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Climate, Food Security & Growth

Ethiopia's Challenge with Livestock

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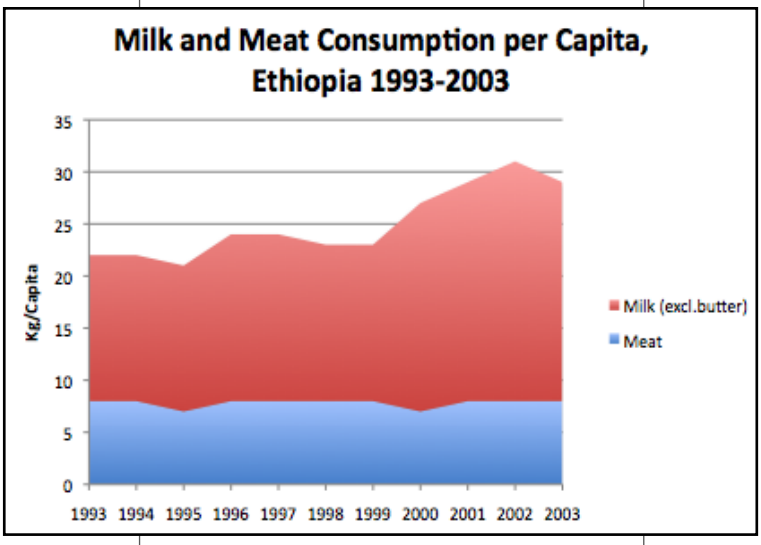
AS THE GLOBAL POPULATION grows and demand for animal products increases, the United Nations Food and Agricultural Organization (FAO) projects that the global meat and milk market will double by 2050. A number of developing countries are seeking to expand their livestock sectors to compete in the global agricultural economy. Ethiopia, home to Africa's largest livestock population and the continent's top livestock exporter (tenth largest livestock producer globally) is poised to join the race.

In recent years, the government of Ethiopia has made expanding and modernizing the country's meat, dairy, and leather sectors a priority, and Prime Minister Meles Zenawi has indicated that he is keen for foreign investment in Ethiopian agriculture, particularly for export. An official government paper on agricultural investment has stated: "While the contribution of the livestock industry to the country's total exports is currently low compared to its potential, this sector holds great promise as a source of export diversification for the future."

Ethiopia is not starting from zero. Currently, it is Africa's leading meat producer. Income earned from meat exports to the Gulf countries and South Africa contributes significantly to Ethiopia's gross domestic product. Ethiopia's livestock population is significant. In 2009, it included about 40 million cattle (the sixth largest cattle herd in the world, just behind Argentina), 25 million sheep, 23 million goats, and 150,000 camels, as well as tens of millions of poultry. Between 12 and 14 percent of Ethiopia's population are pastoralists.



Source: FAO

The Ethiopian government has also made agreements with a number of countries, including Saudi Arabia, to lease agricultural land for food production—mostly grain—for export back to their populations (and potentially their livestock). Such policies are controversial among Ethiopian civil society groups (which operate under significant government constraints) and other food experts, because of the devastating reality of food insecurity in the country.

Forty-seven percent of Ethiopia's children are currently underweight, subsisting on a diet that is heavily starch-based and lacking in key nutrients. Despite this, Ethiopian exports include regional agricultural staples such as cereals, pulses, and roots and tubers. Though the per capita consumption of these crops in Ethiopians' diet has declined in recent years, the Ethiopian government has intensified agricultural exports.

A quarter-century after a debilitating famine shocked the world and claimed the lives of a million people, providing enough food for all of its people remains a huge challenge for Ethiopia. And the specter of famine has not been consigned to history. In 2008, Ethiopia faced the prospect of another famine, after seasonal rains failed two years in a row (a phenomenon attributed to climate change). Thousands of livestock died in the ensuing drought; widespread deaths among the human population were staved off by an influx of emergency food aid.

As of November 2009, more than six million Ethiopians were in need of food aid. But Ethiopians' reliance on such aid isn't consigned to crises; as much as one-tenth of Ethiopia's population is dependent on external food aid, regardless of drought or other crisis.

It remains an open question whether Ethiopia can use its water, land, and crop production capacity to expand and "modernize" its livestock sector—for export and to supply the country's small, urban middle class—without forestalling or derailing prospects for sustainable, human development for its large and fast-growing population, particularly as global warming guarantees greater uncertainty.

Even though Ethiopia's CO_2 emissions rose 12 percent between 1990 and 2004, the overall total is still tiny, amounting to 0.0 percent, or a tenth of a ton of CO_2 per person per year. This is below even the sub-Saharan African average.

Nonetheless, efforts to intensify Ethiopia's livestock sector—and meet the demands of domestic food production—come amidst projections suggesting that with climate change the country will lack both the fertile land and water resources on which a growing, and intensifying, agricultural sector depends. Given this set of factors, it's unclear whether the pastoral system in its current form—including the growth of herd numbers—can be sustained even as many Ethiopians are already scrambling to access sufficient quantities of grazing land and fresh water.

No Fast Food Nation

A landlocked country in the horn of Africa, Ethiopia is anything but a fast food nation. No McDonald's or other international quick-serve chain yet operates, and the average Ethiopian eats fewer than 20 pounds of meat a year, one-tenth of U.S. consumption levels. These levels have remained relatively flat for years. Milk consumption, however, has been rising.

Ethiopia remains one of the poorest nations in the world, ranking 105th out of 108 countries for which the United Nations has indexed measures of human poverty. The country's people experience significant deficits in access to education, availability of healthcare and overall life expectancy. Average annual income is only about U.S.$200 a year per person, and more than 80 percent of Ethiopia's people are rural.

Most Ethiopians rely heavily on the surrounding environment for their livelihoods. More than 95 percent of Ethiopia's farmers operate near subsistence level, and are wholly dependent on rain rather than irrigation to produce crops and feed and water their livestock. For most of Ethiopia's rural poor, livestock, if they can afford them, remain an important safety net, a living bank and a hedge against hard times, for those with few other assets.

Like many poor countries, Ethiopia's economy is rooted in agriculture, which is the mainstay for 80 percent of the population. Almost half of Ethiopia's gross domestic product (or GDP) is derived from the agriculture sector, and agricultural products comprise 60 percent of the country's exports. Ethiopia's economy has been growing at a healthy clip in recent years, about 11 percent, well above the world average.

For the most part, systems of food production remain traditional and small-scale: herding for hoofed animals; backyards for poultry; and small plots of teff, wheat, barley, corn, and coffee. Ethiopia is Africa's largest coffee exporter, and coffee is a key foreign exchange earner for the country.

Pressing Needs, Ecological Deficits

Similar to many countries in Africa and the Middle East, Ethiopia's population of 85 million is young—nearly half is 14 or younger—and growing by 3.2 percent a year, one of the fastest rates in the world; it's expected to more than double by 2050. "Drought and famine continue to plague the country," writes Ethiopian population expert Sahlu Haile. "[A]lthough the government is investing a considerable amount of resources for social services, including health and education, this is being neutralized by the number of people needing these services."

Even as the exigency of increased domestic food production increases, Ethiopia's varied environment is vulnerable to climate shocks and new pressures. And as human numbers expand, still more pressure will be put on natural resources, including Ethiopia's dwindling forests, for grazing and farming land, as well as fresh water.

Overgrazing has degraded much of the country's rangeland, and Ethiopia has one of the highest rates of soil erosion worldwide, losing an average of two billion tons of soil each year. Farmers clear trees to meet increasing demand for grazing lands and farm fields. (One effect of Ethiopia's high population growth is that land has been subdivided among many family members, leaving many rural Ethiopians with tiny plots and land hunger.) From 1990 to 2000, slash-and-burn farming techniques contributed to a deforestation rate of 0.93 percent per year, or a loss of 140,900 hectares of forest annually. Much of Ethiopia's rangeland and fertile riparian (riverbank) habitat has been depleted by deforestation and overgrazing. Between 2000 and 2005, growing demand for land caused deforestation rates to rise to 1.03 percent.

Livestock's Long Shadow: and Climate Factors

Small-scale pastoral farmers migrate through the drought-prone arid and semi-arid regions of eastern, western and southern Ethiopia, tending cattle, sheep, goats and camels. Farmers in the lusher highland areas tend 75 percent of the country's livestock in crop-livestock systems, using the animals for draught power, transportation, sources of milk, nutrition in times of drought, and manure for fertilizer and fuel.

Despite Ethiopia being overwhelmingly rural, industrial animal agriculture is present in the country. Intensive, fac-

tory-style poultry facilities operate in areas with access to major markets in the capital, Addis Ababa. Many of Ethiopia's roads are unpaved, which constrains the development of industrialized or intensified animal agriculture across the country.

The Ethiopian government is undertaking initial steps to commercialize Ethiopia's poultry industry, a system that has been largely based on small-scale rural production. In rural communities throughout Ethiopia, women tend low-maintenance native flocks of five or six chickens. While chickens are a preferred farmed animal—since they subsist on small plots of land and scavenge for food, requiring little in terms of land, feed or water—native breeds are low yielding and produce only 30 to 80 eggs a year. ELFORA is the primary force pushing the sector towards commercialization, and it currently operates a modern poultry farm and chicken abattoir in Debra Zeit, as well as supplies farmers with day-old hatchlings.

ELFORA Agro-Industries PLC opened its doors in 1997, operating as the country's sole contemporary livestock facility. ELFORA's main focus is the poultry sector, running poultry farms and chicken abattoirs, as well as providing the live chicks. ELFORA also has modern ranches that can hold 65,000 cattle and 400,000 goats and sheep, and operates feedlots and slaughterhouses throughout the country. It supplies markets not only with live cattle, sheep and goats but also frozen meat products and processed foods like chicken sausage and canned vegetable soup; it also sells staples such as cereal and pulses.

ELFORA sells its products to Ethiopian supermarkets, which serve the country's middle class, and its growing appetite for meat, as well as to the Addis Sheraton and Hilton hotels, Ethiopian airlines, colleges and hospitals. ELFORA also has a lively export trade, shipping products to, in Africa, Cote d'Ivoire, Congo Brazzaville and Egypt, as well as Saudi Arabia, Dubai and Yemen.

To date, the most significant contribution the Ethiopian government has made to the dairy industry remains the creation of the Dairy Development Enterprise program, which operates collection points throughout the country for both informal and formal sources of milk. The Ethiopian dairy industry has been largely resistant to commercializing forces. While intensive dairy farms, privately-owned or state-run, do exist in the urban and peri-urban areas surrounding Addis Ababa, the industry remains largely reliant on small-scale production.

At present, livestock represents 18.85 percent of Ethiopian GDP, a figure the government considers low when compared with potential output. This year for example, the government hopes to double the income it earned from 2008's live animal exports—nearly 300,000 animals—whose sales grossed $40 million.

In addition to increasing these activities, the government is promoting diversification within the livestock sector. According to Berhe Igziabher, head of Ethiopia's Animal and Plant Regulatory Board, "the country plans to transform the old and backward type of animal husbandry into a modern ranching system and export processed meat, hides and skin and other leather goods rather than live animals." In 2008, Ethiopia earned about $100 million from leather exports, and plans to almost double that in 2009. In addition to developing existing pastoral livestock systems, increasing demand for meat, both domestic and foreign, is pushing Ethiopia's industrialization of the livestock sector.

Pastoral Growth?

Those who believe Ethiopia should intensify its livestock sector—including the government, many international donor agencies and agribusiness—consider it an important, and underdeveloped, resource to be exploited. Advocates also suggest that this intensification and modernization will generate jobs, help alleviate poverty, and increase Ethiopia's GDP.

The government recently established the Ethiopian Meat and Dairy Technology Institute to facilitate the growth of modern dairy farming. It also has plans to assist pastoralists deal with the risks of climate change by offering feed, water and veterinary services in each of Ethiopia's districts.

USAID launched a project in 2003 to help modernize the industry by improving market access to small-scale farmers. The organization connected pastoral producers directly with livestock exporters and policy makers to help streamline the process and reduce excessive ownership exchanges. USAID is also working to support greater livestock production levels by developing the country's marketing capacities and veterinary services.

But such efforts will not occur in a vacuum. Industrial-scale animal agriculture requires significant resources in terms of land, water and grain, and has far-reaching environmental and social impacts. In 2005, the news website Allafrica.com ran a story with this headline: "Ethiopia: land degradation to reduce livestock population by 10%." Some studies suggest that in adapting to climate change, Ethiopians will move away from cattle to smaller, more easily maintained animals like goats and sheep, which can cope with higher temperatures and more varied, and irregular, forage. This research also indicates that smaller operations will prove more resilient than larger ones, and smaller farmers may in fact earn more income—at less risk.

Researchers indicate that Ethiopia will have to increase the yield from cereal production significantly given demands for food from its expanding population, and anticipated changes in diet. Alternatives to such increases in productivity would entail expanding land used as pasture or for crop

As the United Nations Framework Convention on Climate Change (UNCFCC) concluded in Poznan, Poland, 5,000km south in Ethiopia, smallholder farmers in the city of Nazareth (*Adama*) provided their testimonies at a recent workshop on how the changing climate is impacting on their lifestyles and livelihoods.

"My father, at any given time, kept around 100 head of cattle, but today I am forced to keep only 15," explained Fitala Lemu, a livestock keeper from Ethiopia's Oromia state. Lemu is one of many millions of African farmers experiencing the effects of climate change first-hand. Rising temperatures and prolonged dry spells have resulted in shortages of grass and water, while rains between January and September have become more erratic. Sometimes the rains are too heavy, causing serious floods, which destroy crops, devastate infrastructure and sweep away livestock."

production, at the expense of Ethiopia's shrinking forests. One set of researchers, assuming GDP growth of between 5 and 10 percent a year to 2030, anticipate that per capita consumption of cereals would be 154 kilograms a year in 2030; meat will be between 14 and 20 kg a person a year (up from current) and milk, 40 to 60 kg a year.

Even if demand for meat didn't grow at all, and the population increased was of the medium variant (so not the highest, not the lowest), the increasing size of the population means that meat demand will double by 2030, and milk demand triple from 2005 levels. This means a needed increase in cereal production—for human and animal consumption—of between 22 and 44 million tons by 2030. Cereal yield would have to double, too, under these same assumptions, even if per capita consumption of cereals and meat didn't increase from 2005 levels.

Climate Realities

"The poor do not have the necessary technology and resources . . . to be able to change and adapt" to climate change, Prime Minister Zenawi said in early 2009. "Climate change is thus an additional reason why sustained and fast economic growth is a matter of life and death for our country," he added.

According to the Intergovernmental Panel on Climate Change (IPCC), a rise in one degree Celsius by 2050 will put 75 million to 250 million people in Africa at risk of increased water stress. If the temperature increases by two degrees Celsius, a scenario considered likely, up to 600 million Africans will face this risk.

Though contributing little themselves to global greenhouse gas emissions, developing countries are and will be disproportionately affected by these worldwide trends in climate change. In Ethiopia, the reality is no different. According to the National Meteorological Agency, Ethiopia will experience climate change through altered patterns of precipitation and temperature increase.

The Hadley Center for Climate Change projects that arid and semi-arid regions will increase by 60 to 90 million hectares throughout sub-Saharan Africa by the end of the century, in which time a vast majority of Ethiopia's land will be considered drought prone.

A recent study found that lack of land is the major obstacle to farmers adapting to global warming. Other major issues identified by farmers were lack of information, credit, labor and water, as well as soils lacking in productivity. Noting that a large percentage of Ethiopia's people live within the country's mountain regions, Tewolde Berhan Gebre Egziabher, who heads Ethiopia's national environmental protection agency, told the inaugural meeting of the National Forum for Climate Change: "[O]ur presence changes the delicate components of the environment into vulnerability, our land has been degrading fast, and our lives with it."

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