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Water Management and Water Harvesting

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ABSTRACT

World oceans cover about three fourth of earth's surface. Although it is surprising but true that 70% part of the world is covered with water but still we are thirsty. Out of 97% of earth's water is found in ocean, 2% is frozen as ice in poles etc and remaining 1% is available to us in the form of fresh water in rivers, lakes and ground water and which is used for human beings for their daily needs, irrigation and Industries. Mankind can't do anything without water. Unfortunately, with a galloping population growth, urbanization and ever increasing demand on it, water resource of world over are fast depleting. Excessive tapping of ground water through numerous bore wells and tube wells has led to a decline of water level, whose means of replenishing itself has been greatly hampered. The crisis about water resources development and management thus arises because most of the water is not available for use and secondly it is characterized by its highly uneven spatial distribution. Accordingly, the importance of water has been recognized and greater emphasis is being laid on its economic use and better management. Global water consumption has been raised ten told since 1900 and many parts of the world are now reaching the limits of their supply. UNIESO has predicted that by 2020 water shortage will be a serious worldwide problem. Third world war will be battled for water. One third of the world's population is already facing water problem due to water shortage and poor drinking water quality.

In order to augment the depleting ground water resources, it is essential that the surplus monsoon runoff that flows into the sea, is conserved and recharged to augment ground water resources. The need for conserving water has therefore become imperative. Since water is the most important resources for all developmental activities on which future depends, it must be carefully conserved and put to optimum use. In future, a day is bound to come when the demand will outgrow availability.

Today there is an urgent need for efficient and effective management of water supply system and storage of rain water on surface for future use and recharge to ground water in India.

I.AVAILABILITY OF WATER IN INDIA & REQUIREMENT

- In relative term, India has 6% of world water resource but has to meet the consumption needs of 15% of the world's populations. The latest assessment indicates that total surface water in the country is about 180 M-ha-m, out of which 68.4 M-ha-m, or 38% is utilizable. The replenish able ground water is estimated at 60 M-ha-m, of which 42 M-ha-m or 70% is utilizable. Thus a total 110.4 M-ha-m or 46% of the total estimated water (240 M-ha-m) of the country is utilizable.

- Consumption demands are particularly from the three sectors, irrigation, and domestic settlement including liver stock and for industries. Annual requirement of water in India at four different points of time are given in table - 1.

Table - 1 Annual requirement of water in India

Figures in parenthesis give percentages

Year	Irrigation	Total other use in cities / industries/village	Total
1974	35 (89.3)	3 (10.7)	38
1985	36 (66.7)	18 (33.3)	54
2000	50 (66.7)	25 (33.3)	75
2025 (estimated)	77 (73.3)	28 (26.7)	105

We can see that the total requirement has increased steadily form 38 M-ha-m in 1974 to 54 M-ha-m in 1985. The Projected figure for 2025 (AD) is 105 M-ha-m. The need for conserving water has therefore become imperative. Since water is the most important resources for all developmental activities on which future depends, it must be carefully conserved and put to optimum use. In future, a day is bound to come when the demand will out grow availability.

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Ground water Level in Alwar District:- A Sense

Due to unmanaged extraction of ground water and continuous low rainfall, ground water crisis is growing up. Position is that ground water level is depleting about 0.50 meter every year is Alwar district. According to Survey of Ground Water Department our consumption in various sectors, agriculture, Industries, domestic and other activities is about 1143.9127 MCM. But recharged 790.3744 MCM (million cubic meter) in every year.

Figure shown that 1079.8122 MCM Ground water use in irrigation and 64.1005 MCM in drinking.domestic& industries, out of total consumption 1143.9727 MCM per year.

Table- 2 Consumption and recharge of ground water in every year (in MCM)

Total Consumption	1143.9127	Total recharge	790.3744
1.irrigation 2.domestic & industries	1097.8122 64.1005	Loss water	353.5383

Blockwise Ground Water Level in Alwar District- 2013

Name of Block	Water Level (Meter)	Consumption rate of ground water (%)	Remark
Behror	55.20	218.44	Over Exploited
Bansur	26.40	114.84	Over Exploited
Kathumer	21.30	152.21	Over Exploited
Kishangarh	43.10	200.00	Over Exploited
Kotkashim	16.60	164.32	Over Exploited
Laxmangrah	67.85	154.67-43.82	Over Exploited

Mundawar	25.45-40.00	167.08	Over Exploited
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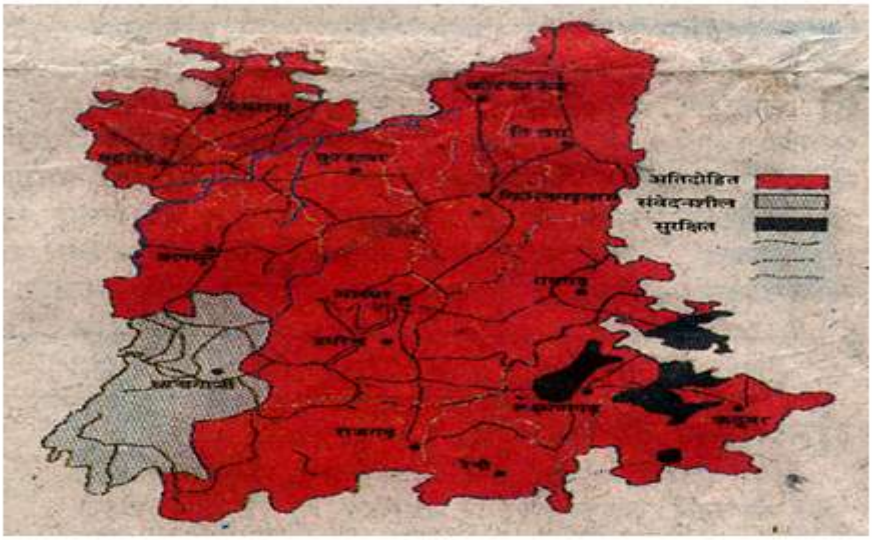
Categories of ground water exploitation rate:
Safe : Up to 70%
Semi Critical : 70-90%
Critical : 90-100 %
Over exploited : >100%

Out of 12 blocks, 11 blocks are notified over exploited ground water region. This is alarming for us. In the name of progress and greed of prosperity. We have blindly over extracted the ground water . It has resulted in deteriorated condition on account of which the water resources are fast depleting . If same conditions like increase ground water extraction, indiscriminate use of water, we shall soon reach a point of no back from them.

Alwar water Level



Water Management

1.By Water supply Management:

- Today there is an urgent need for efficient and effective management of water supply system. The quality of water supplied should be the prime consideration for any water supply organization at the safety and health of the people depends upon it. Government and NGO's water supply system should be modified accorded to cities & towns

2.By Internal Management of Water :

(a) In the bathroom:

Water can be save by efficiency use of bathroom water some tips are given as:

1. Turn off the tap while washing the face, brushing the teeth or shaving.

2. Never to use toilet as an ashtray or waste basket.

3. Never to take marathon showers. Five minutes will clean and showers use less water then the normal practice of using water from a bucket.

4. Close the tub drain before turning on the water

5. To check toilet for leaks. Put a few drops of food coloring in the toilet tank, wait ten minutes, if without flushing the color appears in the bowl theirs leak.

(b) In the Kitchen

- When washing dishes by hand do not let the water run while washing fill a sink with water and the other with rinse water.

(c) In the garden

1. According to water users group plantation should be adopted that is better for the plants and will be prevent wastage water.

2. Watering to plants should be early morning or in the evening.

3. Spinkler valve is good for saving the water.

4. Remember one inch. Rule. Most of lawns, srubs, vegatables&flowers need just one inch water a week.

5. Capture rain water for plants focus that all the water on roots of the plants to ensure that they absorb maximum water.

Methods of Water Harvesting

Storage of rain water on surface for future use and recharge to ground water, are the two main techniques involved in water harvesting.

1.Traditional techniques

- India has had tradition of water harvesting which is more than two millennia evidence of this tradition has been found in ancient texts, inscriptions and archaeological remains. The kuhals of Jammu, kuls of Himachal Paradesh, Guls of Uttarkhand, pats of Maharashtra, Zings Tankas, Jhalares, etc. of Rajasthan are but a few of the traditional rain harvesting system, which existed in India but now, dying a slow death. Rajasthan state had a rich traditional, social and cultural heritage of conservation and judicious use of water that helped the mankind. Various water harvesting structures and technique like Nadi, Khedin, Johad, Kund, Kua, Sager, Jhalra, Bawdi, Beri, Tanka tec. were practiced to suit particular site conditions but now, these traditional structure to has been destroyed day-by-day.

2.By Scientific methods:

Structures general used for rain water harvesting are given below.

- **Spreading techniques:** when permeable strata start from to then this technique is used. Water is spread in stream nalas by making check dams; cement plugs, gabion structures or a percolation pond may be constructed.
- **Trenches:** these are constructed when the permeable strata is available at shallow depths.
- **Dug wells:** Rainwater, which is collected on the rooftop of the building, is diverted by drainpipes to a filtration tank, from where it flows into the dug well.
- **Hand Pumps:** The existing hand pumps may be used for recharging the shallow/ deep aquifers, if the availability of water is limited.
- **Recharge wells:** Theses are generally constructed for recharging the deeper aquifers and water is passed through filter media to avoid choking of recharge wells.
- **Recharge shafts:** For recharging the shallow aquifers, which are located below clayey surface.
- **Lateral shafts with bore wells:** For recharging the upper as well as deeper aquifers lateral shafts of 1.5 to 2 mm width and 10 to 30 m length.
- **Pits:** recharge pits are constructed for recharging to shallow aquifer.

II.CONCLUSIONS

The need for conserving water has therefore become imperative. Since water is the most important resources for all developmental activities on which future depends, it must be carefully conserved and put to optimum use. In future, a day is bound to come when the demand will outgrow availability.

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