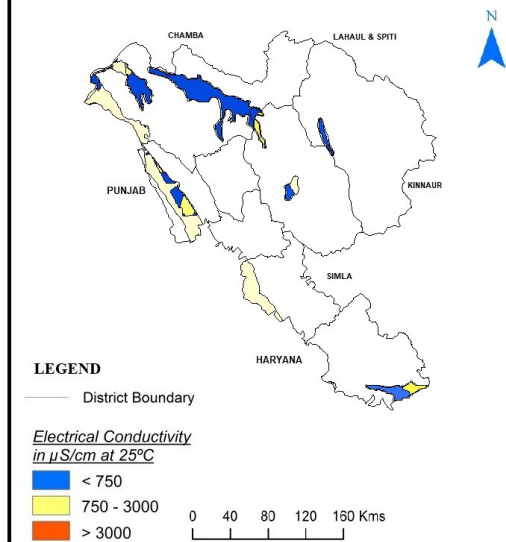


Groundwater Quality Scenario in Himachal Pradesh

Parameters	No of samples	Permissible limit	No. of Samples above permissible limit	% Samples above permissible Limit
EC	171	3000 $\mu\text{S/cm}$	0	0
Fluoride	171	1.5 mg/L	2	1.17
Nitrate	171	45 mg/L	16	9.36



ELECTRICAL CONDUCTIVITY Pre-Monsoon 2024, Himachal Pradesh



Districts with anomalous values at sporadic locations

EC (3000 $\mu\text{S/cm}$)	Not Any
Fluoride ($F > 1.5 \text{ mg/L}$)	Sirmour, Una
Nitrate (Nitrate $> 45 \text{ mg/L}$)	Bilaspur, Hamirpur, Mandi, Sirmour, Solan, Una

For Further Information, Contact to :
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<https://ingres.iith.ac.in>
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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 Himachal Pradesh, 2024

December, 2024

Groundwater Resource Scenario in Himachal Pradesh

- ◆ 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	1,592.94 mm
2	Hydrogeology	Unconsolidated / semi-consolidated formations form potential aquifers in valley and low-lying areas.
3	Recharge Worthy Area of the State	3.47 Thousand Sq. Km
4	Assessment Unit (AU) Type / Number	Valley / 10 Numbers
5	Average area of Assessment Unit	346.80 Sq. Km

Findings

	Attribute	GWRA-2017	GWRA-2020	GWRA-2022	GWRA-2023	GWRA-2024
1	Total Annual Ground Water Recharge (in bcm)	0.51	1.07	1.03	1.11	1.11
2	Annual Extractable Ground Water Resources (in bcm)	0.46	0.97	0.94	1.01	1.01
3	Annual Ground Water Extraction (in bcm)	0.39	0.36	0.35	0.35	0.36
4	Stage of Ground Water Extraction (in %)	86.37	36.83	37.56	34.95	35.48

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	3	38	10	100	10	100	10	100	10	100
2	Semi-critical	1	13								
3	Critical										
4	Over-exploited	4	50								
5	Saline										
Total number of AUs		8		10		10		10		10	

Recommendations

- * 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.
- * 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 0.36 bcm and Stage of Ground Water Extraction is 35.48 %. Out of the 10 assessment units, all the ten assessment units have been categorized as 'Safe'.
- * In the safe category areas of Himachal Pradesh, State Government can judiciously develop the ground water resource mainly for agricultural use, however, at no point of time the extraction level should exceed 70%.
- * Development of springs and their catchment in hilly areas for their sustainability.
- * National Aquifer Mapping & Management Programme (NAQUIM) Reports prepared by CGWB (<https://cgwb.gov.in/cgwbpm/>). which are also being shared with State/District Authorities and Ground Water Year Book published by CGWB having water level & water quality data may be used in Ground water management. (<https://cgwb.gov.in/cgwbpm/>).
- * State may review their free/subsidized electricity policy to farmers (if applicable), bring suitable water pricing policy and may work further towards crop rotation/diversification/other initiatives to reduce overdependence on groundwater.
- * 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.