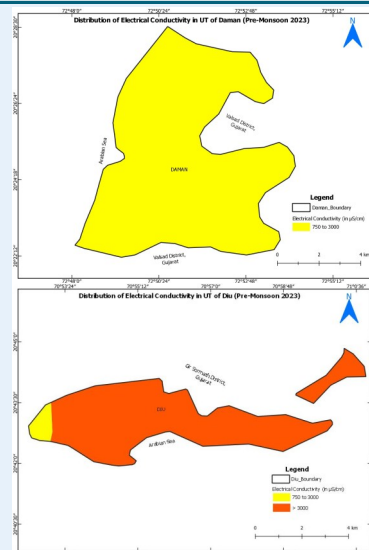
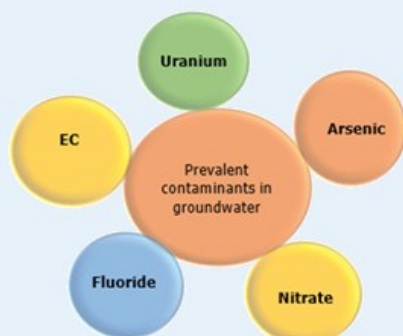


Groundwater Quality Scenario in Daman and Diu

Parameters	No of samples	Permissible limit	No. of Samples above permissible limit	% Samples above permissible Limit
EC	7	3000 $\mu\text{S}/\text{cm}$	1	14.29
Fluoride	7	1.5 mg/L	0	0
Nitrate	7	45 mg/L	0	0
Arsenic	7	10 ppb	0	0
Uranium	7	30 ppb	0	0



Districts with anomalous values at sporadic locations

EC (3000 $\mu\text{S}/\text{cm}$)	Not Any
Fluoride ($F > 1.5$ mg/L)	Not Any
Nitrate (Nitrate > 45 mg/L)	Not Any
Arsenic ($As > 10$ ppb)	Not Any
Uranium ($U > 30$ ppb)	Not Any

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Central Ground Water Board
 Department of Water Resources, RD & GR
 Ministry of Jal Shakti, Government of India



Dynamic Ground Water Resources &
 Ground Water Quality of Daman and Diu, 2024

December, 2024

Groundwater Resource Scenario in Daman and Diu

- ◆ Ground Water Resources Assessment (GWRA)- jointly carried out by Central Ground Water Board and State Nodal/Ground Water Department periodically as per the Ground Water Resource Estimation Committee (GEC) methodology.
- ◆ Carried out under the guidance of the respective State/UT Level Committees (SLCs) and overall supervision of Central Level Expert Group (CLEG).
- ◆ As part of the assessment, 'Annual Extractable Ground Water Resource' as well as 'Annual Ground Water Extraction are assessed for each assessment unit (Block).
- ◆ The 'Stage of Ground Water Extraction' is computed as the ratio of 'Annual Ground Water Extraction' with respect to 'Annual Extractable Ground Water Resource' and is usually expressed in percentage. Based on the stage of extraction, the assessment units are categorized as Safe ($\leq 70\%$), Semi-Critical ($>70\%$ and $\leq 90\%$), Critical ($>90\%$ and $\leq 100\%$) and Over-Exploited ($>100\%$).
- ◆ GWRA-2024, 2023, 2022 and 2020 has been carried out through a software/web-based application "INDIA-GROUNDWATER RESOURCE ESTIMATION SYSTEM (IN-GRES)" developed by CGWB through IIT-Hyderabad.

Salient Features

1	Rainfall	1,709.10 mm
2	Hydrogeology	Diu is underlain by Alluvium and Milliolite soft rock formation. Daman is underlain by 30% alluvium and 70% Basalt rocks.
3	Recharge Worthy Area of the State	110.9 Sq. Km
4	Assessment Unit (AU) Type / Number	District / 2 Numbers
5	Average area of Assessment Unit	55.45 Sq. Km

Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	0.02	0.03	0.04	0.04	0.04
2	Annual Extractable Ground Water Resources (in bcm)	0.02	0.03	0.04	0.03	0.03
3	Annual Ground Water Extraction (in bcm)	0.01	0.03	0.06	0.06	0.06
4	Stage of Ground Water Extraction (in %)	61.4	113.38	157.92	170.7	170.83

bcm: Billion Cubic Meters

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

Sl. No	Category	GWRA-2017		GWRA-2020		GWRA-2022		GWRA-2023		GWRA-2024	
		Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs	Number of AUs	% of AUs
1	Safe	1	50	1	50						
2	Semi-critical										
3	Critical	1	50								
4	Over-exploited			1	50	2	100	2	100	2	100
5	Saline										
Total number of AUs		2		2		2		2		2	

Recommendations

- * 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. The ground water resources have been assessed district-wise. The total Annual Ground Water Recharge has been assessed as 0.04 bcm and Annual Extractable Ground Water Resources as 0.03 bcm. The total current Annual Ground Water Extraction has been assessed as 0.06 bcm and Stage of Ground Water Extraction as 170.83 % and falling under "Over – Exploited" category.
- * Due care must be taken to arrest depletion in water level in Diu by reducing ground water withdrawal and by resorting to surface water supply for sustainability of available fresh water resource and to prevent deterioration in ground water quality.
- * Adoption of Roof Top Rainwater Harvesting in urban areas of Daman district, mainly in areas, where the alluvial aquifer has been desaturated. In these areas regulatory measures for registration of ground water abstraction structures for industries and their monitoring has to be taken up for sustainable development of the ground water resource. To augment available resources, roof top rainwater harvesting or suitable artificial recharge measures (percolation ponds with recharge shafts) should be made mandatory for the non polluting industries.
- * Restoration/rejuvenation of all the existing tanks should be taken up with the view of accommodating the available surface run off and thus augmentation of the ground water resources by artificial recharge. Periodical maintenance of these tanks is to be ensured.
- * Disposal of industrial effluents, solid waste and urban sewerage should be disposed off safely and after treatment, so that the phreatic aquifer does not get adversely polluted.
- * Creating awareness (Mass Awareness Campaign for public and farmers, Slideshows, Display boards on water conservation, Water Management Training Programme for personnel related with water sector, Painting/Essay competition for school students etc.) regarding water conservation etc may be organized at appropriate level.
- * Union Territory may review their free/subsidized electricity policy to farmers (if applicable), bring suitable water pricing policy and may work further towards crop rotation/diversification/other initiatives to reduce overdependence on groundwater.
- * Regulation & control of Ground water Extraction: Ministry of Jal Shakti has issued the guidelines for control and regulations of ground water extraction vide notification dated 24.09.2020 which has further been amended in March 2023. Concerned departments may ensure implementations of the guidelines.