



Food and Agriculture
Organization of the
United Nations



ACTIVITY BOOK

Water is life, water is food

Leave no one behind



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World Food Day

Every year on 16 October, people from more than 150 countries come together to mark World Food Day (WFD). Since 1945, nations around the world have joined forces with the common goal of raising global awareness and taking action to end hunger and guarantee healthy diets for all. FAO was founded on that day. But WFD is YOUR day too! Become a food hero and inspire others to take action to help create a more sustainable world where no one is left behind.

Note to teachers

This Activity Book is aimed at a broad age range of young people interested in learning more about the importance of water on our planet. It is also a source of inspiration for those wishing to enter the World Food Day (WFD) 2023 Poster Contest. Although it is intended for children between the ages of 8 and 12, it is also a valuable teaching aid for younger and older students.

Acknowledgements

FAO would like to thank author Susanna Mattiangeli and illustrator Lorenzo Terranera for their contributions to this publication.

The Water Planet

The planet we live on may be called Earth, but the reality is that it's mostly made up of water. This precious resource covers about three quarters of the world. It is in water that the first lifeforms arose and in water that we are born. Water allows us to grow and live. Think about your body: that's mostly water too.

Do you know
how much
water there is
in the world?

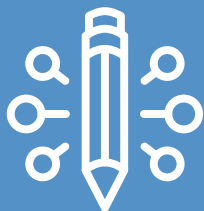
Imagine millions and millions of billions of litres of water, which take up much more space than our continents combined. But we can only use a small part of this enormous quantity.

Why? Water can be fresh or salty, distilled or mineral, pure or polluted. That depends on the substances dissolved in it.

Most of the water on Earth is salty (71 percent) and can be found in the seas and oceans. Hardly any of the water is fresh – only 3 percent of all the water on the planet. It is stored mainly in glaciers and snow, underground, in lakes, rivers and swamps.



WFD2023 Poster Contest



What comes to mind when you try to imagine a world where everyone has access to food and water? Take part in the World Food Day Poster Contest. Unleash your creativity by designing a poster showing your water action for food.

To take part, go to:
www.fao.org/world-food-day/contest

The competition is open to participants aged 5 to 19 and the deadline is 3 November 2023. Three winners in each age group will each receive a certificate of recognition and a surprise gift bag. They will be mentioned on the World Food Day website and FAO social media channels.



Water and farming

Almost all the food in the world is produced from soil in the fields and water. Since ancient times, farming, which is the practice of cultivating the land but also of rearing animals, has used different methods to water vegetables, fruit trees and cereal crops.

It all begins with a seed,
soil and water.

Water from rivers and lakes and groundwater from wells is used for farming. In places where rainfall is scarce, water drawn from below ground is the main way to irrigate the land. Over the last 70 years, techniques to drill into the ground and pump out groundwater have helped millions of people out of poverty and hunger. But now freshwater resources are decreasing.

Rapid world population growth, global warming and an increase in the production of goods and services around the world have reduced reserves of this precious commodity.



Over-extraction of groundwater is a threat to the food security of many people. Worldwide, about 72 percent of the available fresh water is used in agriculture. Only 12 percent is used in towns or communities for everyday life, while 16 percent is used by industry.

If we wish to safeguard water reserves, we must clearly begin with farming and the food system as a whole.

Everything in the world is connected, like a big chain: farming, which contributes to the depletion of reserves, is affected by water scarcity. The people who are most affected by this situation are smallholder farmers struggling to meet their daily needs, particularly women, Indigenous Peoples, migrants and refugees.

One third of the planet's inhabitants are affected in various ways by decreasing water resources, while one tenth of humanity finds life very difficult due to living in places where drinking water is scarce. At the same time, the need for water is increasing in step with the world's population. There are now around 8 billion people in the world: if, as has been predicted, the world's population reaches 9 billion by 2050, the demand for water will rise by 35 percent. We will need to grow more food using less water. How, though?

Solutions

Broadening our knowledge

Understanding how much groundwater we use, particularly in farming areas, is very important if we plan to use it sustainably. Getting as much information as possible can help monitor how much water it actually takes to grow crops and help farmers manage this resource better. Technology and innovation can be great allies in this important challenge.



Protecting wetlands

Land and water coexist in some of the world's natural environments. Swamps, lagoons, marshes and basins can be freshwater, saltwater – or brackish water, which is somewhere between the two. These ecosystems are valuable for many reasons. For example, they are rich in biodiversity or home to a wide variety of living species, and they are also natural reservoirs that purify water. More than three quarters of the world's wetlands have disappeared in the last 300 years and those that remain are threatened by pollution and climate change. In a world threatened by water scarcity, we need to do more to protect these areas.



Making farming more efficient

Some irrigation systems in farms are not designed to save water. As we'll see in more detail, there are ways to water plants without wasting resources. At the same time, food production can be increased by making room for crops of high nutritional value that do not require too much water to grow, such as pulses.



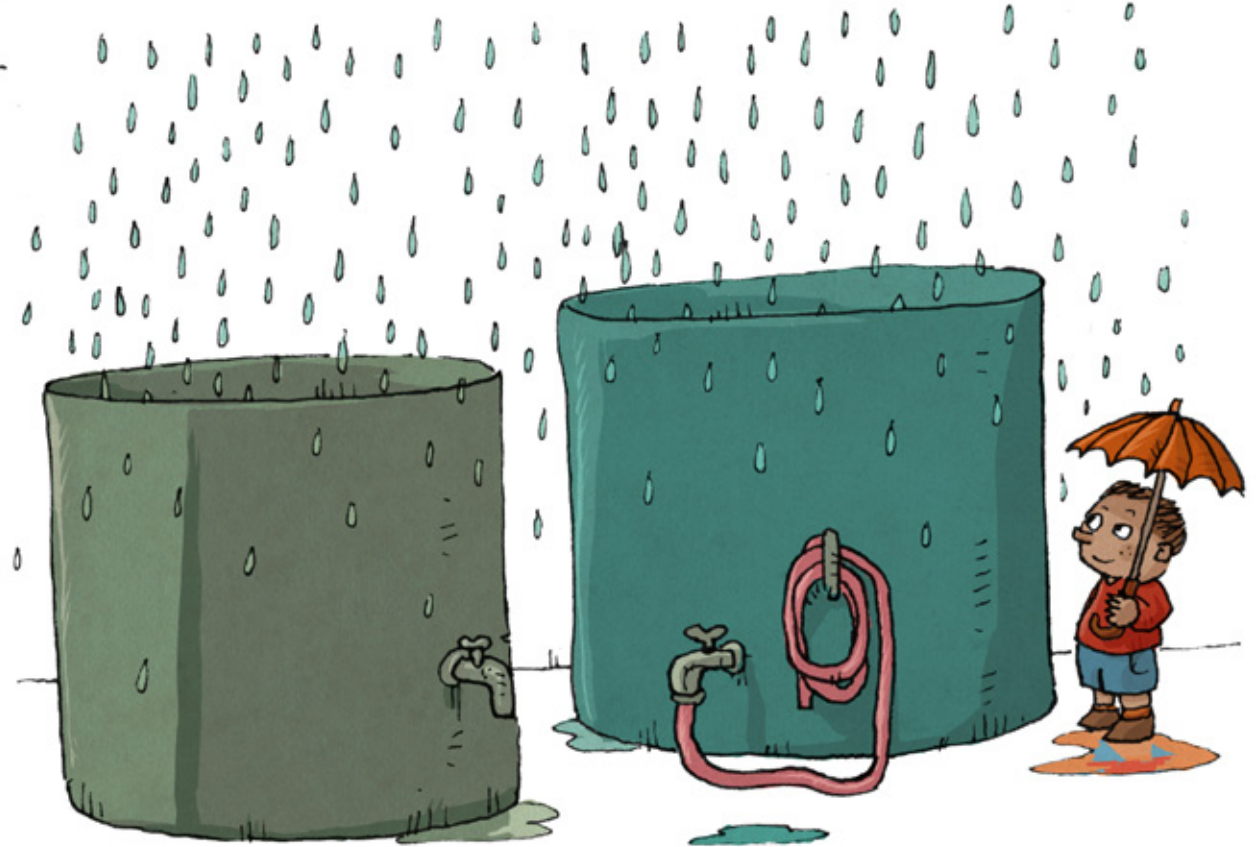
Reducing waste is an essential step towards saving water.

Approximately one billion tonnes of food (if you find this hard to visualize, just imagine 250 000 elephants) is wasted in the world every year, along with the water needed to produce it. Food might be lost during production or wasted in shops and homes at the end of the cycle. We can reduce all this waste.



Slowing global warming

Over the past 50 years pollution has caused gases to concentrate in the atmosphere. This heats our planet and changes the way air masses move. As a result, the number of droughts or long periods without rain, has increased since the year 2000 and there are more than twice as many floods. Currently, most natural disasters are water related. Farming that is more sustainable or environmentally friendly, can help slow global warming.



We must work together

Governments of individual countries need to invest money to support the most efficient farming practices that do not waste water and produce food without leaving anyone behind. Laws are needed to protect wetlands, seas, lakes and underground reserves.

The scientific community can contribute greatly to this end by continuing to do research, collecting data and making it accessible so that reliable, fact-checked information on the subject of water can be disseminated worldwide.

Private companies can do a lot as well: technology can continue to come up with innovative solutions to improve the efficiency of farming.

Water scarcity affects the whole of society, so **civil society organizations** can also become agents of change by spreading accurate information on this topic, encouraging a more sustainable diet and a more water-friendly lifestyle in general.

All of this can make a difference as long as we cooperate across the board. We can only preserve water and guarantee that everyone has access to it by forming teams of international organizations, governments, research institutes, the private sector and citizens' associations.

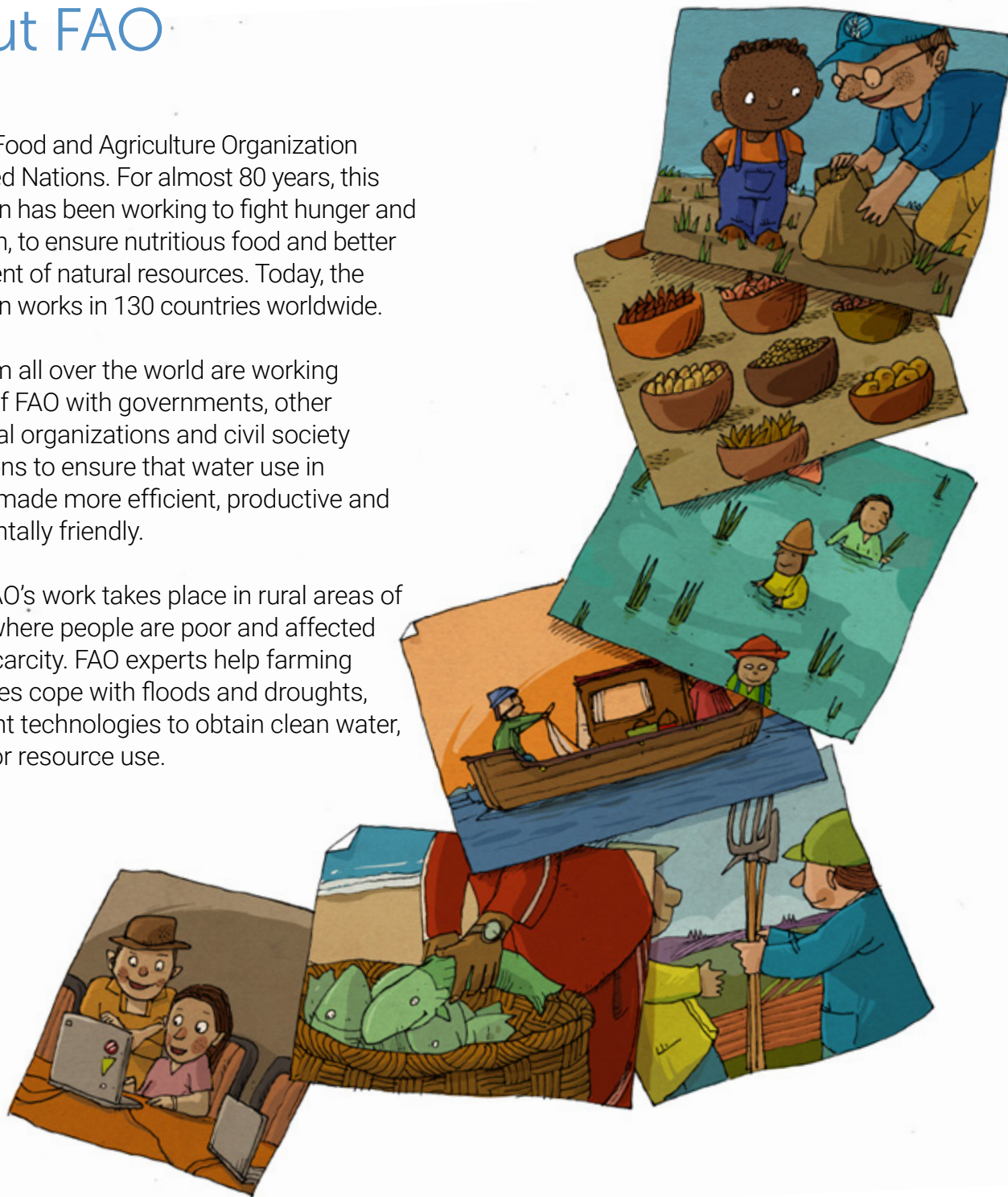


About FAO

FAO is the Food and Agriculture Organization of the United Nations. For almost 80 years, this organization has been working to fight hunger and malnutrition, to ensure nutritious food and better management of natural resources. Today, the organization works in 130 countries worldwide.

People from all over the world are working on behalf of FAO with governments, other international organizations and civil society organizations to ensure that water use in farming is made more efficient, productive and environmentally friendly.

Much of FAO's work takes place in rural areas of countries where people are poor and affected by water scarcity. FAO experts help farming communities cope with floods and droughts, use the right technologies to obtain clean water, and monitor resource use.



- FAO provides smallholders with material and technical support to grow crops using less water, reduce energy consumption and practice more sustainable agriculture.
- We help governments in many countries to improve water management and irrigation systems, working to find solutions on a case-by-case basis.
- We work with local experts to help prepare for and respond to natural disasters crises in a timely fashion.
- We provide courses and opportunities for countries to exchange and share b new technologies, knowledge and water-sparing farming practices, helping populations to exploit natural resources sustainably.
- We help small agricultural companies access finance to work in a more efficient and innovative way, avoiding food and water wastage during production.
- We encourage the inclusion of women, youth and Indigenous Peoples in the search for solutions and in decisions that affect their lands.



Sustainable Development Goals

The United Nations has set 17 Sustainable Development Goals to be achieved by 2030 and over 190 countries are committed to achieving them.

What does Sustainable Development mean? It means being able to ensure a healthy, dignified and fair life for all, respecting the environment and conserving its resources. FAO is committed to many of these goals, because, as we have seen, food goes hand in hand with the future of the planet.

Goal 6, Clean Water and Sanitation, is about access to drinking water and sanitation and safe water resources. Since water lies at the heart of life on the planet, sustainable development clearly cannot be achieved without also achieving this goal.

Water projects

Technology

News from space – WaPOR (pronounced vapour) is the name of an FAO project to monitor a given crop's water consumption using information from space satellites. We can find out about the evapotranspiration of farmland from high above. In other words, we can measure the water vapour produced by a cultivated field to understand how much water crops have used in their development from seed to harvest and obtain data we can use to avoid waste. FAO uses this information to produce a publicly accessible pool of data that anyone can use to improve water management.

All kinds of data – AQUASTAT is FAO's global water information system that collects, analyses and disseminates data for every country and region around the world. Its aim is to provide governments, private individuals, international organizations and civil society organizations with comprehensive and up-to-date information on water and its use. This information portal is very important for achieving Sustainable Development Goal 6, which aims to guarantee clean water for all and achieve efficient management in the use of this resource.





Solutions old and new

Hydroponics - This is a method for growing crops using little water and no soil. During this simple process, the seeds are first soaked in water until they germinate, then placed in a greenhouse where they continue to receive nourishment and water to grow. This method has many advantages: the plants take only a week to grow compared to several weeks when normal methods are used. It requires no fuel and little water, which makes it ideal in times of drought. FAO's hydroponics specialists train technical staff in many countries to spread this practice.

Aquaponics - This farming production method does not use chemicals and saves a lot of water: plants are grown in tanks populated by fish that fertilize them by leaving their waste. This system is very efficient, as long as the water quality is monitored.

Food from the rain - FAO has launched projects to introduce harvesting systems to collect rainwater and new water management techniques that are based on traditional methods. This is a way to adapt to climate change, ensuring that communities, particularly women, have regular access to water and make efficient use of it.

Agricultural Heritage Systems - Traditional farming methods can be very efficient and environmentally friendly. This is why FAO has compiled a list of sustainable traditional systems that should be protected. There are now more than 70 Globally Important Agricultural Heritage Systems. These are places where communities have managed ecosystems over generations by saving water, respecting soil health and working together to leave no one behind. Protecting these places and exploring ancestral knowledge can help us find solutions for the present and the future.

Health and Peace

Water under the microscope - One Health is an FAO programme that works for the health of all living things and ecosystems as though they were one organism. Since everything in the world is connected, water quality affects food quality and it is important to monitor this aspect from production to consumption. Food-borne diseases are often the result of eating food contaminated by poor quality water. FAO is working to study the composition of small organisms living in the water that can cause disease. Contamination and epidemics can be avoided by tracing their path from water to food.

Resolving conflicts - In many parts of the world, competition for water is an ever-increasing cause of hostility that can escalate into open conflict. For example, in certain parts of Africa where water is scarce, farmers are reluctant to share this commodity with nomadic pastoralists. Conflicts may even arise because of differences between ancient unwritten laws and new regulations on water use. This is why FAO proposes projects to encourage meetings and dialogue between the various communities, helping to find solutions and improve community life so that all people can enjoy water.



On the next page you'll find a fun game! You will need a dice, and a counter for each player.

Water unites us

Water is the element that creates life and provides food. Throughout human history, it has always played a key role in innovation and invention. Water has always been the basis of all civilizations, from the wells of ancient Egypt to the aqueducts in ancient Rome and new practices such as aquaponics today.

The ocean, lakes, rivers and wetlands are home to important ecosystems and an astonishing wealth of biodiversity. They are an essential source of food security: more than 600 million people depend on food that comes from water to survive.

Currently, 3 000 different species of fish are caught and over 650 are farmed. In many regions, fish is the main source of important substances such as protein, omega-3 fatty acids, vitamins and minerals that are vital for human health. Together with molluscs and crustaceans, fish play a key role in the fight against malnutrition.

Aquatic food systems – that is, all the work done by small-scale fishers, those who raise fish and those who process and preserve it – ensure the livelihoods of coastal and inland communities, sustain local economies and influence cultures around the world.

People living off aquatic food systems suffer the effects of pollution, ecosystem degradation, unsustainable practices and climate change. Preserving and safeguarding these aquatic ecosystems and the species they host is not merely a responsibility, but a necessity for the well-being of our planet and its inhabitants.



Four fundamental steps for safeguarding water on the planet

These are the **Four Betters**.

We must strive for **Better Production, Better Nutrition, a Better Environment** and to achieve a **Better Life** together, leaving no one behind.

To combat water scarcity, it is especially necessary to achieve better production in the world. This means increasing food production in a way that is planet-friendly with a responsible management of our water resources.

As we have seen, sustainable agriculture produces more nutritious food and keeps ecosystems healthy. An efficient use of fresh water that avoids unnecessary waste, makes it possible to irrigate fields and ensure the hygiene and health of communities.



What can we do?

Water is vital for everyone, so we all have to do our part. Water is used to produce food, energy and even the clothes we wear. Our everyday choices have an impact on the precious natural resources in our environment. We can learn to save water and help ensure that no one is left without this valuable commodity. Your actions, big or small, can make a difference.

Eat local and seasonal food

Opt for food produced nearby, which has not had to travel long distances on big trucks. Choose seasonal fruit and vegetables: they take less water to produce. If you can, try to eat more foods that grow with less water such as pulses, millet and nuts. This choice is good for us and good for the planet.





Eat more fresh food

A healthy, balanced diet is important to stay healthy and helps the environment at the same time. When you shop, choose fresh products, which are generally healthier and made with less water than processed and preserved products.

Reduce food waste

It takes a lot of water to produce food and get it from the farm to the table. When considering all the food lost and wasted, don't forget about the water wasted to produce it. Storing food in the right way helps you plan meals and reduce food waste. You can also try using leftovers for a new recipe or try composting fruit and vegetable peel in a garden.

Don't waste water

Not wasting water saves energy and money. Take shorter showers, don't let the tap run and water plants using rainwater you collected or the unsalted water that boiled the vegetables. These are just some of the many ways to save this precious natural resource. Using less water can also help keep the planet's wetland habitats healthy.





Save energy

Currently, 90 percent of the energy produced also requires water. Switch off electronic devices such as smartphones, computers or tablets when you're not using them. At home, leave lights on only where they are needed. These small actions can make a big difference.



Don't pollute water

It might seem like stating the obvious, but we must never forget that pollution damages our environment. At home, there are several ways to avoid polluting water. Don't pour food waste, oils, medicines and chemicals down the toilet or down the drain. If you can, use environmentally-friendly soaps and detergents to wash and to clean your house. Another good idea is to regularly empty the septic tank, which is the tank used to treat wastewater, in an effort to prevent pollution and problems for the environment.



Clean up the environment

Certain associations organize clean-up operations to reduce pollution in local neighbourhoods. Help clean local beaches, rivers, lakes or wetlands. It's one way to protect your environment, help your community and also to learn more about the impact of our behaviour on nature.

Buy sustainably

When buying clothes, it's best to choose natural and organic fibres such as cotton over synthetic options. Synthetic materials such as polyester or acrylics often release microplastics that are so small that many pass through filtration processes entering our water systems, oceans, and ultimately the food chain.

Be in the know

Look for news of solutions to preserve water and discover stories about people who are committed to the environment and can inspire us. It's also important to share this information to encourage others, such as friends and family, to act with you. Together, you can turn this knowledge into action.



Write to your local leaders

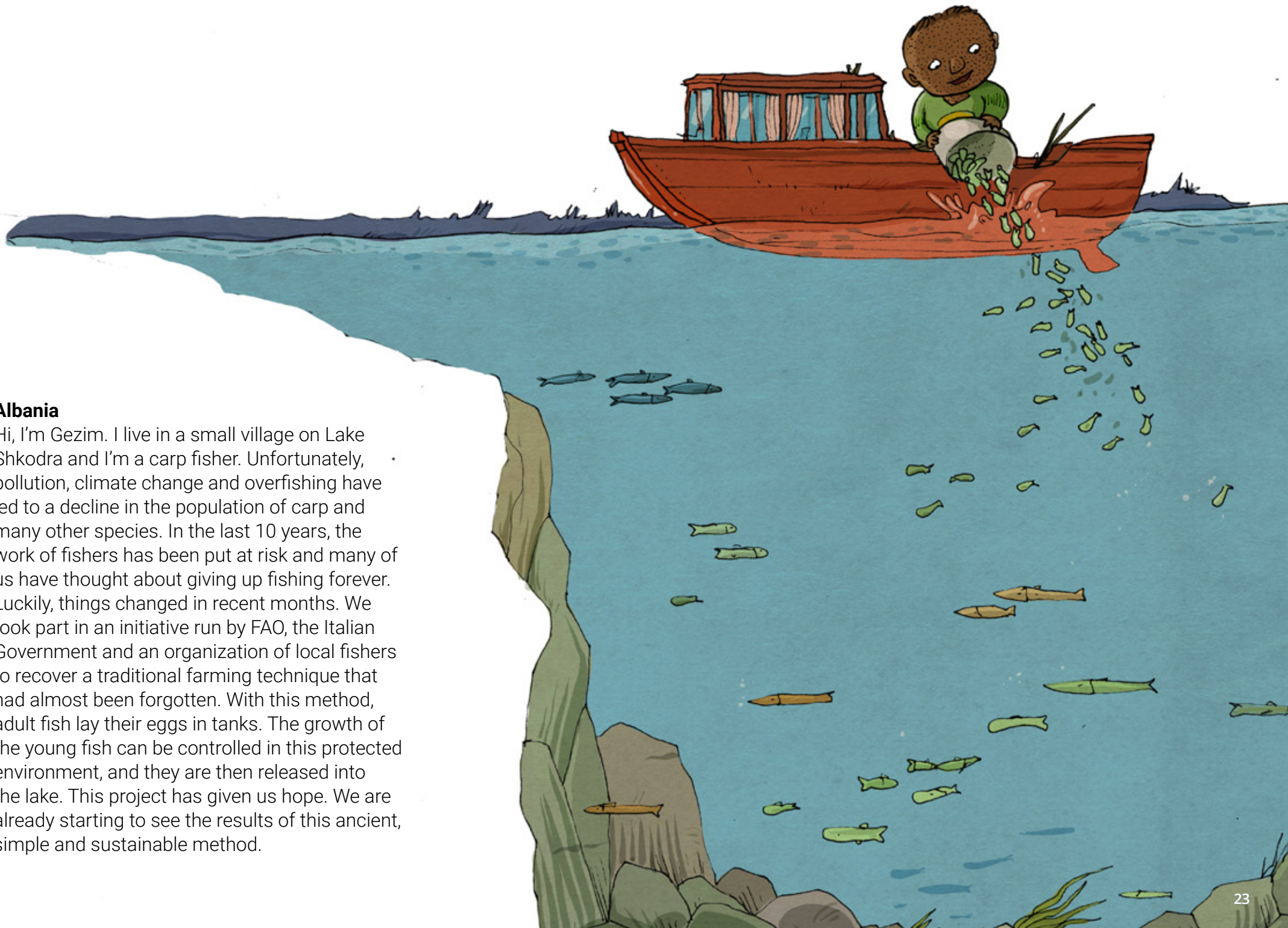
Every citizen can ask their representatives to take action to protect our water and ecosystems. If you want to make decision makers change their policies, you have to let them know that the community cares about the environment. Contacting those in positions of power and sharing reliable information helps bring about real change.

Stories

Sri Lanka

I'm Ramani and I grow rice in the Malwathu Oya river basin. The weather plays tricks on us here. Sometimes it rains too much, ruining crops and other times there's no rain and we can't grow anything. At one point, we farmers were very worried about our future so we asked local experts for help. They started looking for solutions and learned how to use FAO's WaPOR platform, which collects information from a satellite in space. It's incredible! From up there you can tell how much water each crop really needs. This data allows us to plan our work better. We used to start the season by cultivating all the rice together, using a lot of water. Now we work a little at a time and control waste. Being more aware has raised our crop yields and hopes.





Albania

Hi, I'm Gezim. I live in a small village on Lake Shkodra and I'm a carp fisher. Unfortunately, pollution, climate change and overfishing have led to a decline in the population of carp and many other species. In the last 10 years, the work of fishers has been put at risk and many of us have thought about giving up fishing forever. Luckily, things changed in recent months. We took part in an initiative run by FAO, the Italian Government and an organization of local fishers to recover a traditional farming technique that had almost been forgotten. With this method, adult fish lay their eggs in tanks. The growth of the young fish can be controlled in this protected environment, and they are then released into the lake. This project has given us hope. We are already starting to see the results of this ancient, simple and sustainable method.



Jamaica

My name is Howard and I'm a farmer in the Mount Airy farming consortium in the Clarendon region. Working the land here is a real challenge. We have to deal with long droughts and much of the soil in the area has become depleted due to the intensive mining of bauxite, Jamaica's main mineral resource. To save our agriculture sector, some time ago FAO and the Agricultural Development Authority of the Government of Jamaica organized a series of courses to teach farmers new techniques. I took these courses too and learned many systems including fertigation, which is a natural way of fertilizing the soil as it is irrigated. Thanks to this method, no water is wasted, soils have become fertile again and we have increased yields by more than 35 percent. Now we can think about expanding and we can make plans. It's been a long time since we were last able to do that.

Namibia

Hi, I'm Agnes and I rear cows and goats in Otjozondjou, a small village in the east of Namibia. My animals are in good health now, but a few years ago I lost many to drought. There wasn't enough water for the whole barley field and the little we had wasn't enough for the animals. It was terrible to see so many of them die. Then a project supported by FAO introduced us to hydroponics, which allows fodder to be grown without soil and with little water. All you have to do is put the seeds in water until they germinate and then keep them in the greenhouse for a week to get green seedlings that can be given to livestock. The community pulled together to save its farms quickly and at little expense. If another drought comes along, we'll be ready for it.



Now it's your turn!

1. Where do Ramani, Gezim, Howard and Agnes come from?

Draw an arrow to connect the main character from each story to their country of origin.



Ramani



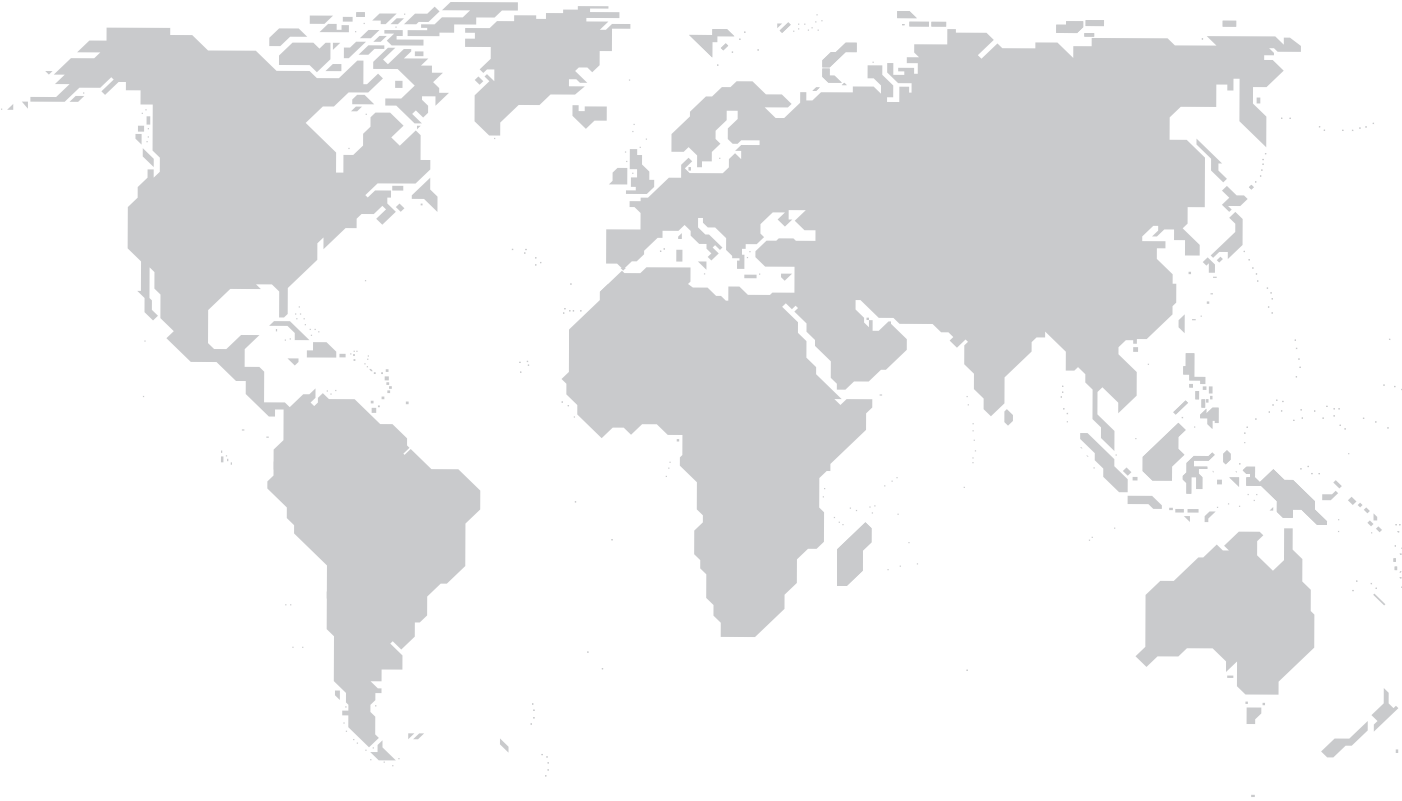
Gezim



Howard



Agnes



2. Being thankful for water

List five water-saving measures you would like to propose in your school:

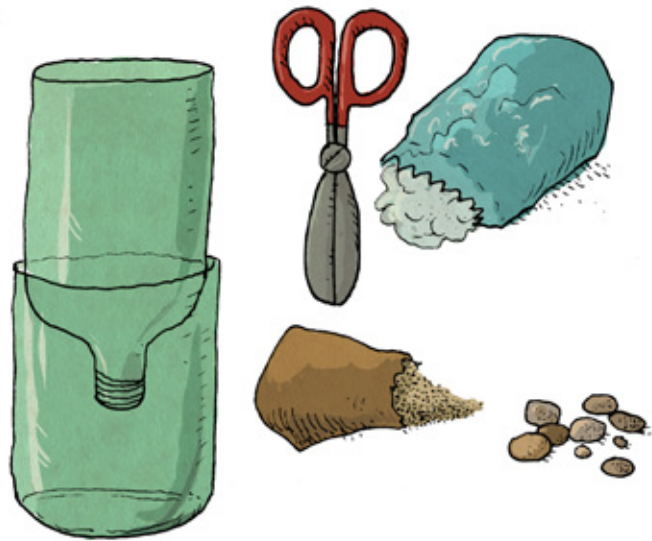
Experiments

Do you want
to find out how
it works?



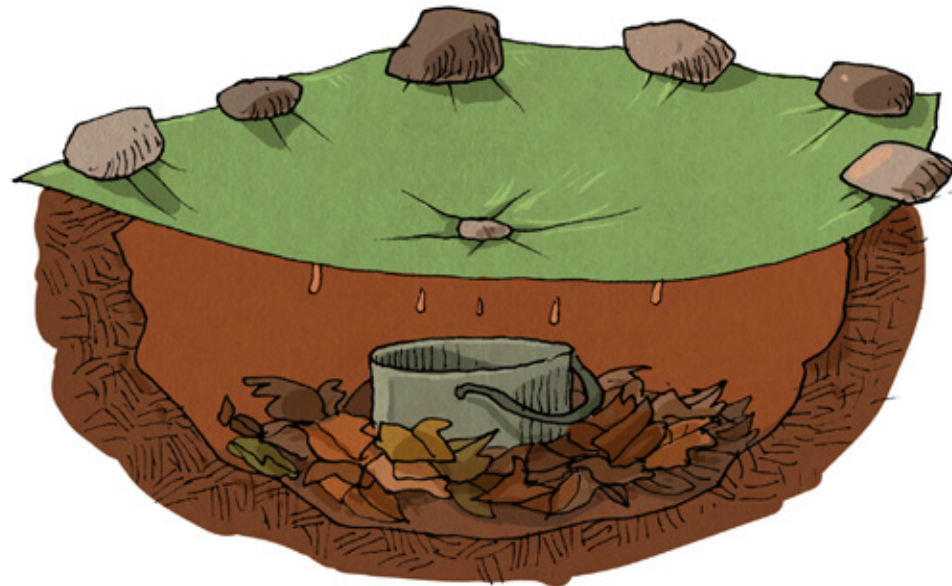
Make a filter at home

Groundwater is naturally filtered by the soil. Do you want to find out how it works? Build a filter at home. Cut a plastic bottle in two: place the top part upside down on the bottom part, and then fill with six layers: cotton wool, sand and gravel followed by another set of cotton wool, sand and gravel layers. Now your purifier is ready. Add some soil to a glassful of water, mix well and pour the contents into the filter. The filter layers trap the soil particles and the water collected at the bottom is almost clean again. Careful, it's clean but it's best not to drink it. Use it to water your plants!



Water from the ground

A solar still is a system for collecting water by harnessing moisture from the ground. If your school has a garden, you can try to build one. Pick a sunny spot, make a hole in the ground and place a bucket at the bottom. Immediately after digging the hole, cover it with a sturdy plastic sheet, securing all the edges with stones and soil so that moisture can't escape. Place a stone in the middle of the sheet, at the point where the bucket stands, to create a slope. The sun's heat will cause the moisture in the soil to evaporate and condense under the sheet, forming many droplets that will fall into the bucket. It really works!

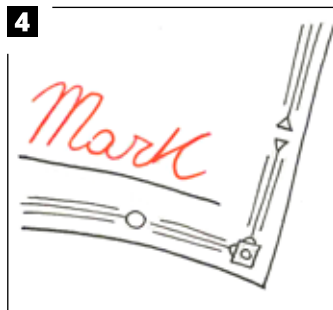
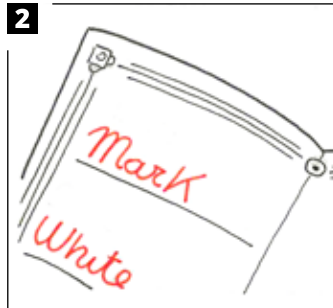
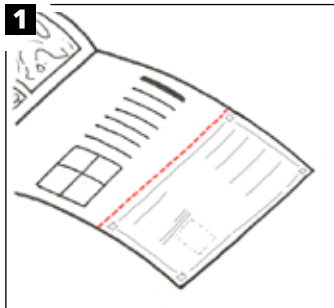


INSTRUCTIONS

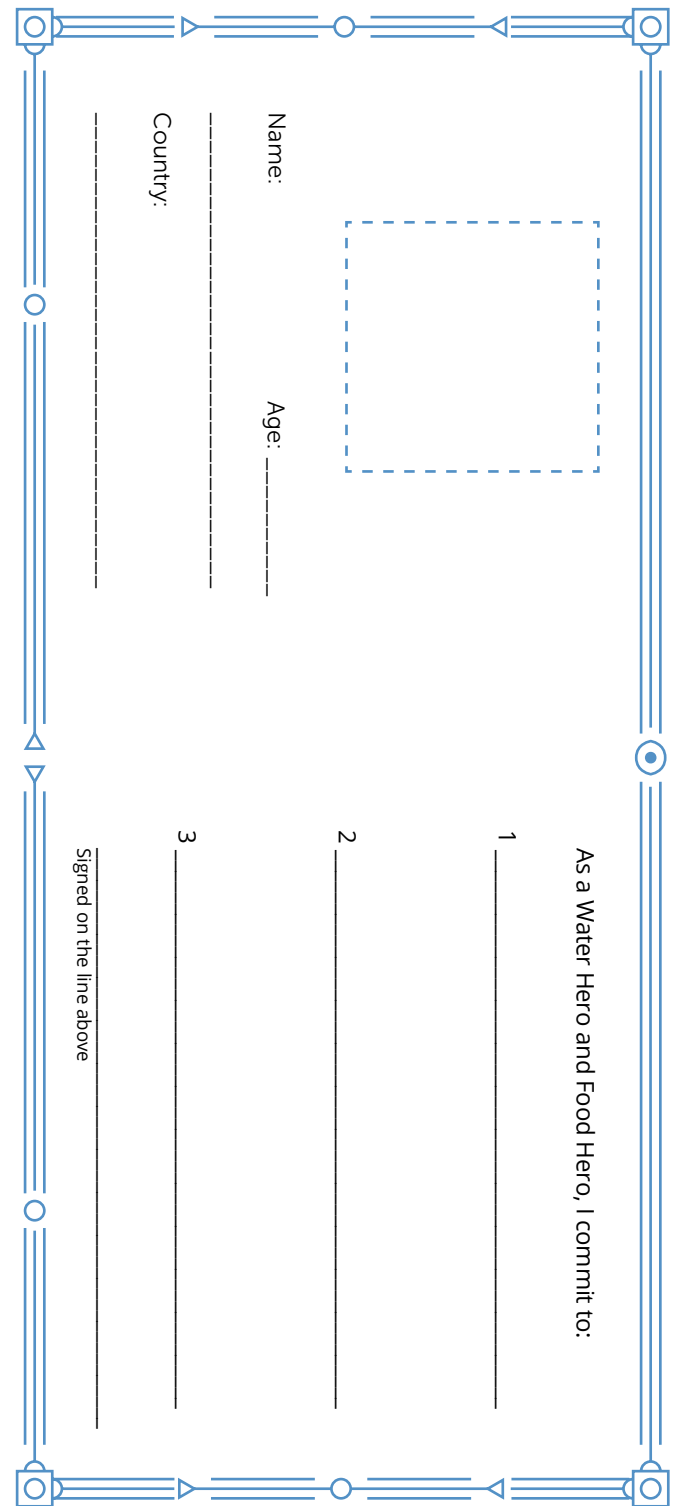
Now that you have completed the Activity Book, you are ready to commit to water action. Water Heroes are #FoodHeroes!

Follow the instructions to complete your Passport:

1. Carefully tear out the passport on the right.
2. Fill in the details on the inner left page.
3. Draw a picture of yourself or glue a photo in the box provided.
4. Take a pledge. Choose 1-3 actions to commit to and write them down in the space provided in your passport. Get some inspiration from the actions in this activity book, or think of some of your own! Then sign your declaration.



Don't forget to fold your passport in the middle



Name: _____

Age: _____

Country: _____

As a Water Hero and Food Hero, I commit to:

1 _____

2 _____

3 _____

Signed on the line above _____



Food and Agriculture
Organization of the
United Nations



With your actions, your passport will be
valid for a sustainable world.

Date . . . / . . . / . . .
#FoodHeroes

www.fao.org



Water heroes are
#FOODHEROES
PASSPORT

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► Maria's story



► Leave no one behind



► Our actions are our future



► Food Heroes



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Healthy Planet



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► Change the future
of migration



► Climate is changing



► Your Guide to FAO



► Working for Zero Hunger

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