYAPUR, JAMSHEDPUR

Analysis report under NWMP for the month of October, 2023

SLN n.	Lab. Ref.	Water Code	Name of the Sampling Point	Date / Time of collection	Temp		D.O mg/l	pH	Concl. pohm/ m ²	B.O.D mg/l	Alk. Mg/l	Total Hard, mg/l	Ca ⁺⁺ mg/l	Mg ⁺⁺ mg/l	T.D.S mg/l	T.S.S mg/l	T.S mg/l
					A	W											
1	132/23	49	D/S Mango, Jamshedpur	20.10.2023 At 08.30 AM	30.4	27.2	6.4	7.7	348.0	3.2	13.6	96.0	24.8	8.30	112.0	24.0	336.0
2	133/23	4745	On Kharkai river before meeting swarnrekha river.	20.10.2023 At 09.10 AM	32.3	30.1	6.8	7.7	322.0	3.0	14.6	108.0	27.2	9.76	322.0	26.0	348.0
3	134/23	4744	On swarnrekha river before meeting to kharkai	20.10.2023 At 09.20AM	32.5	30.4	8.0	7.4	248.0	2.2	12.4	58.0	12.8	6.34	172.0	16.0	188.0
4	135/23	4746	On swarnrekha river after confluence kharkai river	20.10.2023 At 09.45 AM	32.6	30.5	7.6	7.7	244.0	3.2	18.2	84.0	15.2	11.22	286.0	28.0	314.0
5	136/23	2399	Chandil Dam	20.10.2023 At 10.50AM	33.2	30.4	7.2	7.6	336.0	1.8	6.6	54.0	12.8	5.37	262.0	20.0	282.0
6	137/23	48	Chandil Road Bridge	20.10.2023 At 11.20	33.2	31.4	7.8	7.5	258.0	1.8	21.0	58.0	15.20	4.88	192.0	18.0	210.0
7	138/23	2398	Dimna Lake	20.10.2023 At 12.15 PM	32.5	29.2	8.2	7.5	344.0	2.8	18.6	66.0	16.8	5.86	266.0	22.0	288.0
8	139/23	4742	Galudih Barrage	20.10.2023 At 01.10PM	32.2	29.5	7.6	7.5	254.0	2.2	10.6	72.0	16.0	7.81	192.0	18.0	210.0
9	140/23	4743	U/s HCL, Ghatsila.	20.10.2023 At 1.55PM	34.3	32.2	8.0	7.4	278.0	2.4	12.3	88.0	23.2	7.32	208.0	20.0	228.0
10	141/23	2387	Ghatsila Road Bridge	20.10.2023 At 02.15PM	34.4	32.3	8.0	7.4	281.0	1.2	12.4	82.0	22.4	6.34	244.0	22.0	266.0
11	142/23	24	D/S HCL, Ghatsila.	20.10.2023 At 02.15 PM	34.4	31.3	7.2	7.8	264.0	2.4	14.6	96.0	25.6	7.81	288.0	18.0	306.0
12	143/23	4748	Bharugora Road Bridge	20.10.2023 At 05.20 PM	30.2	28.7	7.8	7.6	288.0	1.4	6.0	86.0	21.6	7.81	376.0	22.0	398.0
13	130/23	1036	Koel Karo River at Manoherpur	15.10.2023 At 12.30 PM	34.5	30.6	7.6	7.5	244.0	1.6	13.4	112.0	28.8	9.76	412.0	26.0	438.0
14	131/23	4747	Koira River at Manoherpur	15.10.2023 At 01.15 PM	35.4	32.6	7.6	7.4	386.0	1.8	12.6	76.0	18.4	7.32	388.0	48.0	436.0

MKC
11-11-2023
(M.K. Choudhary)
S.T.

Satyaprakash
(Satya Prakash)
ASO

R.P. Kumar
(R.P. Kumar)
Regional Officer.

Board Analyst

1949



JHARKHAND STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY, MANO BALRAM BHWAN, HATIA, RANCHI-834003

Analysis report of Swarnrekha river basin, Brahmini river Basin under NWMP of October., 2023

Lab Ref. No. Station Code No.	Name of the sampling point.	Date/time of sample collected	Temp A/W in °C	D.O. mg/lit	PH Value	BOD mg/lit	T.C. MPN 100	F.C. MPN 100	Alk mg/lit	Cl. mg/lit	COD mg/lit	T.H. mg/lit	Ca ⁺⁺ mg/lit	Mg ⁺⁺ mg/lit	TDS mg/lit	T.S. mg/lit	TSS mg/lit	Acidity mg/lit
562/23	River Swarnrekha At. Ranchi (Tatisilwai)	13.10.2023 3.15 PM	30.0/19.0	5.2	6.7	2.4	-	-	82	18	40	114	32	8.296	386	426	40	6
609/23	River Koel At.-Basia Dam U/S, Jharkhand	30.10.2023 2.40 PM	30.0/24.0	7.6	7.3	1.4	-	-	78	22	36	112	24.8	12.2	394	436	42	6
610/23	River Sankh At.-Bolba, U/S	31.10.2023 10.20 AM	28.6/22.4	7.9	7.2	2.2	-	-	72	16	32	116	32.8	8.296	346	390	44	6
603/23	River Karo At.- Lohajimi U/S Jharkhand	30.10.2023 11.30 AM	28.0/23.0	7.7	7.4	2.6	-	-	82	18	48	122	33.6	9.27	294	434	40	6
574/23	River North Koel U/S Daltonganj	18.10.2023 2.30 PM	29.0/23.0	7.8	7.6	2.0	-	-	72	22	36	120	32.8	9.27	338	394	56	6
578/23	River North Koel D/S BCCL, Rehla	19.10.2023 11.30 AM	27.0/22.0	7.8	7.3	2.4	-	-	70	18	48	122	33.6	9.27	374	432	58	6
559/23	River Swarnrekha At.- Nankum Road Bridge	13.10.2023 01.00 PM	24.4/20.2	5.2	6.8	2.3	-	-	82	24	32	126	33.6	10.25	412	466	54	6
604/23	River Swarnrekha At.- Muri Road Bridge	27.10.2023 11.20 AM	29.2/22.0	7.8	7.5	1.4	-	-	80	22	38	120	32.8	9.27	398	436	38	6
555/23	River Swarnrekha At.- Hatia Dam	13.10.2023 8.38 AM	26.0/17.0	7.9	7.4	2.2	-	-	82	18	32	124	36.8	7.800	412	464	52	6
556/23	River Jumar At.- Kanke Dam	13.10.2023 10.30 AM	22.0/18.0	7.1	7.6	2.0	-	-	70	20	28	118	33.6	8.30	302	346	44	6
564/23	River Swarnrekha At. - Getalsnd Dam	13.10.2023 5.15 PM	22.0/18.0	7.8	7.4	2.6	-	-	92	24	48	124	36.8	7.80	340	380	40	6

S.K. Kashyap
06.11.23
(S.K.Kashyap)
S.T

Usha
06.11.2023
(Kumari Usha)
ASO

R.N. Anjaan
06/11/2023
(R.N. Anjaan)
Board Analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

CENTRAL LABORATORY, MANO BALRAM BHWAN, HATIA, RANCHI-834003

Analysis report of Swarnrekha river basin of October, 2023

Sl. No.	Name of the sampling point.	Date/time of sample collected	Temp A/W in °C	D.O. mg/lit	PH Value	BOD mg/lit	T.C. MPN/100	F.C. MPN/100	Alk mg/lit	Cl. mg/lit	COD mg/lit	T.H. mg/lit	Ca ⁺⁺ mg/lit	Mg ⁺⁺ mg/lit	TDS mg/lit	T.S. mg/lit	TSS mg/lit	Acidity mg/lit
569/23	River Swarnrekha, Near Ring Road Bridge, Sembo, Nagri, Ranchi	17.10.2023 4.00 PM	24.0/18.0	5.3	6.6	2.4	-	-	84	24	40	126	28.8	10.248	438	508	70	6
4749	River Swarnrekha, Near Intake Well, Hatia Railway	17.10.2023 12.10 PM	25.0/19.0	3.6	6.6	2.1	-	-	84	24	40	126	28.8	10.248	438	508	70	6
566/23	River Swarnrekha, Near Oberia Road Bridge, Hatia, Ranchi	17.10.2023 11.00 AM	24.2/18.2	3.2	6.5	2.6	-	-	88	18	40	120	24.8	9.270	372	312	40	6
4752	River Harmu, Near Harmu Bridge, Harmu, Ranchi	13.10.2023 11.25 AM	23.0/19.0	3.4	6.5	8.4	-	-	86	22	44	122	33.6	9.27	322	380	58	6
557/23	River Harmu before Meeting to Swarnrekha River	13.10.2023 12.15 AM	24.0/20.0	3.5	6.6	9.2	-	-	82	16	178	126	36.8	10.248	426	484	58	6
555/23	River Swarnrekha At.- Rucca Dam, Rucca, Ranchi	13.10.2023 5.40 PM	21.0/17.0	8.0	7.3	2.4	-	-	86	22	190	120	32.8	9.27	378	438	60	6
4756	Govt. Handpump, Near House of Rajendra Singh Munda, Kokrana, Muri	27.10.2023 12.10 PM	30.0/24.0	7.2	6.6	0.2	-	-	74	20	48	118	36.8	8.296	310	352	42	6
554/23	River Swarnrekha At.- Hatia Road Bridge, Ranchi	13.10.2023 8.00 AM	20.0/16.0	3.5	6.6	2.1	-	-	70	16	50	126	36.8	10.248	442	482	40	6
4084	River Jumar At.- BIT Mesra, Ranchi	13.10.2023 4.10 PM	22.0/18.4	4.9	6.5	2.4	-	-	68	22	44	124	33.6	7.800	412	456	44	6
606/23	River Swarnrekha U/S Hindalco Ind. Ltd., Muri Works, Chhota Muri, Ranchi	27.10.2023 1.30 PM	31.2/24.2	7.8	7.4	2.3	-	-	70	20	32	122	33.6	9.27	334	376	42	6
4086	River Damodar Near Rohini Project, NK Area, PO-Dakra, Ranchi	20.10.2023 1.35 PM	27.0/22.0	7.9	7.3	2.8	-	-	98	26	48	154	43.2	12.200	388	438	50	6

(S.K.Kashyap)
S.T

(Kumari Usha)
ASO

(R.N. Ahjaan)
Board Analyst

06.11.23

06.11.2023

06.11.2023



Jharkhand State Pollution Control Board, Regional Office, Hazaribag.
 Physico chemical characteristics of river Damodar at different points.
For the month of October, 2023

S/No	Ref No.	Station code	Name of Sampling Points.	Date & time Sampling	Temp. °C	pH	D.O.	BOD Mg/l	COD Mg/l	T.S. Mg/l.	TSS Mg/l.	TDS Mg/l
1.	526	2378	U/s Bhairi River At- Rajrappa, Ramgarh	18.10.2023 at 11.00 AM	30/28.0	7.4	7.6	2.5	68	402	74	328
2.	527		D/s Damodar River, At- Rajrappa, Ramgarh	18.10.2023 at 11.30 AM	31/28.0	7.5	7.6	2.6	80	490	84	406
3.	528	2380	Damodar River near Ramgarh Road Bridge, Dist. Ramgarh.	18.10.2023 at 03.10 PM	30/28.5	7.4	7.5	3.2	88	528	90	438
4.	529	2379	Nalkari Tributary, At- Parau, Ramgarh.	18.10.2023 at 04.20 PM	30/27.5	7.5	7.5	2.6	76	490	80	410
5.	530	2388	Tilaiya Dam at River Brakar, PO-Jhunnri Tilaiya, Koderna	19.10.2023 at 11.10 AM	31/28.0	7.3	7.7	1.2	44	370	52	318
6.	531		Tilaiya Dam near Inake Well of DVC, Jhunnri Tilaiya, Koderna	19.10.2023 at 11.50 PM	31/28.0	7.3	7.8	1.2	40	314	48	266
7.	532	2389	Konar River at Konar Dam, Bishnugarh, Hazaribag.	19.10.2023 at 02.10 PM	32/28.5	7.2	7.7	1.3	48	380	50	330
8.	533		Konar Dam near Inake well of DVC, Bishnugarh, Hazaribag.	19.10.2023 at 02.40 PM	30/27.0	7.2	7.9	1.2	44	320	48	272
9.	534	2402	Meetha Jhocol, At-Hazaribag Dist-Hazaribag	19.10.2023 at 04.10 PM	30/27.0	7.4	7.6	2.1	64	388	72	316

Standard Limits

6.5 to 8.5 4.0 min. 3.0

1500

CV/24.11.2023
 (C.K. Yadav)
 A.S.O.

28/8/23
 28/8/2023
 (J.P. Singh)
 R.O.

Board Analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

Dated.....09/10/2023

1. Lab.Ref. No.109...../
2. Name of sample **Ganga River At.- Rajmahal, Dist.- Sahibganj**
3. Sample collected by **1. Sri Anant Prakash Jha, F.A**
2.
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed:	Value
1. Date and time sampling	09/10/2023/10:17 AM
2. Temperature (A/W) C:	30°C / 27°C
3. pH :	7.6
4. D.O.mg/l :	7.2 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	13.8 mg/l
7. Total solids mg/l :	148.0 mg/l
8. T. S. S. :-	29.0 mg/l
9. T. D. S.:	119.0 mg/l
10. Conductivity :	124.0 MHO
11. Turbidity :	26.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A/J.S.A *[Signature]*
17/10/2023

[Signature]
17/10/2023
Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

Lab. Ref. No. ...112...../

Dated....09/10/2023

2. Name of sample **Ganga River U/S Near LCT Ghat**
3. Sample collected by **1. Sri Anant Prakash Jha, F.A**
2. Sahibganj
4. Sample analysed at **Regional Office cum Laboratory Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed:	Value
1. Date and time sampling	09/10/2023 / 02:45 PM
2. Temperature (A/W) C:	33°C / 30°C
3. pH :	7.5
4. D.O.mg/l :	7.2 mg/l
5. BOD mg/l :	1.1 mg/l
6. COD mg/l :	13.7 mg/l
7. Total solids mg/l :	146.0 mg/l
8. T. S. S. :-	26.0 mg/l
9. T. D. S.:	120.0 mg/l
10. Conductivity :	126.0 MHO
11. Turbidity :	27.0 NTU

Remarks: **Parameters were found within acceptable limits.**

(Signature)
S.S.A/J.S.A
09/10/2023

(Signature)
Regional Officer / Board analyst
17/10/2023



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. ...111...../ Dated.....09/10/2023
2. Name of sample **Ganga River D/S Janta Ghat**
Dist.- **Sahibganj**
3. Sample collected by **1. Sri Anant Prakash Jha, F.A**
2.
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analyzed:	Value
1. Date and time sampling	09/10/2023/02:25 PM
2. Temperature (A/W) C:	33 ⁰ C / 30 ⁰ C
3. pH :	7.6
4. D.O.mg/l :	7.3 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	13.9 mg/l
7. Total solids mg/l :	156.0 mg/l
8. T. S. S. :-	32.0 mg/l
9. T. D. S.:	124.0 mg/l
10. Conductivity :	130.0 MHO
11. Turbidity :	28.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A/J.S.A

Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

Dated.....09/10/2023

1. Lab.Ref. No.110...../
2. Name of sample **Ganga River Sahibganj (Sangi Dalan)**
3. Sample collected by **Sahibganj**
1. **Sri Anant Prakash Jha, F.A**
2.
4. Sample analysed at **Regional Office cum Laboratory Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed:	Value
1. Date and time sampling	09/10/2023/10:30 AM
2. Temperature (A/W) C:	30 ⁰ C / 27 ⁰ C
3. pH :	7.7
4. D.O.mg/l :	7.0 mg/l
5. BOD mg/l :	1.3 mg/l
6. COD mg/l :	13.6 mg/l
7. Total solids mg/l :	143.0 mg/l
8. T. S. S. :-	25.0 mg/l
9. T. D. S.:	118.0 mg/l
10. Conductivity :	123.0 MHO
11. Turbidity :	25.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A/J.S.A

Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No.114...../

Dated....11/10/2023

2. Name of sample **Masanjore Dam,**
Dist.- Dumka.3. Sample collected by **1. Sri Anant Prakash Jha, F.A**
2.4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**

5. Name and designation of representative present at the time of sampling

Parameter Analyzed:

Value

1. Date and time sampling	11/10/2023/11:30 AM
2. Temperature (A/W) C:	31 ⁰ C / 28 ⁰ C
3. pH :	7.4
4. D.O.mg/l :	6.5 mg/l
5. BOD mg/l :	1.3 mg/l
6. COD mg/l :	14.1 mg/l
7. Total solids mg/l :	169.0 mg/l
8. T. S. S. :-	43.0 mg/l
9. T. D. S.:	126.0 mg/l
10. Conductivity :	132.0 MHO
11. Turbidity :	29.0 NTU

Remarks: Parameters were found within acceptable limits.

(Signature)
17/10/2023
S.S.A/J.S.A

(Signature)
17/10/2023
Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. ... 113...../

Dated... 12/10/2023

2. Name of sample **Shiv Ganga Pond,**
Near Baba Mandir, Deoghar
3. Sample collected by **1. Sri Anant Prakash Jha, F.A**
2.
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed :	Value
1. Date and time sampling	12/10/2023/11:45 AM
2. Temperature (A/W) C:	32 ⁰ C / 29 ⁰ C
3. pH :	7.6
4. D.O.mg/l :	6.3 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	13.8 mg/l
7. Total solids mg/l :	145.0 mg/l
8. T. S. S. :-	29.0 mg/l
9. T. D. S.:	116.0 mg/l
10. Conductivity :	122.0 MHO
11. Turbidity :	23.0 NTU

Remarks: Parameters were found within acceptable limits.

S.S.A/J.S.A

Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. 22 / Dated..... 12/10/2023
2. Name of sample Holy Pond of Shivganga At.+Po- Jarmundi, Basukinath, Dumka
Dumka
3. Sample collected by 1. Sri Anant Prakash Jha, F.A
2.
4. Sample analysed at Regional Office cum Laboratory Tower Chowk, Dudhani, Dumka
5. Name and designation of representative present at the time of sampling

Parameter Analysed:

Value

1. Date and time sampling	12/10/2023/02:30 PM
2. Temperature (A/W) C:	32 ⁰ C / 29 ⁰ C
3. pH :	7.7
4. D.O.mg/l :	6.0 mg/l
5. BOD mg/l :	1.3 mg/l
6. COD mg/l :	13.8 mg/l
7. Total solids mg/l :	255.0mg/l
8. T. S. S. :-	44.0 mg/l
9. T. D. S.:	211.0 mg/l
10. Conductivity :	220.0 MHO
11. Turbidity :	41.0 NTU

Remarks: Parameters were found within acceptable limits.

S.S.A/J.S.A

Kannal
19/10/2023
Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. 21...../ Dated.....11/10/2023
2. Name of sample **Kurwa Dumka Water Intake Point, Dumka (Water intake Point)**
Dumka
3. Sample collected by **1. Sri Anant Prakash Jha, F.A**
2.
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed:

Value

1. Date and time sampling	11/10/2023/02:00 PM
2. Temperature (A/W) C:	33 ⁰ C / 30 ⁰ C
3. pH :	7.5
4. D.O.mg/l :	8.0 mg/l
5. BOD mg/l :	1.3 mg/l
6. COD mg/l :	14.1 mg/l
7. Total solids mg/l :	260.0 mg/l
8. T. S. S. :-	47.0 mg/l
9. T. D. S.:	213.0 mg/l
10. Conductivity :	220.0 MHO
11. Turbidity :	40.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A/J.S.A

Kamal
11/10/2023
Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. 115

Dated... 17/10/2023

2. Name of sample **Ganga River At.- Rajmahal, Dist.- Sahibganj**

3. Sample collected by **1. Sri R. D. Sahani S.T**
2.

4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**

5. Name and designation of representative present at the time of sampling

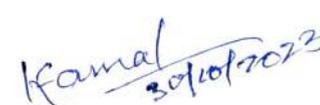
Parameter Analysed:

Value

1. Date and time sampling	17/10/2023/10:00 AM
2. Temperature (A/W) C:	29°C / 27°C
3. pH :	7.5
4. D.O.mg/l :	7.2 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	14.8 mg/l
7. Total solids mg/l :	168.0 mg/l
8. T. S. S. :-	41.0 mg/l
9. T. D. S.:	117.0 mg/l
10. Conductivity :	131.0 MHO
11. Turbidity :	27.0 NTU

Remarks: **Parameters were found within acceptable limits.**


S.S.A./J.S.A.
30/10/2023


Regional Officer / Board analyst
30/10/2023



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. 116 / Dated..... 17/10/2023
2. Name of sample **Ganga River Sahibganj (Sangi Dalan)**
Sahibganj
3. Sample collected by 1. **Sri R. D. Sahani** S.T
2.
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed:	Value
1. Date and time sampling	17/10/2023/10:30 AM
2. Temperature (A/W) C:	29°C / 27°C
3. pH :	7.6
4. D.O.mg/l :	7.3 mg/l
5. BOD mg/l :	1.3 mg/l
6. COD mg/l :	14.2 mg/l
7. Total solids mg/l :	169.0 mg/l
8. T. S. S. :-	44.0 mg/l
9. T. D. S.:	125.0 mg/l
10. Conductivity :	131.0 MHO
11. Turbidity :	28.0 NTU

Remarks: **Parameters were found within acceptable limits.**

[Signature]
30/10/2023
S.S.A/J.S.A

[Signature]
30/10/2023
Regional Officer / Board analyst



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No.117...../

Dated.....17/10/2023

2. Name of sample **Ganga River D/S Janta Ghat****Dist.- Sahibganj**3. Sample collected by 1. **Sri R. D. Sahani** S.T
2.4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**

5. Name and designation of representative present at the time of sampling

Parameter Analyzed:	Value
1. Date and time sampling	17/10/2023/11:00 AM
2. Temperature (A/W) C:	30 ⁰ C / 28 ⁰ C
3. pH :	7.5
4. D.O.mg/l :	7.1 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	14.1 mg/l
7. Total solids mg/l :	168.0 mg/l
8. T. S. S. :-	42.0 mg/l
9. T. D. S.:	126.0 mg/l
10. Conductivity :	130.0 MHO
11. Turbidity :	26.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A/J.S.A

(Signature)
30/10/2023

Regional Officer / Board analyst

(Signature)
30/10/2023



JHARKHAND STATE POLLUTION CONTROL BOARD

Lab. Ref. No.118...../

Dated.....17/10/2023

2. Name of sample **Ganga River U/S Near LCT Ghat
Sahibganj**
3. Sample collected by **1. Sri R. D. Sahani S.T
2.**
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analysed:

Value

1. Date and time sampling	17/10/2023 / 11:30 AM
2. Temperature (A/W) C:	31 ⁰ C / 28 ⁰ C
3. pH :	7.4
4. D.O.mg/l :	7.2 mg/l
5. BOD mg/l :	1.3 mg/l
6. COD mg/l :	13.9 mg/l
7. Total solids mg/l :	167.0 mg/l
8. T. S. S. :-	42.0 mg/l
9. T. D. S.:	125.0 mg/l
10. Conductivity :	128.0 MHO
11. Turbidity :	26.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A/J.S.A

[Signature]
30/10/2023

Regional Officer / Board analyst

[Signature]
30/10/2023



JHARKHAND STATE POLLUTION CONTROL BOARD

1. Lab.Ref. No. 119

Dated..... 18/10/2023

2. Name of sample **Shiv Ganga Pond,**

Near Baba Mandir, Deoghar

3. Sample collected by 1. **Sri R. D. Sahani** S.T
2.

4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**

5. Name and designation of representative present at the time of sampling

Parameter Analysed :

Value

1. Date and time sampling	18/10/2023/11:00 AM
2. Temperature (A/W) C:	30°C / 27°C
3. pH :	7.6
4. D.O.mg/l :	6.9 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	12.6 mg/l
7. Total solids mg/l :	145.0 mg/l
8. T. S. S. :-	32.0 mg/l
9. T. D. S.:	113.0 mg/l
10. Conductivity :	116.0 MHO
11. Turbidity :	22.0 NTU

Remarks: **Parameters were found within acceptable limits.**

S.S.A./J.S.A

Regional Officer / Board analyst



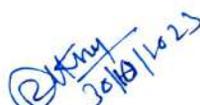
JHARKHAND STATE POLLUTION CONTROL BOARD

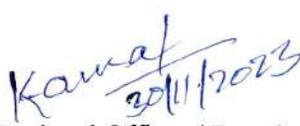
Dated.....18/10/2023

1. Lab.Ref. No.120..../
2. Name of sample **Masanjore Dam,**
Dist.- Dumka.
3. Sample collected by 1. **Sri R. D. Sahani** **S.T**
2.
4. Sample analysed at Regional Office cum Laboratory **Tower Chowk, Dudhani, Dumka**
5. Name and designation of representative present at the time of sampling

Parameter Analyzed:	Value
1. Date and time sampling	18/10/2023/02:00 PM
2. Temperature (A/W) C:	31 ⁰ C / 28 ⁰ C
3. pH :	7.7
4. D.O.mg/l :	6.7 mg/l
5. BOD mg/l :	1.2 mg/l
6. COD mg/l :	13.2 mg/l
7. Total solids mg/l :	140.0 mg/l
8. T. S. S. :-	24.0 mg/l
9. T. D. S.:	126.0 mg/l
10. Conductivity :	128.0 MHO
11. Turbidity :	21.0 NTU

Remarks: **Parameters were found within acceptable limits.**


 S.S.A/J.S.A


 Regional Officer / Board analyst