



# WATER CONSERVATION, WASTE WATER TREATMENT AND RAIN WATER HARVESTING- EDUCATORS INITIATIVE IN CREATING AWARENES

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*Abstract:* Water conservation is a critical element of any future water management strategy. It is defined as the “beneficial reduction in water use, waste and loss “and is proven to be the most economical and environmentally protective management tool for meeting water supply challenges (Yushiou 2011) <sup>6</sup>. Apart from water conservation, rain water harvesting and waste water treatment are also the major steps which need to be taken to solve the issue of scarcity of water. In Urban areas, the construction of buildings, footpaths roads etc has left very little exposed earth for water to soak in. If this water can be held back, it can seep into the ground and recharge the ground water supply. Minimizing water use, waste, and loss over time and water conservation, treatment and rain water harvesting is heavily dependant on continually evaluating and adopting new technologies and practices. Education and technical assistance programs are important to inform people about the impact of improved water efficiency and water conservation. Without adequate knowledge, water users lack the ability to put conservation measures and practices into place, however motivated they may be. Educators play a major role in spreading this message of water conservation and implementing these practices. This paper talks about the role of educators in spreading awareness about water conservation and the various steps which can be taken to address the issue at various levels like the educational institutions, the students the employees and the community.

*Index Terms* - educators, water scarcity, water conservation, rain water harvesting, waste water treatment.

## I. INTRODUCTION

Water, water everywhere, but not a drop to drink. Lines from “The Rime of the Ancient Mariner,” by Samuel Taylor Coleridge. The speaker, a sailor on a calmed ship, is surrounded by salt water that he cannot drink. Fresh clean water is a limited resource. Although a large percentage of our planet is covered by water, it is salt water and this can deemed fit to be be consumed only after desalinization, which is a very expensive process. Droughts also lead to limited access to clean and fresh water. In India we face a very contrasting situation some areas are water logged during rains and few areas are affected by draught. As planners and educationist we need to really understand this contrasting situation and come up with ideas to have control over this situation. The images shown below speaks about the contrast



Fig 1-A man wades through a water-logged road during rains in Mumbai in August.  
Source- Hindustan times- 25 Sept ,2018



Fig 2 - Incessant rains caused flooding around Bhagmandala in Kodagu District, Bangalore  
Source- The Hindu, 28 June ,2018



Fig 3-With Months to go for rain,, Vidharbha Drought hit areas.Source- The Indian Express April 11, 2020



Fig 4 - 23 Districts of Karnataka Declared Drought-Hit  
Source-The times of India

A week after the official withdrawal of monsoon, Marathwada continues to suffer acute shortage of drinking water due to poor rains even as the rest of the state appears to be in a much better shape than last year. The water stock was meager in most Marathwada dams. In Malegaon it was 0% while in Manjara it was 2% of the total capacity. During the corresponding period last year, the stock in these two dams stood at 58% and 85%, respectively. ( Source- The Times of India)

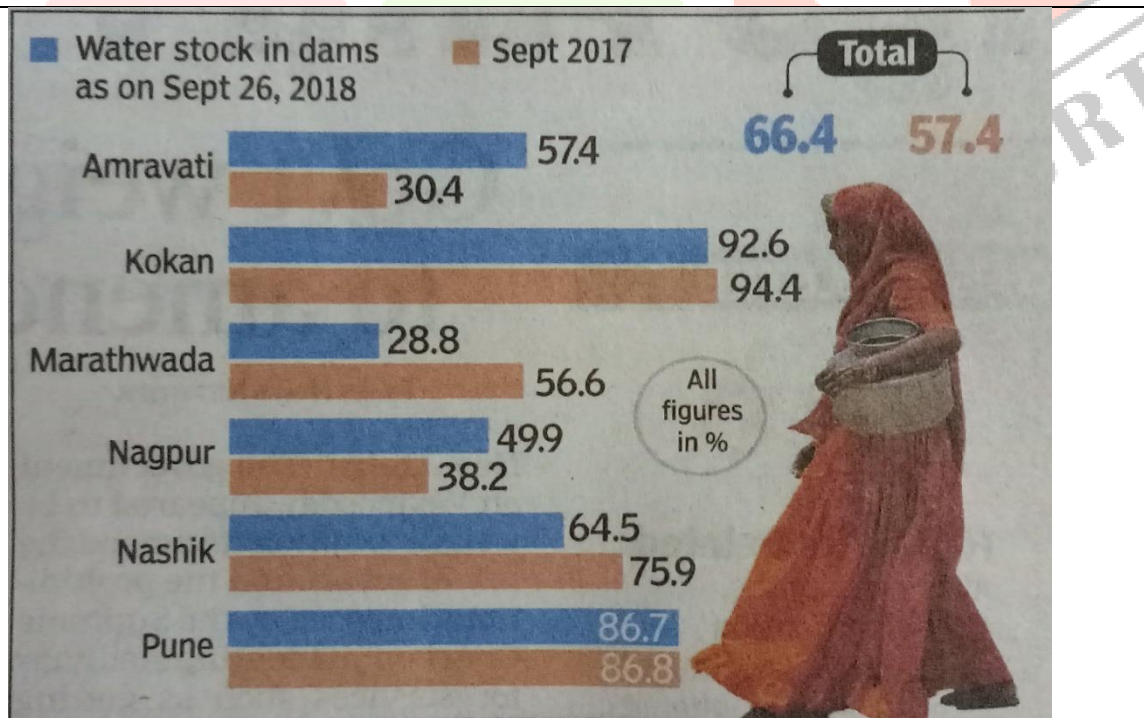


Fig 5-Marathwada Grapples with acute potable water crisis

Source- The Times of India

Out ancient religious texts and epics give a good insight into the water storage and conservation systems that prevailed in those days. Over the years rising populations, urbanization and growing industrialization have pushed up the demand of water and water conservation. Its high time that we all must be sensitized towards the issue of availability of potable water and take necessary steps for the mitigation of this issue.

## II. NEED OF WATER CONSERVATION EFFORTS

Eighty Percent (80%) of India's drinking water and nearly two-thirds of irrigation needs of India are met by Groundwater. While rainfall is considered to be one of the primary sources of fresh water, it is not conserved in an appropriate manner, leading to scarcity of water across the country.

It's a serious matter of concern that the increasing decline in the level of groundwater, in many parts of the country, is leading to a lot of unsustainability. It has been observed that in some parts of the country the water levels are declining by over one meter each year. Apart from this, lack of proper wastewater treatment from industrial, mining, and domestic sources is resulting in increased contamination of groundwater, leading to potential threats to humans as well as the ecosystems as well as scarcity of water.

There are many states that face water shortage Irrespective of their proximity to a water body, and are sometimes flooded during rainy season An evident example of this is Uttar Pradesh. Despite its close proximity to the Ganges, the state still faces water shortage due to lack of water conservation methods.

Water conservation is a critical element of any future water management strategy (C. J. Vörösmarty 2010)<sup>4</sup>. To be successful, water conservation efforts should include an education program that informs individuals of the need to use water resources in a sustainable manner and programs that promote water conservation can serve as good starting points for more comprehensive water conservation programs.

## III. RATIONALE FOR DEVELOPING AND IMPLEMENTING WATER CONSERVATION EDUCATION PROGRAMS

Virtually all water conservation efforts depend on public awareness and understanding of the need for conservation (Buchberger1996)<sup>3</sup>. Conservation efforts are only considered successful if results can be measured and results are targeted to the particular type of water user (e.g. commercial, residential, industrial and agricultural). Minimizing water use, waste, and loss over time is heavily dependant on continually evaluating and adopting new technologies and practices. Education and technical assistance programs are important to inform people about the impact of improved water efficiency and water conservation. Without adequate knowledge, water users lack the ability to put conservation measures and practices into place, however motivated they may be (Buchberger1996)<sup>3</sup>.

A public education program is a very important element of a broad-based water conservation strategy. Research has proven that public education programs can be beneficial in achieving behavioural changes and can improve the effectiveness of active water conservation efforts, such as water fixture and appliance retrofit or replacement, recycling of water and rain water harvesting .Small steps taken by each individuals can lead to great achievements in this field and can solve the issue of water scarcity.

## IV. ROLE OF EDUCATORS

We all have a role in responsible water use and by using water wisely we can help secure water supplies and create greener and more liveable communities now and into the future. But the role of an educator is foremost in addressing such crucial issues. Today's students are tomorrow's citizens. Educators are directly dealing with the future citizens and hence each and every educator must clearly understand the responsibility and work towards creating awareness about these issues.

Education of the public at large, municipal officials and water suppliers is crucial to generating an understanding of the issues, and creating acceptance to the implementation of water conservation efforts. It is important to provide to the public the basic understanding of sound water resources management and planning and to explain the associated economic and environmental benefits. Public education and outreach can be an essential prerequisite to the successful adoption and implementation of conservation practices.

## V. STEPS TO BE TAKEN TO BUILD CONSERVATION AWARENESS

As educators the following steps can be taken to create awareness about water conservation

1. Adopt a water conservation policy and incorporate water conservation practices in the educational institutions.
2. Developing a Training Program for Water System to educate and train the employees on how to minimize the loss and waste of water within the distribution, treatment systems and rain water harvesting.
3. Developing a Training Program for Water System to educate and train the students on how to minimize the loss and waste of water within the distribution, treatment systems and rain water harvesting.
4. Developing a Training Program for Water System to educate and train general public on how to minimize the loss and waste of water within the distribution, treatment systems and rain water harvesting.

## VI. Water Conservation Practices in the educational Institutions

‘Practice what you preach’. Practice what you preach before you try to teach it to someone. So as educators we must strictly follow this and implement water conservation practices at our institute

- Create water-friendly gardens where students can build their own ponds or billabongs to monitor local wildlife such as frogs or fish.
- Conduct excursions to local waterways, reservoirs, creeks and rivers involving our local water corporations and agencies.
- Create your own recycling water systems and treatment plants.
- Make it a compulsory subject in their curriculum.
- Measure the institutions water intake each day and look at how water consumption can be reduced
- Involve the students groups in water audit works
- Implement rain water harvesting techniques in the institution.
- Conduct various events like poster making competition, Power Point Presentation competitions etc on the occasion of World Water Day which is held annually on 22 March.
- Design various short term and certificate courses on Water conservation, waste water treatment and rain water harvesting.

## VII. Steps to build conservation awareness among employees.

Building water conservation awareness and education among employees can not only save water, but can also save money on operational and production costs. Educated employees will be able to identify problems before they become serious and can help think innovatively about ways to conserve or reuse water within the facility. The various steps which can be take to educate the teaching as well as the non teaching staff of various institutions can be-

- Conduct awareness programs for the employees and make it compulsory for the staff to attend such sessions for making themselves eligible for promotions and increments.
- Encourage them to be experts for various such session which may be conducted for other work places as well as community. Reward such employees.
- Measure the institutions water intake each day and look at how water consumption can be reduced.
- Involve the staff groups in water audit works
- Implement rain water harvesting techniques in the institution and involve the staff in actual measurement of the harvested water.
- Conduct various events for their family members on the occasion of World Water Day which is held annually on 22 March.

### VIII. Steps to build conservation awareness among students.

- Make it a compulsory subject in their curriculum.
- Involve students in practical work related to water conservation, water treatment and rain water harvesting.
- Grant financial assistance to researchers for works related to water conservation.
- Encourage them to be experts for various such session which may be conducted at other institutions as well as street plays for community. Reward such students.
- Design various short term and certificate courses on Water conservation, waste water treatment and rain water harvesting.

### IX. Steps to build conservation awareness among general Public (Community)

The responsibility for ensuring a sustainable water future lies with the community as a whole; everyone has a role to play to make sure that all water (rainwater, stormwater, public water supply, etc.) is treated responsibly and planned for properly. Education of the public at large, municipal officials and water suppliers is crucial to generating an understanding of the issues, and creating acceptance to the implementation of water conservation efforts. It is important to provide to the public the basic understanding of sound water resources management and planning and to explain the associated economic and environmental benefits. Public education and outreach can be an essential prerequisite to the successful adoption and implementation of conservation practices.

- Public education and outreach
- Street Plays
- Fines in cases of tap leakages and other cases of wastage of water
- Fixed timings of supply of water.
- Rewards for those implementing rain water harvesting systems,

### X. CONCLUSION

Virtually all water conservation efforts depend on public awareness and understanding of the need for conservation. The most important step in the direction of finding solution to the issues of water conservation is to change people's attitudes and habits. Educators can play a major role in sensitizing everyone towards this issue of scarcity of potable water and play active role in mitigation measures. Conservation efforts are only considered successful if results can be measured. Minimizing water use, waste, and loss over time is heavily dependant on continually evaluating and adopting new technologies and practices..

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