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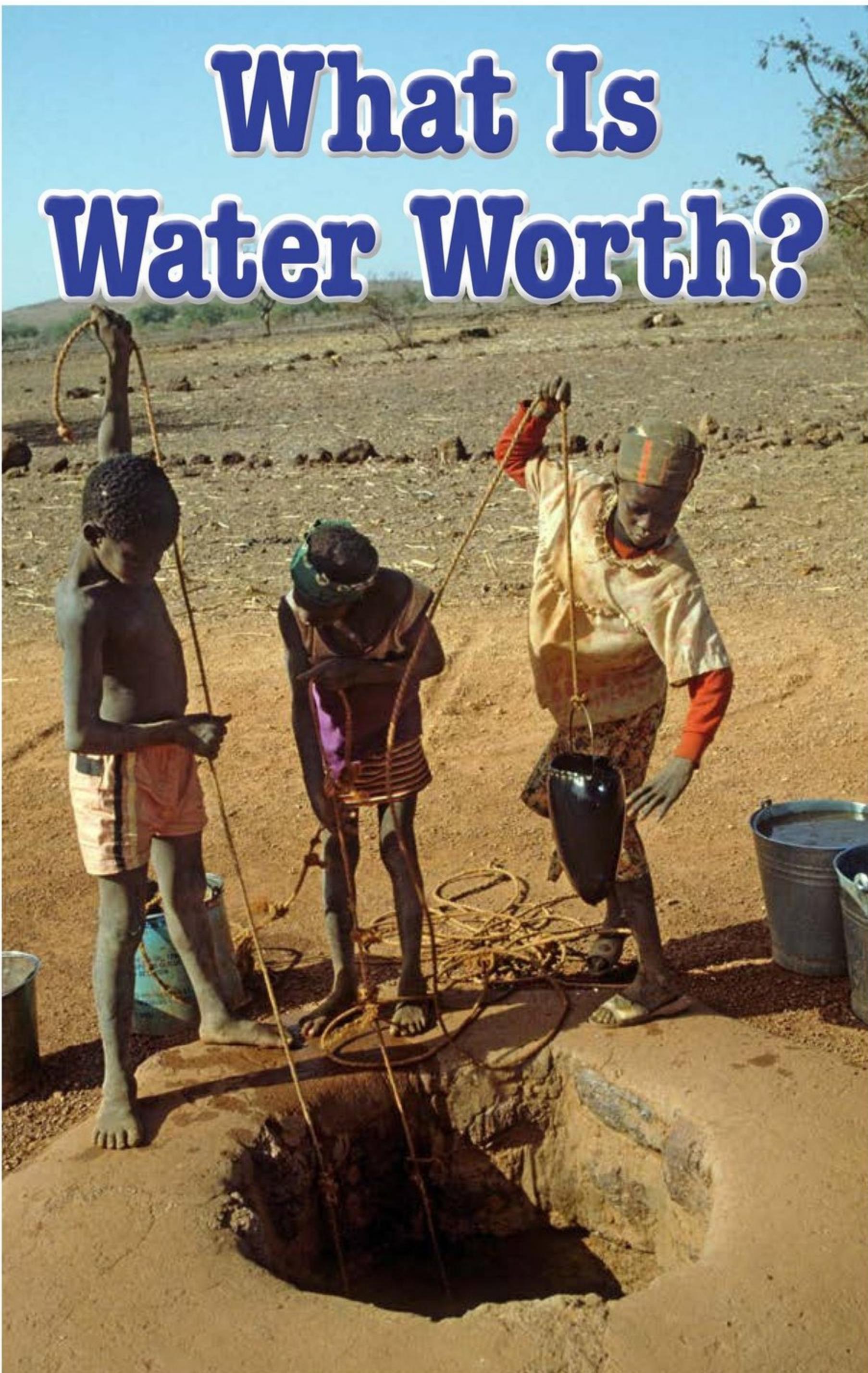
What Is Water Worth?



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Written by John Perritano

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A summer rain can mean fun in many places. In others, it can mean survival.

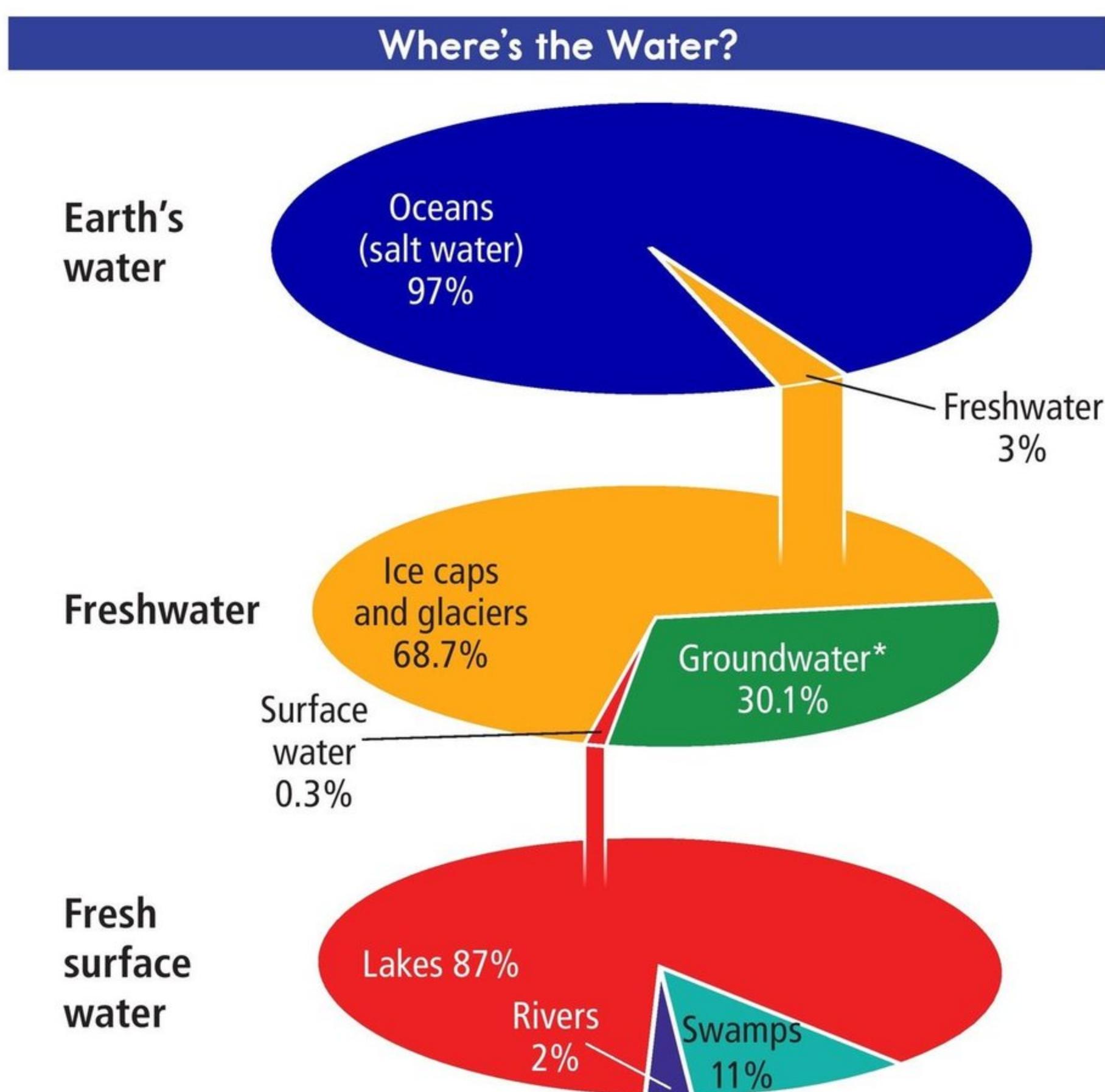
Water, Water Everywhere

Many of us around the world take water for granted. Why shouldn't we, when water is all around? It comes out of our faucets and collects in puddles on the sidewalk when it rains. Lakes and rivers brim with water. We buy water in bottles and slurp it from drinking fountains.

In fact, if we had a drinking glass as big as the United States and filled it with every drop of water on the planet, the glass would have to be 145 kilometers (90 mi.) tall to hold it all. With so much water, you'd think everyone would have enough to drink. Not so!

A Drop in the Bucket

Water is fast becoming more precious than gold or oil. The planet simply does not have enough usable water for everyone. For one thing, most of Earth's water is salt water, which we can't drink or use to water our crops. Only about 3 percent of Earth's water is fresh. Most of that is locked away in polar ice caps, glaciers, or underground layers of rock called *aquifers*.



*Groundwater provides 25% to 40% of the world's drinking water. It provides even more water for growing food. However, groundwater supplies are shrinking.



In India, young girls collect water from a hole dug in the ground.

Some countries have more **freshwater** than others, but most have enough water to meet people's needs. What they don't always have is the means to make that water available to people. Rich countries can tap into hard-to-get sources of water much more easily than poor countries, where people often don't have enough money to dig wells or build dams to create reservoirs.

Today, we humans can only reach and use 1 percent of Earth's freshwater. That 1 percent is under stress due to three underlying problems: **pollution**, increased demand driven by the world's ever-growing population, and **climate change**.

Pollution's Impact

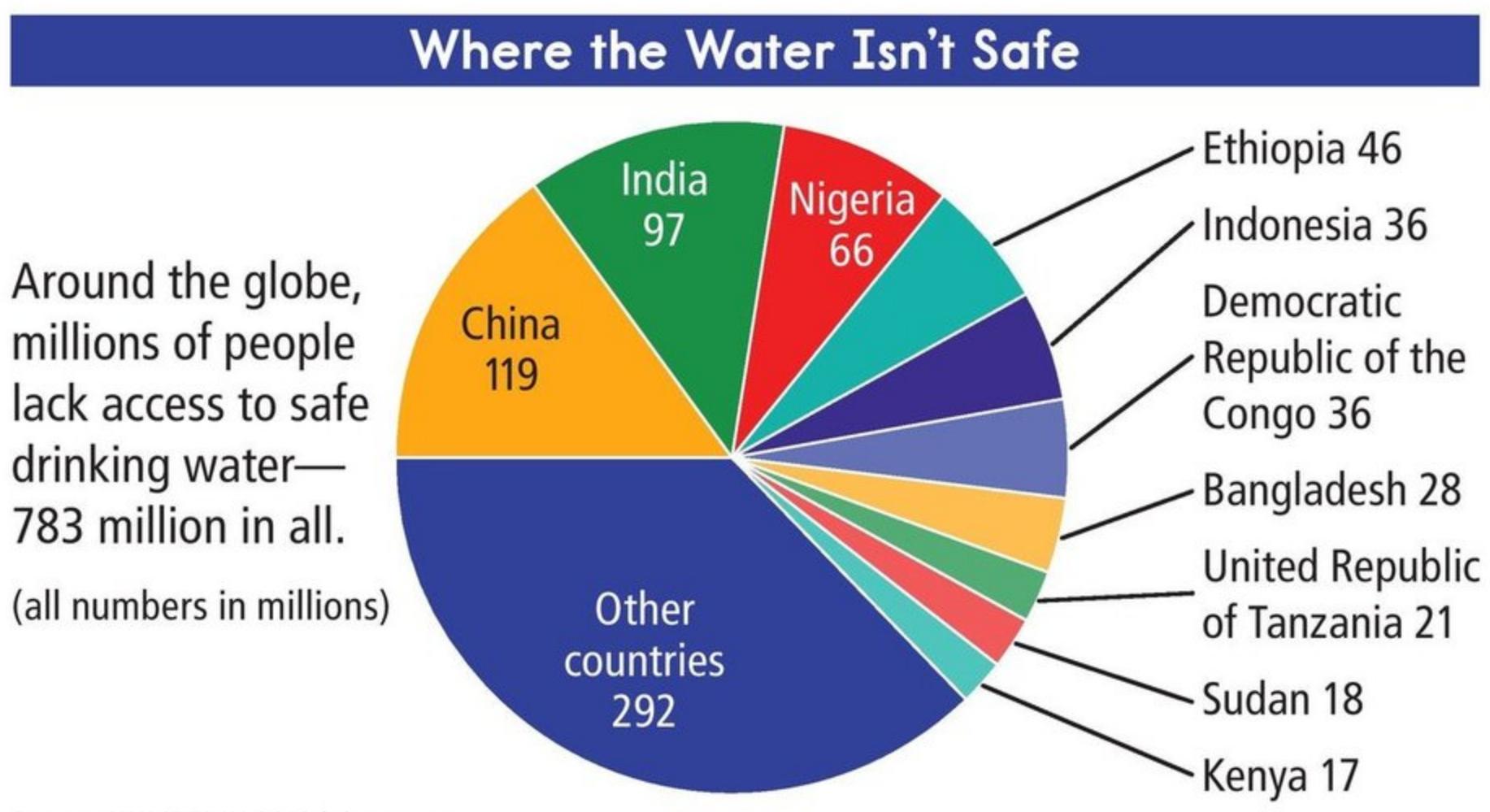
Water pollution is a huge problem on many continents. South America's Amazon rainforest spans 7 million square kilometers (2.7 million sq. mi.) and is home to about 10 million people and more than 30,000 plant species. For years, people have been dumping untreated human waste and toxic chemicals into the Amazon River. Drilling for oil and mining for gold have made some sections of the Amazon River toxic.



Canoes sit in a part of the Amazon River thick with trash.

In other poor areas where freshwater often goes untreated, pollution makes people sick in other ways. Because people lack running water, they dump human waste outside their houses. That waste, filled with bacteria, then flows into rivers and streams. People use the water in these toxic waterways for drinking, cooking, and bathing. According to the United Nations Development Program, half the world's hospital beds contain patients sick from drinking unclean water.

In Haiti, one of the poorest countries in the world, seven out of ten people do not have clean water to drink. Each year, unclean drinking water causes more than half the deaths in Haiti. A huge earthquake in 2010 damaged wells and water pipes there, making clean water even more scarce. Many children and adults must walk miles to find clean water to drink.



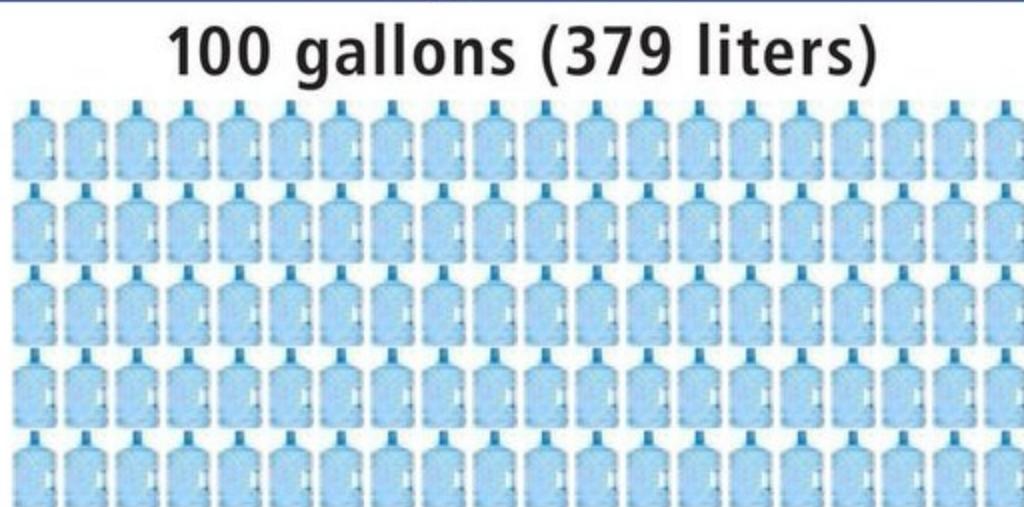
Population's Impact

In 2011, the human species hit a milestone. On October 30, a baby girl was born in the Philippines: the world's 7 billionth person. By the time she turns 40, experts say that 9 billion people will be walking the planet, each looking for food, energy, land, and water.

Growing populations reduce the amount of water available for each person. Fifty years ago, the 2.5 billion people on Earth only used a third of the freshwater that we use today. Now, research shows that more than 1.1 billion people—1 in every 6 people in the world—don't have enough clean water to drink. They live on less than 8 liters (2 gal.) a day. Experts say that by 2035, 3.6 billion people will be living in areas where water is scarce.

Wealthy, more developed countries are far less likely to face polluted drinking water than poor countries, but some face surging populations. This can lead to water shortages, in part because people in wealthy countries use more water.

Average Water Use: Americans vs. Others



100 gallons (379 liters)

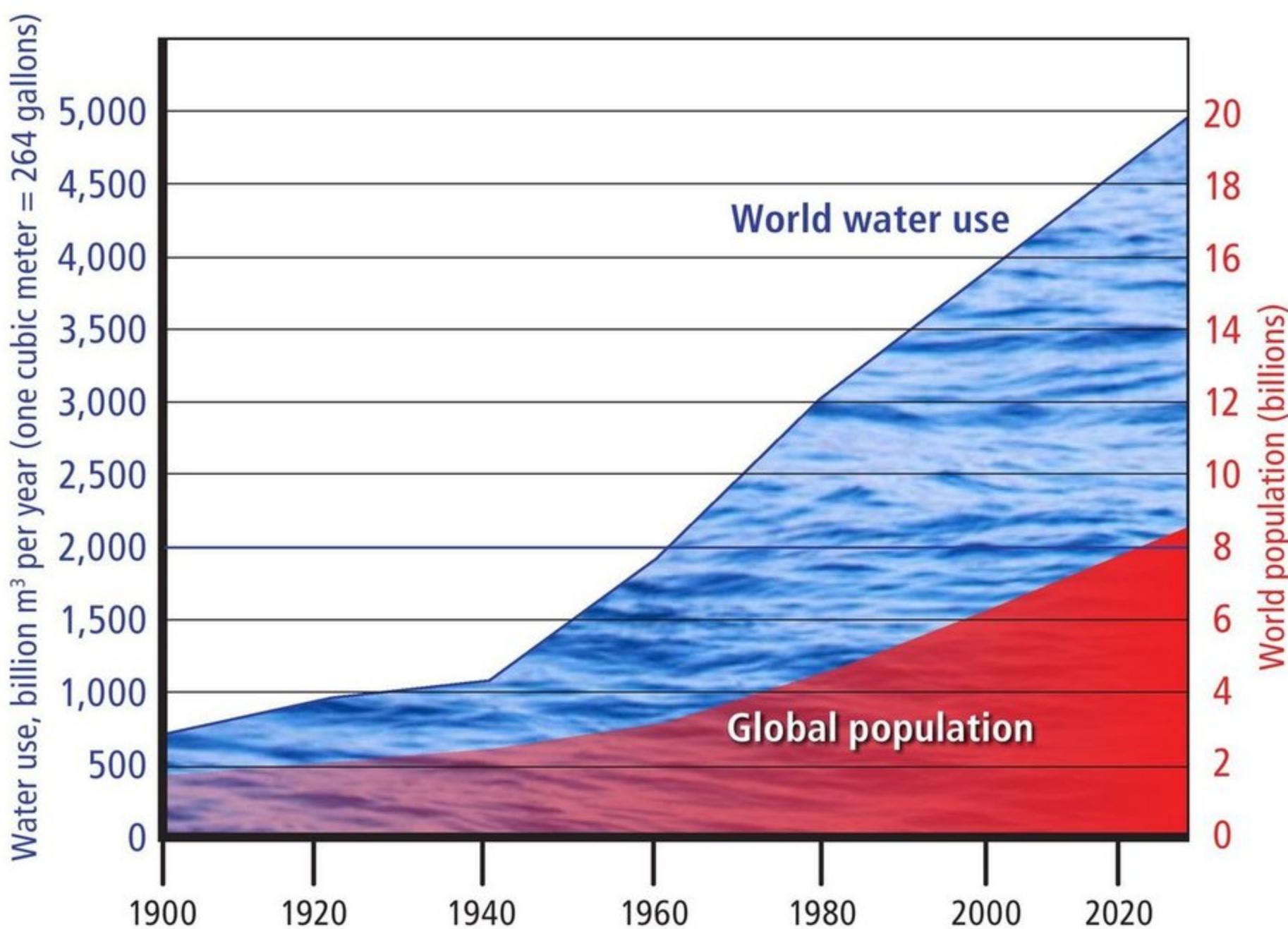
**2 gallons
(8 liters)**

Compare daily water use between Americans (left) and many poor people around the world (above).

In the United States, a four-person family, on average, uses 1,514 liters (400 gal.) of water a day, about 379 liters (100 gal.) per person. This level of use could last if only a few people were using the water. Instead, more and more people rely on limited water sources. For example, the Los Angeles area's population is expected to reach 41 million by 2020. Yet the area can only support 1 million people on its own water.

Instead, Los Angeles—and many other cities in the western United States—pull their water from distant rivers. That river water is running out, owing to growing populations . . . and to climate change.

Big Population = Big Water Demand



The Impact of Climate Change

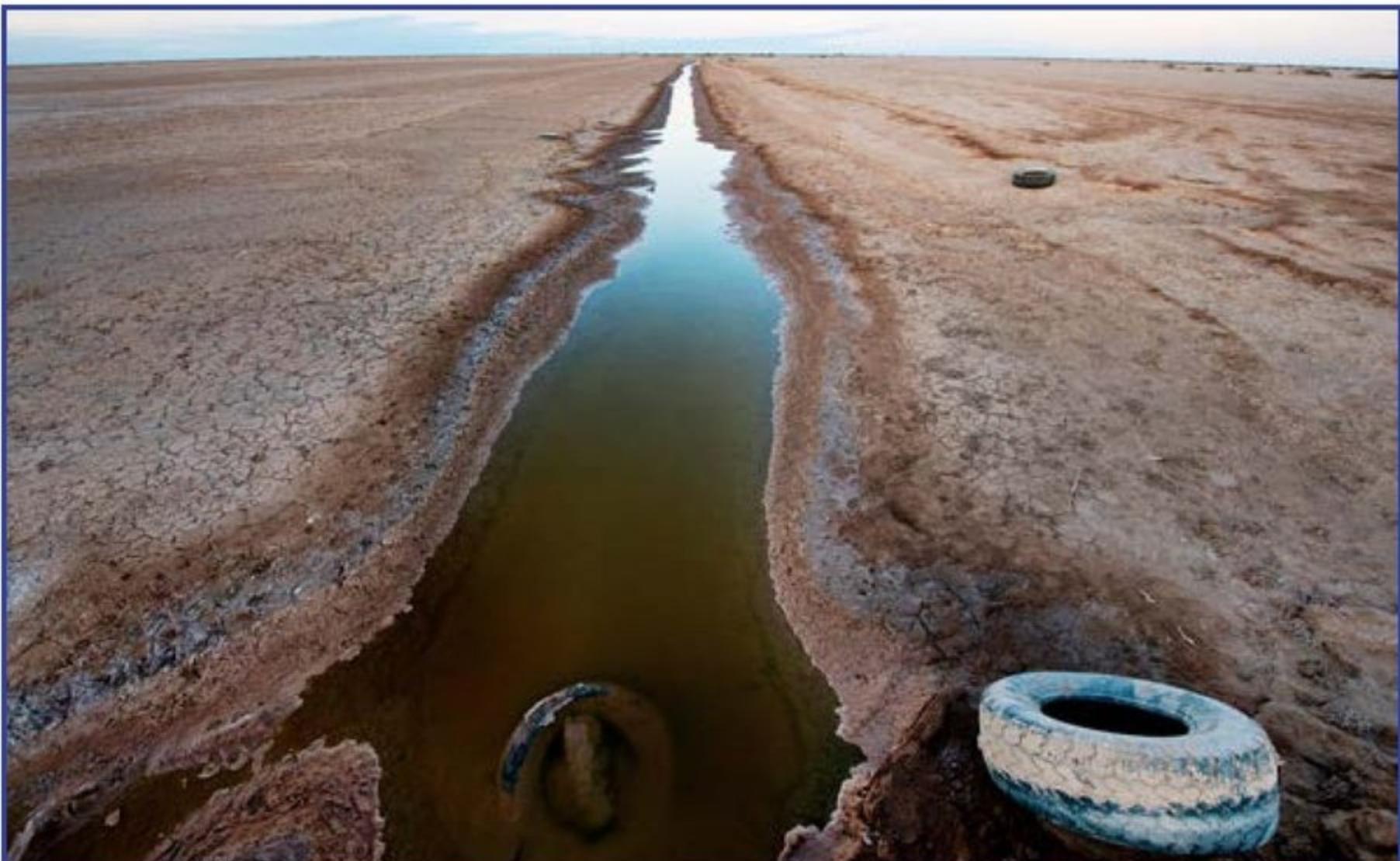
Many scientists think climate change is already affecting people around the world by producing extreme weather conditions such as storms and floods. Yet the threat that climate change presents to the global water supply may be the worst threat of all. Scientists predict that by 2050, one-fifth of the world's population may face severe water shortages as a result of climate change.

Climate change results from too much **carbon dioxide** and other greenhouse gases in the atmosphere. These gases, produced in large part by the burning of **fossil fuels**, trap the Sun's heat close to Earth's surface, much like a greenhouse. The result is an overall increase in Earth's temperature. That warming, in turn, leads to climate change.

The warmer temperatures disrupt the water cycle, which is a delicate balance between **evaporation** and **precipitation**. Warmer temperatures increase the rate of surface water evaporation into the atmosphere. That, in turn, affects different parts of the world in different ways. Increased evaporation might dry out some areas while producing droughts in other areas. A drought is a long period of lower-than-normal precipitation that results in a shortage of water.

Regions at the highest risk of drought include the Mediterranean and the Middle East. In the United States, most scientists say that climate change is responsible for an extreme drought in the Southwest and California.

The drought in the Southwest has been causing problems in the region since 1999. The water level of Lake Mead, on the border between Nevada and Arizona, has dropped 37 meters (120 ft.) in that time. The lake, which is fed by the Colorado River, is a source of freshwater for 22 million people. If rains don't increase soon, odds are good that desert residents will have to start **rationing** water.



A River Runs Dry

More than 30 million people depend on the Colorado River. It now trickles to an end before it can reach the sea.



A boy fishes in the Daning River, one of many rivers fed by the Himalayas.

Scientists say climate change is also responsible for the melting of glaciers high in the Himalayan Mountains. The glaciers help provide freshwater for 1.5 billion people living in India, Pakistan, and six other Asian countries. In the past, the melting glaciers slowly released water into the rivers below. Now the glaciers are melting rapidly, and the long-term water supply is shrinking. At the same time, the increased melting has caused severe flooding along these rivers.

As climate change worsens, less water is available for ranching, growing crops, and producing energy. Nature and wildlife suffer. Arguments break out between cities, states, and even countries over who has a better right to the same source of water. For instance, Pakistan and India are in a race to build dams on the headwaters of the same river. Tensions between the two countries run high, and the growing water **crisis** hasn't helped.

Solving the Problem

So what can we do?

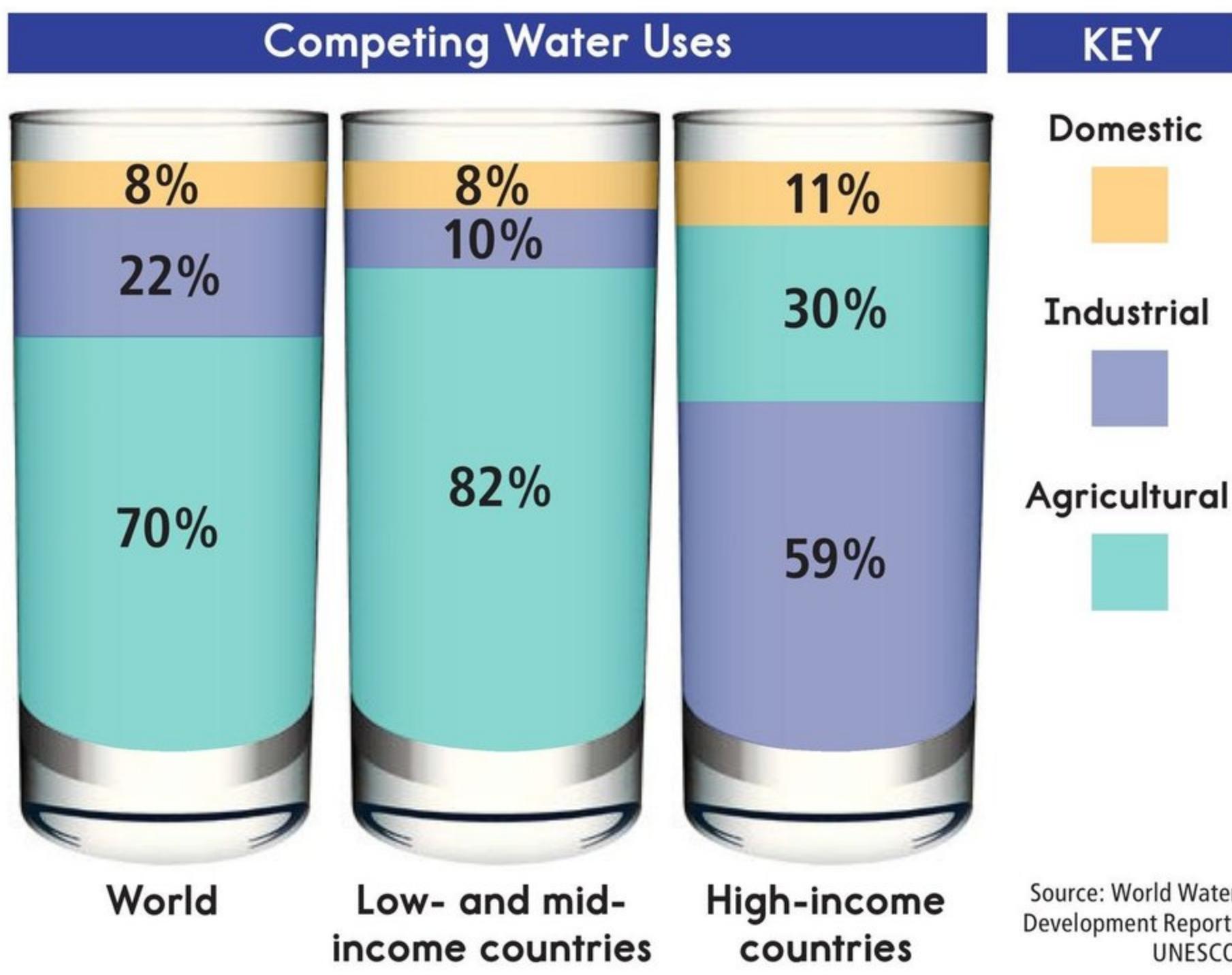
Each person's efforts to **conserve** water can help. States can conserve, too. In 2013, faced with California's driest year on record, the governor called for people to use 20 percent less water.

Countries need to find solutions, too. Workers in Saudi Arabia are converting salt water to freshwater in a process called *desalination*. The process is expensive, though, and many countries cannot afford to build desalination plants.

What Can You Do?



- Turn off the water when brushing your teeth.
- Take shorter showers (or take baths if you like to linger).
- Turn off the hose when washing the family car.
- Buy a rain barrel to store water for plants.
- Fix leaks and drips.
- Eat less meat (on average, beef requires 125 times more water than the same amount of potatoes).
- When you can, buy used or recycled stuff instead of new stuff.



The island of Singapore has experimented with cleaning wastewater that comes from washing dishes, flushing toilets, and taking baths and showers. Some other countries do this, too, but Singapore obtains one-third of its water this way.

While cities are growing rapidly, agriculture uses about 70 percent of the world's water. Some farmers and ranchers are trying to use water in more efficient ways. The water saved could go to cities instead.

Solving the planet's water problem is hard. Still, we all need to find ways to conserve this valuable **resource**, not just for our generation, but for the ones yet to come.

Glossary

carbon dioxide (n.)	an invisible gas that is often formed by the burning of fossil fuels (p. 11)
climate change (n.)	the long-term, lasting changes in Earth's weather patterns (p. 6)
conserve (v.)	to protect a natural place or resource so it will last longer (p. 14)
crisis (n.)	a dangerous or unstable time or situation that demands attention (p. 13)
evaporation (n.)	the change of water from a liquid state to a gaseous state due to an increase in temperature (p. 11)
fossil fuels (n.)	energy sources, such as coal, oil, and natural gas, that are taken from the ground (p. 11)
freshwater (n.)	water that is not salty (p. 6)
pollution (n.)	the act or result of putting harmful substances into the air, water, or soil (p. 6)
population (n.)	all the members of one species in a particular area (p. 6)
precipitation (n.)	water that falls to the ground, such as hail, sleet, rain, or snow (p. 11)
rationing (v.)	controlling the portioning of goods during periods of short supply (p. 12)
resource (n.)	a supply of something valuable or very useful (p. 15)

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