

# ENVIRONMENT

GLOBAL STUDY GUIDE SERIES



## TOPICS

- Climate Change
- Soil Health
- Water Access
- Healthy Stoves

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# ENVIRONMENT FOCUS

# CLIMATE CHANGE



## How Can We Reduce the Effects of Climate Change?

At Heifer International, we've been answering this question for years through our innovative yet simple **agroecology** programs. Throughout the developing world, we're fighting the environmental effects of greenhouse gasses by training small-scale farmers to use **sustainable** methods of rearing animals and raising crops.

Our programs work to improve local **ecosystems** while helping families lift themselves out of poverty by:

- Improving soil water **retention** through planting trees and wise grazing management
- Controlling soil erosion
- Rotational grazing practices for small and large **ruminants** like goats, cattle, alpacas and water buffalo
- Periodic or sustained use of **zero-grazing** pens
- Improved animal feeding with local resources, using an educated understanding of animal nutrient requirements
- Better **manure** management through composting, covering wet and dry manure storage and incorporating it into the soil for crops

While animals and manufacturing items like meat or wool **emits** greenhouse gasses, an educated understanding of where these gasses come from and the means to reduce their impact are **mitigation** practices that can be accomplished by all small-scale farmers. **Read more about Heifer's work with environmental sustainability.**

### THINK ABOUT IT

How do families benefit from learning sustainable farming methods? Is it the responsibility of farmers to preserve the environment?

## STORIES



WORLDWIDE

### How the Burden of Climate Change Falls on the Poor

Climate change disproportionately affects poor families. Harjeet Singh, the global lead on climate change for international NGO ActionAid, discusses the current state of the climate change crisis and what we can do about it.



TANZANIA

### It Takes an Eco-Village to Conquer Climate Change

In one of Tanzania's driest districts, farmers are working together to fight climate change and to leave the Earth better than they found it.



HAITI

### Changing the Landscape

The impact of climate change is particularly devastating for Haiti — one of the most deforested countries in the world. See how Heifer Haiti is lessening the impact by encouraging small-scale farmers to practice advanced agroforestry models and other adaptive measures.

# Our Farming Practices

Our projects promote best practices that **diminish** negative environmental impacts of agricultural production and processing. For example, we teach project partners to use water and energy **efficiently**, encourage nutrient recycling in soil and use organic fertilizers as an **alternative** to expensive chemical applications. We also employ wastewater treatment, **biogas digesters** and energy-efficient milk cooling and processing equipment. From an agroecological perspective, farmers also are trained on and encouraged to use **intercropping** techniques and to plant **fodder** crops that can improve soil fertility. Heifer promotes agroecological farming practices and increases access to water and land resources by:

**SUPPORTING RESTORATION PROJECTS:** In **deforested** areas, we train our farmers to plant trees to improve the air quality and hold topsoil in place, which sustains moisture and nutrients. We also show them how to **compost** livestock manure, which nourishes soils in an organic and sustainable way.

**PROMOTING RESOURCE MANAGEMENT:** Training in sustainable agricultural techniques — such as zero-grazing, improved **husbandry** and renewable energy systems — allows communities to manage their natural resources, building healthier and more stable environments.

**PROVIDING INNOVATIVE TECHNOLOGY SOLUTIONS:** We encourage families to make use of technologies, such as biogas stoves to make efficient use of animal waste and **treadle pumps** to provide clean water for whole neighborhoods. Innovations like these **conserve** resources and also are more **sanitary**, providing people with a better quality of life.

“The best approach to cooling the planet is to build large coalitions of farmers who cultivate the land using environmentally friendly practices: covering the soil, rotating crops and integrating different species of crops and livestock. Farmers then become resilient to the effects of climate change while improving the environment for future generations.”

**OSCAR CASTAÑEDA**  
Vice president of Heifer's Americas program



## VIDEOS



### How Heifer Promotes Climate-Smart Agriculture

See how Heifer helps small-scale farmers combat accelerating climate change and why this work is so important.



### Defending the Mangroves in Ecuador

As mangroves die and shellfish populations flounder, Heifer helps coastal Ecuadorians preserve what they can and find new sources of income.

## READ MORE



### Surprise! Livestock Helps Farmers Become Resilient to Climate Change

See what we are doing to help farmers grow the food that will be necessary to feed over 9 billion people in the next 15 to 20 years and the role livestock plays in our work.

## TAKE ACTION

Set up a **fundraising page** and organize a fundraiser to help families improve the environment through sustainable farming. Here's an idea to get you started.

## 1 CHORES FOR CHANGE

Think about how you can take steps to support and spread climate-friendly agriculture in your community. Ask friends, neighbors and small businesses to sponsor you for each hour you work to learn more about climate-smart agriculture. Check out Heifer's **Chores for Change** guide for help and ideas.

SHARE YOUR STORIES ON SOCIAL MEDIA



GIVE TO PROJECTS THAT **COMBAT CLIMATE CHANGE TODAY!**

# ENVIRONMENT FOCUS

# SOIL HEALTH



## Soil: More Than Dirt

We all could benefit from being a little dirty-minded. Not the R-rated kind but rather good, clean dirt, a.k.a. soil. You may think of soil just as something that gets you in trouble when you track it into the house, but it's a very important resource. In fact, it's so important that the United Nations designated 2015 as the **International Year of Soils**.

Why all the fuss about soil? Because every single one of us – all 7.53 billion people inhabiting Earth – depend on it to stay alive each day. It's the source of most of our food, feed for livestock and fiber for our clothing. It filters and stores water, it captures and stores more carbon than any other material, it holds

**vegetation** in place, and it is home to hundreds of billions of organisms.

Heifer recognizes the importance of caring for soil. Each Heifer gift helps improve soil through promoting **sustainable** agricultural techniques such as **composting**, **reforestation** and organic growing techniques. We teach participants how to care for soil, teaching them methods specific for the climate where they live.

When we provide people with livestock, we also train them how to use the manure as fertilizer.

For the long-term viability of humanity, we must put more importance on the health of our soil. Our future and our health depend on it.

## STORY



UGANDA

**Tiny Organisms Sweeten the Soil**  
Pristine pink pigs prance in their pens on the Sabika farm in Mokuno, Uganda. Their pens are not only tidy, but they actually smell sweet. See how the Sabika family treats the soil to make that possible.

## LEARN MORE



**How Livestock Might Be the Secret to Restoring Our Soil**  
Herd animals have long been blamed for destroying natural grasslands. But with proper management, biologist Allan Savory says those very animals could be the land's salvation.



**Dirt Dearth: Why Produce is Less Healthy Than it Used to Be**  
Due to soil degradation, fruits and vegetables now contain significantly fewer vitamins and minerals than they once did. But these trends are reversible.

# Desertification 101



## WHAT?

Slices of fertile land are deteriorating into desert rapidly, leaving us with less of the farmland we'll need to feed our swelling population.

## WHERE?

Desertification happens primarily on grassland, which covers roughly **40 percent** of the Earth's land surface.



## CAUSES



## WHO SUFFERS

2.6 billion people depend directly on agriculture for their living, but 52 percent of the land used for farming is falling prey to soil degradation.

## ACTIVITIES



### Prep Your Garden With Cardboard

Learn how to transform cardboard into a soil-enhancing, microbe-boosting, weed-smothering garden all-star.



### Dirt Pudding

Learn more about soil layers and enjoy the fruits of your science!

## VIDEO



### Soil 101

As helpful as soil is to keeping humans alive, we haven't taken very good care of this precious, non-renewable resource.

## TAKE ACTION

Set up a [fundraising page](#) and organize a fundraiser to help families improve the environment through sustainable farming. Here's some ideas to get you started.

### 1 EAT DIRT BAKE SALE

Make and sell "dirt" pudding cups or "dirt" cupcakes.

### 2 HEALTHY EARTH CAFE

Host an event to sell organic coffee, fair-trade chocolate products and fresh produce from your garden. Check [Heifer Marketplace](#) for coffee made by Guatemalan farmers.

SHARE YOUR STORIES ON SOCIAL MEDIA



GIVE TO PROJECTS THAT **SUPPORT SOIL HEALTH** TODAY!

# ENVIRONMENT FOCUS

# WATER ACCESS



## Providing Clean Water

Did you know that access to safe water sources and proper sanitation could save the lives of up to 1.5 million children a year?

That's according to the United Nations, who is monitoring progress toward the **Sustainable Development Goals**. While the world has made significant progress toward achieving the goal of **halving** the proportion of people without sustainable access to safe drinking water and basic **sanitation**, there's still much work to be done.

Millions of people around the world still lack access to clean drinking water. In the impoverished communities where Heifer works, many homes lack running water, and some families do not even have a well nearby. Instead, they must spend each day fetching water. This is often a chore left

to the children — especially girls — leaving no time for school.

But Heifer has a solution: helping families and communities install **irrigation** and **treadle pumps** and teaching them the value of water **conservation**.

We provide this through two gifts in our gift catalog. The **Gift of Water for Life** provides communities with clean, healthy water for daily living; helps families install treadle pumps; teaches communities about managing water resources; and improves health by emphasizing the importance of proper sanitation. The **Gift of Irrigation Pumps** uses treadle pumps to efficiently irrigate farmland and shares water-saving techniques.

Ultimately, Heifer is devoted to providing communities with clean, healthy water for daily living.

## STORIES



HAITI

### A Man-Made Oasis Keeps a Community Afloat

Cabaret, a community in northern Haiti, struggled when its lake dried up. Heifer teamed up with the community to bring its lake back to life.



TANZANIA

### Well Wishes in Tanzania's Driest District

In Igunga, one of Tanzania's driest districts, Heifer is partnering with communities to combat the climbing temperatures and earn enough income for a healthy life.

## LEARN MORE



### How Much Water You Use VS. How Much You Actually Need

Take a look at this Heifer infographic about water use and brainstorm ways you can conserve at home.

# How Much Water Does it Take?

Fixing leaky faucets and taking shorter showers will certainly help a bit, but you may be surprised to discover the other ways we're draining our water supply. **Manufacturing** food, electricity and clothing all soak up far more water than you may think.



**Brewing a gallon of coffee requires significantly more water than a gallon of tea: 880 vs. 128 ounces.**



**"Dry-goods" is a misnomer considering it takes 713 gallons to produce a single T-shirt.**



**One half-pound of leather requires 1,096 gallons to produce.**



**Goat meat requires only 127 gallons of water per pound to produce, as opposed to beef, which needs 1,799 gallons.**

Visit [watercalculator.org](http://watercalculator.org) to estimate your total water use and to learn more about **minimizing** your water footprint.

<b>100</b> LOOK FOR WATER-SENSIBLE LABELED IRRIGATION CONTROLLERS.	<b>23</b> IF YOUR SHOWER FILLS A ONE-GALLON BUCKET IN LESS THAN 20 SECONDS...	<b>05</b> REUSE LEFTOVER WATER FROM COOKED OR STEAMED FOODS TO START A...	<b>12</b> REUSE LEFTOVER WATER FROM COOKED OR STEAMED FOODS TO START A...
<b>150</b> WATER AUDIT YOUR FACILITY TO FIND OUT YOUR RECOMMENDED WATER USE...	<b>99</b> TIMING IS EVERYTHING WHEN IT COMES TO IRRIGATION. LEARN HOW TO SET YOUR...	<b>173</b> SUPPORT TAP INTO QUALITY AND FORGO THOSE PLASTIC WATER BOTTLES...	<b>22</b> WHEN BUYING A WASHER, CHECK THE CONSORTIUM FOR ENERGY EFFICIENCY...
<b>147</b> IMPLEMENT A WATER MANAGEMENT PLAN FOR YOUR FACILITY, THEN...	<b>11</b> USE A PITCHER TO FILL YOUR WATER CONTAINERS...	<b>16</b> HAVE A PLUMBER RE-ROUTE YOUR GREY-WATER TO TREES AND PLANTS...	<b>180</b> INSPECT YOUR LANDSCAPE IRRIGATION SYSTEM REGULARLY FOR LEAKS...
<b>118</b> USE A POOL COVER TO HELP KEEP YOUR POOL CLEAN, REDUCES CHEMICAL...	<b>137</b> IF YOU HAVE AN EVAPORATIVE COOLER, DIRECT THE WATER DRAIN...	<b>21</b> HAVE A PLUMBER RE-ROUTE YOUR GREY-WATER TO TREES AND PLANTS...	<b>100+</b> Ways to Conserve Water

## VIDEOS



### Dreams From the Desert

Khardiata's village is small, but that doesn't stop her from dreaming big. Journey to Senegal and learn about farming life and the role of water in Khardiata's daily life.



### How Clean Water Empowers Farmers

Hear a woman farmer in Malawi discuss the struggles of farming in the face of water scarcity.



### Homemade Treadle Pump

Learn how to build your very own human-powered treadle pump.

## TAKE ACTION

Set up a [fundraising page](#) and organize a fundraiser to help families improve the environment through sustainable farming. Here's an idea to get you started.

### LIFESTYLE CHALLENGE

Estimate how much water you consume in a day with the [water calculator](#). Collect and boil this amount in the morning to use throughout the day, and pack it so it's available to drink and cook with. Ask your friends and family to join you, or collect sponsorships if you complete the challenge.

SHARE YOUR STORIES ON SOCIAL MEDIA



GIVE TO PROJECTS THAT **PROVIDE WATER ACCESS TODAY!**

# ENVIRONMENT FOCUS

# HEALTHY STOVES



## Cooking up Healthy Solutions with Biogas

For most families in the places where Heifer works, cooking usually means gathering firewood by hand, which often depletes the soil and robs the environment of its trees.

In addition, smoke **inhalation** in poorly **ventilated** homes often leads to chronic lung and eye diseases. Millions of women and girls in developing countries spend part of every day foraging for fuel to cook their families' meals. This effort to chop, collect and carry **biomass** for miles can take hours, cutting into the time they need for other chores.

A **biogas** stove is a better option. It runs off **methane** gas captured from animal waste, and it burns cleanly, reliably and

efficiently. This not only is better for the environment, but it is more **sustainable** and healthier for families feeding their children.

In Guatemala, villages are working with Heifer to install life-saving stoves that burn only two or three logs a day, compared to the 25-30 needed to fuel traditional open cook tops. The stoves are installed with chimneys, which bring the harmful smoke outside families' living quarters.

Giving biogas stoves to project families, including training in using biogas technology, creates a cleaner, healthier environment. **Learn more about stoves** and how they can help families around the world.

## STORIES



SENEGAL

### Biogas Lights the Way

As the first person in his community to own a biogas digester and stove, Mamadou Diouf is leading the way in his community with a blue flame.

## VIDEOS



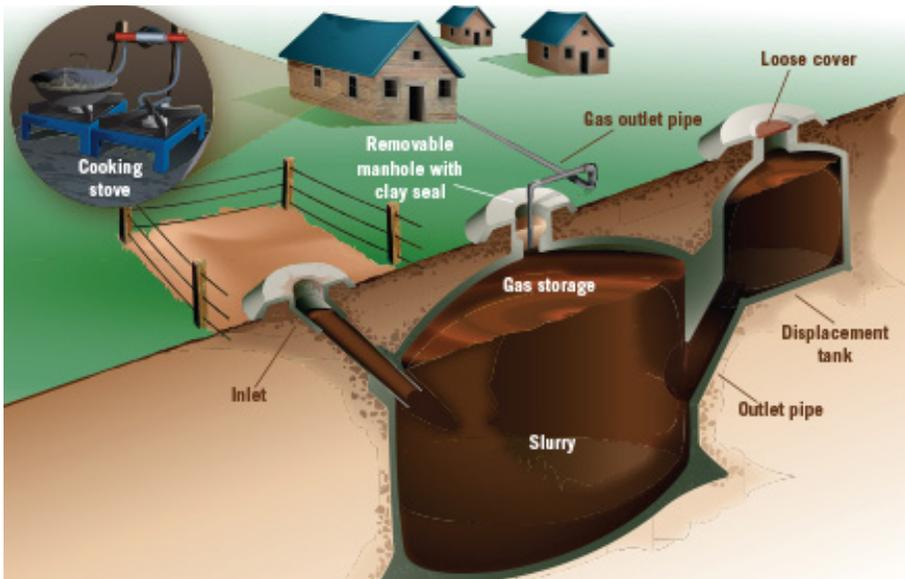
### The Power of Poo

See how a biogas system has changed the lives of a family in Senegal.



### TEDx | Biogas Digesters in Africa: A "10X" Opportunity

The distribution of household biogas digesters in Africa could reduce green house gas emissions and violence against women and children, increase life expectancy, food security and literacy, and offset carbon emissions from China.



## Biogas Basics

**Biogas digesters** can be a key **component** of an **integrated farm**, turning **organic** waste into rich fertilizer and **combustible** methane gas. The gas is used to generate light for the house and heat for cooking. Children can study past sunset thanks to the lighting, and time once spent fetching fuel can go to other tasks. Heifer Uganda initiated a biogas program to address **deforestation**, which is a serious problem in the country.

### Additionally, biogas digesters:

- Reduce air pollution from smoke, which leads to less **respiratory** diseases and eye **ailments**
- Create more free time for families, particularly females of households who no longer have to collect firewood
- Generate opportunities for local employment through construction of biogas digesters
- Control **greenhouse gas emissions** from livestock in a responsible way

Bio-slurry, which comes from biogas production, is used to improve agricultural yields and restore soil **fertility**. Browse some of **our projects** and see if you can find other ways that we integrate sustainable agriculture practices with simple, life-saving technologies.

## LEARN MORE



### Collecting Firewood Findings

Women spend 374 hours each year collecting firewood in India, according to a study. Biogas stoves help cut down this time drastically.



### How to Make Clay Cookstoves

In the Kasungu project in Malawi, we teach participants how to make portable clay cookstoves. These stoves use only a third as much fuel as traditional cooking fires, cook meals faster, **emit** less smoke and are less dangerous.



### How to Make Biogas

Make a bottle that shows how gas is made when materials decay.

## TAKE ACTION

Set up a **fundraising page** and organize a fundraiser to help families improve the environment through sustainable farming. Here's some ideas to get you started.

### 1 SOLAR OVEN BAKE SALE

**Build a solar oven** and use it to bake cookies. Then, hold a bake sale to sell your delicious treats.

### 2 SELL TREE SEEDLINGS

Biogas stoves limit deforestation – saving trees! Work with a local gardening club or greenhouse to sell tree seedlings to your community.

SHARE YOUR  
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SOCIAL MEDIA



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INTERNATIONAL

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