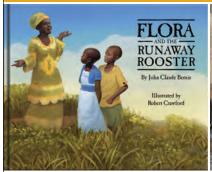


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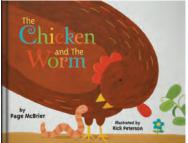
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Dear Fellow Activists,

olving some of the world's largest and most pressing problems — global hunger, poverty and environmental degradation — requires a nimble approach. When Heifer International shifted to focusing on ensuring families achieve living incomes, it became clear that parts of our work needed to adapt to close that income gap for families we serve.

And while we have modified strategies so families become truly self-reliant and resilient in the face of setbacks, the core work remains the same. Our Values-Based Holistic Community Development model focuses on self-driven community transformation. Two driving principles in our model are Gender Equity and Improved Animal and Resource Management, and both are showcased in this issue.

A photo essay from Senegal highlights Heifer's commitment to clean water access. While water has always played a part in our projects, it is now becoming a central focus as climate change and desertification threaten the traditional rain-fed agricultural cycle in many areas. We know water is vital for better animal growth and productivity, as well as for irrigation and soil productivity. Without water, our farmers simply cannot grow the crops and livestock they need to thrive. We've also learned that water access is key to Gender Equity, since women in many places are



traditionally burdened with the time- and energy-consuming task of fetching water. With more time and energy available to them now that safe, plentiful water is close at hand, the women in these projects are aiming to double their household incomes.

In "Quiet Strength," you'll read about women in India who are pooling resources, developing leadership skills and adopting improved techniques to raise healthier, larger goats that command higher prices. Women's empowerment is an intentional component of our work. We see a direct link between equitable participation in decision-making and an increase in the economic and social well-being of families. This

is clear in the three states where we work in India, where Heifer is helping groups grow businesses, boost home nutrition, improve sanitation and gain easier access to clean water — all of which are contributing to healthier, more prosperous families.

I hope you enjoy this issue and see how we're blending our core work with new strategies to maximize the impact and benefits to farmers. I am confident this blend of approaches creates truly lasting change for communities.

here M. Felran

Yours for a better world,

Pierre U. Ferrari @HeiferCEO

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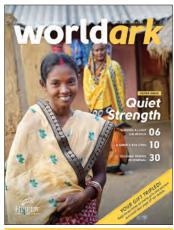
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COVER

Reena Mohanta of Khasadhia village in the Indian state of Odisha is a member of the Maa Ambica self-help group. Photo by Geoff Oliver Bugbee

Top: Heifer projects help communities in Senegal access clean water, saving women and children the hours they used to spend each day walking to and from far-away wells.

Photo by Xaume Olleros

Sheep View 360
On an archipelago where sheep outnumber people two to one, it's the wooliest inhabitants who donned cameras and mapped the islands for Google Street View. A Faroe Islander talks about what life is like in this rugged, wet and windy autonomous country with Nordic roots.

Quiet Strength
Women in the jungled Indian state of
Odisha carry an inordinate amount
of responsibility for keeping families
and communities going. Heifer
International is helping them pool
resources and know-how so they
can bring in more money and claim
their rightful leadership roles.

Digging Deeper in Senegal Farmers in parched regions of the world simply cannot thrive without access to enough water for their crops and livestock. A new generation of Heifer projects make water access a priority from the beginning.

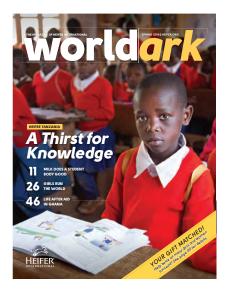






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JUST ONE RESERVATION

I rejoice when I read about the great work Heifer does around the world, but I wonder why I do not see Heifer at work on reservations for Native Americans where poverty and malnutrition are rampant?

FAYE LEWELLEN Peachtree City, Georgia

GREAT MINDS THINK ALIKE

Hello! I am a regular donor to Heifer because I believe in what you do!

Two comments: First, I am very sorry that the Rutland Farm is closing. That is where I, for the first time ever, saw something (lambs, in that case) being born. I spent a wonderful weekend there, and was hoping to bring my niece in the next couple of years.

Second, do you ever collaborate with other organizations? I would think that Heifer and TechnoServe would be good partners in some situations. I think your joint skills might more than double your impact.

GRETA R. AUL Lancaster, Pennsylvania

Editor's note: Heifer International and TechnoServe make a good team! We partnered in Kenya, Rwanda and Uganda to help small-scale dairy farmers as part of the East Africa Dairy Development program.

CONSTRUCTIVE CRITICISM

Heifer's School Milk Program sounds great for nutrition, education and family success. But what happens to all of the empty pouches? It seems like they would create a lot of waste, and might not be recyclable, which should be a big concern.

SHARON HAUSAM Albuquerque, New Mexico

Editor's note: Great idea! Where possible, we are recycling the milk pouches to use as planters for seedlings.

If you want to end poverty you will provide long-acting reversible contraceptives to as many women as possible. This is the single most effective strategy, more costeffective than even nutrition and

electrification. Do your research, please. You are in a position of power. Use your power. Thank you.

ALICE STARR DWORKIN

Montpelier, Vermont

In our Winter issue we asked readers to answer this question: "Do people in rich countries have an obligation to help people in poor countries? Why, or why not?"

I do believe that people in rich countries have an obligation to help people in poor countries. If we look just at agriculture in the U.S., the farmers here would probably not be able to produce as much as they do without technology and government assistance. In poorer, less developed countries, the farmers may not have access to the advances in agriculture that we have in the U.S. Without a government that supports farming, that will not change. So, yes, I think we should help poor countries (if they want our help) to get ahead. By doing this, they could sell the excess and improve their lives by sending their children to school, having improved nutrition, and possibly running water or whatever would make their lives better. Everyone, regardless of income, deserves proper nutrition, water, education and shelter.

MERRIE SCHAMBERGER
Neenah, Wisconsin

Q&A SUMMER

When Heifer International works within cultures where women are considered the inferior sex, should Heifer work to change that thinking?

Why, or why not?

WE WANT TO HEAR FROM YOU!

Please send your comments to **worldark@list.heifer.org**. Include your name, city, and a telephone number or email address. Letters may be edited for length and clarity, and may be published online as well as in print. Because of the volume of mail we receive, we cannot respond to all letters.

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Since 1944, Heifer has helped 31 million families, directly and indirectly, move toward greater self-reliance through the aift of livestock and training in environmentally sound agriculture.

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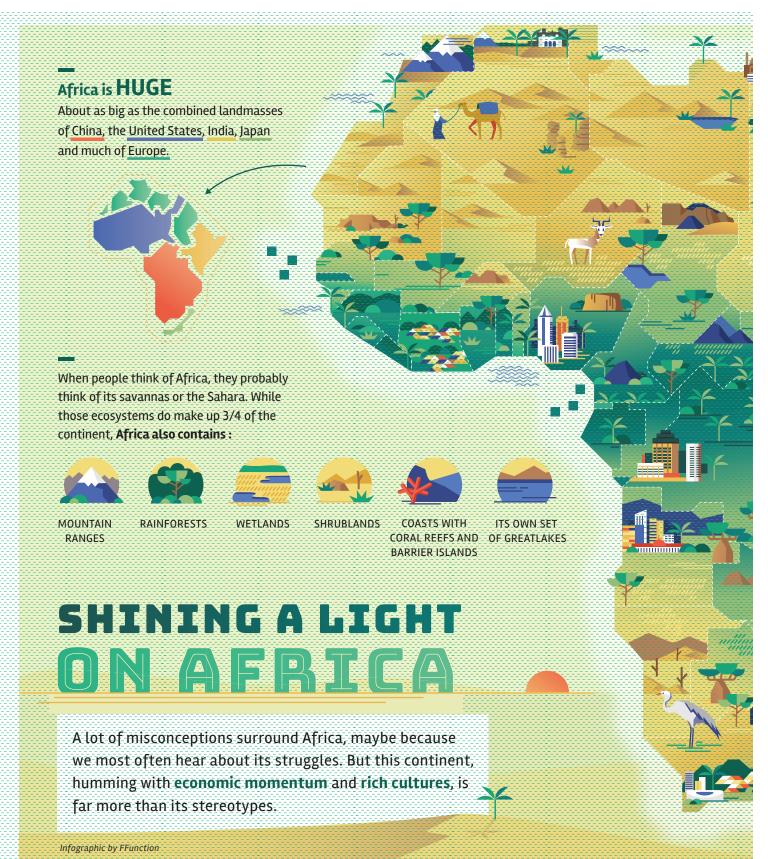
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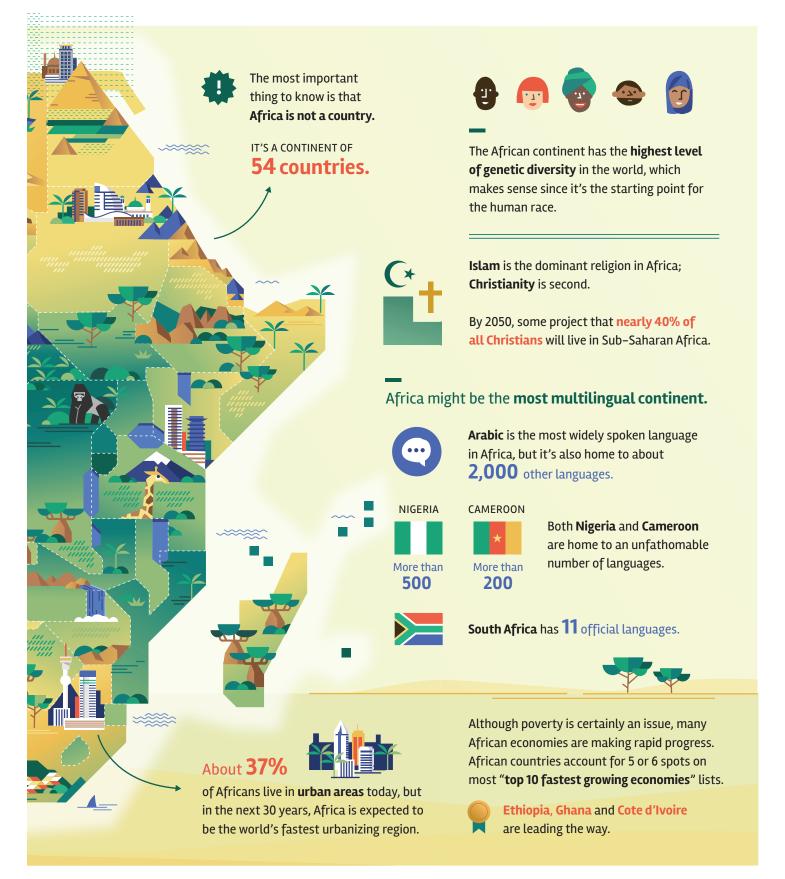
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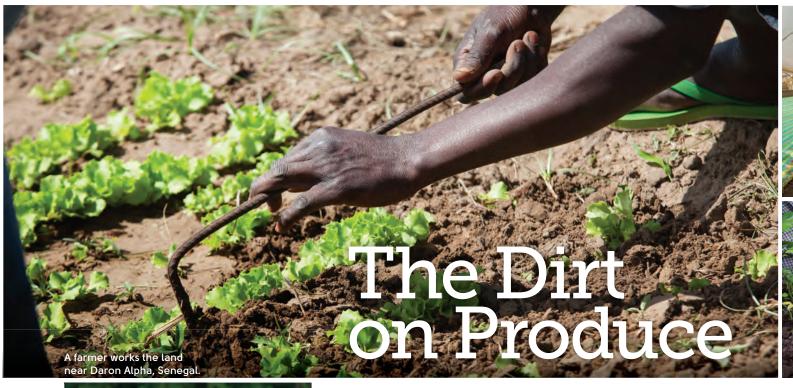
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t seems your grandparents were right. Today's produce just isn't what it used to be.
Scientific studies conducted over the last decade tell us that fruits and vegetables now contain significantly fewer vitamins and minerals than they once did.

Researcher Donald Davis and his colleagues reported in the *Journal of the American College of Nutrition* that between 1950 and 1999, 43 varieties of produce in the United States reliably declined in a long list of vitamins and nutrients. Researchers in another study found that modern consumers need to eat eight oranges to equal the same amount of vitamin A of one orange grown in the 1950s.

Many researchers put the

blame on destructively intensive farming practices. As cultivated fruits and vegetables have been rapidly bred to become higher yielding, bigger and more resistant to pests, nutritional value has been sacrificed.

Intensive farming's focus on maximizing yields sometimes means a heavy application of chemicals, an over-reliance on monocropping and failure to rotate crops and occasionally leave fields fallow. All of these practices can deplete soil quality, resulting in nutritionally deficient produce. Overgrazing livestock, failing to plant cover crops and ploughing sloped land are also contributing to soil erosion, sending rich topsoil into creeks and rivers.

Soil degradation is a global

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phenomenon. According to a study supported by the United Nations, one-third of the world's arable land is degraded and 24 billion tons of fertile soil are lost annually. Another report from the U.N.'s Food and Agriculture Organization found that a majority of the Earth's soil resources are in "fair, poor or very poor" condition, and things are getting worse more often than they're improving. In addition to irresponsible farming practices, the report cites climate change, population growth and urbanization as contributing to loss of soil health.

Filiberto Choc holds earthworms

Guatemala.

outside his greenhouse in Senahú,

But not everything is doom and gloom.

The U.N. reports say that these trends are reversible, as long as

countries support sustainable management practices and appropriate technologies. Although the U.S. is not one of them, 112 countries have joined the global campaign to achieve the Sustainable Development Goal target of reaching land degradation neutrality by 2030.

At a much more local level, consumers can effect change by buying produce from organic farmers, and voters can support policy changes that favor sustainable agriculture.

And one more thing—the loss of nutrients in produce over time is not an excuse to forgo your daily intake of leafy greens. Fruits and vegetables still represent the best source for vitamins and nutrients.

IMPROVING SOIL HEALTH AT HOME

If you grow your own fruits and vegetables at home, here are some of the easiest and most important things to do to make sure your soil is healthy and yields the best produce possible.

ADD ORGANIC MATTER. Manures provide nitrogen for plants and beneficial bacteria. Composting adds important fertility to the soil.

PLANT COVER CROPS. This will protect your plot from erosion when you're not growing other crops and also provide nutrients to the soil.

AVOID TILLING. Tilling can destroy the soil's structure and aggravate the soil biome.

MULCH. Spreading mulch retains soil moisture. and protects against extreme temperatures.

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Sheep View 360 Puts the Faroe Islands on the Map

Interview by Molly Fincher, World Ark writer



What's life like on islands with more sheep than people? Hidden between Iceland and Norway lay the Faroe Islands, a mountainous archipelago home to seaside cliffs, nighttime views of the aurora borealis, a few people and a LOT of sheep. With a human population of 45,000 and a sheep population of 80,000, sheep nearly double the number of people there.

At Heifer International we know a thing or two about sheep, but we work mainly with hair sheep, an animal that thrives in warmer climates and is used for meat and milk. Hair sheep are great, don't get us wrong, but we need more of the fluffy sheep variety in our lives. And we're endlessly fascinated by the integral role livestock continues to play in our lives, even as society becomes increasingly mechanized and digitized.

When the islands were passed over for Google Street View, the Faroe Islands Tourist Board launched a campaign to catch Google's attention: Sheep View 360. They attached cameras to the backs of sheep and recorded the Faroe Islands from the perspective of their primary inhabitants. The adorable idea worked and Google showed up to officially put the islands on the map. Now the beauty of the Faroe Islands can be viewed on Google Street View by anyone with an internet connection.

Súsanna Sørensen was part of the campaign and spoke with us about Sheep View 360, the Faroe Islands and what makes Faroese sheep so special.

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ewe view asked & answered





WORLD ARK: Does everyone on the Faroe Islands own sheep? What is it like living in a place where sheep outnumber people?

SÚSANNA SØRENSEN:

Not everybody in the Faroe Islands owns sheep, but we have a lot of people who are involved with sheep farming. Obviously, first there are the farmers but there is also a relatively large proportion of the population who have a piece of land and a few sheep. And there is an even larger number of people who

are involved in the various work related to the annual cycles of sheep farming, especially the herding and slaughter in the autumn.

It's an important part of our culture, and parents make sure that their children become part of it as well so it is passed to future generations. My family, for example, lives in the capital and does not have sheep, but we have close family who do and our sons (15-year-old twins) take part in the herding and slaughtering even if we, their parents, do not. My husband grew

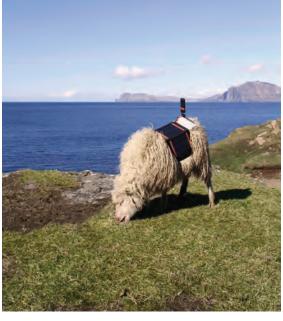
up in a small village and took part, and although he is not part of it anymore, we still want our sons to experience and learn it and are happy that we have families who have sheep and invite them along.

If you don't have sheep, you will most likely have an agreement with a farmer, often passed on from your parents, to buy sheep from them in the autumn. Typically a family buys a few sheep (the full bodies), and we hang them to dry and ferment in our hjallur, which are traditional drying houses that are built so the

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wind can blow through and the meat is dried and fermented. It does not rot because of the salty air. Even new, modern houses have these *hjallur* so we can dry our meat, which is a very important part of our diet.

Living in a place where sheep outnumber people means that sheep are an important part of our lives, as described above, but it also means that we see sheep everywhere, in the hillsides but also on and by the roads, so it also means you have to be careful when you drive in the Faroe Islands. This also means that we all notice when the first lamb arrives in the spring. They are seen as one of the first bearers of spring.

Does everyone there know how to knit?

Most girls learn to knit from their grandmothers or mothers (some men knit too, but it's typically women who knit). Especially older women knit a lot, and whenever a new baby is born, he or she will receive a lot of knitted clothes from relatives and friends of the family. The younger generation knits in waves. When I went to high school we all knitted a lot, even in class, then for many years it became unfashionable to knit. But that has changed in recent years after we got designers like Guðrun & Guðrun [www.gudrungudrun.

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com], who make modern versions of knitwear based on our traditional knitting and patterns.

What makes Faroese wool special?

Faroese sheep are out all year in all weather. The wool is therefore very resilient and has a special character, which also might make it difficult to wear because it can itch. The wool is in two layers. The inner layer is fine and lanolin-rich wool, which means it "self cleans" because of the lanolin. The inner layer is very well suited for fine knit wear, whereas the outer layer is made up of more coarse long hairs, which are traditionally used for sweaters and other outerwear.



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What animals do you have on the islands besides sheep?

We have a very rich bird life with over 305 different species recorded. About 50 species are regular visitors to the islands. Especially in the summer, the Faroe Islands are a good spot for bird watching, and you can get close to puffins and other seabirds on the island of Mykines.

Is there an iconic Faroese knitting pattern you can share with us for our readers?

Guðrun and Guðrun are local designers who have been quite successful internationally with their knitwear based on traditional Faroese knitting techniques and patterns. Their most popular design is the star sweater, which was made famous through the successful Danish TV series "The Killing," where the lead character wears one of their sweaters. The sweater is an interpretation of Guðrun Ludvik's dad's fishing sweater. She took one of the patterns, the star, and used that and made a slimmer and more feminine version of his sweater. There is also a book on traditional Faroese patterns, but these days I think we can say the Guðrun & Guðrun is the most iconic.



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Can you summarize the Sheep View 360 project for us? Were there any challenges or surprises?

Sheep View was a fantastic project to be part of, and to see how much coverage it has received makes us proud to have been part of the project, and maybe also realize how big it was.

I guess the biggest surprise or challenge was that once the cameras were strapped to the sheep, we found out that they did not really move that much. I guess we had expected that they would run off and cover the areas, which they did not really do.

Why was it so important to get Google's attention and convince them to include the Faroe Islands on Google Street View?

The Faroe Islands are quite unknown and we felt that it would be good to have street view, which so many countries have now, both so we could show our friends



abroad what our country looks like, but also for future guests to get an impression before they arrive.

What benefits have the Faroe Islands seen now that they are included on Google Street View?

We had an increase in bookings

following the Sheep View project. We expect that one benefit will be that our guests can be better prepared before they arrive, and also that more people can experience the beauty of the Faroe Islands and hopefully come for a visit in the future.

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Quiet Strength



BY **AUSTIN BAILEY**, WORLD ARK MANAGING EDITOR PHOTOS BY **GEOFF OLIVER BUGBEE**

Huge amounts of responsibility fall to women in the Indian state of Odisha, and they shoulder it gladly. Heifer International is working with them to make sure they reap their just rewards.



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t's common in Odisha, a jungled state in northeast India, for teams of women to tackle the brawniest of jobs. The sweaty, dusty, brutal work of building rural roads, for example. It's hard to not marvel at the sight of dozens of slender women clad head to toe in gauzy, fluttering saris, stooped at the waist to pluck debris from a freshly flattened roadbed. The women keep corners of their saris pulled over their heads to escape the sun while the only man on the road crew supervises from the shade of his steamroller cockpit.

And nowhere does grace marry strength so well as in rural Indian villages like Odisha's Jhinkpahaldi, where farm work is women's work. With their quick bare feet and bright cotton saris, the women move together like a cloud of butterflies. Ankle bells jangle as they step down a dusty path that connects their homes to the rice fields. Six hours a day the women work together in the fields, taking turns tending each woman's family's plot. The day's fieldwork done, they alight back home, still a flutter of color and contained energy.

The women's solidarity in Jhinkpahaldi is formalized in a self-help group, where the women strategize ways to wring greater returns from their labors. Sukhmari Singh is the secretary of the Simlashewar Self-Help Group in Jhinkpahaldi, which is named after a Hindu temple nearby. A mother of two boys, she helps organize meetings and



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Heifer is working in three of India's 29 states, with a focus on helping small-scale farmers raise goats and produce milk to help feed the country's growing and dependable market for animal-protein foods.

collect members' 20 rupees for monthly dues. She also dispenses loans agreed upon by all 15 group members. The women have bought seeds, goats and a water pump using their pooled money, and their incomes are rising as a result of their investments.

Sukhmari took advantage of a Heifer International training to become a Community Animal Health Worker, and now earns money administering vaccines and caring for sick livestock. Her husband's parents, steeped in a tradition of keeping women isolated and homebound, used to interrogate Sukhmari anytime she left the house to care for animals or go to meetings, and forbade her from speaking to other men.

"There was always a sense of fear that if I was late they would abuse me and scold me," she said of her in-laws, with whom she shares a home. But as money started coming into the household because of Sukhmari's animal health work, and as the family's health and nutrition improved thanks to the kitchen garden she planted after a training she got through her self-help group, the in-laws relaxed their grip. She could go out to meetings or to attend sick animals without having to secure permission first. And as Sukhmari



earned more money and more prestige in the community, her family's respect for her grew.

This self-help group building financial security for women in Jhinkpahaldi is one of many groups Heifer International is supporting in this impoverished region. Heifer is working in three of India's 29 states, with a focus on helping small-scale farmers raise goats and produce milk to help feed the country's growing and dependable market for animal-protein foods.

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While eating meat is rare in some parts of India, it's a common practice in Odisha, where many families raise and sell goats, chickens and other livestock. The state consistently ranks among the poorest of the 29, with a third of its population below the poverty line. Education and literacy levels in Odisha are lower for men than for women because so many men leave school at young ages to go to work. Lack of opportunities in Odisha scatters many of these men to other parts of India, where they find work as day laborers and send home any money they can. While the people left behind are more than capable, they have little capital and opportunity to work with.

Heifer's programs here are also investing in women's leadership potential, giving them the

While eating meat is rare in some parts of India, it's a common practice in Odisha, where many families raise and sell goats, chickens and other livestock.

business know-how and access to loans they need to start and sustain their own agricultural and business enterprises. Pooling resources, improving animal health and changing women's traditional status in the region as second-class citizens are the goals for Heifer projects in Odisha, and women make up the majority of project participants here.

With its partners, Heifer International is stepping in with training and resources needed to break through the poverty line.

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HEIFER INDIA

Since 2009, Heifer International has worked in three states in India to help rural, small-scale farmers move from poverty to resilience. In Bihar, Odisha and Rajasthan, Heifer supports farmers as they upgrade their goat-raising operations to become more sustainable and profitable. Farmers receive help in providing their animals with improved housing, fodder, breeding and veterinary care.

In addition to helping farmers raise and sell livestock, Heifer is helping to boost sanitation, water access and nutrition. Many project participants in drought-prone regions construct water tanks to harvest rainfall. Thousands of families who lacked toilets in their homes now have them, and most families working with Heifer India now tend their own kitchen gardens, boosting nutrition at the household level.

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"If I am becoming sustainable, why not give to someone who has no hens, no goats?" — Anusaya Naik

THE WOMAN WHO GAVE THE FIRST GOAT

Anusaya Naik got no animals when she joined the Simlashewar Self-Help Group, but she did get access to loans, and she made the most of it. The first loan she used to increase her groundnut crop. She used her second loan to shore up her house. Her third helped her plant a kitchen garden so she would have fresh vegetables to eat, and the fourth she used to pay for her daughter's wedding. She paid back each loan on time and with interest, and they had the intended effect of expanding Anusaya's crop production, which brought in more money.

Heifer International is helping project participants in Anusaya's village by offering training and support, but no animals. So it was a surprise when she decided that even though she hadn't received a goat herself, she wanted to pass one on. Training in health care and hygiene for livestock meant more of her animals were surviving and thriving, she said. So why not share?

"If I am becoming sustainable, why not give to someone who has no hens, no goats?"

Sheer happiness moved her to give one of her six goats to struggling neighbor Sukunti Mal, Anusaya said. The nanny goat has already given three kids, and Sukunti said that when she gets a fourth kid she will share it with someone in need.

Anusaya shies away from the attention she gets as the inspiration for a new model of sharing and cooperation. "I don't have much education," she said. "I can't read or write, and I don't speak well." But her success and generosity make her something of an idol among self-help group members in the region, and many have followed her example. Word spread quickly, and within a year of Anusaya's gift to Sukunti, women in 13 different self-help groups whose animals thrived and reproduced thanks to better hygiene and healthier fodder had given goats to fellow group members.

WHAT ARE GROUNDNUTS?



Groundnuts and peanuts are the same thing, although there are many varieties grown in different parts of the world. One thing they all have in common is that none of them are actually nuts. They're legumes, which are the edible seeds of pods that split open on their own when they're ready for harvest. Nuts, on the other hand, have strong shells that have to be cracked open.

Groundnuts originated in South America, and are believed to have been introduced to India by the Jesuits who arrived in the 1500s. Today, India is the second largest producer of groundnuts/ peanuts, after China. Most of India's crop remains in country, where it is eaten as a snack food or processed into cooking oil.

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TYING IT ALL TOGETHER

A close look at the homes and furnishings in Kailashchandpur reveals that most things here are held together by rope. Chair seats are made up of woven rope and beds consist of a simple frame topped by a firm, decorative lattice. Fat tree branches knotted together with rope provide shady spots to sit on woven grass mats.

The sabai grass the rope is made from grows wild and abundant in the region, and the rope made from it is easy to sell. So Anita Mohanda makes some rope every day when her husband is selling milk at a nearby market and her two sons are at school. Like the other women in her self-help group, Anita Mohanda can churn out a few feet of rope per minute. First, she dips her hands in a bowl of water to keep them cool, then skillfully twists cuttings of sabai grass between her calloused hands. After drying for a day or so, Mohanda runs the rope through a winding contraption fashioned from an old bike wheel. The winding machine evens out any lumps and twists the ropes into tidy bundles.

Rope-making is just one small facet of Mohanda's plans for building financial security. She also raises goats, tends groundnut fields and works with her husband to sell milk from the family's dairy cow. These are all things this family and most of their neighbors have always done to earn money. But with access to loans, Mohanda reports, each endeavor is far more efficient.

Most families in the community keep goats, but the mortality rate was astronomical. Fewer than 50 percent of the goats were expected to survive long enough to be sold, said Barsha Mothandy, a project coordinator for the Voluntary Association for Rural Development. An India-based nonprofit aimed at boosting livelihoods in a sustainable way, the Voluntary Association for Rural Development (VARD) works in partnership with Heifer International to support 2,000 women in Odisha by giving them the training and tools they need to boost production with improved fodder, sheds, vaccinations and access to loans.



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SACRIFICES ON THE ALTAR OF THE COBRA

What's the worst thing that could happen? This is a fun question to ask yourself before venturing into parts unknown. And if you're headed to India for the first time, the answer is snakes. India has the dubious distinction as the snakebite capital of the world, a blood-red blob on the global snakebite map where an estimated 50,000 people per year die from venomous bites.

But Ichhasakti Mohanta, a mother of one and president of the Maa Durga self-help group in the village of Khasadhia, can put you at ease. She lives with her husband's parents, and her father-in-law is a Hindu priest who specializes in curing snakebites with herbs and prayer. A tall, white altar in their yard is painted with the unnerving outline of a cobra, its tongue flickering and hood flared. Mohanta's daily sacrifices of water, which she pours on the basil plant growing atop the altar, is believed to offer her some cosmic protection from cobras, and also from the deadly kraits and vipers that prowl the jungles of northern India.

About once a month, Mohanta reports, a snakebite victim arrives in the yard seeking help. The Hindu priest goes immediately to work, chanting, laying on hands and administering herbal remedies. Once the victim is cured, his or her family renders payment in the form of a swan, which is sacrificed on the altar and then cooked and eaten by the priest's family. Her father-in-law's cure rate is 100 percent, Mohanta said, and that's why the snakes really don't bother her. She's more worried about the elephants tromping through her garden.

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"Animal hygiene is better, the feed is better now," Mothandy said. "There's not as much open grazing. The goats used to die in the fields or by disease." Now, she reports, goat weights are up. The animals are vaccinated, dewormed and healthy, all of which makes for higher sale prices.

Mohanda and other members of her selfhelp group have been working with VARD and Heifer for a few years now, and Mohanda says they all see a difference. "The animal training is helpful because our animals are cleaner and healthier," she said. And instead of buying vegetables or going without, group members have all started their own kitchen gardens. Most importantly, the women pool their finances and take turns getting the loans they need to expand their plantings and improve their goat operations.

"Before, there was always a sense of financial dilemma. There was nowhere to get money if you needed it," Mohanda said. Women frequently mortgaged their jewelry, but the money lenders would sometimes keep jewelry even after their money was repayed. Now, Mohanda said, group members don't have to do business with people they don't trust.

"There's a common sense of financial security among the women who've joined the self-help group," Mohanda said. "We know that if there's a time of need, we can rely on each other and the group."

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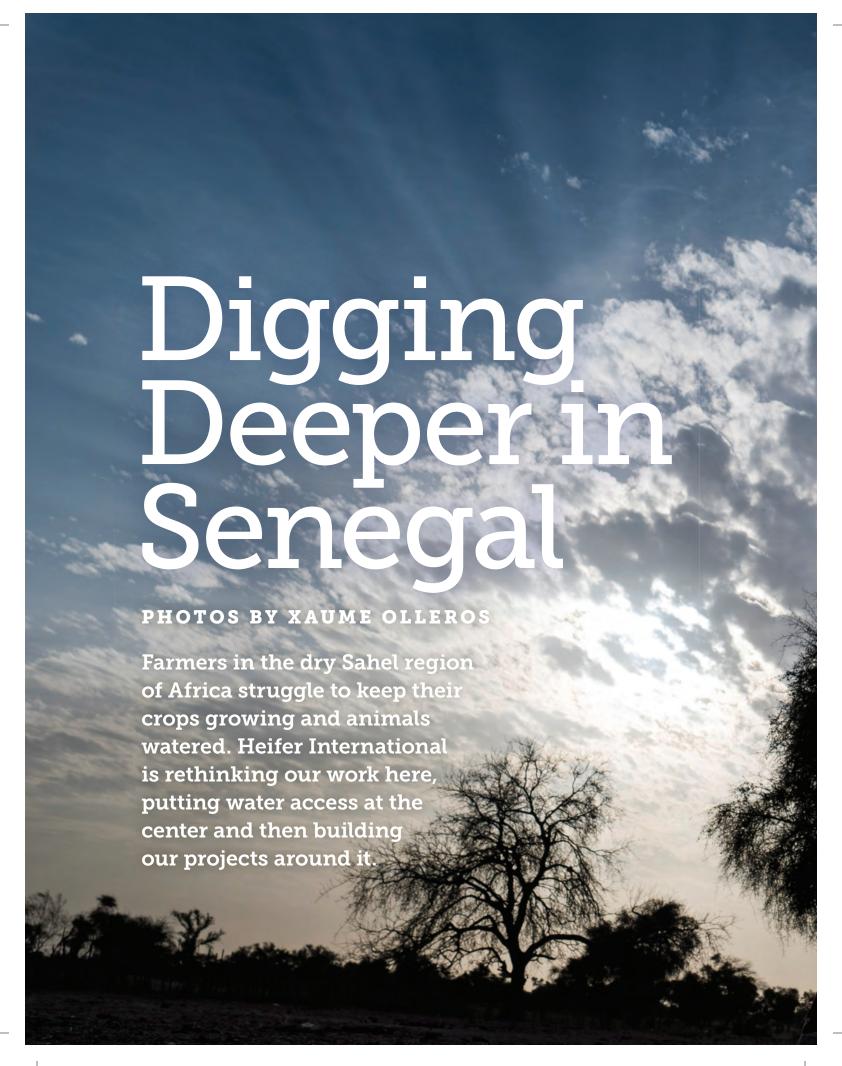
ALL GIFTS TRIPLED



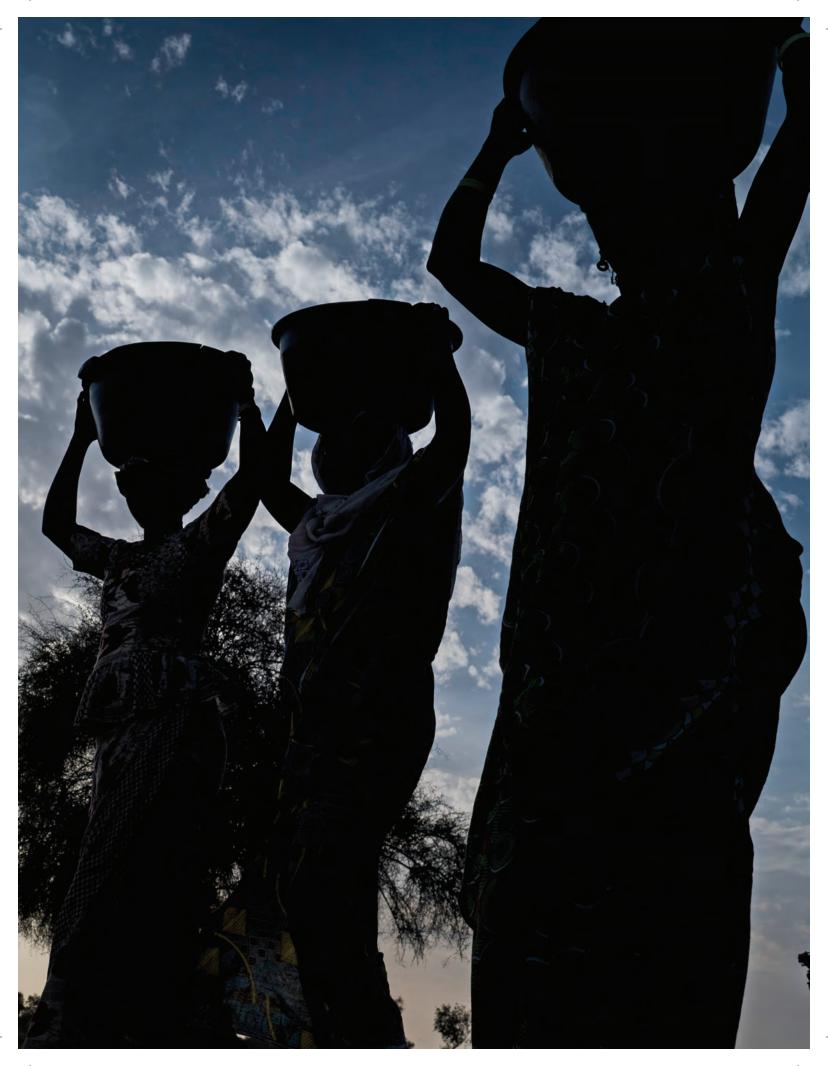
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ater is the basis of life, without which no crops can grow, no animals can survive. Heifer's work has always focused on hunger, poverty and environmental sustainability, and this focus will not change. It has become increasingly clear, however, that without community access and management of water, Heifer project participants simply cannot achieve their goals.

Digging wells or piping in water have long been peripheral components of Heifer International's work in dry regions. With the *Sahel Water Exploration Project* in Senegal, water becomes central. The prototype project is in the Matam region, a flat and arid section of northeastern Senegal bordering Mauritania.

The project will ensure 3,500 women farmers in Velingara Ferlo and Younoufere have year-round access to water. It will also double the household incomes of 600 farming families.

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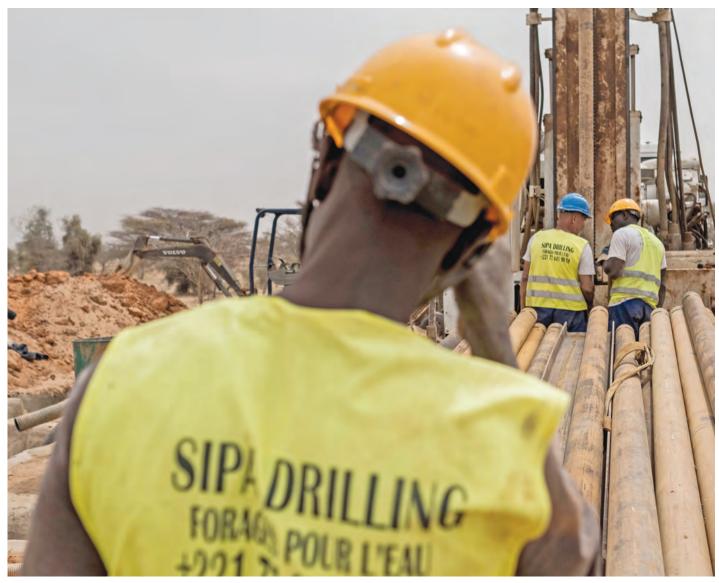


TOP LEFT: The Younoufere community in the Matam region of Senegal is parched and sandy nine months of the year. Farmers who rely on rain for irrigating crops can only grow things during the rainy months of May, June and July.

ABOVE: The homes in the Mbonay community are thatched with corn and sorghum stems. This compound belongs to a polygamous family. The husband's home is in the center, flanked by the homes of his two wives.

LEFT: The oldest well in Younoufere was dug by hand. It has gone dry, forcing people to have to pay for water at government-dug wells. A Heifer project will provide the community with a new well where they can access water free of charge.

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ABOVE: Hand-dug wells have gone dry, and buying large amounts of water from government-dug wells is quite expensive. Heifer International is funding the drilling of two new wells, each nearly 400 feet deep, with pumps powered by solar energy.

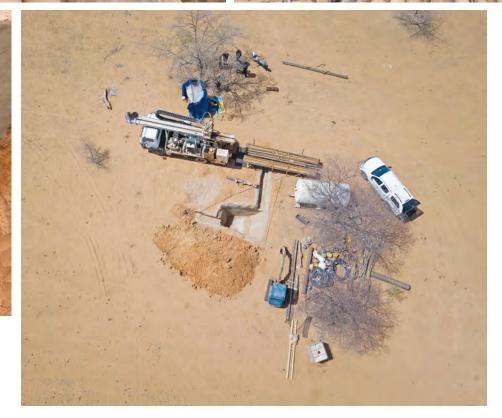
RIGHT: A worker preps the spot where a new well will be drilled. The handdug wells communities once relied on have become unreliable.



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ABOVE: Older wells in the community were about 215 feet deep and dug by hand. The new wells will be far deeper, so heavy machinery is required.

LEFT: A drone's-eye view of the drilling site. Once the well is finished, members of surrounding communities plan to take advantage of the easy water access by building gardens and a fish pond in a 5-acre area around the well. Cement sluices will send water beyond the garden borders to troughs where animals can drink.

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ABOVE: Women and children in Mbonay spend hours a day fetching water. Girls learn to carry heavy jugs of water on their heads around age 12.

BELOW: A woman waters her animals at a borehole in Velingara Ferlo. The water source sometimes goes dry, and the next closest water source is 3 miles away.

TOP RIGHT: Heifer project participants travel from Younoufere to Nakara for a training.

well in Mbonay is nearly 250 feet deep, so harvesting water from it takes a long time. Once a bucket is lowered, the rope is hitched to donkeys who walk away from the well to pull the water up.



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ABOVE AND RIGHT:

Women in Mbonay collect water after their donkeys pull it up from the well. A new well will have a solar-powered pump, but the women will still use their donkeys to transport the water back home.



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LEFT: The government-dug well in Younoufere is not reliable, and because it's powered by a gas generator, the water is expensive. A new Heifer project in this region of Senegal will provide communities with two solar-powered wells that they can access free of charge.

BELOW: While this Heifer project centers on providing water so people can grow and consume green vegetables year-round, participants will also receive and pass on chickens.



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Make Coffee, Not War

Reviewed by Molly Fincher, World Ark writer

ou may think you love coffee, but prepare for your devotion to be lapped about a thousand times while reading

The Monk of Mokha, the true story of a young man who risked life and limb for the sake of bringing coffee from his homeland to the world.

Part coming-of-age story, part education on the entire coffee production chain from tree to cup, and part nerve-rattling account of an escape from the turmoil of the Yemeni Civil War, The Monk of Mokha has something to offer most readers, though not all may be engrossed by every section.

As any accurate account of reallife events must be, the plot is not a perfectly balanced structure.

At times it takes the start-and-stop, winding path of real life.

The winding path in question follows our hero Mokhtar Alkhanshali. Son of Yemeni immigrants living in the roughest part of San Francisco, we find a whip-smart and charismatic person languishing as a doorman at 25, directionless and without resources to make a change. A devastating theft of his laptop, which he borrowed money to buy, dashed his hopes for college. Everything changes when he learns of coffee's true origins in Yemen. He is gripped with a desire to resurrect his homeland's ancient art and bring the fruit of his wartorn home to the world, both for the



sake of coffee and so that people may think of something besides terrorism and drone strikes when they think of Yemen. He wears his hope quite literally in Dave Egger's introduction, as Eggers relates that during one of his interviews with Mokhtar he was wearing a T-shirt that read, "Make Coffee, Not War."

As we follow Mokhtar's journey, we learn as he learns. From the first legend of Khaldi, the Ethiopian shepherd who noticed his goats frolicking with extra energy after eating the fruit of a certain tree, we learn about the proliferation of coffee as we know it now around the globe thanks to a monk in Yemen's port town Mokha. As we follow Mokhtar's personal development, we follow the development of coffee, both its history and the story of fruit to cup.

It makes for a lot of exposition

as we get into the weeds of coffee production, but Eggers helps it go down easy by enlisting readers as companions for our underdog hero Moktar, leading us to take interest in what he's interested in and become educated as he is educated.

Part of Mokhtar's education is learning the plight of the smallscale coffee farmer. Though we may often groan at the expense of specialty coffee, he learns why it is, indeed, worth so much, and about the dark implications of cheaper prices for the consumer. "Even a four-dollar cup was miraculous, given how many people were involved, and how much individual human attention and expertise was lavished on the beans dissolved in that four-dollar cup. So much human attention and expertise, in fact, that even at four dollars a

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THE MONK OF MOKHA DAVE EGGERS

The Monk of Mokha
By Dave Eggers
Published January 30, 2018
\$28.95

cup, chances were some person or many people, or hundreds of people—along the line were being taken, underpaid, exploited."

The difference he could make in poverty-stricken Yemeni farmers' lives by getting them the tools and training to garner good prices for their product fueled Mokhtar's passion for his project.

Passion he would need in spades, because getting high-quality coffee out of Yemen was a task of herculean proportions. At this point the story takes a hard turn into high-octane adventure. Once Mokhtar finally secures the high-quality samples needed to convince international buyers to invest in Yemeni coffee, the simmering tensions in Yemen finally boil over. He finds himself laughing at the extremes he is willing to push for his dream.

"Mokhtar and Nuri laughed harder. They were pushing a taxi with an exposed propane tank while machine-gun fire rattled over their heads. They couldn't run away. All their coffee was in the taxi."

This incident marks the beginning of the harrowing escape from a country breaking out into civil war. By sheer virtue of his wits and charisma, he manages to finally get out of Yemen after many life-threatening detours—with the coffee!—on a skiff crossing the Red Sea, still not sure whether the man driving the boat is on the level or about to sell him to pirates. But, incredibly, he makes it. Today his Yemeni coffee is considered among the best in the world.

It's an incredible example of the true American dream, not to mention just how far the fake-ittil-you-make-it strategy can take you. Whether you're into adventure, inspiration, coffee or insights into one of the most misunderstood countries in the world, *The Monk of Mokha* is well worth the read.

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Kate Moreland is a first-grader at the Lovett School in Atlanta, and chapter books are her jam.



What is a book you enjoy reading? Why do you like it?

I like Fancy Nancy chapter books because they have all these cool things like mystery and sleuthing and love. They also have secret keys and secret wardrobes. I liked the first one I got because it was about soccer and Fancy Nancy helped people score two goals!

What did you like most about participating in Read to Feed?

I liked that we got to help other people, and we got to read books.

What did you learn about how Heifer helps the families in their projects?

I learned that it doesn't give them just a milk carton, it gives them a whole entire cow.

Why should other students support Heifer International through Read to Feed?

I'd tell them because they get to help other kids and families and it's so great, it feels so nice and good!

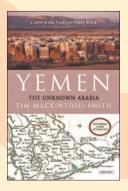
KATE MORELAND
1st grade, Lovett School
Atlanta, Georgia

LEARN MORE AT READTOFEED.ORG

THREE FAVORITES ON:

YEMEN

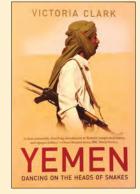
Yemen is one of the least-understood countries in the world, its culture especially clouded from outsiders by the fog of civil war. Here are three books to help you learn about the fascinating history and culture of Yemen, and the role it plays in today's geopolitical world.

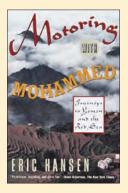


Yemen: The Unknown Arabia

By Tim Mackintosh-Smith







Motoring with Mohammed: Journeys to Yemen and the Red Sea

By Eric Hansen

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Robotics Team Supports Heifer Brick by Brick

By Whitney Bryson, World Ark contributor

he Fin-tastic Fish LEGO Robotics Team is proving girls really do run the world. Fourth graders
Ellie Grace, Lena Larson, Brianna Williams, Greta Babbitt and Nicole Williams from Albany, Oregon, named their team the Fin-tastic Fish for the water-inspired FIRST LEGO League competition season.

Thousands of students and teachers worldwide participate in FIRST, or For Inspiration and Innovation in Science and Technology, programs each year with a focus on STEM principles.

For the 2017-18 school year, teams were challenged to develop a research question on hydrodynamics. With an all-girl delegation, the Fintastic Fish asked how girls in developing countries might use microhydroelectric water power to improve their quality of life.

According to Lena Larson, the group researched how girls' lives are impacted due to the lack of access to clean water.

"Our team decided to design a real-world project and innovative solution that people — girls like us — could actually use to improve their lives," Lena said.

"We learned about international aid organizations, such as Heifer

International and Farmers-Helping-Farmers, that work to improve the lives of girls who live in remote villages in [developing] countries," said Greta Babbitt. "We wanted to discover how we could actually help girls like us have equal access to water and education. We all agreed just because you're a girl should not mean you should be prevented from getting an education."

To create a solution, the girls designed, built and programmed an autonomous robot using LEGO bricks. When placed in a small stream, the water current powers the robot to recharge batteries and small LED lights, which are safer to use than candles with open flames.

Representing Oak Grove
Elementary School, the Fin-tastic
Fish completed tasks and missions
during the state competition
held earlier this year at Oregon
State University. After presenting
their research and robot, the
team received the state Core
Values Championship Award
and was highlighted in a special
feature on FirstInspires.org.

"One of the four areas all FIRST LEGO League teams are judged on is core values, which encompasses good citizenship — sharing and giving back to others. We wanted to find a way our team



could demonstrate how much we value the importance to giving back to others," Greta added.

As a way to give back, the team held a bottle and can drive to support Heifer.

"In our research, we discovered the donor program Heifer offers for people living in countries throughout Africa," Brianna Williams said. "As our team discussed possible ways we could tie our research project to the core values, we discovered that people could donate hand water pumps to villages. We also liked how the subject of water availability

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fit within the scope of this year's international FIRST LEGO League research project of hydrodynamics."

Each girl collected bottles and cans throughout their homes and neighborhoods and accepted cash donations. As a result, the Fan-tastic Fish reached their goal of \$150 and donated a hand-powered water pump.

"Our team's ultimate hope is that people, especially girls like us, who live in developed countries will begin to understand the effects of poverty in the lives of others," Nicole Williams said.



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New Toilets Boost Attendance and Performance in Tanzanian Schools

By Mercy Nyanda, communications officer for Heifer Tanzania

ome primary schools in the Mbozi District of Tanzania simply didn't offer enough bathrooms for their students, a situation that had a negative effect on attendance rates. But Heifer International's Mbozi Farmers Livelihood Initiative is being credited with boosting both attendance and academic performance thanks to the construction of toilets.

Now, more students are showing up for class, studying harder and passing national exams, teachers from Shiwinga, Iwalanje, Isansa and Hatelele Primary schools report.

A total of 20 toilets have been constructed at each of these four schools, with urinals for boys and menstrual hygiene management rooms for older girls.

The pit toilets students relied on before were never adequate, Hatelele Primary School students Frank Kayange and Nahami Mwamkinga said. "The toilet pits were not enough for us. We even missed our break time because we had to wait for one hour to get into the toilets." And the rudimentary toilets were hard to keep clean, a big problem in a region prone to outbreaks of diarrhea and cholera.

"After completion of these improved toilets, they were handed over to us and our teachers and the Heifer team to ensure their cleanliness," the students said. "We were also taught how to make tippy taps that are already hanging outside



of each toilet. When we get out of the toilets, we wash our hands with clean water using the tippy taps and ashes to kill germs."

Isansa Primary School Head
Teacher Abel Kajinga said he's
particularly glad the new construction
caters to female students. "The girls'
toilet has a special room for older
girls to protect themselves," he said.
"This has helped the girls not miss
their classes during menstruation
now that they have a special room for
ensuring their hygiene throughout
the month. In the past, older girls
missed an average of four to five days
of school each month. The new toilets
have contributed to increased girls'

performance as they no longer miss their classes."

The Mbozi Farmers Livelihood Initiative is a five-year project implemented by Heifer Tanzania, Southern Highland Participatory Organization and the Mbozi District Council. The project aims to increase access to water and improve sanitation and hygiene facilities by building latrines and handwashing facilities at primary schools.

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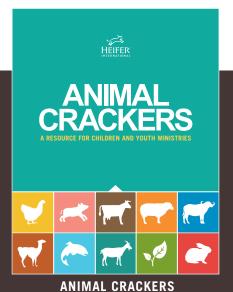


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first person building a future







Ojok Ivan Emmanuel, 17, and his brother Ronnie Owekgiu, 12, pile up clay bricks that will later be baked. Selling the bricks is one source of income for their family of six. Their family is part of the Gulu Women Dairy Farmers Heifer project in a region of northern Uganda that's suffered violence and political unrest. The boys' mother, Lily Atube, received a brown Guernsey cow in 2013 and has since brought financial stability to their household through milk sales.

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