ENVIS CENTRE, CHANDIGARH
NewsLetter
Paryavaran - Patra
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Chandigarh State of Environment

EDITORIAL

WATER STATUS: CHANDIGARH (UT)

Water is the elixir of life and it's importance cannot be underestimated. No living being can survive without water. According to the recent report of WHO, by 2025, half of the world's population will be living in water-stressed conditions. thus it is crucial to realize the significance of this depleting natural resource and develop relevant strategies for its sustainable use and conservation. Chandigarh for that matter has been playing well within boundaries. The present water supply service area of Municipal Corporations Chandigarh (MCC) is 114km^2, which includes MCC area of 79.34 km^2 and rural area of 34.69 km^2.The urban area falls in jurisdiction of Municipal Corporation and the water supply system is entrusted to Public Health Wing of MCC. The rural area comprises of 13 villages overseen by the Engineering Department. The water supply to the villages is provided with tube wells in and around the villages. Other urban/rural areas have water source of 67MGD (Millions of Gallons per day) from Bhakra Main Canal which is 27 km away from Chandigarh and 20 MGD from 239 tube well located in the city.

Index

- Introduction
- Status of Ground water
- Water Table
- Monsoonal Water Level Range
- Water Supply, Demand and Consumption Scenario
- Water Conservation Practices in Chandigarh
- Recycle and Reuse of Treated Waste Water
- Action Plan for Water Conservation: UT, Chandigarh

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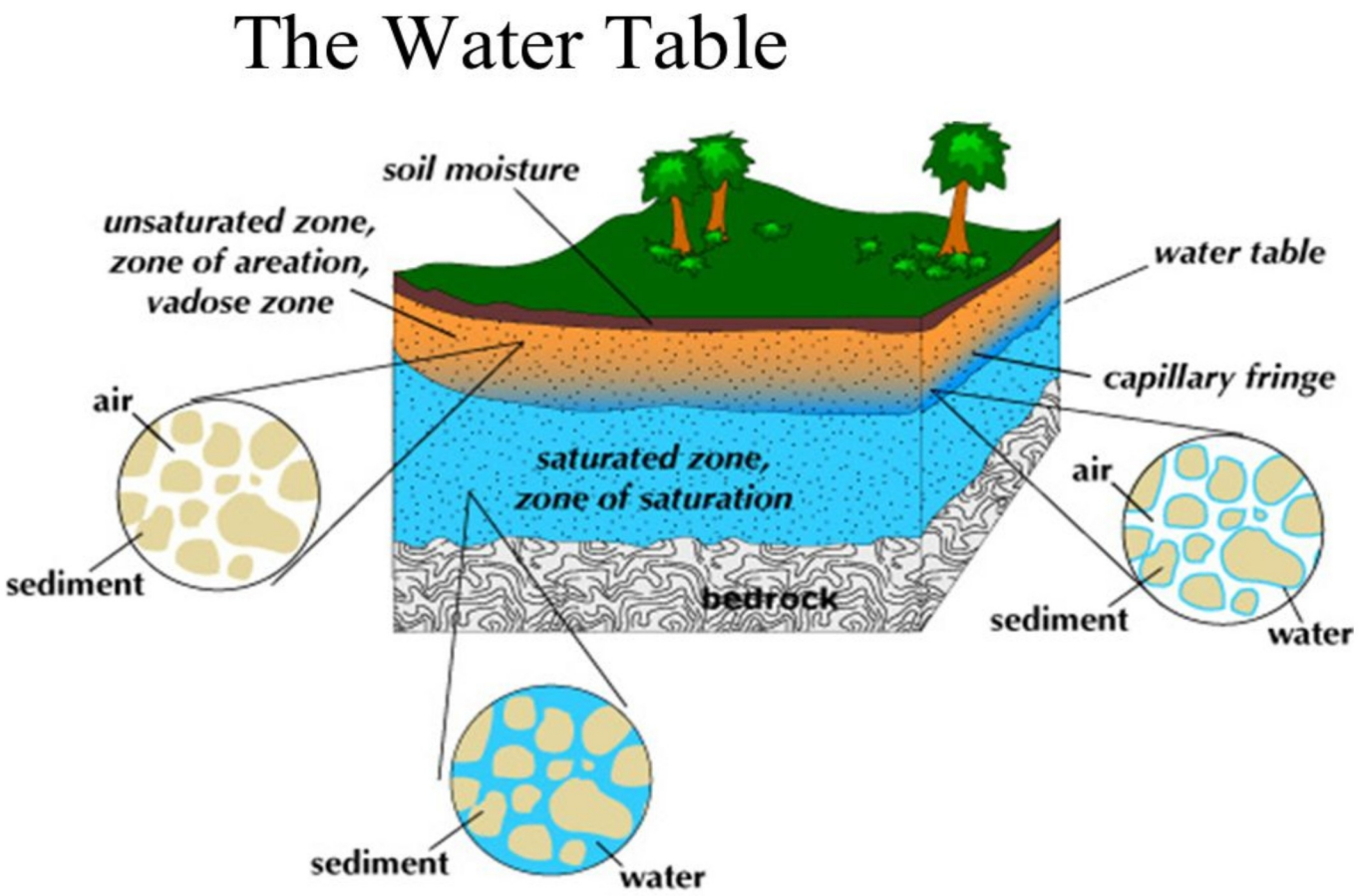
Status of Ground Water

Status of Ground Water	2015	2016	2017
Annual Replenishable Ground Water Resources (MCM)	2156 ham	2159 ham	2159 ham
Available Ground Water Resource	1940 ham	1943 ham	1943 ham
Balance Ground Water	1940 ham	1943 ham	1943 ham
Provision for Industrial/Domestic and other uses & Natural Discharge etc.	216 ham	216 ham	216 ham

Source: Scientist 'D' & TS For Regional Director, Superintending Hydrogeologist For Reg. Dir. Ground Water B. Chandigarh
Ham- Hectare Meters

Ground water is one of the most important natural resource. It is the water that is present beneath the earth's surface, in rock formations and in soil pores. Ground water level of Chandigarh has increased over the past few years (2015-2017).The data collected by Central Ground Water Board, Chandigarh shows that the status of ground water for Industrial/ Domestic, other uses & natural discharge has remained constant at 216 ham from 2015 to 2017.



The demand for water in Chandigarh has increased considerably owing to its highly dense population structure. It is estimated that by 2026, the water demand will be 523.41 (Millions of liters per day) MLD (116.31 MGD) that is about 22.73% higher than the 2011 demand of 426.50 MLD (94.78 MGD). This is due to excessive pumping of water than the required replenishment. As a result, the ground water level of deep aquifers in Chandigarh have been suppressed on an average of 4m in 6 years at different locations throughout the city.

Year	Covered Status	Level of Supply (LPCD)	No of Existing Water Source	Type of Water Source	No of Stand Posts With Platform Drainage	Total No of House Connection
2013-14	100%	Potable Water 10 Hrs Per Day	2	Canal Water & Deep Bore Tubewells	233 No's	156730 No's
2014-15	100%	Potable Water 10 Hrs Per Day	2	Canal Water & Deep Bore Tubewells	319 No's	158363 No's
2015-16	100%	Potable Water 10 Hrs Per Day	2	Canal Water & Deep Bore Tubewells	720 No's	142633 No's
2016-17	100%	Potable Water 10 Hrs Per Day	2	Canal Water & Deep Bore Tubewells	720 No's	156668 No's

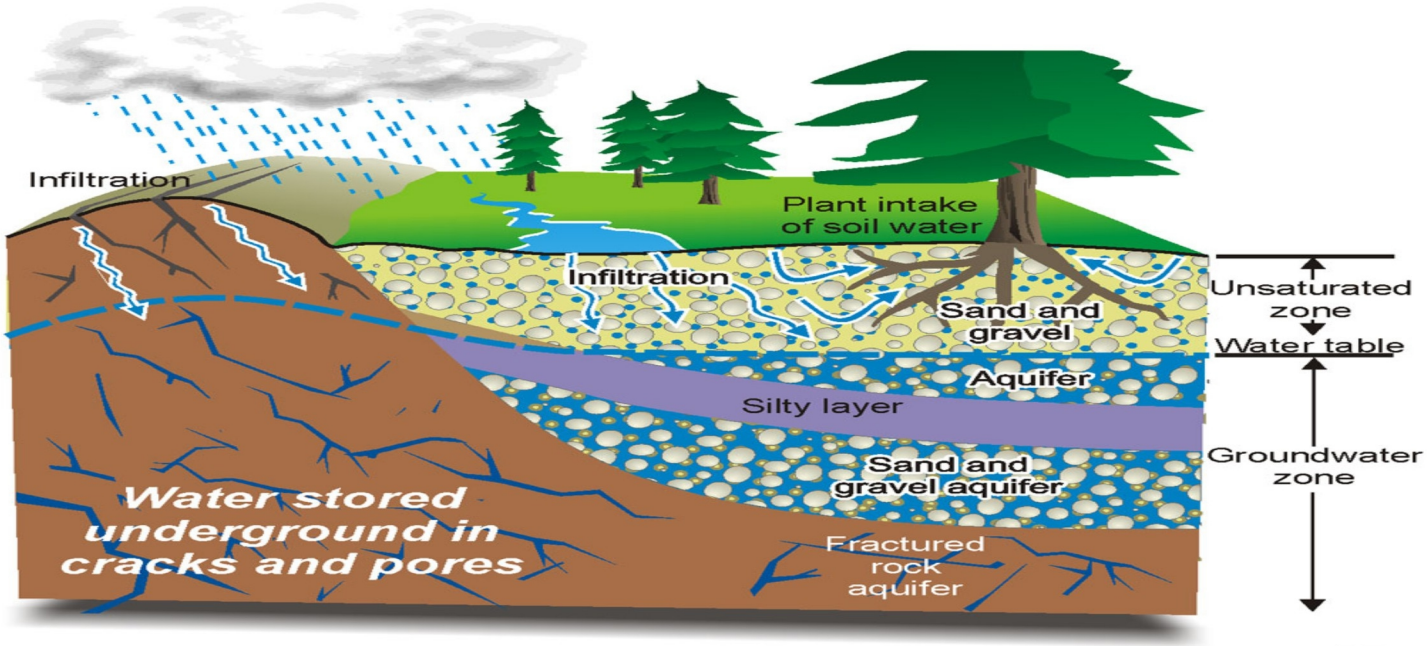
Source: Executive Eng., MCPH, Div.1, 2 & 3, O.S.D. Chief Engg., Chandigarh.
Superintending Engineer, MCPH Circle, Chandigarh. (M.C-17)

Monsoonal Water Level Range

Year	Pre-Monsoon Water Level Range	Post Monsoon Water Level Range	Units
2013	4.62-22.49	2.98-20.50	m bgl
2014	2.05-21.48	2.55-20.50	m bgl
2015	3.07-38.47	2.72-39.67	m bgl
2016	3.09-30.97	2.82-28.85	m bgl
2017	3.75-42.52	2.44- 41.16	m bgl

Source: Scientist 'D' & TS For Regional Director, Superintending Hydro-geologist For Reg. Dir. Ground Water Board, Chandigarh
m bgl - Meter Below Ground Level

Chandigarh is recipient to heavy rainfall during the months from July to September and receives an average rainfall of 1059.3 mm, which is calculated to be approximately 60380.1 million liters or 13241 gallons or 36.28 MGD per annum. It is this water source that helps in recharging of ground water and various confined/ unconfined aquifers.

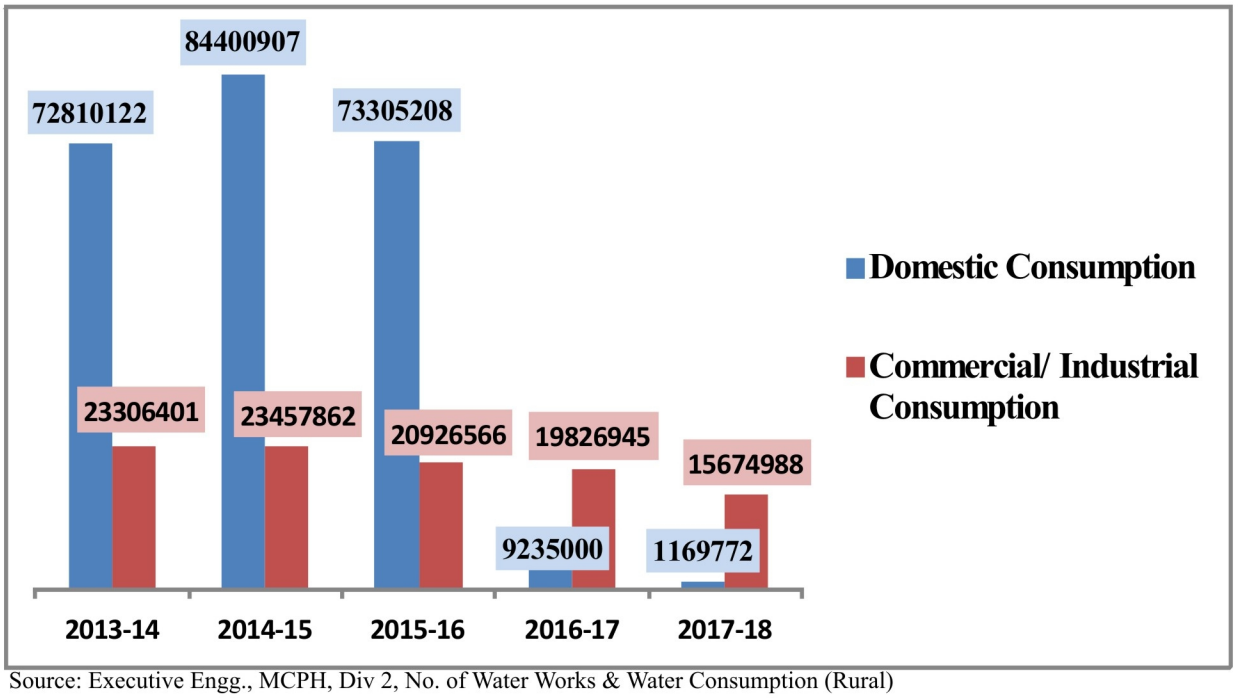


Water Supply, Demand and Consumption Scenario

Year	Population in Lacs	Domestic Requirement @ 150 LPCD in MLD	Industrial Commercial @ 4000 gallon/Acres /Day Area in Acres	Industrial Commercial Requirement in MLD	Community Institutional @ 4000 gallon/Acres /Day Area in Acres	Community Institutional Requirement in MLD	Requirement For Stand Post Lav Blocks MLD	Wastage Water Leakage %	Total Leakage MLD	Total Requirement	Horticulture Requirement @5400 Gallon/Acres/ Day Area in Acres	Horticulture Requirement in MLD	Gross Requirement MLD
2011	10.55	158.25	1921.63	29.09	3048.5	46.15	20.07	15	38.04	291.6	6600	134.9	426.5
2016	12.79	191.85	1998.5	30.26	3170.44	48	24.43	8	44.18	338.72	6600	134.9	473.62
2021	13.71	205.65	2078.44	31.47	3297.25	49.92	29.77	8	47.52	364.33	6600	134.9	499.23
2026	14.96	216.9	2161.6	32.73	3429.15	51.92	36.29	8	50.68	388.51	6600	134.9	523.41
2031	15.59	233.85	2248	34.03	3566.32	53.99	44.19	8	54.91	420.98	6600	134.9	555.88
2036	16.95	254.25	2338	35.4	3709	56.15	53.86	8	59.95	459.61	6600	134.9	594.51

Source: Climate Action Plan, U.T., Chandigarh

The above graph shows a detailed description of the current and prospective water scenario in Chandigarh. It highlights an understandable comparison between the demands of drinking water over the years, which is most likely to increase, keeping in view the constant demand and unnecessary exploitation of water resources. It projects more than 60% increment in population of the city from 2011 to 2036. With increased urbanization, the demand for fresh water may also rise up to 30% as compared to the current requirement. It is high time to take progressive steps in order to tackle futuristic water related issues. For effective operationalisation of above agenda, use of tertiary treated water for various household purposes like cleaning, washing and gardening can prove to be a useful measure. In addition to this, we can inculcate sustainable farming practices, like no-till farming, sprinkler irrigation, improved drainage, time of use charge and metered supply.



Source: Executive Engg., MCPH, Div 2, No. of Water Works & Water Consumption (Rural)

The above graph shows the water consumption rate in Domestic sector and Commercial/Industrial sector of Chandigarh. From 2013 to 2016, the water consumption in the domestic sector is more than the Commercial and Industrial sector. But the trend has been altered from the past few years (2016-2018). The possible reason is the relentless construction of industrial units in and around chandigarh. The categorization of industries are based on the following type-
Red Category - 192
Orange Category - 575
Green Category - 577
White Category - 1625

Name of Industry	Number
Electroplating	98
Foundries	33
Hotel & Restaurants	229
Sewage Treatment Plants	5
Potable Alcohol's bottling Plants	10
Automobile Service Stations	91
Hospitals	44
Wire Drawing with Pickling	48
Wire Drawing without Pickling	7
Slaughter House (Abattoir)	1
Zinc processing units	3
Microbreweries	11

Source: Ghaggar Action Plan

Water Conservation Practices in Chandigarh

No. of Units	Type of scheme	Total annual Capacity (Lakh Cubic meter)
6	Roof Top Rain Water Harvesting	0.144-0.13
1	Roof Top & Pavement catchments Rain Water	34.5
1	Recharge Trenches	9.5

Source: Executive Engineeing Project Public Health Division No. 1 & 7, Chandigarh

Chandigarh has a total rain water harvesting capacity of more than 70% of the total land area. The total capacity of water that would be available for recharge annually is : 58 sq km (area) x 1059.3 (rainfall) x 0.5 (rainfall coefficient)= 30, 720 million liters.To reduce dependence on ground water a short term legal frame work was been laid by the Administration to make provisions for rain water harvesting mandatory while granting the additional covered area to all plots above 500 sqm (1 Kanal) area, with Order/Notification dated 16.10.2008.

Storm Water Harvesting Sources	Area Covered
From Roads	15.89 sq.km
From the Rooftop of Residential area	30.19 sq.km
From Public and Institutional Buildings	7.94 sq.km
From Shopping area	3.97 sq.km

Source: Ex.Er. Project Public Health Division No.7,Chandigarh, Chandigarh Housing Board, 8, Jan Marg, Sector 9 D

Owing to the escalating population explosion, there has been an exponentially increasing water demand and never satiating water consumption. Fortunately the city beautiful 'Chandigarh' has operationalized artificial recharging schemes like Roof Top Rain Water Harvesting, Roof Top and Pavement Catchments Rain Water Harvesting and Recharge Trenches.

Construction of storm water harvesting and ground water recharge structures is also at its peak advancement. Storm water harvesting sources like the roads cover an area of 15.89 sq. Km, an area of 30.19 sq. Km is covered under rooftop of residential area, 7.94 sq. Km under public and institutional buildings and3.97 sq. Km from shopping area.

Recycle and Reuse of Treated Waste Water

Municipal Population	**10.54 Lacs**
Volume of Domestic & Industrial Waste Water Generated	**54 MGD (Approx.)**
Treated wasted water	**48.85 MGD**
No. of STPs	**5 No.s**
Capacity of Each STP	**11 MGD - 3 BRD**
	5 MGD - Raipur Kalan
	30 MGD - Diggian
	1.25 MGD - Raipur Khurd
	1.6 MGD - Dhanas
	Total : 48.85 MGD
Proposed STPs	**Maloya- 5.04 MGD**
	Raipur Kalann - 2 MGD
	Kishangarh Near Sukhna Lake - 0.44 MGD
Mode of Disposal	**Natural Choe for all except Diggian. Diggian STP effluent goes to Irrigation Channel**

Source: Action Plan for Control of Pollution in river Ghaggar, CPCC, Chandigarh

Chandigarh has a properly hooded sewerage facility in addition to a fully functional treatment facility. Out of the total water being supplied to the residents of Chandigarh, 54 MGD sewage effluent is being generated per day. According to the Action Plan for Control of Pollution in river Ghaggar, at present, 48.85 MGD is being treated in the city with the total proposed STP capacity of 56.33 MGD. Considering the importance of water, Chandigarh initiated tertiary treatment of waste water at Diggian STP (10 MGD) and later supplied it for the non-potable uses such as irrigation of gardens, washing purposes, etc to different sectors.

Response Centre
Feedback Form

YES ! I WANT TO KNOW
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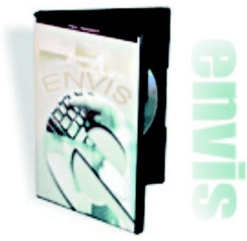
Dear Information Seeker,



ENVIS CENTRE, Chandigarh furnishes you with the services to collect and disseminate information related to environment of Chandigarh. To share information with us you are requested to fill up the form given below.

Your feedback is valuable to us and will be highly appreciated

- Name _____
- Designation _____
- Department _____
- Address _____

_____ City _____

- State _____ Country _____ Pin _____
- Phone _____ Fax _____
- Email _____

Your views on scope of improvement :

- Interest Area _____

I would like to have information on following :

e-mail : ch@envis.nic.in • Web : www.chandigarhenvis.gov.in

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Action Plan for Water Conservation: UT, Chandigarh

Sr. No.	Category of interventions	Proposed activities	Remarks
1	Reduce Water consumption	Water efficient fixtures are being fitted in all new	All new buildings are being fitted with water efficient fixtures and water less urinals, resulting into reduction of 15% of the water consumption.
		Leakage Control Management	An agency is being decided from the Empanelled agency of MoUD to study the non revenue water, however strict monitoring results in leakage control in the tune of 5%.
		Replacement of malfunctioning water meters	It has been notified in the Chandigarh Water Supply Bye Laws that all the mulfunctioning water meters shall be replaced by the consumers from their own otherwise the penal rate will be charged from water charges which is being strictly followed resulting 80% of the mulfunctioning water meters replaced.
2	Landscape water conservation	Use partially treated water for irrigation	Tertiary Treated water network has been provided and it has been mandatory for all the residential houses above 1 kanal to have T.T connection for irrigation purpose all the green belts/ parks are being irrigated with T.T. water and the work is in progress to cover the entire city within next 3 months.
3	Water Audit		EESL has been engaged for the water audit and survey work is in progress.

Source: Climate Action Plan, U.T., Chandigarh

Water is inextricably linked to energy and climate change. Energy is required for pumping and treating water that we get at home. Pumping and treating wastewater is energy intensive. Conservation of water indirectly conserve energy and reduce greenhouse gas emissions. Following steps should be taken to encourage sustainable use of water-

- Take shorter showers to reduce water consumption.
- Check your water bill to see how much water you are using.
- Check all faucets, pipes, and toilets for leaks.
- Use a toilet flush which consumes less water.
- Water your plants early in the morning or late in the evening to reduce water loss due to evaporation.
- While watering plants, use watering-can instead of a running hose.
- Promote drip irrigation and other water conservation methods in agriculture. Practice rainwater harvesting.

आपो हि ष्ठा मयो भुवस्तानऽऊर्जे दधातन । महे रणाय चक्षसे ।।

यो वः शिवतमो रसस्तस्य भाजयतेह नः । उशतीरिव मातरः ।।

तस्माऽअरं गमाम वो यस्य क्षयाय जिन्वथ । आपो जनयथा च नः ।।

O water body, you are the source of happiness. So, make sure you conform to the finest scenic work that is mighty, O Water Group! Your welfare juice will be available to us in sufficient quantity which satisfies the entire world by which you are responsible for our origin. Such public utility can endow us with its qualities.

- Yajurveda11/50-52, 36/15

Source: Green Good Deeds, MoEFCC

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To,