



International Journal of Multidisciplinary Research Transactions

(A Peer Reviewed Journal)

www.ijmrt.in

Management of Natural Resources - A Study with respect to Rain Water Harvesting

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DoI: <https://doi.org/10.5281/zenodo.6047327>

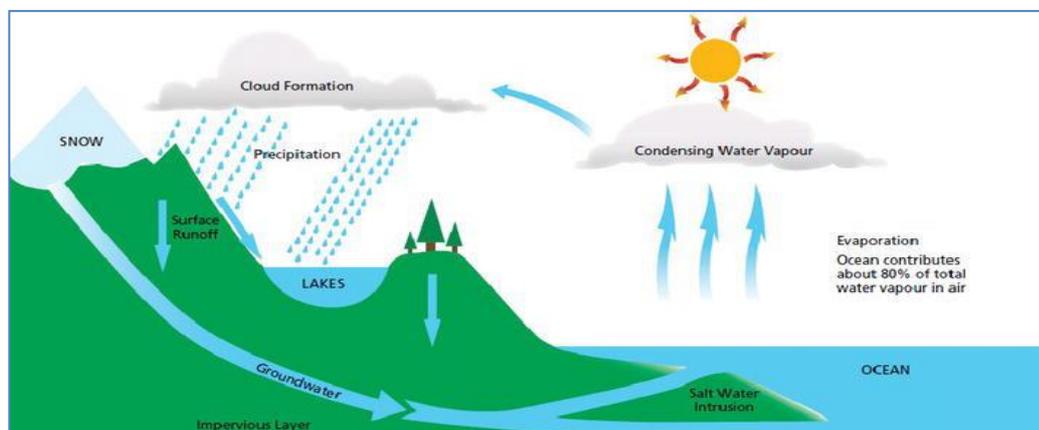
Abstract

Management of Natural Resources about some natural resources like soil, air and water and how various components are cycled over and over again in nature. The pollution of these resources because of some of our activities. We shall be looking at our natural resources like forests, wild-life, water, coal and petroleum and see what are the issues at stake in deciding how these resources are to be managed for sustainable development. We often hear or read about environmental problems. These are often global-level problems and we feel helpless to make any changes. There are international laws and regulations, and then there are our own national laws and acts for environmental protection. There are also national and international organizations working towards protecting our environment. Rain water harvesting is the need of the hour.

Keywords: Natural Resources, Management, Rain water harvesting, Global Warming, Recycle, House, Clean.

1. Introduction

WHY DO WE NEED TO MANAGE OUR RESOURCES? Not just roads and buildings, but all the things we use or consume – food, clothes, books, toys, furniture, tools and vehicles – are obtained from resources on this earth. The only thing we get from outside is energy which we receive from the Sun. Even this energy is processed by living organisms and various physical and chemical processes on the earth before we make use of it. Why do we need to use our resources carefully? Because these are not unlimited and with the human population increasing at a tremendous rate due to improvement in health-care, the demand for all resources is increasing at an exponential rate. The management of natural resources requires a long-term perspective so that these will last for the generations to come and will not merely be exploited to the hilt for short term gains. This management should also ensure equitable distribution of resources so that all, and not just a handful of rich and powerful people, benefit from the development of these resources. Another factor to be considered while we exploit these natural resources is the damage we cause to the environment while these resources are either extracted or used. For example, mining causes pollution because of the large amount of slag which is discarded for every tonne of metal extracted. Hence, sustainable natural resource management demands that we plan for the safe disposal of these wastes too. The accumulation and storage of rainwater to reuse at the site and not allowing to runoff is known as rainwater harvesting. We can collect it in many places like a river, roof, etc. and redirected to well, bore well, shaft, a reservoir with percolation, aquifer, etc. We use it for watering of gardens, drinking for livestock, irrigation, domestic use with proper treatment. It is one of the oldest and simplest methods of supply of self-supply of water for households.



Source :- <https://www.google.com/search?q=Management+of+Natural+Re>

2. Rationale Of The Study

The main purpose of the study is to save the natural resource of the water by making scientific and proper rainwater harvesting on all the roofs of the country and make the awareness about this important issue of water problem to the society . Hence, sustainable natural resource management demands that we plan for the better way to preserve the rain water to make the use for various other purposes like gardening and other use .

2.1. OBJECTIVES

Following are the main objectives of this paper

- 1) To Study the methods of rainwater harvesting
- 2) To create awareness among the stakeholders about the rein water harvesting
- 3) To suggest the best method to implement rein water harvesting to village and urban population .

3. Rain Water Harvesting in Brief

Water Harvesting is the storing the roof water from rain in proper planning the pipeline to store and keep it in big tank for future use.. Various organizations have been working on rejuvenating ancient systems of water harvesting as an alternative to the ‘mega-projects’ like dams. The awareness about this is very important since we don’t have habit of storing the rain water in homes it goes waste and it is natural resource wastage. To avoid this we have to create awareness among all the people to make the arrangement to collect the rain water and make it use for other useful activities like gardening or reuse of the clean water including drinking purpose. **Rainwater harvesting (RWH)** is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water. Dew and fog can also be collected with nets or other tools. Rainwater harvesting differs from storm water harvesting as the runoff is collected from roofs, rather than creeks, drains, roads, or any other land surfaces. Its uses include watering gardens, livestock, irrigation, domestic use with proper treatment, and domestic heating. The harvested water can also be committed to longer-term storage or groundwater recharge.



Source:- <https://www.google.com/search?q=water+harvesting&rlz=1>.

4. Rain water Harvesting IN INDIA

Tamil Nadu was the first state to make rainwater harvesting compulsory for every building to avoid groundwater depletion. The project was launched in 2001 and has been implemented in all rural areas of Tamil Nadu. Posters all over Tamil Nadu including rural areas create awareness about harvesting rainwater. It gave excellent results within five years, and slowly every state took it as a role model. Since its implementation, Chennai had a 50% rise in water level in five years and the water quality significantly improved.

5. Advantages of Rain water Harvesting

Rainwater harvesting provides the independent water system during regional water restrictions, and in developed countries, it is usually won't to supplement the most supply. It includes water when a drought occurs, can help mitigate flooding of low-lying areas, and reduces demand on wells, which can enable groundwater levels to be sustained. It also helps with the availability of potable water, as rainwater is substantially freed from salinity and other salts.

An enormous body of work has focused on the development of life cycle assessment and its costing methodologies to assess the level of environmental affects and money that can be saved by implementing rainwater harvesting systems



Source :- <https://www.google.com/search?q=Management+of+Natu>

6. Catchment area characteristics

Runoff depends upon the area and type of the catchment over which it falls as well as surface features.

All calculations relating to the performance of rainwater catchment systems involve the use of runoff coefficient to account for losses due to spillage, leakage, infiltration, catchment surface wetting and evaporation, which will all contribute to reducing the amount of runoff.

(Runoff coefficient for any catchment is the ratio of the volume of water that runs off a surface to the volume of rainfall that falls on the surface).

Table.1. Runoff coefficients for various catchment surfaces

Type of Catchment	Coefficients
Roof Catchments - Tiles - Corrugated metal sheets	0.8- 0.9 0.7- 0.9
Ground surface coverings - Concrete - Brick pavement	0.6- 0.8 0.5- 0.6

<p>Untreated ground catchments</p> <ul style="list-style-type: none"> - Soil on slopes less than 10 per cent - Rocky natural catchments 	<p>0.0 - 0.3</p> <p>0.2 - 0.5</p>
<p>Untreated ground catchments</p> <ul style="list-style-type: none"> - Soil on slopes less than 10 per cent - Rocky natural catchments 	<p>1.0 - 0.3</p> <p>0.2 - 0.5</p>

Source : Pacey, Arnold and Cullis, Adrian 1989, Rainwater Harvesting: The collection of rainfall and runoff in rural areas, Intermediate Technology Publications, London.

Based on the above factors the water harvesting potential of a site could be estimated using the

formula given below.

Source :- <http://www.rainwaterharvesting.org/urban/thepotential.htm>

Water harvesting potential

$$= \text{Rainfall (mm)} \times \text{Area of catchment} \times \text{Runoff coefficient}$$

Conclusion

Sustainable management of natural resources is a difficult task. In addressing this issue, we need to keep an open mind with regard to the interests of various stakeholders. We need to accept that people will act with their own best interests as the priority. But the realization that such selfish goals will lead to misery for a large number of people and a total destruction of our environment is slowly growing. Going beyond laws, rules and regulations, we need to tailor our requirements, individually and collectively, so that the benefits of development reach everyone now and for all generations to come. Rainwater harvesting is an eco-friendly technique to save water. It also increases level of ground water. Effective use of this method helps us to Save our earth. I hope you liked this informative article on Rainwater harvesting. This paper is decent contribution in creating awareness among the stakeholders and citizens of the country.

Acknowledgement

Authors are thankful to all the members of the research committee for possible help and support in the matter. All the references are hereby acknowledges for the preparation of this paper . We are also thankful to Dr Anil Gaikwad for motivating us to select this important topic

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