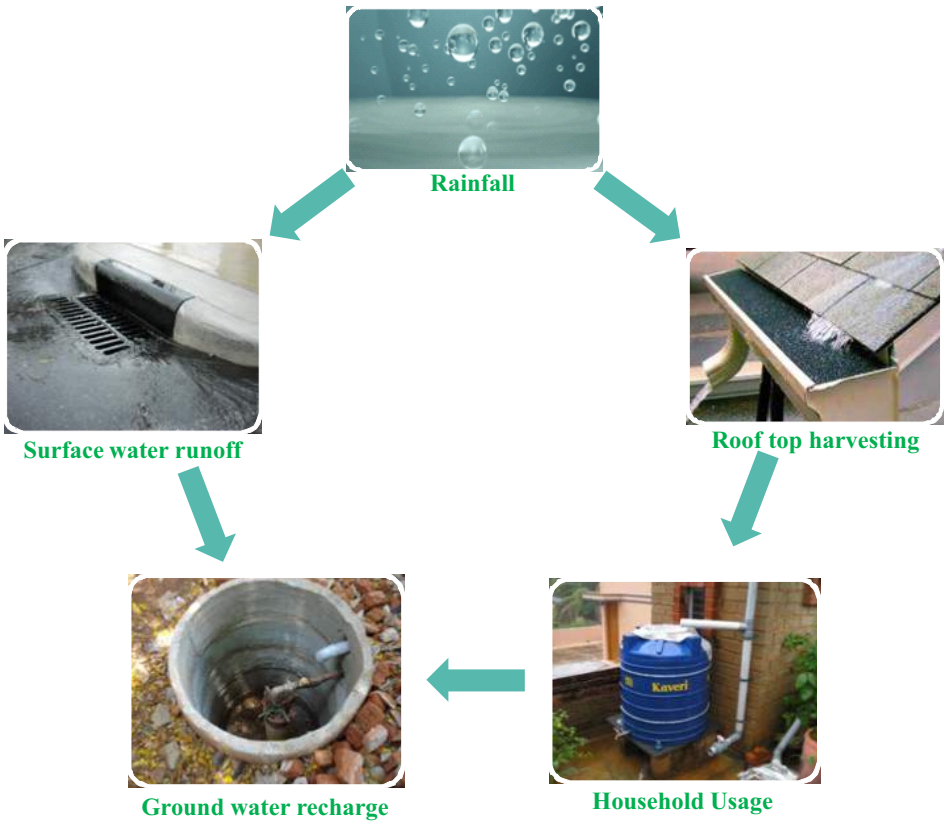
ENVIS CENTRE, CHANDIGARH
Newsletter
Paryavaran - Patra

Chandigarh
State of Environment

Rain Water Harvesting, Chandigarh

EDITORIAL

Rain water harvesting (RWH) for recharge augmentation is among the major activities being taken by the Central Ground Water Board for the effective implementation of demonstrative schemes. With the exponentially increasing demand of water resources due to escalating population, the city beautiful"Chandigarh", has also implicated the scheme at the remarkable speed in a very short span of time. The rainwater harvesting potential of Chandigarh, with an area of 114 sq km and the average annual rainfall of 1059.3, is calculated to be 60380.1million litres or 13241gallons or 36.28 MGD. Thus, the potential is more than the water pumped out of aquifers and therefore, efficient harvesting of rain water and proper recharging of ground water will go a long way in contributing towards sustainablility of water supply.



In Chandigarh, more than 60 sites were covered so far by the Public Health Division, Chandigarh administration, for harvesting rain water. Out of these, majority of structures belongs to the roof top rain water harvesting system. Work has been completed on most of the sites deleivering a total yield of 108 million litres per annum.

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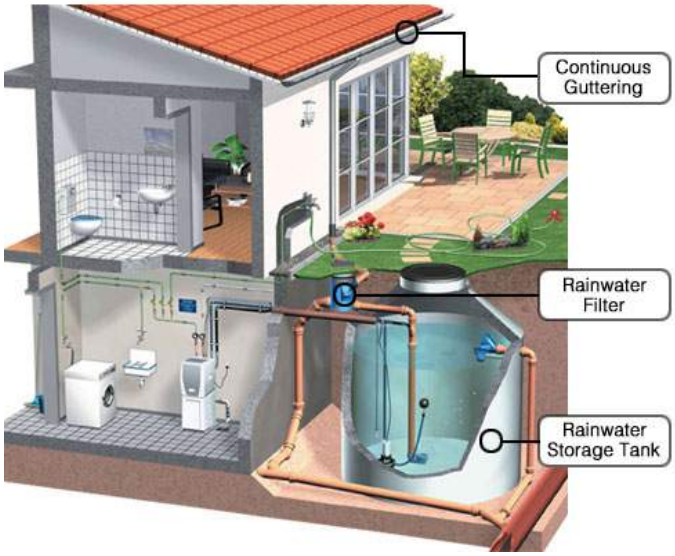
Brief about RWH

Rain Water Harvesting is the technique of collection and storage of rain water at surface or in sub surface aquifers, before it is lost as surface run-off. The harvested water can be used for artificial recharge of ground water reserviors to augment them at higher rate than the natural replenishment.



Aims of RWH

-> To Solve the problem of water scarcity
->To protect water for future use
-> To check declining ground water level
-> To improve the quality of ground water

Need of RWH in Chandigarh

Chandigarh is a rapidly growing city and in the last decade (2001-2011), its population growth rate was observed to be about 28%. Being one of the densely populated city (9252/sq km), its demand for water is estimated to grow steeply. It is estimated that by 2025, the water demand will be 800 MLD that is about 58% higher over the 2011 demand of 494.25 MLD.

GRAPH: WATER DEMAND-SUPPLY SCENARIO (CHANDIGARH)

Year	Projected Population (Million)
2011	1.055
2016	1.279
2021	1.371
2025	1.446

Source: The Future Population of India, Population Ref. Bureau, Aug 2007
Ground Water Scenario In Major Cities of India, CGWB, 2011

Flow Chart of Roof Top rain water harvesting

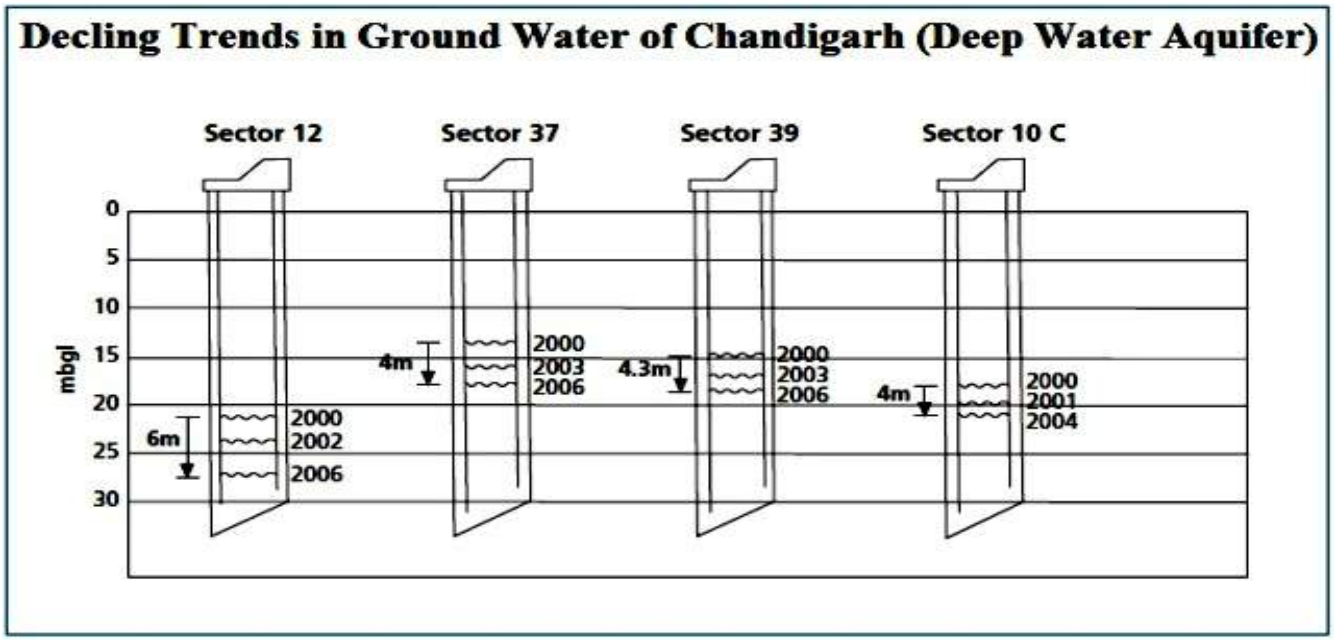
Status of Ground Water Level in Chandigarh

Ground water level of Chandigarh has declined at a fast speed in the last decade. The data collected by the CGW, Chandigarh shows a gradual decrease in the total replanishable Ground Water Resources (3.636%)and the available ground water resources (3.645%).

Status of Ground Water	2004	2009	2013
Annual Replenishable Ground Water Resources (MCM)	2255 ham	2173 ham	2173 ham
Available Ground Water Resource	2030 ham	1956 ham	1956 ham
Balance Ground Water	2030 ham	1956 ham	1956 ham
Level of Ground Water Development	N.A.	N.A.	N.A.
Net Draft	N.A.	N.A.	N.A.
Provision for Industrial/Domestic and other uses & Natural Discharge etc	225 ham	217 ham	217 ham

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

Ground Water declining in Deep Aquifers



Source: National data centre, Central Ground Water Board, Faridabad (Haryana)

Artificial ground water recharge: Panjab University, Chandigarh

Status of RWH in Chandigarh (2008-2013)

Projects completed: (By Public Health Division, Chandigarh)

Time	Rain Water Harvesting Structure	Location	Specifications/Water Recharge (Million Litre)
2008	Public Health Office Building	Sector-11	1.77
2008	Govt. College for Women	Sector-11	N.A
2008	UT Guest House	Sector-6	N.A
2010-13	Govt. Girls High School	Sector 15-C	1.57
2010-13	Additional Deluxe Building	Sector 9	3.96
2010-13	3 No's Judge House	Sector 19-B	0.59
2010-13	Govt. Girls High School	Sector 22-A	2.67
2010-13	Govt. Girls High School	Sector 22-C	1.7
2010-13	Govt. Girls High School	Sector 8-C	2.94
2010-13	Govt. Girls Model Sr. Sec. School	Sector 32-C	1.93
2010-13	Govt. Girls Model Sr. Sec. School	Sector 33-D	3.36
2010-13	Govt. High School	Sector 25	2.53
2010-13	Govt. High School	Sector 27-C	1.93
2010-13	Govt. High School	Sector 29-B	1.43
2010-13	Govt. High School	Sector 30-A	1.75
2010-13	Govt. High School	Sector 31	0.92
2010-13	Govt. High School	Sector 35-D	0.92
2010-13	Govt. High School	Sector 38-D	2.39
2010-13	Govt. High School	Sector 41-A	1.29
2010-13	Govt. High School	Sector 42-B	2.02
2010-13	Govt. High School	Village Maloya U.T.	1.25
2010-13	Govt. Model High School	Sector 26-C	1.01
2010-13	Govt. Model High School	Sector 28-C	1.66
2010-13	Govt. Model High School	Sector 28-D	3.08
2010-13	Govt. Model High School	Sector 29-A	1.7
2010-13	Govt. Model High School	Sector 46-D	2.25
2010-13	Govt. Model High School	Sector 7	0.92
2010-13	Govt. Model High School	Vill. Dhanas	2.07
2010-13	Govt. Model High School	Vill. Mouli Jagran	1.84
2010-13	Govt. Model Sr. Sec. School	Karsan Village	1.29
2010-13	Govt. Model Sr. Sec. School	Sector 10-A	3.86
2010-13	Govt. Model Sr. Sec. School	Sector 16-D	3.31
2010-13	Govt. Model Sr. Sec. School	Sector 19-C	2.21
2010-13	Govt. Model Sr. Sec. School	Sector 19-D	1.75
2010-13	Govt. Model Sr. Sec. School	Sector 20-D	0.92

Continue....

2010-13	Govt. Model Sr. Sec. School	Sector 21-C	2.87
2010-13	Govt. Model Sr. Sec. School	Sector 26	1.93
2010-13	Govt. Model Sr. Sec. School	Sector 34-D	1.29
2010-13	Govt. Model Sr. Sec. School	Sector 35-D	3.08
2010-13	Govt. Model Sr. Sec. School	Sector 37-B	2.94
2010-13	Govt. Model Sr. Sec. School	Sector 37-D	1.84
2010-13	Govt. Model Sr. Sec. School	Sector 45-A	2.02
2010-13	Govt. Primary School	Sector 38-B	0.83
2010-13	Govt. Sr. Sec. School	Sector 40-B	3.22
2010-13	Hostel For GMCH	Sector 32	1.15
2010-13	Judge House No.3	Sector 3	0.2
2010-13	Tourist Information Centre, Capital Complex	Sector 1	0.16
2010-13	U.T. Office Building	Sector 9	3.96
		Total installed capacity = 108.46	

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

Ongoing Projects: (By Public Health Division, Chandigarh)

Time	Rain Water Harvesting Structure	Location	Capacity (Million Litres)
2010-13	Govt. Girls High School	Sector 38 DMC Chandigarh.	2.21
2010-13	Govt. Girls High Sec. School	Sector 18-C Chandigarh.	4.28
2010-13	Govt. Model Sr. Sec. School	Sector 23-A Chandigarh.	4.32
		Total Capacity =	**10.81**

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

Work Allotted: (By Public Health Division, Chandigarh)

Time	Rain Water Harvesting Structure	Location	Capacity (Million Litres)
2008	Govt. College	Sector-46, Chandigarh.	NA
2009	Delux Building	Sector-9, Chandigarh.	N.A
2010-13	Paryavaran Bhawan Building	Sector 19-B Chandigarh.	1.77

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

Projects at final stage of Execution: (By Public Health Division, Chandigarh)

Time	Rain Water Harvesting Structure	Location	Capacity (Million Litres)
2008	Govt. College for Boys	Sector-11, Chandigarh.	N.A
2008	Govt. Sr.Sec.School	Sector-21, Chandigarh.	3.22
2010-13	Industrial Training Institute (ITI)	Sector 28-D Chandigarh.	6.16

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

Artificial Recharge Schemes Implemented: (by Central Ground Water Board)

1. Scheme of rooftop rainwater harvesting at CSIO Complex, Chandigarh (1998-99).
2. Artificial recharge to ground water under central Sector scheme in Panjab University, Chandigarh (2000-2001).
3. Artificial recharge to ground water in Leisure valley, Chandigarh (2000-2001).
4. Scheme for roof top rainwater harvesting at Bhu-Jal Bhawan Chandigarh (2001-2002).
5. Artificial recharge to ground water at office of Chandigarh Housing Board in sector 9, Chandigarh (2001-2002).
6. Scheme for rain water harvesting at DAV School in Sector-8, Chandigarh (2001-2002).
7. Artificial recharge to ground water at TTTI, Sector-26, Chandigarh (2001-2002)
8. Scheme for utilising surplus water monsoon runoff for sector 27,19,30,20, Chandigarh (2001-2002).

Details about the installed capacity of the schemes:

No. Of Units	Type of scheme	Total annual Capacity (Lakh Cubic meter)
6	Roof Top Rain Water Harvesting	0.144-0.13
1	Rain Water Harvesting through Roof Top & Pavement catchments	34.50
1	Recharge Trenches	9.50

Check dam cum rain water harvesting: Nepli Forest

Feedback Form

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 :

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Area wise Rain Water Collection Network of Chandigarh:

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

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 would be:
58 sq km (area) x 1059.3 (rainfall) x 0.5 (rainfall coefficient) = 30,720 million lt.

Aknowledgement:

We would like to appreciate the contribution of the following for the Newsletter:

1. Executive Engineer, Project Public Health, Division No. 1 & 7.
2. Central Ground Water Board, Chandigarh.
3. Statistical Abstract, Website of Chandigarh Administration.
4. Ground Water Information Booklet, Chandigarh (2007).
5. State of Environment, Chandigarh (2008).
6. Capturing Rainwater, A way to augment Chandigarh's water resources: by Centre for Science and Environment

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To,