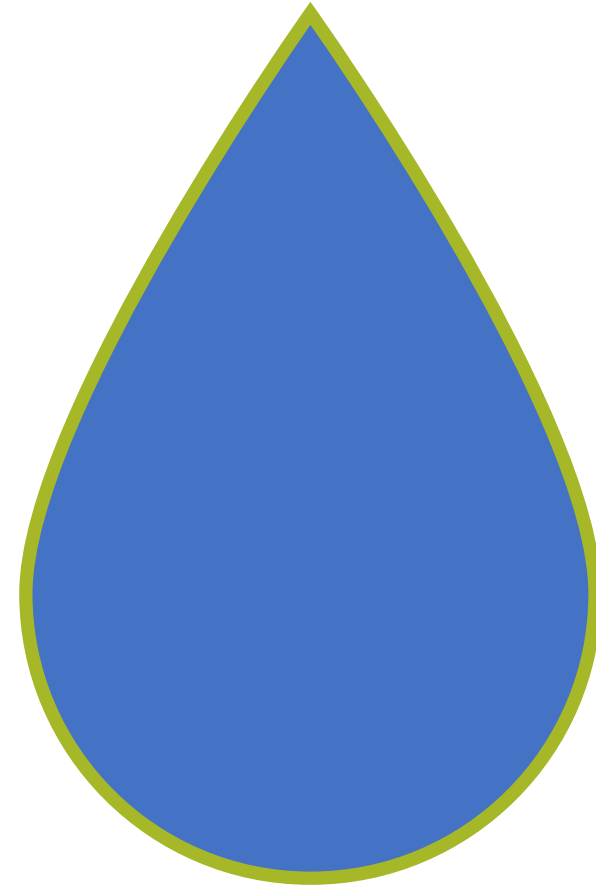
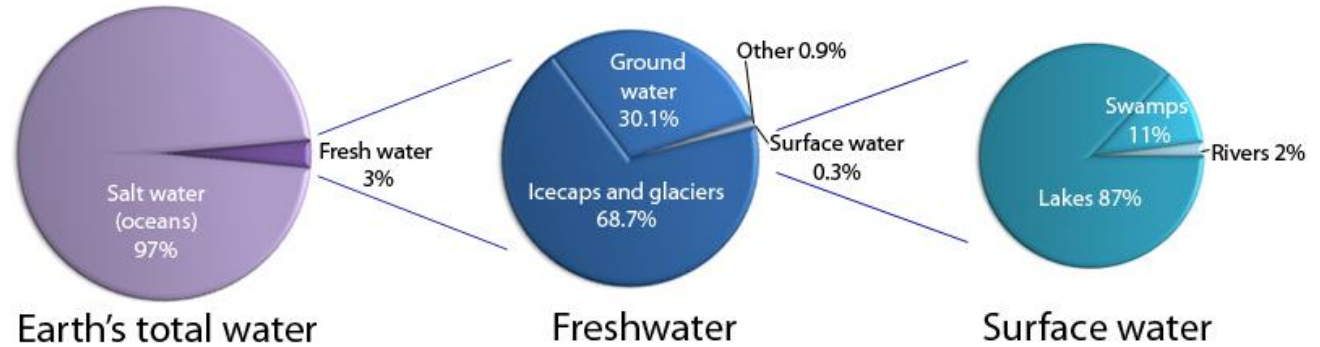


WATER  
RESOURCES  
AND USE



## GLOBAL WATER DISTRIBUTION

- Although **71%** of the Earth's surface is water, nearly **97%** of Earth's water is **salt water**.
- Of the fresh water on Earth, about **68%** is **frozen** in glaciers and polar icecaps.
- A small percentage of the water on Earth is liquid fresh water that humans can use.



Earth's water distribution

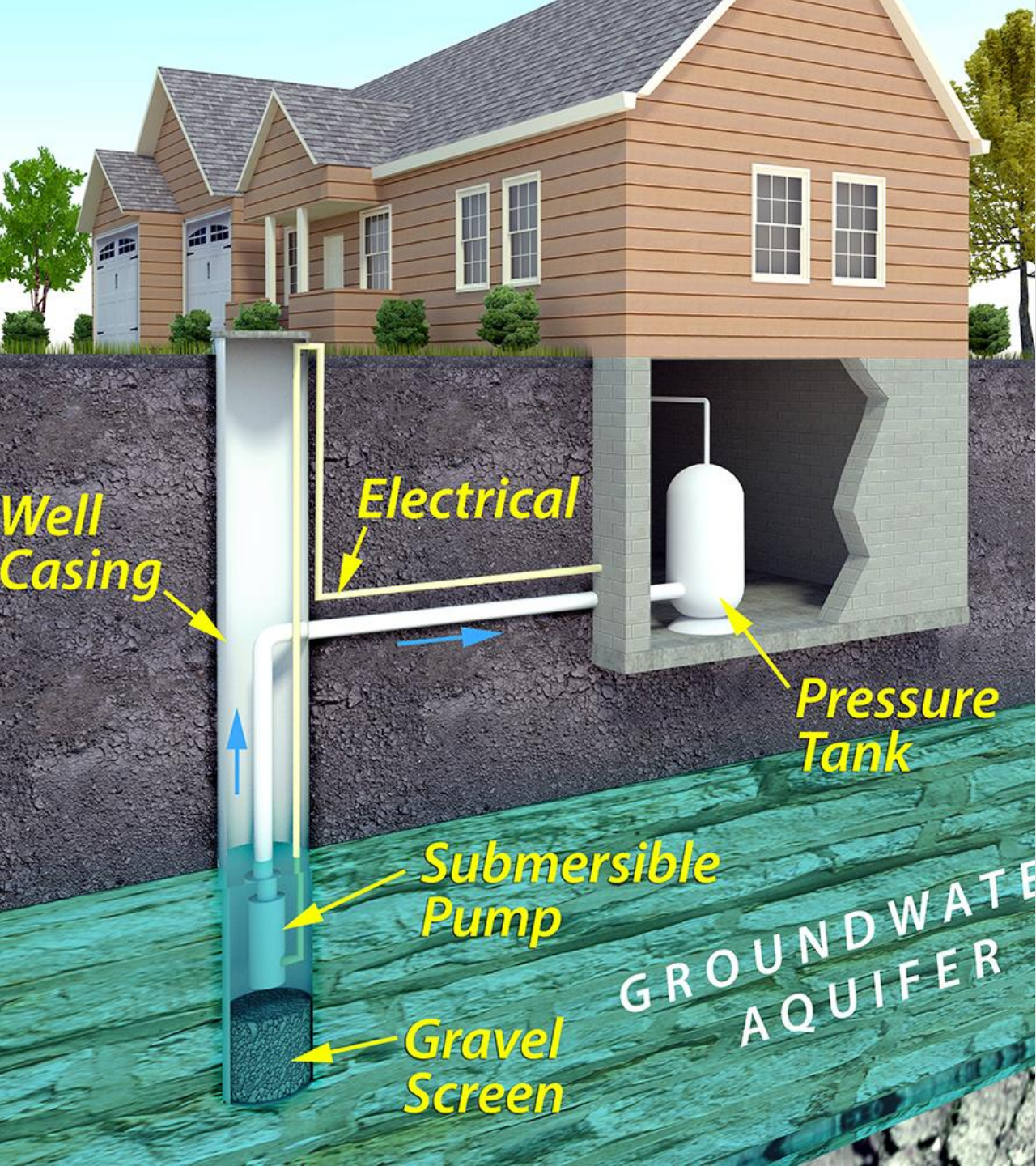


## SURFACE WATER

The distribution of surface water has played a vital role in the **development** of human societies.

Throughout history, people have built **cities and farms** near reliable sources of water.

Today, most large cities depend on surface water for **drinking water, water to grow crops, food such as fish, power for industry, and transportation.**

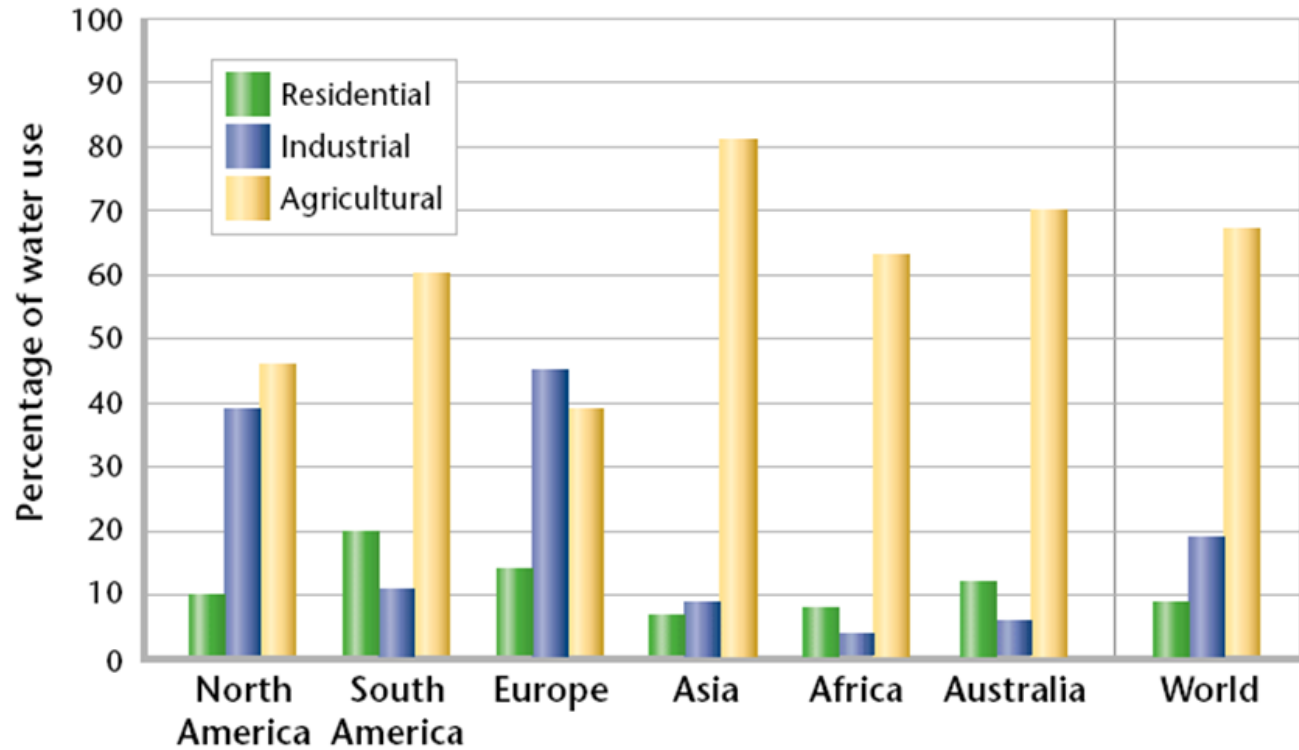


# GROUNDWATER

- When it rains, some of the water **percolates through the soil** and down into the rocks beneath.
- An **aquifer** is a body or rock or sediment that stores groundwater and allows the flow of groundwater.
- The water table forms the **upper boundary of an aquifer**, and most aquifers consist of materials such as rock, sand, and gravel that have a lot of spaces where water can accumulate.
- We obtain this water with the use of a well

# GLOBAL WATER USE

- There are three major uses for water:
  - **Industrial**
  - **Agricultural**
  - **Residential**



Source: World Resources Institute.



# INDUSTRIAL WATER USE

Industrial water use includes water used for fabricating, processing, washing, diluting, cooling, or transporting a product; incorporating water into a product; or for sanitation needs within the manufacturing facility. Some industries that use large amounts of water produce such commodities as food, paper, chemicals, refined petroleum, or primary metals.

Most industrial water is used to cool power plants. Power-plant cooling systems usually pump water from a surface water source, carry the water through pipes in a cooling tower, and then pump the water back into the source.

An aerial photograph of a vast agricultural field. The field is divided into long, straight rows of green crops. In the foreground, there are several shallow, water-filled ditches that run parallel to the crop rows. The water in the ditches is a dark, muddy brown color. The sky is a pale, overcast blue. The overall scene depicts a well-organized and irrigated agricultural landscape.

## AGRICULTURAL WATER USE

**Irrigation** is a method of providing plants with water from sources other than direct precipitation.

Many different irrigation techniques are used today. For example, some crops are irrigated by **shallow, water filled ditches**.



## AGRICULTURAL WATER USE

In the U.S., **high-pressured overhead sprinklers** are the most common form of irrigation.

However, this method is **inefficient** because nearly half the water **evaporates** and never reaches the plant roots.

Drip irrigation is the process of lacing your garden area with irrigation lines that feed directly into the root systems of your plants, “dripping” water into them gradually. Drip irrigation is by far the most efficient irrigation system regarding water usage. It typically uses less water, and the water it does use is less prone to evaporate.



# RESIDENTIAL WATER USE

There are striking differences in residential water use throughout the world.

The average person in the United States uses about **300 L** of water a day.

In India, the average person uses only **41 L** of water everyday.

## Daily Water Use in the United States (per Person)

Use	Water (L)
Lawn watering and pools	95
Toilet flushing	90
Bathing	70
Brushing teeth*	10
Cleaning (inside and outside)	20
Cooking and drinking	10
Other	5

# WATER TREATMENT

Residential water must first be made **potable**.

Water treatment removes elements such as **mercury, arsenic, and lead**, which are poisonous to humans even in low concentrations.

Three major steps of water treatment

1. **Coagulation**
2. **Filtration**
3. **Disinfection**

Watch this video

<https://www.youtube.com/watch?v=tuYB8nMFxQA>

