

# AGRICULTURE AND FOOD SECURITY



One of the world's cruelest ironies is that among the hungriest people<sup>1</sup> on the planet are the farmers who grow the food we eat.

Nowhere is this more true than sub-Saharan Africa,<sup>2</sup> whose 33 million<sup>3</sup> farmers typically use seeds, tools, and farming practices handed down by their grandparents to eke out a meager harvest. Their crop yields measure roughly a quarter of the global average.<sup>4</sup>

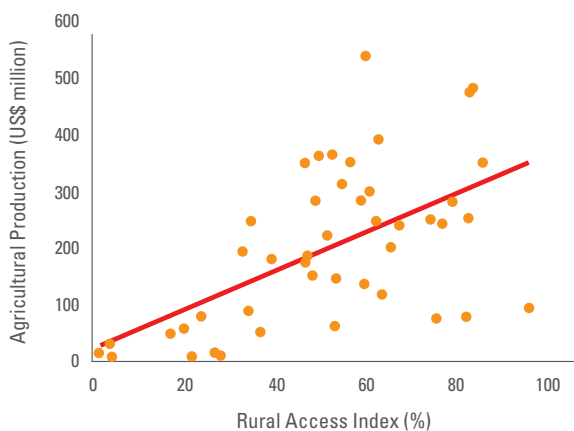
Women are particularly impacted by these challenges. In sub-Saharan Africa, over 66% of women's employment is in agrifood systems, compared to 60% of men's, and women make up well over 50% of the agricultural labor force in many countries across the region.<sup>5</sup>

**Researchers increasingly recognize one critical factor undermining these hardworking farming families' efforts: distance.**

The high-yielding hybrid seeds, modern fertilizers, and innovative farming practices that have boosted yields and incomes the world over are simply out of reach for the majority of Africa's smallholder farmers who live far from the nearest all-weather road,<sup>6</sup> will likely never be visited by an agricultural extension agent<sup>7</sup> nor access quality inputs.<sup>8</sup>

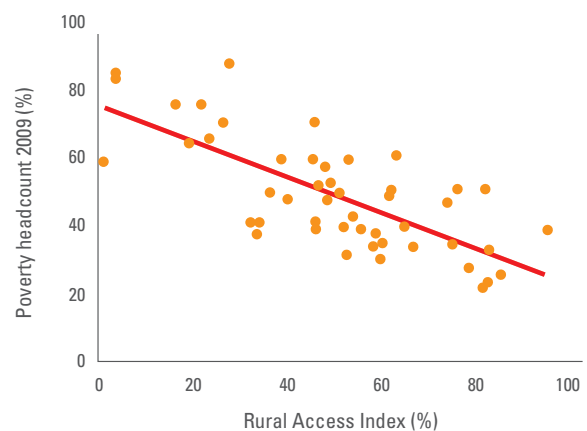
The relationship between access to transportation, poverty, and agricultural production is clear: The farther farmers live and the harder it is for them to access markets, the further they are from financial and food security.<sup>9</sup>

Kenya Agriculture Production and the RAI, by County



Agricultural Production increases as access to an all-weather road increases

Kenya Poverty Rate and the RAI, by County



Poverty decreases as access to an all-weather road increases

Source: Measuring rural access: Using new technologies. Washington, D.C. World Bank Group, 2016. <http://documents.worldbank.org/curated/en/367391472117815229/Measuring-rural-access-using-new-technologies>

## EQUIPPING FARMERS WITH BICYCLES

### We can help farmers grow a better future.

Since 2005, World Bicycle Relief has distributed and sold more than 361,000 bicycles to smallholder farmers and agrarian workers across rural Africa—helping farmers save time, access essential resources and markets, and diversify their livelihoods.

With a heavy-gauge steel frame and puncture-resistant long-wearing tires, the Buffalo Bicycle is designed for rugged conditions, heavy loads of up to 100 kgs, and grueling daily use in challenging terrains—yet costs under \$200. The bike's heavy-duty carriers help farmers transport more of their produce, more quickly, to sell it for a better price and reduce post-harvest loss. This can create a virtuous cycle, improving food security, finances, and health.

Farmers are not just receiving a tool—they are gaining access to a sustainable solution that builds resilience, productivity, and opportunity. During the severe drought in Zambia in 2023, households with bicycles reported a 43% higher monthly household income than those without, helping them maintain food security, including increased consumption of animal protein<sup>10</sup>.

### A rigorous randomized control trial on livelihoods and development in Zambia has found that with a bicycle:

- Livelihood group members make **22%** more markets visits per week.
- Business owners generated **53%** higher revenue per month
- Households scored an average of **12%** higher on dietary diversity scores, a measure of improved nutrition, and recorded better consumption of nutritious foods.

## PARTNERSHIP RESULTS

In a USDA-supported project led by Land O' Lakes International Development in Zambia, dairy farmers equipped with Buffalo Bicycles delivered **23%** more milk and earned **23%** more income. Previously, one-quarter of the milk produced simply spoiled before it could be delivered.

In a partnership with Access Agriculture, Entrepreneurs for Rural Access, in Uganda, farmers have seen increased efficiency, reduced transportation costs, and time savings, among other benefits.

Zambian households with bicycles saved an additional **4.2 hrs/** week in travel time, a **22%** reduction in travel time.



Because we focus on women farmers, our impact is multiplied. Research demonstrates that women spend more of their income on their children's health and education. **There is no more powerful lever for reducing poverty than improving women farmers' productivity.**



## CLIMATE CHANGE AND POPULATION GROWTH ADD URGENCY

The United Nations estimates that the global population will grow by 2 billion to 9.8 billion by 2050. More than half of that growth—a projected 1.3 billion<sup>11</sup>—would occur in Africa. Africa needs to boost its harvest to feed this growing population.

At the same time, climate change is reducing the amount of arable land in Africa<sup>12</sup> and Latin America<sup>13</sup>, forcing governments to do more with less. As rainfall patterns shift and temperatures rise, farmers across sub-Saharan Africa and much of Latin America need to adapt.

During the current drought in Southern Africa - one of the worst in decades - farmers who could not reach agricultural support centers struggled to access drought-resistant seeds and water-saving technologies. Our Buffalo Bicycles help farmers access improved seeds that are drought-tolerant; education on climate-smart farming practices; and pesticides that protect their crops against a changing and growing assortment of pests and build resilience by boosting farmer incomes and savings.

The benefits extend beyond increased income to their children, their community, and the planet. Farmers can grow their yields without growing their footprint, allowing us to protect more land from Congo to Colombia.



## PARTNERS



## ABOUT WORLD BICYCLE RELIEF

World Bicycle Relief partners with communities, especially women and girls, in rural areas to establish and manage a sustainable transportation ecosystem in order to improve people's access to critical poverty-reducing services and opportunities with gender integration. Given the scale of this challenge, we collaborate with governments to help them change the way systems operate and services are delivered to make them more accessible and impactful.

Together, we will work to identify access challenges and deploy community-led programming and purpose-designed bicycles in a gender-responsive manner to improve access to healthcare, jobs, markets, and education.

Over nearly 20 years, the lives of over 4 million women, men, and children have measurably improved through better access to resources and opportunities from the distribution of more than 800,000 Buffalo Bicycles and supportive programming. Leveraging extensive learning and a successful social enterprise, we are preparing to scale our impact with a continued focus on gender integration so that millions more can thrive through the Power of Bicycles.

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3 International Fund for Agricultural Development. "The Field Report." <https://www.ifad.org/thefieldreport/>

4 Food and Agriculture Organization of the United Nations. "Smallholders and family farmers." 2012, [http://www.fao.org/fileadmin/templates/nr/sustainability\\_pathways/docs/Factsheet\\_SMALLHOLDERS.pdf](http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/Factsheet_SMALLHOLDERS.pdf).

5 Food and Agriculture Organization of the United Nations. "The status of women in agrifood systems." 2023. <https://www.fao.org/gender/the-status-of-women-in-agrifood-systems/en>.

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7 Global Forum for Rural Advisory Services (GFRAS). Fact Sheet on Extension Services. 2012, [http://www.farmingfirst.org/wp-content/uploads/2012/06/Global-Forum-for-Rural-Advisory-Services\\_Fact-Sheet-on-Extension-Services.pdf](http://www.farmingfirst.org/wp-content/uploads/2012/06/Global-Forum-for-Rural-Advisory-Services_Fact-Sheet-on-Extension-Services.pdf).

8 Westengen OT, Haug R, Guthiga P and Macharia E "Governing Seeds in East Africa in the Face of Climate Change: Assessing Political and Social Outcomes." 2019. Front. Sustain. Food Syst. 3:53. doi: 10.3389/fsufs.2019.00053. <https://www.frontiersin.org/articles/10.3389/fsufs.2019.00053>.

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11 United Nations. "Population." UN | Peace, Dignity and Equality on a Healthy Planet, <https://www.un.org/en/global-issues/population>. Accessed 2021.

12 FAO Regional Office for Africa. "Climate change in Africa: The threat to agriculture." 2009, <https://www.unclearn.org/wp-content/uploads/library/fao34.pdf>.

13 Zhang, Xiao, and Ximing Cai. "Climate change impacts on global agricultural land availability." Environmental Research Letters, vol. 6, no. 1, 2011, <https://iopscience.iop.org/article/10.1088/1748-9326/6/1/014014/meta>.