AGRICULTURAL DEVELOPMENT

LIVESTOCK OVERVIEW AND APPROACH

Our goal: to reduce hunger and poverty for millions of poor farm families in sub-Saharan Africa and South Asia.

OUR MISSION
Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, we focus on improving people’s health and giving them the chance to lift themselves out of hunger and poverty. We focus on problems that have a major impact on people, but get too little attention and funding.

The foundation’s Agricultural Development initiative works to reduce hunger and poverty for millions of poor smallholder farmers in sub-Saharan Africa and South Asia. We focus on helping farmers increase their productivity while preserving and enhancing the viability of soil, water, and other natural resources. The initiative works in many areas, including developing improved seeds, helping improve soil quality, and developing policies that support small farmers. Livestock is an important component of the initiative’s work that addresses the challenges faced by those farmers who keep livestock as a way to earn income and provide better nutrition for their families.

WHY IS LIVESTOCK IMPORTANT TO SMALLHOLDER FARMERS?
Livestock is a key part of the overall farming system in developing countries and is critical to the livelihoods of more than 900 million poor livestock keepers in...
sub-Saharan Africa and South Asia. Of those who live in extreme poverty in sub-Saharan Africa and South Asia, about 60 percent own livestock, and they often depend on this livestock for a significant portion of their income.

These small farmers must contend with a variety of challenges that limit the productivity of their livestock, including shortages of quality feed and fodder; suboptimal nutrition and veterinary care; inadequate systems for breeding; and disorganized collection, transportation, and marketing systems.

Despite the importance of livestock to smallholder farmers, livestock initiatives have been grossly underfunded by international donors and national governments. Historically, livestock has received a very small share of agricultural funding (2–4 percent), and that share has decreased over recent years.

Population and income growth, increasing urbanization, and changing consumption habits are expected to boost demand for livestock products by more than 150 percent by 2050 in both sub-Saharan Africa and South Asia. At the same time, there is current demand that is not being met for food from animals in rural areas. Livestock productivity must increase to meet these growing demands.

Improving livestock production will make a dramatic difference in the lives of small farmers in these regions in four significant ways:

1. **As a source of income**: Improved livestock production can contribute significantly to household income through the sale of food such as milk and eggs, live animals, and skins as hides, as well as manure to be used as fertilizer for crops.

2. **As a source of nutrition**: Livestock products are important sources of protein and micronutrients, especially for women and children. These products provide micronutrients not found in other crops, including vitamin B-12, calcium, zinc, and riboflavin, which have been proven to improve child development and school performance.

3. **For farm productivity**: Livestock produces manure for fertilizing crops, provides power to haul and plow fields, and helps control insects and weeds.

4. **As an asset**: Livestock is commonly used as a “walking savings bank” for farmers who lack other ways to store wealth. Farm animals can also act as collateral, particularly among women who do not typically own land. Livestock can help develop financial security, provide regular cash flow, and allow farmers to hedge against risk and disaster.

**OUR GOAL AND APPROACH**

By helping smallholder farmers increase the productivity of their livestock, while preserving and enhancing the viability of natural resources, we aim to reduce hunger and poverty for millions of poor farming families in sub-Saharan Africa and South Asia. Our approach focuses on the following key principles.

**We concentrate our efforts on the countries and species where there is the greatest demand.** We concentrate on areas in sub-Saharan Africa and South Asia where most poor livestock keepers live and where we can have the greatest impact. Within these areas, we identified the most economically important species of animals for these farmers. Our research showed that cattle, chickens, and small ruminants (goats and sheep) represent the greatest opportunity. We will also explore potential support for water buffalo, given their prevalence in South Asia.

**We focus on women.** In sub-Saharan Africa and South Asia, women are key contributors to livestock production.
activities, from feeding and caring for animals to marketing and selling products. While women typically have limited support and little control over productive resources such as land, they can sometimes own and control livestock, especially small ruminants and poultry. Our work will increase income-generating opportunities for women.

We work to improve data collection. The lack of quality data about the contributions of livestock to households, the constraints on smallholder livestock keepers, and the market opportunities for livestock have proven to be major obstacles. They impede national, regional, and global understanding of the critical role livestock can play in poverty reduction and the opportunities for smallholders to use livestock to decrease hunger and poverty. Therefore, we look for opportunities to improve data collection and analysis to foster a greater understanding of the roles of livestock in reducing poverty, to increase investment in the sector, and to improve policymaking to benefit smallholder livestock keepers.

We work with key partners. Our goals can be accomplished only by working closely with our partners. We collaborate with a range of actors, including other donors; universities and research institutes such as the Consultative Group on International Agricultural Research (CGIAR) centers; multilateral organizations such as the Food and Agricultural Organization (FAO), the World Bank Group, and the African Union’s Inter-african Bureau for Animal Resources (AU-IBAR); international regulatory authorities such as World Organisation for Animal Health (OIE) and Pan African Veterinary Vaccine Centre (PANVAC); national players such as National Agricultural Research Systems (NARS) and National Veterinary Services; nongovernmental organizations (NGOs); and both the international and local private sectors.

We address environmental issues. While there are environmental concerns associated with raising livestock, there are also ways to abate livestock’s footprint. Within our grantmaking, we evaluate and plan for potential

Why Cattle, Chickens, and Small Ruminants?

Cattle, chickens, and small ruminants (goats and sheep) represent the majority of the opportunity for smallholder farmers. Within all species, there is significant room to increase productivity.

We invest most in dairy because cattle have the largest current and future value of production across the geographies in which we work. In India, for example, poor rural farmers produce more than 90 percent of the nation’s milk. In Bangladesh, low productivity of existing dairy cattle means that 85 percent of the population faces a shortage of milk. In East Africa, income generated through dairy production is a critical source of revenue for more than 2 million smallholder dairy farmers.

We invest in chickens because there are more than 17 billion chickens in sub-Saharan Africa and South Asia, and 90 percent of smallholders raise chickens. While poultry is an important source of income and protein for farming families in regions such as East Africa, one quarter of the chickens die from preventable diseases, particularly Newcastle disease.

We invest in small ruminants because they provide a high percentage of future growth potential. Small ruminants require low investment and are easy to raise and manage. Through targeting investments in small ruminants, we increase our reach to the poorest farmers, particularly women.

Goats are affordable and easy to raise, making them a good investment and reliable source of income for poor farmers (India, 2010).
Our grantmaking priorities are:

**Developing new and improved animal health products for priority diseases.** We have identified 10 priority diseases that cause significant loss for smallholders. We invest in the development of appropriate and affordable diagnostics, vaccines, and treatments to address these diseases.

**Creating catalytic change in the regulatory system.** To improve the quality of animal health products, as well as farmers’ access to them, we work to ensure a functioning and effective regulatory system for these products in sub-Saharan Africa and South Asia.

**Leveraging existing vaccine and drug manufacturers.** We work with a range of manufacturing partners in both the public and private sectors, locally and internationally, to ensure that there is an adequate supply of high-quality, low-cost products to address the priority diseases.

**Building models for delivery.** Working with NGOs and other partners, we pilot models for the delivery of animal health products and services to smallholder farmers. Once these models are proven, we engage partners such as the private sector and governments to expand the reach of the models to millions of farmers.

**2. Livestock Genetics and Reproduction**

The biggest gains in livestock productivity are possible through improved genetics and reproduction. We invest in genetic improvement efforts based on the benefits environmental impacts and develop interventions to mitigate the negative impacts and enhance the positive impacts. We are focused on helping farm families increase the productivity of their livestock while preserving and enhancing natural resources over the long term.

### Strategic Focus

Our livestock investments are concentrated in three areas: animal health, animal genetics and reproduction, and postharvest and markets.

#### 1. Livestock Health

One quarter of the animals owned by poor livestock keepers die from preventable and treatable diseases. Those diseases that do not lead to death can result in decreased productivity or can be passed on to humans, causing serious illness or death. Our investments in livestock health range from development of new tools and technologies to ensuring their delivery and access.

#### Priority Diseases

For animal health, we focus on 10 diseases that cause significant loss for smallholder farmers in sub-Saharan Africa and South Asia.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cattle</th>
<th>Small Ruminants</th>
<th>Poultry</th>
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<tbody>
<tr>
<td>Endoparasites</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Peste des Petits Ruminants (PPR)</td>
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<td>✔</td>
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<tr>
<td>Contagious Bovine Pleuropneumonia (CBPP)</td>
<td>✔</td>
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<tr>
<td>Ectoparasites</td>
<td>✔</td>
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<tr>
<td>Trypanosomes</td>
<td>✔</td>
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<tr>
<td>Contagious Caprine Pleuropneumonia (CCPP)</td>
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<tr>
<td>Newcastle Disease</td>
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<tr>
<td>Goat Pox and Sheep Pox</td>
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<tr>
<td>Rift Valley Fever (RVF)</td>
<td>✔</td>
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<tr>
<td>East Coast Fever</td>
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Helping Farmers in East Africa Make the Most of Their Dairy Business

Smallholder dairy farmers in East Africa have the potential to reap substantial benefits from the increased demand for milk in the region. But because these farmers lack access to production technologies, efficient farming practices, and links to markets, that potential has gone largely unfulfilled.

The foundation is providing support to Heifer International, along with the International Livestock Research Institute, TechnoServe, the World Agroforestry Center, and Africa Breeders Services, to work with 179,000 dairy farmers in Kenya, Rwanda, and Uganda to help them double their income, create sustainable dairy livelihoods, and improve their families’ nutrition.

The project works with dairy farmer business associations to develop milk collection hubs, many with chilling plants that can hold milk for pickup by commercial dairy delivery trucks. These hubs create the opportunity for farmers to sell to formal sector processors. In addition, they provide comprehensive services to farmers, including financial services, artificial insemination services, feed and fodder, and animal health services.

### Average Yield of Milk

![Average Yield of Milk Chart](chart.png)

- **Sub-Saharan Africa**: 0 liters per dairy cow per day
- **India**: 10 liters per dairy cow per day
- **China**: 20 liters per dairy cow per day
- **United States**: 50 liters per dairy cow per day
that farmers seek, and we ensure that these are adapted and appropriate for local conditions. Our investments in livestock genetics and reproduction include basic research in traits such as disease resistance, as well as ensuring that farmers have access to quality genetics at the right price. We work to leverage the most advanced technologies, when appropriate, to increase the benefit of these investments.

**Our grantmaking priorities are:**

**Developing new traits that address the key constraints of smallholders.** With our overall goal of increasing productivity, we first work to understand the specific problems faced by smallholders so we can invest in the development of improved breeds with the traits farmers are looking for.

**Creating catalytic change in both government agencies and the private sector.** We work with national governments, NARs, and the private sector to build capacity in specific countries for the adaptation and multiplication of genetic/reproduction research and development.

**Building models for delivery.** Working with NGOs and other partners, we pilot models for delivery of animal health services at the local level.

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**Keeping Livestock Healthy and Productive**

Millions of people living in extreme poverty depend on livestock for income, nutrition, manure for soil fertility, animal traction, and savings. An estimated 25 percent of these animals die each year from preventable diseases, severely hampering production and the benefits that farming families could gain from their livestock. While vaccines exist for some diseases, they are often not accessible, affordable, or easy for poor rural farmers to use.

The Global Alliance for Livestock Veterinary Medicines (GALVmed), with a grant from the foundation and the UK Department for International Development (DFID), works to make livestock vaccines, diagnostics, and medicines accessible and affordable to the millions in developing countries for whom livestock is a lifeline. GALVmed’s goal is to create sustainable animal health systems that will allow rural livestock farmers to identify and diagnose disease outbreaks, access vaccines, and administer treatments.

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*Halima, a dairy farmer, milking her cow (Bangladesh, 2008).*
genetics products and reproductive services to smallholder farmers. Once these models are proven, we engage partners such as the private sector and governments to expand their reach to millions of small farmers.

3. Postharvest Practices and Markets for Target Commodities
Smallholder livestock keepers struggle with disorganized marketing systems, the inability to link to markets, and a lack of access to the tools that would allow them to fully benefit from the sale of their goods. Furthermore, to ensure that they have sufficient surplus to sell, smallholders must prevent their products, primarily milk and eggs, from spoiling, spilling, or breaking before they can be sold at market. We work to promote reliable access to markets and good postharvest practices to help small farmers translate productivity growth into increased incomes and other benefits for their families.

Our grantmaking priorities are:

Enabling access to local, regional, and global markets.
We address market failures to ensure that farmers can adopt new practices, capture value from commodities, and link to stable markets. We help farmers improve their ability to meet quality and quantity commitments for buyers and facilitate partnerships between buyers, processors, and farmer organizations. We work to connect smallholder farmers to the formal sector as well as increase the benefits available from the informal sector. Our role in market systems is assessed based on the specific needs of the countries in which we are working.

Improving postharvest activities. We work to improve storage and postharvest practices, as well as management skills, to help farmers get the most from selling their livestock products.

GRANTS
Our investments to date total $133 million.

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<thead>
<tr>
<th>RESEARCH AND DEVELOPMENT</th>
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<tbody>
<tr>
<td>GRANTEE</td>
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<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Global Alliance for Livestock Veterinary Medicines (GALVmed)</td>
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<tr>
<td>Diagnostics for All</td>
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<tr>
<td>University of New England (UNE)</td>
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<td>University of Georgia Research Foundation</td>
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<th>AGRICULTURAL POLICY</th>
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<td>GRANTEE</td>
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<td>The International Bank for Reconstruction and Development (IBRD)</td>
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## ACCESS AND MARKET SYSTEMS

<table>
<thead>
<tr>
<th>GRANTEE</th>
<th>PROJECT NAME</th>
<th>DESCRIPTION</th>
<th>GRANT AMOUNT (U.S.)</th>
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<tbody>
<tr>
<td>Heifer International</td>
<td>East Africa Dairy Development Project</td>
<td>This project aims to increase the incomes of small dairy farmers by targeting interventions along the dairy value chain to link farmers in Kenya, Rwanda, and Uganda to growing milk markets. Specifically, it works with farmer-owned chilling plants and informal collection points to improve their businesses and create &quot;hubs&quot; of services, including animal health and artificial insemination services.</td>
<td>$42.9 million</td>
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<tr>
<td>BAIF Development Research</td>
<td>Sustainable Model for Delivering Artificial</td>
<td>This project works to test different models to determine a financially sustainable model for delivering livestock artificial insemination services and other inputs to poor dairy farmers in India, including women, to improve the genetics and productivity of their animals and increase farmers' incomes.</td>
<td>$6.3 million</td>
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<td></td>
<td>Insemination Services</td>
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<tr>
<td>CARE</td>
<td>Strengthening the Dairy Value Chain in Bangladesh</td>
<td>This project works to improve the livelihoods of small dairy farmers, mostly women, in northwest Bangladesh by aggregating producers to increase their access to extension services; increasing their access to quality animal health services, artificial insemination services, and other inputs; and linking them to formal and informal marketing systems.</td>
<td>$5.3 million</td>
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<tr>
<td>FARM Africa</td>
<td>Sidai Livestock Service Franchise</td>
<td>This project works to increase the incomes of poor livestock owners in Kenya and improve animal welfare and food security by establishing 150 veterinary franchises offering affordable veterinary drugs, vaccines, diagnostic tests, feed, and other inputs.</td>
<td>$5.2 million</td>
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## TO LEARN MORE
About Agricultural Development: