



Building Bridges

Connecting Diaspora Armenian Students with their Environmental Heritage

A newsletter of the Armenia Tree Project Ages 6-10, Issue No. 6

www.armeniatree.org



Help Aram find Maral!

Aram is looking for his friend Maral. On his way he wants to take photos of some of Armenia's spectacular lakes, reservoirs and waterfalls. Can you help him find his way?

Bonus: How many bridges will he have to cross during his journey?

WATER MAKES OUR WORLD GO 'ROUND!



Water
is life!

Did you know the Earth is also called the Blue Planet? That's because water covers almost three quarters of its surface which makes it look blue when viewed from space.

All living things - people, plants, animals - need water to live.

did
you
know?

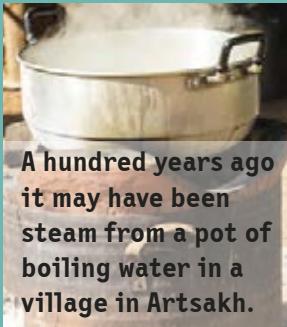


On a summer's day, an average sized birch tree can draw 80 gallons of water from the soil - enough water to fill 8 bath tubs!

Next time you have a glass of water, picture this:



The water in your glass may have rained down on Lake Sevan five years ago.



A hundred years ago it may have been steam from a pot of boiling water in a village in Artsakh.



A thousand years ago it may have flown down the river Arax.



A hundred thousand years ago it may have been frozen ice on Mount Ararat.



A hundred million years ago, a dinosaur may have bathed in it!

The amount of water on Earth never changes. The same water goes around and around.

This movement of water is called

The Water Cycle

Follow this little drop! It will show you the way water moves around. On your way, place the stickers inside the dashed shapes to fill in the water cycle.



When water vapor moves up, it starts to cool and forms tiny droplets. This is called condensation.

The sun heats the water in oceans, lakes, rivers, ponds, and even puddles. Water rises into the air as water vapor. This is called evaporation.

The water droplets gather together and form clouds.

Water also evaporates through plants and animals. This is called transpiration.

When water droplets get too heavy, they fall from the clouds as rain or snow. This is called precipitation.

START HERE!

The sun heats the water, and here we go again!

Some of the rain and snow soaks into the ground. The rest returns to oceans, lakes and rivers. This is called collection.

Water
is
health!



Think about all the ways
we use water at home!

did
you
know?

2.8 gallons of water are
needed for a single sheet of
paper to go all the way from
a tree to your printer!

Almost everything we see was made
using water. Water was used to make
the food we eat and clothes we wear.
It was even used to make the paper
for this newsletter, and the ink used
to print the words.

Did you know that
we need to drink
about 8 glasses of
water each day to
stay healthy?

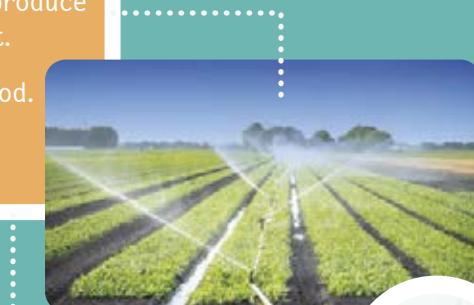
It takes about **4,000**
gallons of water to
make a bag of dog food!



Water
is
food!

A lot of water is required to produce
and transport the food we eat.

Farmers use water to make food.
Crops need water to grow.
Farm animals drink water.



It takes about **49** gallons
of water to produce just
one glass of milk!



Around **50** glasses of
water are needed to
grow enough oranges
to make one glass of
orange juice!

Water
is
power!

Water is used in factories to
heat things up or cool them
down, and to wash away waste.

Flowing water is used to make power. Dams
capture energy from moving water. Power
plants turn the energy into electricity.
**Hydropower plants provide around
one third of Armenia's electricity.**

The Spandarian Hydropower Plant
is one of Armenia's largest hydroelectric
plants.

Armenia: Land of Rivers and Lakes



Did you know? Armenia is also called **Nayiri**. It means the "land of rivers and lakes" in Assyrian.

Ancient **Dragon Stones** (**Vishapakars**) are large fish-like monuments found throughout Armenia at springs and sources of rivers.

They date back to the Bronze Age (around 5000 years ago) and are believed to represent mythological dragons guarding the sources of water. The vishapakar pictured above is located at **Lake Kari** on the slopes of Mt. Aragatz.

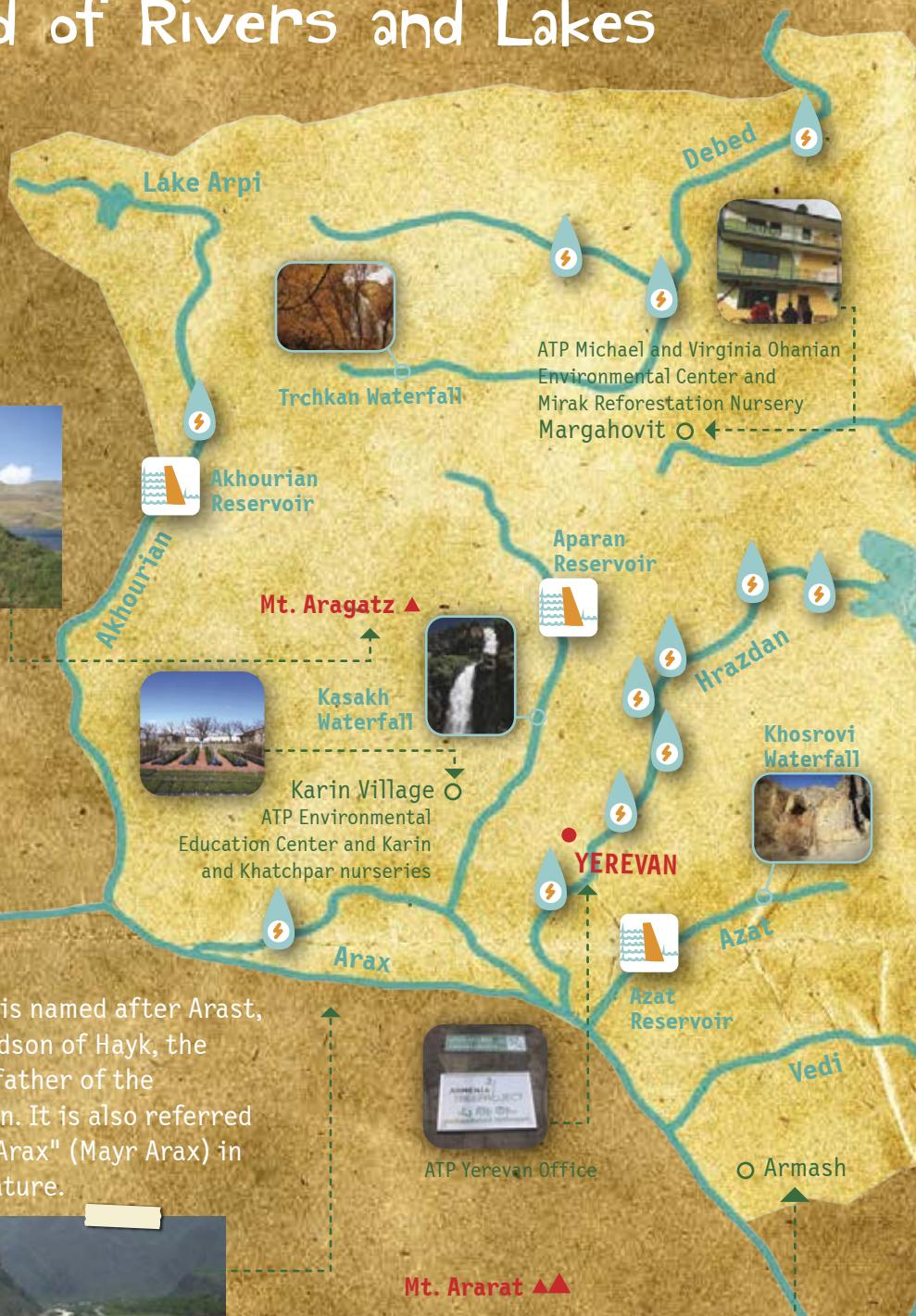


In the streets and yards of **Yerevan** you can see water fountains which are called "pulpulak".

photo: Alek Kostanyan



Lake Van is in historic Armenia and is home to the Van cat, a unique breed that is also referred to as the "swimming cat" because of its natural ability to swim.



The **Arax River** is named after Arast, the great-grandson of Hayk, the legendary forefather of the Armenian nation. It is also referred to as "Mother Arax" (Mayr Arax) in Armenian literature.



photo: Luba Balyan

Armash, on the banks of the Arax River, is home to 220 bird species and is one of the richest birding spots in the region. Sadly, it is in danger. Turn the page to find out why!



photo: Tamar Galstyan



Armenia is known for its abundant fresh water sources: Lake Sevan, more than 100 small lakes, 400 rivers, at least 80 reservoirs and more than 20,000 natural springs.



Lake Sevan is one of the largest alpine lakes in the world. For many years, because of water overuse, its water level had dropped by 59 feet.

To restore the lake, water was redirected from the Arpa river and the water level started to rise. Currently, the lake is again at risk, because more water is being used for agricultural use.



Lake Sevan



photo: Armen Ghazaryan

Jermuk is known for its natural hot springs.



Jermuk Waterfall



photo: Karen Torkhanyan

Dams have been built in Armenia since the 4th millennium BC (6000 years ago).

In this photo, you can see the remains of a dam built between 336-343 AD at the Geghard reservoir. It is still in use!

Arpa



Spandarian Reservoir



Tolors Reservoir



Hydropower stations provide about 1/3 of the electricity in Armenia. Look for this symbol to find Armenia's main hydropower stations on the map!

Shaki Waterfall



Vorotan



Spandarian Reservoir

photo: Tamar Galstyan

A reservoir is an artificial lake where water is stored. A dam controls the amount of water that flows out of the reservoir. Look for this symbol to find Armenia's 5 largest reservoirs.



Additional photo credits on back cover

Every Drop Counts!

- There are more than **7,300,000,000** people on earth!
- This number is growing at a rate of **230,000 people each day** and we all need water to survive.
- We use **6 times more water** than people did 100 years ago.
- At this rate, **4 billion people** may be living without enough clean water by the year **2050**.
- Armenia has been included in the list of **33 countries** that will face the biggest water shortages by **2040**.



In Armenia, the region of Armash is home to threatened species like the marbled and white-headed ducks. Unfortunately, misuse of water resources is drying up the area, threatening its wildlife. The Armenian Society for the Protection of Birds (ASPB) is working to save this bird paradise.



One of the reasons why the Ishkhan fish in Lake Sevan became endangered was the drop in the water level of the lake.



Your Water Footprint

Your "water footprint" is a measure of how much water you use, including all that water you don't see being used, like the amount used to grow the food you eat or to make the goods you buy. The more water you use, the heavier your water footprint.

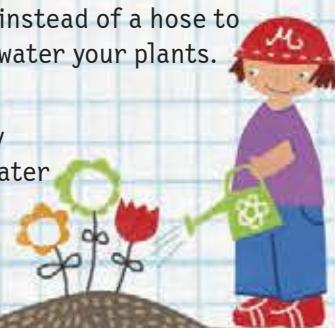
↑ yay!

How often do you do these things? Answer by "never", "sometimes" or "often" to find out how big your water footprint is:

- take a bath instead of a shower
- run the faucet until the water comes out cold or hot
- replace metal, plastic, wood or paper products before they are worn out
- eat meat, especially beef
- eat food that has been grown outside its normal growing area, such as fruit grown in dry areas
- brush your teeth with tap running
- purchase a plastic water bottle
- leave the hose running when washing your bike or family car

If your answers are mostly "never", great! Your water footprint is light. Mostly "sometimes" means your footprint is average. If your answers are mostly "often", then your water footprint is DEEP! Time to make some changes! Read on to find out how to become water smart.

Use a watering can instead of a hose to water your plants.



Water lawn in early morning so less water will evaporate.

Collect rainwater to water plants or wash your car. You could save up to 1,300 gallons of water during summer months.



Cover flowerbeds with wood chips or straw to reduce evaporation.

Don't leave the hose running while washing your bike or family car. Or use a bucket and sponge instead of a hose.

Be Water Smart!

We share water with everyone in the world.

Here's how you can use less water at home!

(And just for fun: can you find the 6 white-headed ducks hiding in this house?)

Turn off water when scrubbing hands and brushing teeth.



Showering for 5 minutes instead of 10 can save about 40 gallons of water.

Take quick showers instead of baths.



Turn faucet on halfway. You will use less water that way.



Buy only what you really need. For example, growing cotton and producing fabric both use up precious water. If you buy clothes you will not wear, you are needlessly increasing your water footprint.



Use less paper! you will be saving trees AND water. It takes 32 gallons of water to make 1 pound of paper.

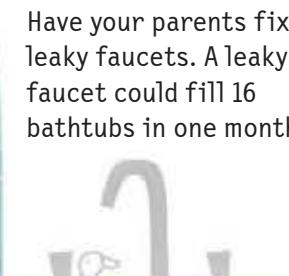


Eat foods native to your area, since those have adapted to the soil and climate and do not need extra water.



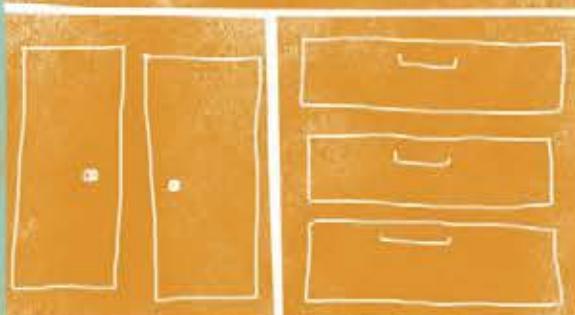
Eat less meat. Animals grown for food are fed grain. Growing grain uses a lot of water. For the same amount of nutrition, a meat-based diet uses 5 times more water than a grain-based one.

Have your parents fix leaky faucets. A leaky faucet could fill 16 bathtubs in one month.



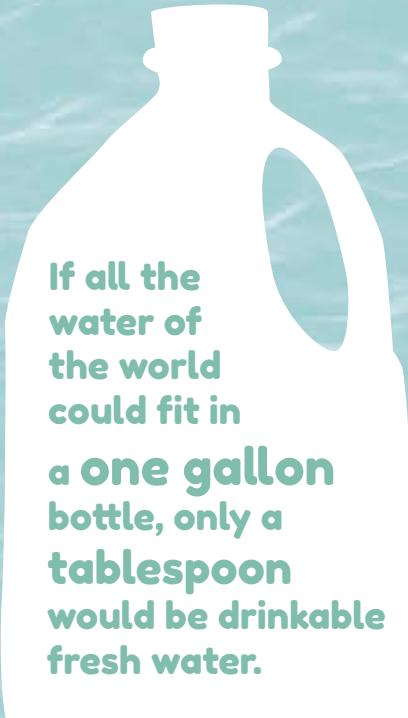
Don't throw ice cubes in the sink when you are done with a drink. Use them to water a plant.

Run dishwasher and washing machine only when full. If you turn on the washing machine when it is full instead of half full, you can save more than 264 gallons of water per month!



Plant a tree or several! Tree roots trap the water in one place so that it can soak into the ground and refill underground water pools called aquifers. You can plant a tree in Armenia! Go to www.armeniatree.org/buildingbridges to find out how.

Did You Know?



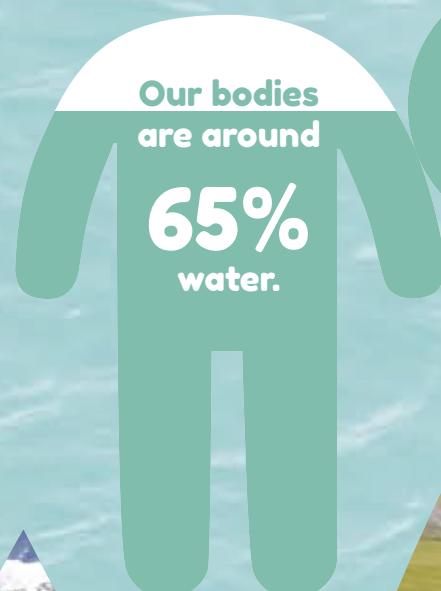
If all the water of the world could fit in a **one gallon** bottle, only a **tablespoon** would be drinkable fresh water.



There are over **400** rivers in Armenia.



The average white cloud weighs about twice as much as a blue whale!



Our bodies are around **65%** water.



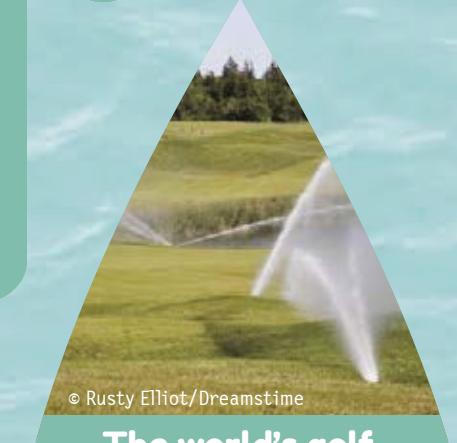
A tomato is **90%** water!



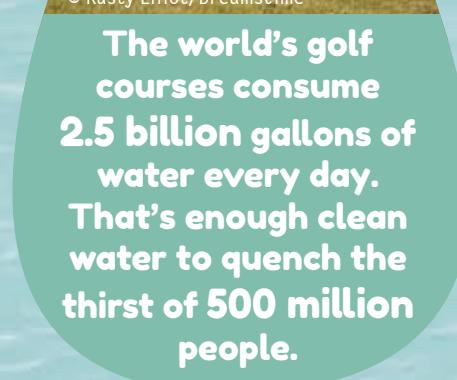
The Bering Glacier in Alaska is the largest glacier in North America. It is about **5 times** bigger than NY city and **twice** as tall as the Empire State Building.



Glaciers are huge masses of ice that form over hundreds of years where fallen snow compresses and turns into ice.



© Rusty Elliott/Dreamstime



The world's golf courses consume **2.5 billion gallons of water every day**. That's enough clean water to quench the thirst of **500 million people**.



© Imagineimages/Dreamstime



The longest river in the world is the **Nile River**. It is over **4,000 miles long**!

It takes 15 million tiny water droplets to form a raindrop large enough to fall to the ground.



At 666.1 miles, the Arax River is the longest river in Armenia and one of the longest in the Caucasus.

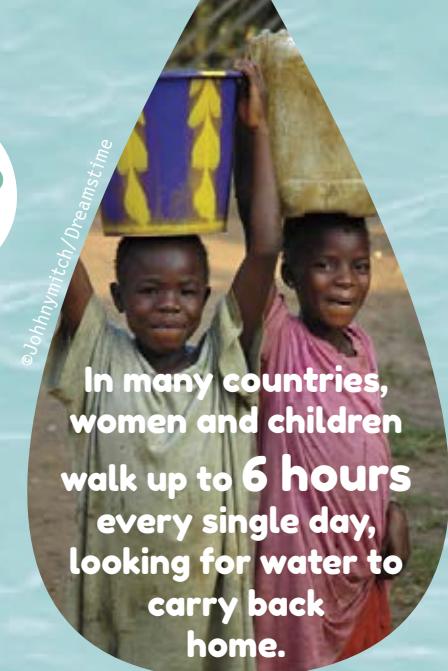


©Irashi/Dreamstime

Many plants depend on water to disperse their seeds. A coconut can spend weeks, months or even years drifting in the ocean before reaching land and sprouting.



Lake Sevan makes up **5%** of Armenia's land area. At an altitude of **6,350 ft**, it is one of the largest alpine lakes in the world!



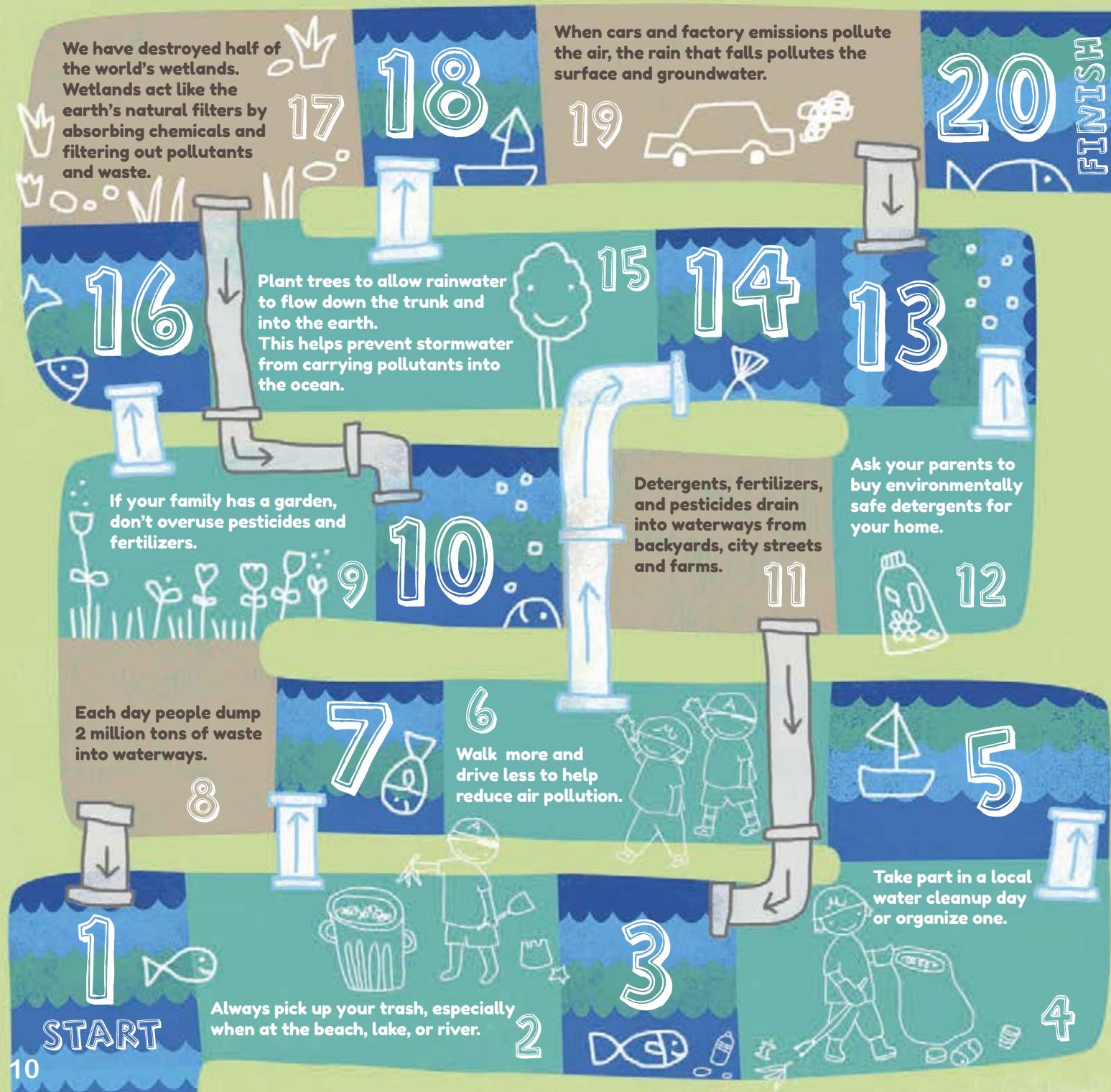
WATER IS LIFE: LET'S KEEP IT CLEAN!

Having enough water isn't the only problem, we also need to keep it clean. All living things need clean water!

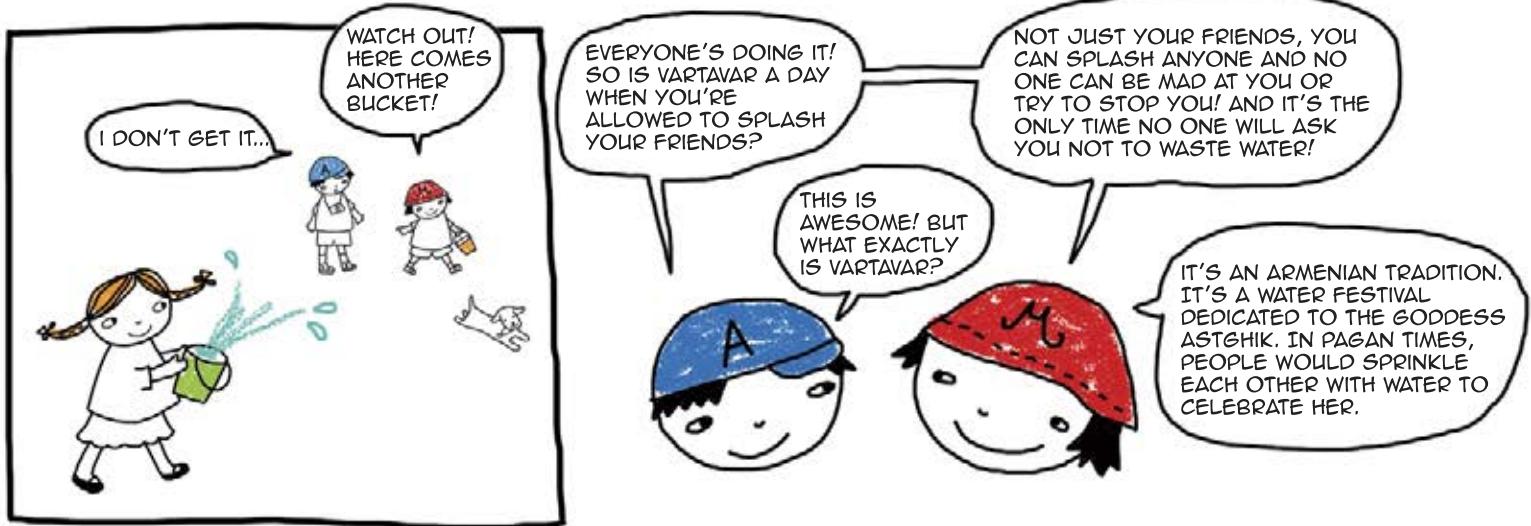


Nearly 80% of all sicknesses in the world are caused by polluted water.
Water pollution is one of the reasons why the Ishkhan fish in Lake Sevan became endangered.

Instructions: Play this fun game with a friend and learn more about water pollution! All you will need is a die and a playing piece such as a pebble or coin. Place your players at START and have the youngest player roll the die first. The player moves as many spaces as the die is rolled. If it is a polluted water space, the player must go DOWN the gray pipe, if it is a clean water space, then the player moves UP the white pipe. The first player to make it to FINISH wins!



Armenia and Maral



GLOSSARY

Aquifer- a layer of rock or sand where water is collected and stored.

Archaea- the first single-celled creatures to appear on Earth.

Collection- the process of water returning back to oceans, lakes or rivers or soaking underground.

Condensation- the process of water vapor in the air turning into liquid water droplets because of cool air.

Evaporation- the process of liquid water changing into water vapor and rising into the atmosphere.

Glacier- a slowly moving mass of ice that is formed over hundreds of years where fallen snow compresses and turns into ice.

Hydropower- the production of electricity by machines that use the energy of moving water.

Precipitation- the process of water falling back to the surface of the Earth in the form of rain or snow.

Reservoir- an artificial lake where water is collected and stored to be used as a source of water supply.

Transpiration- the passage of water vapor from people, animals and plants to the atmosphere.

Water Footprint- the total amount of freshwater consumed by a person, including the amount of water used in the production or supply of goods and services used by that person.

Wetland- an area of land with soil that is filled with water. Swamps, bogs, and marshes are the main types of wetlands.

Water Quiz

Can you guess which consumes the most water?

- A) a 10-minute shower.
- B) a handful of 10 almonds.
- C) a quarter pound hamburger patty.
- D) a washing machine load.



The answer? It's the hamburger patty!

An average shower uses 25 gallons of water.
10 gallons of water are needed to produce a
handful of almonds.

Washing machines use about 35 gallons per load.
And the hamburger, around 450 gallons!



Old bridge in Agarak village, Lori, Armenia
photo by Vahe Martirosian



Water collection tank at ATP nursery in Karin village.

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