

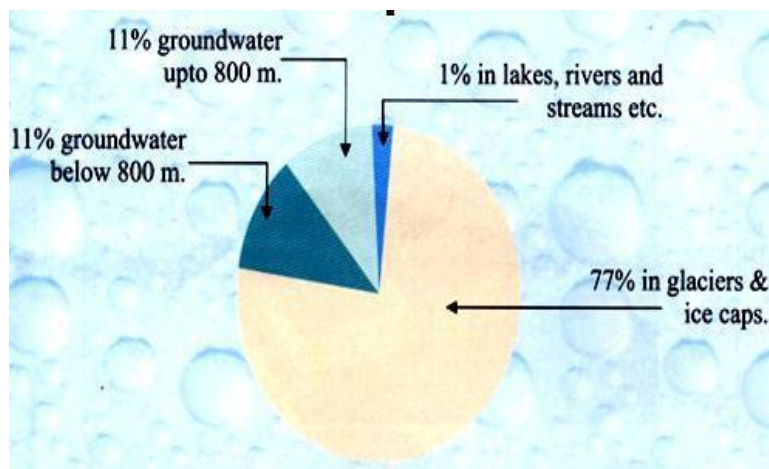
WATER HARVESTING DEFINITION

Water harvesting refers to collection and storage of rain water and also other activities aimed at harvesting surface and ground water, prevention of losses through evaporation and seepage and all other hydrological studies.

Fresh water is scarce

- Of the total water on earth, only 3% constitutes freshwater. Rest is saline water in the oceans.
- 11% of the total freshwater on earth is groundwater available upto a depth of 800m which can be extracted for use.

Mindless extraction and over exploitation of very small quantity of this precious nature resource has caused a rapid depletion and deterioration in its quantity and quality

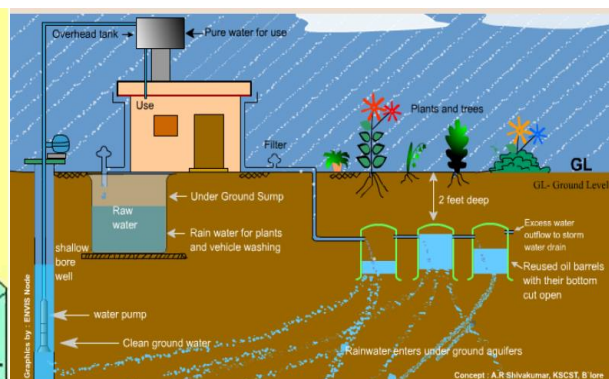
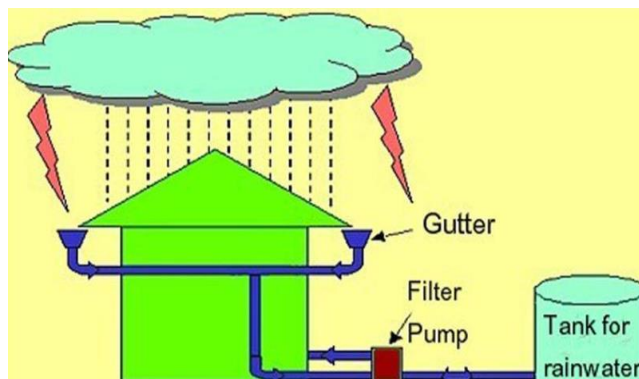
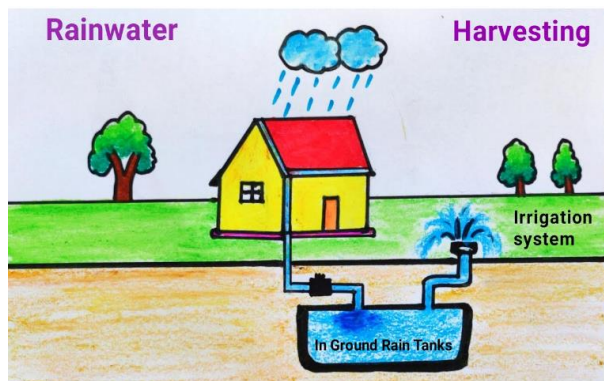


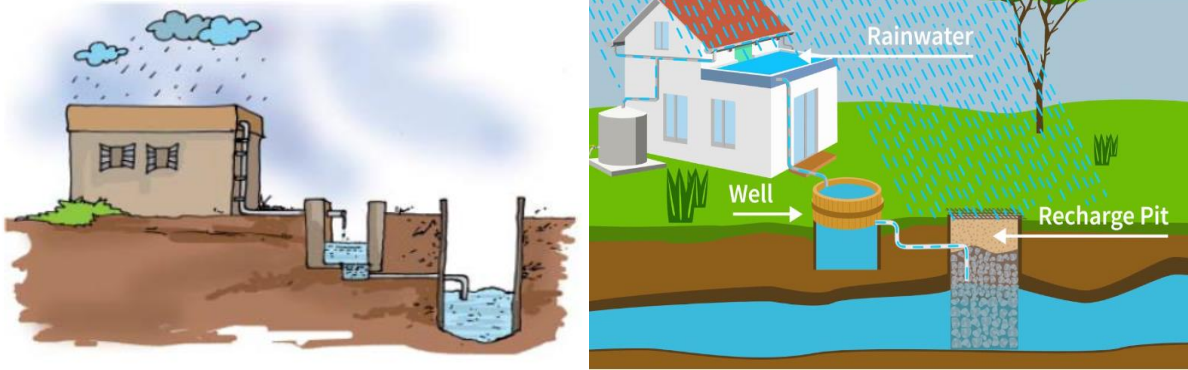
Water harvesting is a method of collecting and storing water for future use. Generally water harvesting is **direct** rainwater collection. Rain is primary water source while lakes, groundwater and rivers are the secondary water source. **Rainwater harvesting** is a type of harvest in which the rain water are collected and stored for the future use, instead of allowing them to run off. However, it is used for

orchards/gardens, raising livestock, **irrigation**, domestic use with proper treatment etc. The harvested water can also be used as drinking water, longer-term storage, and for other purposes such as groundwater recharge.

Rainwater harvesting is one of the simplest and oldest methods of self-supply of water for households, having been used in South Asia and other countries for many thousands of years. Installations can be designed for different scales including households, neighbourhoods and communities and can also be designed to serve institutions such as schools, hospitals and other public facilities.

The collection of rainwater is known by many names throughout the world. It ranges from **rainwater collection** to **rainwater harvesting** to **rainwater catchment**. In addition, terms such as roofwater collection or rooftop water collection is also used in other countries.





Water harvesting can be undertaken through a variety of ways

- I. Capturing runoff from rooftops
- II. Capturing runoff from local catchments
- III. Capturing seasonal floodwaters from local streams
- IV. Conserving water through watershed management

History of Rain Harvesting

Water harvesting is a technique that has been used in various parts of the world since ancient times. It can be adapted to very different situations and has been used in the driest and wettest regions of the world, and in the poorest and richest societies of our planet. Examples of water harvesting can be found in all major societies throughout history. The roof basin system is known to have been used in Roman times. Roman houses and even entire cities have been designed to utilize rainwater as the main water source for drinking and domestic purposes since 2000 B.C. In Israel, in the Negev Desert, where rainfall is 100 mm per year, it is known that tanks are used to store rainfall runoff from hillsides in agricultural and residential areas. The oldest known evidence is that 200–2000 m³ tanks have been used in Egypt for about 2000 years and are still in use today. This practice also has a long history in Asia. In Thailand, water collection practices can be traced back almost 2000 years.

In Africa and Asia, rainwater harvesting has been practiced for thousands of years in traditional earthen pots with simple waterways or through roof eaves. The largest water collection cistern in the world is thought to be the Yerebatan Cistern in Istanbul, which is 140 m long, 70 m wide and has a capacity of 80,000 m³. Throughout the long history of the Palestinian region, farmers have built stone terraces to reduce the negative impact of heavy rainfall, increase soil organic matter content by preventing runoff and soil erosion, and protect soil water structures. It is known that rainwater harvesting systems have existed for thousands of years in different parts of the world and are still in use. The Romans focused on various infrastructures, such as aqueducts for water supply and built reservoirs and rain cisterns to store the water supplied by the aqueducts. In the 13th century, the Venetians developed and applied advanced rainwater harvesting techniques. Currently, rainwater harvesting uses modern materials and techniques with new technologies, such as wells, pumps, reinforced concrete, plastic or steel tanks, which are different from the old rainwater harvesting techniques.

During the Ottoman Empire (1669–1898), considering the importance of water in the Muslim tradition, fountains and baths were quite common, and large hydraulic installations provided them with water. During the Ottoman period, the role of cisterns diminished in centralized areas served by centralized water systems. However, cisterns continued to be built and used in remote areas where water systems did not serve. In contrast to the rectangular plan of Byzantine cisterns, circular cisterns emerged in rural areas. Today, these types of cisterns are frequently encountered and still used to meet the water needs of animals. Evidence from many parts of the world shows that, since prehistoric times, people have tried to meet their water needs for domestic use, irrigation and livestock breeding by collecting and storing rainwater. Throughout history, rainwater has been the main water source for potable and non-potable uses. Rainwater harvesting is, therefore, crucial for human

survival. In addition, rainwater has been used since ancient times in arid regions and places where water access is difficult.

Why Is Rainwater Harvesting Important?

Rainwater harvesting is important for several reasons but one of the biggest is the fact that we are tapping out water conservation gains inside our homes so we need to start looking outdoors for more opportunities.

Importance of Rainwater Harvesting

1. The problem of the water crisis in many regions of the world may be permanently solved through rainwater harvesting.
2. Despite the fact that the planet is made up of around three-fourths water, only a small portion of it is used for farming or human use and it can be solved through rainwater harvesting.
3. Farmers that depend on the monsoon for source of water will find this to be the perfect option.
4. Lack of clean water forces people to drink contaminated water, which leads to a high percentage of death rates and water-borne illnesses.
5. It could be a backup plan for the primary water supply, particularly during dry seasons.
6. Rainwater collection is important because it may be saved for later use.
7. In areas with irregular rainfall throughout the year, rainwater collecting is the appropriate solution.