

# Water: A Precious Resource & A Shared Responsibility

Water is a precious resource. We need water for our survival. In Sanskrit it says,

**“JalEvJivanam Asti”. Jal hi Jeevanhai. Water is life.**

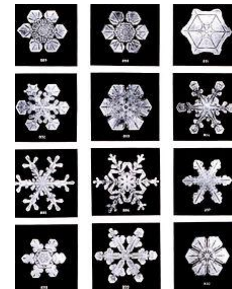
To bring water to your tap, a lot of effort and engineering goes in.

<https://en.wikipedia.org/wiki/Water>



Water is

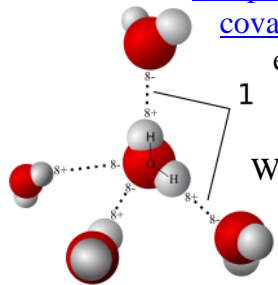
available in liquid form, solid form as ice



and in gases as vapor.

**Water** (chemical formula:  $H_2O$ ) is a transparent fluid which forms the world's streams, lakes, oceans and rain, and is the major constituent of the fluids of organisms. As a [chemical compound](#), a [water molecule](#) contains one [oxygen](#) and two [hydrogen atoms](#) that are connected by [covalent bonds](#). Water is a [liquid](#) at [standard ambient temperature and pressure](#), but it often co-exists on [Earth](#) with its [solid](#) state, [ice](#); and [gaseous](#) state, [steam](#) ([water vapor](#)). It also exists as [snow](#), [fog](#), [dew](#) and [cloud](#).

Water covers 71% of the Earth's surface.<sup>[1]</sup> It is vital for all known forms of [life](#). On Earth, 96.5% of the planet's crust water is found in seas and oceans, 1.7% in groundwater, 1.7% in glaciers and the ice caps of Antarctica and Greenland, a small fraction in other large water bodies, and 0.001% in the [air](#) as [vapor](#), [clouds](#) (formed of ice and liquid water suspended in air), and [precipitation](#).<sup>[2][3]</sup> Only 2.5% of this water is [freshwater](#), and 98.8% of that water is in ice (excepting ice in clouds) and [groundwater](#). Less than 0.3% of all

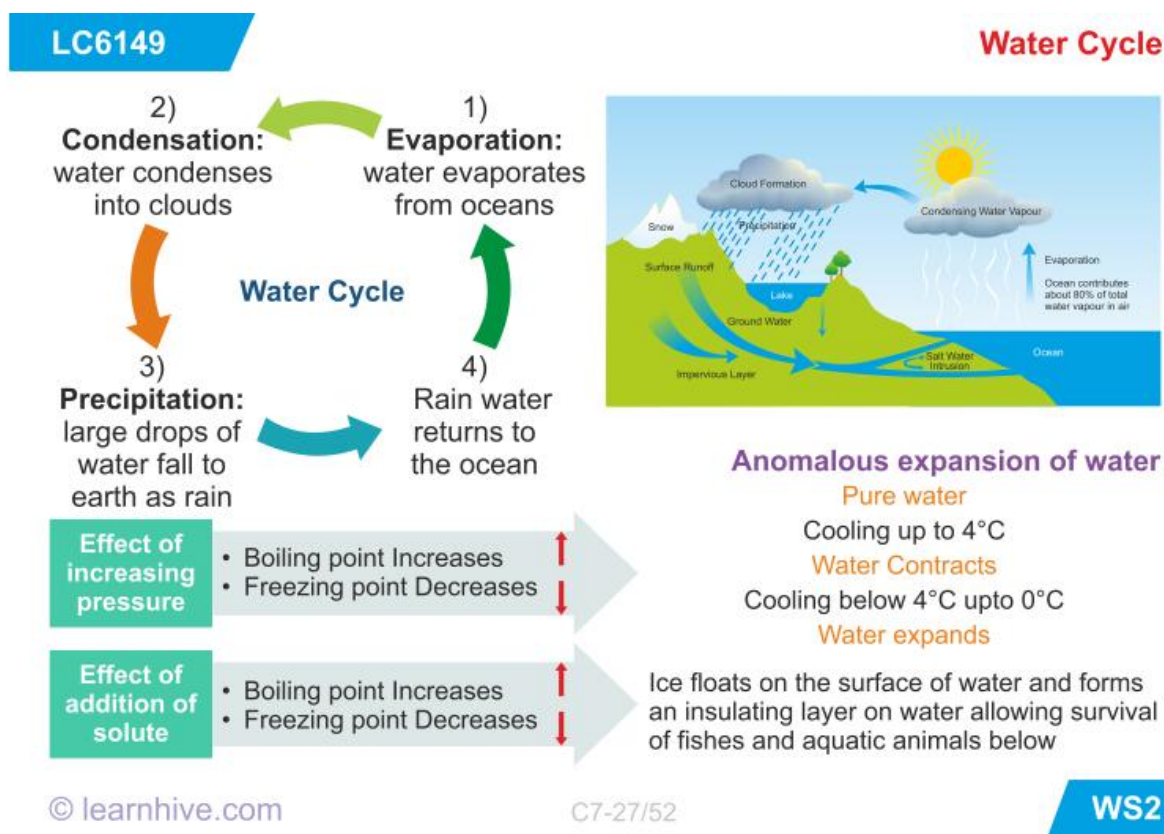


freshwater is in rivers, lakes, and the atmosphere, and an even smaller amount of the Earth's freshwater (0.003%) is contained within biological bodies and manufactured products.<sup>[2]</sup> A greater quantity of water is found in the earth's interior.<sup>[4]</sup>

Water on Earth moves continually through the water cycle of evaporation and transpiration (evapotranspiration), condensation, precipitation, and runoff, usually reaching the sea. Evaporation and transpiration contribute to the precipitation over land. Water used in the production of a good or service is known as virtual water.

Safe drinking water is essential to humans and other lifeforms even though it provides no calories or organic nutrients.

Water is available in seas in form of saline water, on the top of the mountains as ice/ snow , in the ground as ground water in aquifers and finally in the rivers as surface water, which is sweet and usable.



<https://en.wikipedia.org/wiki/Water>

[https://en.wikipedia.org/wiki/Water\\_resources](https://en.wikipedia.org/wiki/Water_resources)

**Properties of water**Molecular Formula:  $H_2O$ 

Molecular weight: 18

Cavendish concluded ratio of hydrogen and oxygen is 2:1

**Appearance**

- Colorless, odorless and tasteless.

**State**

- Exists in all three states: solid, liquid and gas

**Boiling point**

- 100°C at 760 mm. pressure

**Melting point**

- 0°C at 760 mm. pressure

**Conductivity**

- Water is poor conductor of heat and electricity

**Distribution of Earth's Water**

About 97.4% of water is present in oceans. It's salty hence it can't be used.



Of the balance 2.6%, 2% is frozen in forms of ice caps and glaciers. Its not available for human consumption.



Only 0.6% is pure water in liquid form, of this 0.59% is present as groundwater.



Balance 0.01% is available as fresh water on earth surface.



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understanding the environmental aspects.

Brining water to the Farm Gate or to the household taps requires a lot of engineering



activities by collecting from the catchment areas in the upper reaches and collecting in the Dams / Reservoirs, releasing into the canals or into the transmission system for people to receive on demand. Water resource engineering calls a scientific planning



**Water Planning Exercises include;**(i) Assessing Irrigation, Industrial and Domestic demands of water in a geographical area; (ii) Assessing waste water volumes and treatment concerns to keep the environment clean; (iii) Assess Ground Water availability in the area; (iv) Rain Water / Rain Fall data collation and study ; (v) Life of Dams & Reservoirs , (vi) Canal water release and management; (vii) & finally Drinking water quality and requirement which is most important.

Waste water treatment and conservation:

<http://www.globalwaterengineering.com/>

**Water Resources a Shared Responsibility:**Water is for all and is a gift of nature. However, it needs to be protected and not destroyed. Look at our rivers, why do we need **Ganga Action Plan or NamoGange**.Himalayan Glaciers are melting due to falling of trees and global warming.

<http://www.dailymail.co.uk/indiahome/indianews/article-2646549/Ganga-clean-Himalayan-task-The-challenges-facing-Modis-mission-improve-Indias-polluted-river.html>



**Whose responsibility is it to keep the rivers and water bodies clean?**

How much can Government spend and make efforts if citizens do not feel it is their river and their water resource?



### In the context of India:

Why do we do Ganga Aarti then? Offering Aarti means respecting the river. Hence, the respect needs to be in true spirit by not throwing waste

into the river, or, not emptying waste water or raw sewage waste into the river. The systems are still not in place or not functional and people too do not respect the river. The enforcement needs to be strong.



**Clean Water is our responsibility.**

## SOURCES OF WATER POLLUTION

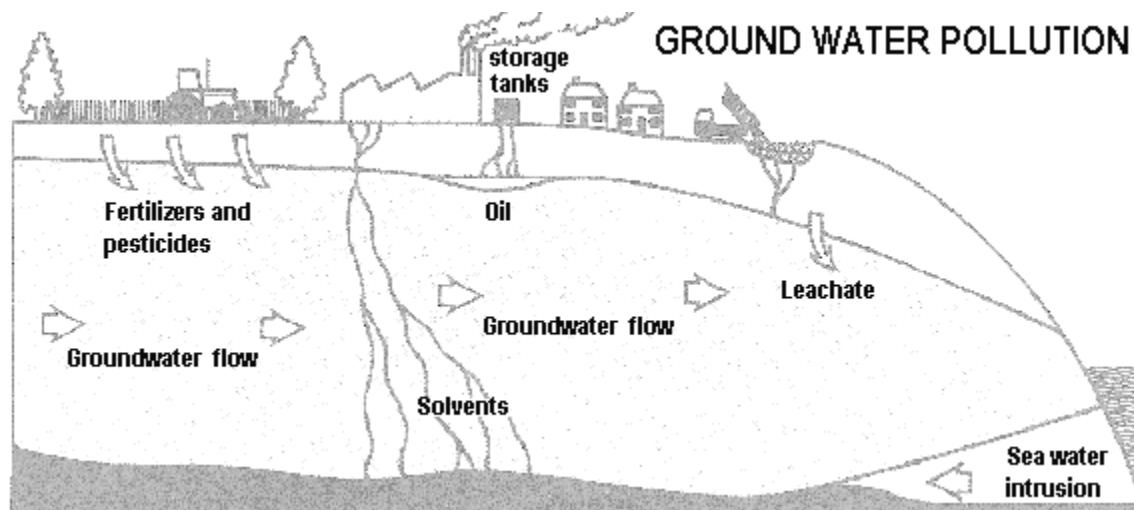
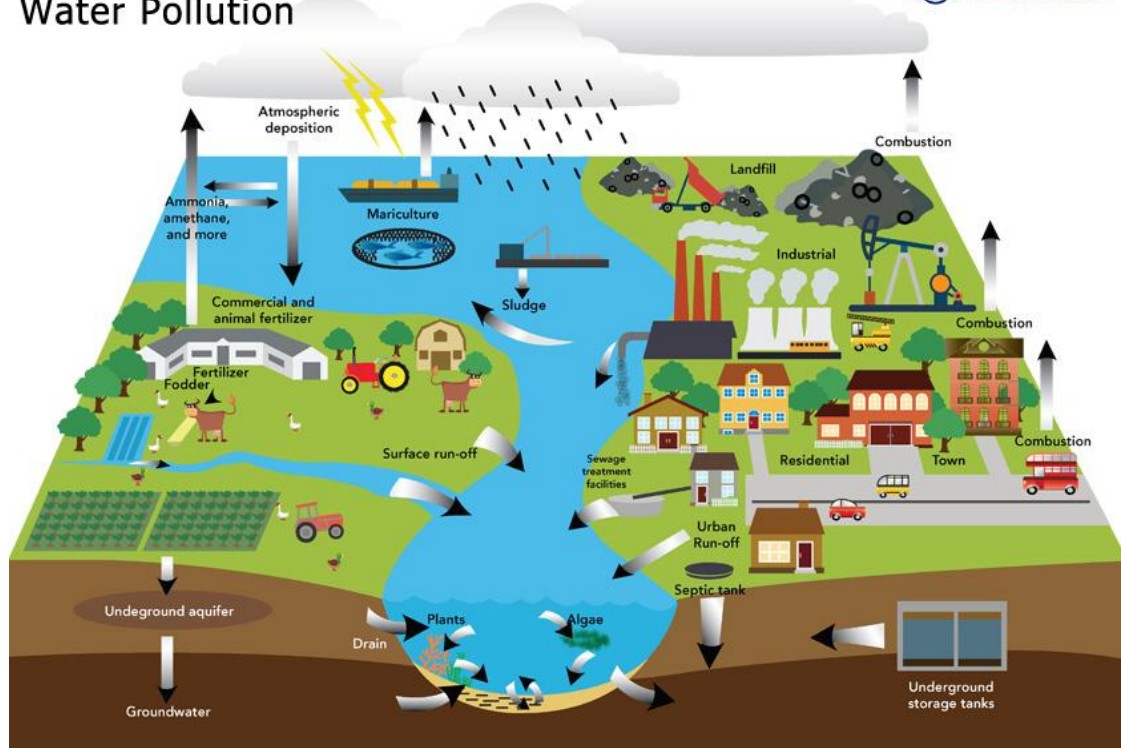
- ❑ Most of Water Pollution is man made It may also occur naturally by addition of soil particles through erosion animal wastes and leaching of minerals from rocks
- ❑ The sources of water pollution can be classified as
  - + Municipal Waste Water
  - + Industrial Waste
  - + Inorganic Pollutants
  - + Organic Pollutants
  - + Agricultural Wastes
  - + Marine Pollution
  - + Thermal pollution

**All these can be checked.**



## Sources of Water Pollution

FilterWater.com



<http://www.gdrc.org/uem/water/water-pollution.html>

[https://en.wikipedia.org/wiki/Water\\_pollution](https://en.wikipedia.org/wiki/Water_pollution)

## Green Hyderabad is an example of Political will and People's Participation



**Hyderabad Urban Development Authority** planned to clean up the 87 Lakes in Hyderabad city with grants from Netherlands Government. All the identified lakes were cleaned up through dredging and creating Sewage Treatment Plants near the lakes to treat the waste water coming from the nearby residential colonies. Treated waste water is then released into the lakes and gradually the lake is cleaned up. The surrounding areas were



made into gardens with fertilizer available from the treatment plants. Birds hibernate and people have picnics in the gardens as they are beautiful now. There is no stink from the lakes any more. The air is not polluted, the water is cleaned up and the

environment is clean for the people to enjoy.

People participate in keeping the lakes clean by not throwing the garbage into the lakes any more. Also no untreated waste water is allowed to be released into the water body. The garden areas attract more people for morning walks and picnics and they are kept clean by self-help groups of women.

[http://www.business-standard.com/article/economy-policy/hyderabad-to-have-clean-lakes-by-8217-09-103061901075\\_1.html](http://www.business-standard.com/article/economy-policy/hyderabad-to-have-clean-lakes-by-8217-09-103061901075_1.html)

## WHERE “Reviving The Life of Lake”

### Greater Hyderabad City

**Area :**  
260 Sq.kms  
5<sup>th</sup> largest city of India

**Population :**  
6.8 Million(1991 census)  
Ranked 6th in population  
among the metropolitan  
cities of India

**Lakes:**  
Managing by both GHMC & HMDA  
400 Big & Small Lakes under HMDA  
89 Lakes are being treated since 2004  
176 Lakes under GHMC



All water bodies are our responsibility and we can keep them clean.

**Best Regards**

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