

RICH APPETITES:

HOW BIG PHILANTHROPY IS SHAPING
THE FUTURE OF FOOD IN AFRICA



Companion Guide

EPISODE 1: THE FOUNDATION



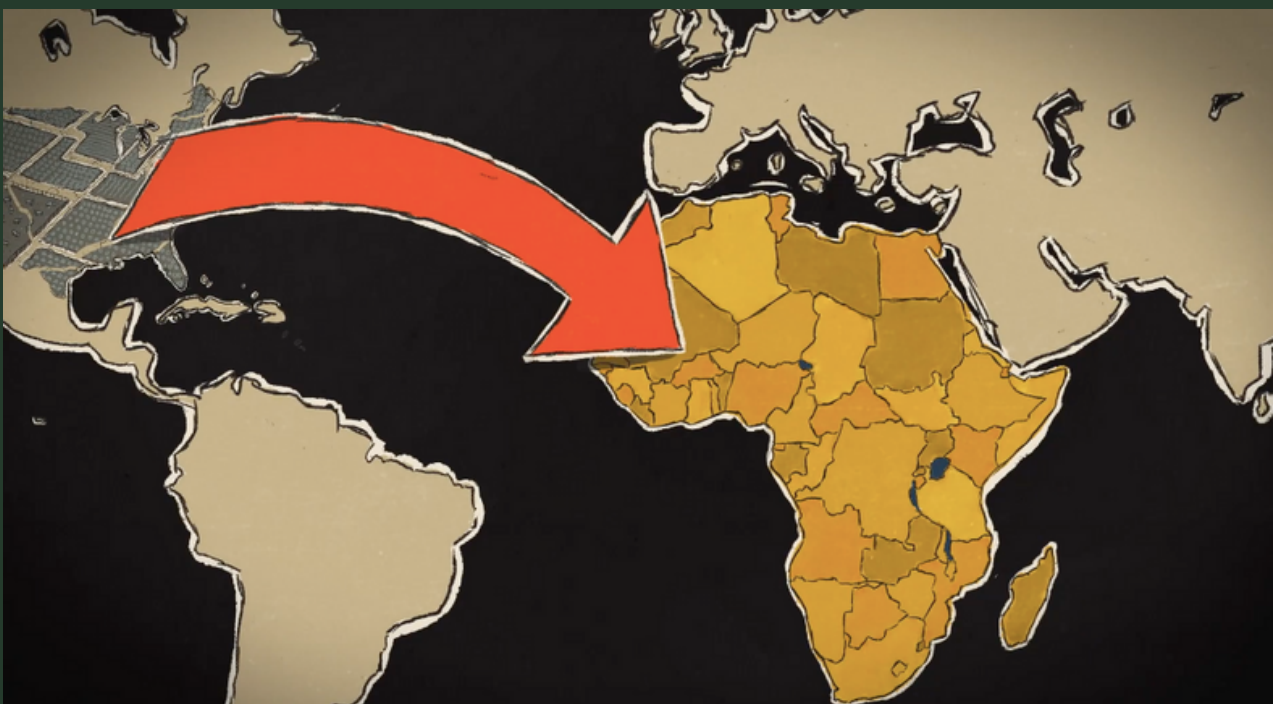
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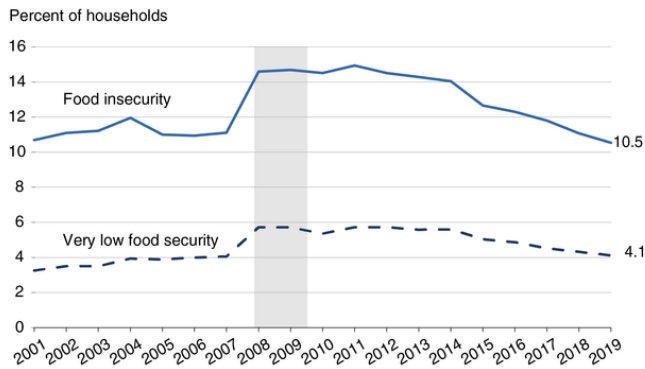
Claim 1: “The United States has the most efficient and productive agricultural system in the world!”

Reality: It is true that US agriculture is highly productive—at least, according to conventional metrics that focus exclusively on crop yields. But these increased yields **have not and cannot solve hunger and food insecurity**, which are much deeper economic and structural problems. Additionally, the focus on crop productivity has led to an **extremely inefficient allocation of ecological and financial resources**.

Higher yields do not reflect the overall health of the food system or the American people. US farm output was 2.9 times higher in 2017 than in 1948, largely due to mechanization and the use of chemicals.^[1] Yet as of 2019, approximately 10 percent of US households, upwards of 35 million people, were food insecure.^[2] Food insecurity rates are highly responsive to economic downturns and recessions (see Figure 1) --not to agricultural productivity rates.

Furthermore, yield-centric metrics do not differentiate among crops based on nutrition, destination, or use. The highest yields are seen in commodity crops, like soy, wheat, and corn, that are not primarily destined for direct human consumption. For example, most corn (maize) grown in the US is used for animal feed or ethanol production.^[3] Large-scale production of these crops is sustained through heavy taxpayer-funded subsidies from the US government (in other words, they are not as economically “efficient” as they might seem).^[4]





Notes: Food insecurity includes low and very low food security. Shaded bar indicates the 2007-09 recession.
Source: USDA, Economic Research Service using data from Current Population Survey Food Security Supplement, U.S. Department of Commerce, Bureau of the Census.

Figure 1: Impacts of global recession on food insecurity

Source: <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartid=99304>

The pursuit of higher yields as a central goal has also had numerous negative consequences, both for communities and the environment.

Impacts on land tenure, labor, and rural communities:

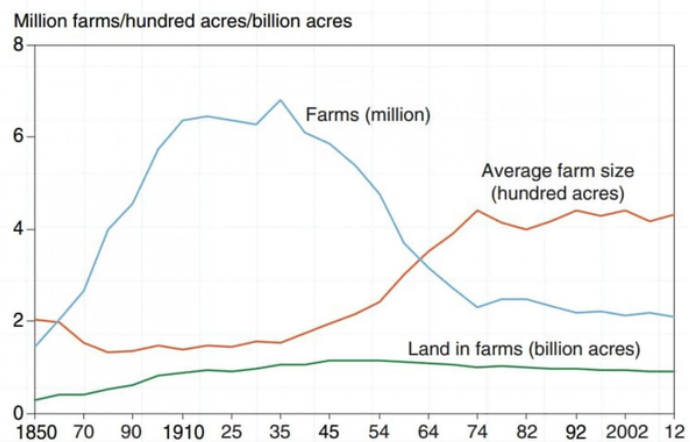
Government policies, infrastructural development, corporate pressures, and other factors combined to increasingly consolidate land and agricultural production over the course of the 20th century. During World War I, the US encouraged farmers to produce record yields of crops and livestock in service of the war effort. The continued emphasis on productivity after the war led to a glut and a vicious cycle of low prices, debt, and overproduction. By the 1930s, between decreasing prices and the effects of the Dust Bowl on certain areas of the country, many farmers went bankrupt and lost their farms.^[5] In spite of some attempts by the government to reduce overproduction, farmer bankruptcy rates increased steadily until World War II.^[6]

During and after World War II, the US government pressured farmers once again to increase yields.^[7] At an accelerating rate from the 1940s and 50s onward, the number of farmers decreased while the average farm size increased (see Figure 2). The number of family farmers decreased further from the mid-20th century onward, from 7.6 million in 1950 to 2.06 million in 2000.^[8] Increased mechanization over the same period has also led to decreases in the numbers of hired farmworkers, from 2.33 million in 1950 to about half that in 2000.^[9]

The aggressive pursuit of surplus and higher yields ramped up even more under President Nixon's Secretary of Agriculture, Earl Butz, who pushed farmers to plant "from fencerow to fencerow" and systematically dismantled government protections for farmers established in the New Deal era.^[10] This resulted in the overproduction, collapsing prices, and record debt and foreclosures that characterized the farm crisis of the 1980s.

Farmers have long been one of the most at-risk populations for depression and suicide. During the farm crisis, the suicide rate among farmers peaked at 58 suicides per 100,000 farmers in 1982.^[11] Facing continued issues of mounting debt and decades of rural crisis, more than 450 farmers across the Midwest died by suicide from 2014 to 2018.^[12] According to 2016 data collected by the National Violent Death Reporting System, the suicide rate among farmers was 43.2 out of 100,000.^[13] (For comparison, the average rate for the US population in 2017 was 18 suicides per 100,000 people).

Farms, land in farms, and average acres per farm, 1850–2012



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture.

Figure 2: Changes in farm size and number over the 20th century

Source: <https://www.iowaagliteracy.org/Article/Family-Farms-Then-and-Now>

Impacts on the environment:

As of 2018, agriculture directly contributed 10 percent of all US greenhouse gas emissions (amounting to 698 million metric tons of CO₂ equivalent).^[14] Indirectly, its impact is far greater, through food processing, fertilizer production, and transportation. As estimated by the Intergovernmental Panel on Climate Change, when factoring in these related industries, global agriculture is responsible for 21–37 percent of all greenhouse gas emissions.^[15]

Worldwide, the expansion and intensification of industrial agriculture is the number one contributor to biodiversity loss.^[16] Excessive application of fertilizers containing nitrogen and phosphorus leads to nutrient pollution and algal blooms that create dead zones in bodies of water--most notably, the Gulf of Mexico.

Meanwhile, the drinking water of millions of Americans living in or near farming communities across the country is contaminated by dangerous amounts of nitrates and coliform bacteria from fertilizer and manure.^[17] And farmworkers--often immigrants--are disproportionately exposed to the hazards of chemical pesticides and fertilizers.^[18]

Claim 2: “The Green Revolution reduced world hunger!”

The reality: The Green Revolution did dramatically increase the yields of key cereal crops in countries where it operated. But, like in the US, **increased yields did not eliminate hunger**, either globally or in Green Revolution countries. This is because food access depends not only on the sheer quantity of food produced, but also on its economic availability.

What was the Green Revolution?

In short, the Green Revolution sought to apply the technologies and tools of US industrial agriculture in the Global South--an effort financed by large philanthropic foundations, namely the Rockefeller and Ford Foundations. It hinged on five main pillars: 1) high-yielding seed varieties, grown as monocultures, 2) chemical inputs, including synthetic fertilizers and pesticides, 3) mechanization, 4) irrigation, and 5) public science institutes that connected farmers with research through extension services.



The conditions that made the Green Revolution possible began in the early 20th century, with corporate consolidation and the establishment of huge tax-exempt philanthropies by industrial capitalists.^[19] Additionally, its emphasis on industrial agricultural methods hinged on the development of nitrogen fertilizers, produced from a fossil fuel-intensive method of artificial nitrogen fixation that was first used to produce ammonium nitrates used in explosives during World War I and was then converted toward agricultural applications after the war.



Borlaug and his "wheat apostles"
(Source : University of Minnesota)

The Green Revolution officially began in the 1940s in Mexico, when the Rockefeller Foundation invested in the Mexican Agricultural Program. This occurred in the context of the election of the anti-Communist president Manuel Camacho, who forged strong ties with the US and with the Foundation. In 1944 the young biologist Norman Borlaug, later called the "Father of the Green Revolution," was hired by the Mexican Agricultural Program, and in 1954 he developed dwarf "miracle" wheat stocks that permitted higher yields. The emphasis on wheat (rather than maize, which is more widely grown and consumed in Mexico) benefited commercial rather than small-scale farmers, as demonstrated by the fact that in 1960, wheat yields were 50 percent higher on private properties (larger than five hectares) than on ejidos (communal agricultural land) and small private properties.^[20] Thus, the Mexican Agricultural Program aligned with the needs of a very particular group of farmers, whose resources were greater and who tended to be located in Northern Mexico.

From there, the Green Revolution was instituted in numerous Asian countries, including India and the Philippines, from the 1950s to the 1970s. At its peak in the 1960s and 1970s, the Green Revolution was expressly aimed at curbing the spread of communism into poorer and rural areas in the Global South.

The term itself was coined by William Gaud, of the US Agency for International Development (USAID), in 1968 at a meeting of the Society for International Development in Washington, D.C. Describing increases in global food production as a result of US and philanthropic funding for fertilizer, irrigation, and hybrid seeds, Gaud stated ^[21]:

"These and other developments in the field of agriculture contain the makings of a new revolution. It is not a violent Red Revolution like that of the Soviets, nor is it a White Revolution like that of the Shah of Iran. I call it the Green Revolution."

The fear of communism was also made explicit within the Rockefeller Foundation. The Board (including John D. Rockefeller III, during his tenure from 1946 to 1956) believed that agricultural development would reduce population growth in Asia--seen as a key factor in increasing impoverishment and hunger and making people more amenable to communism.^[22]

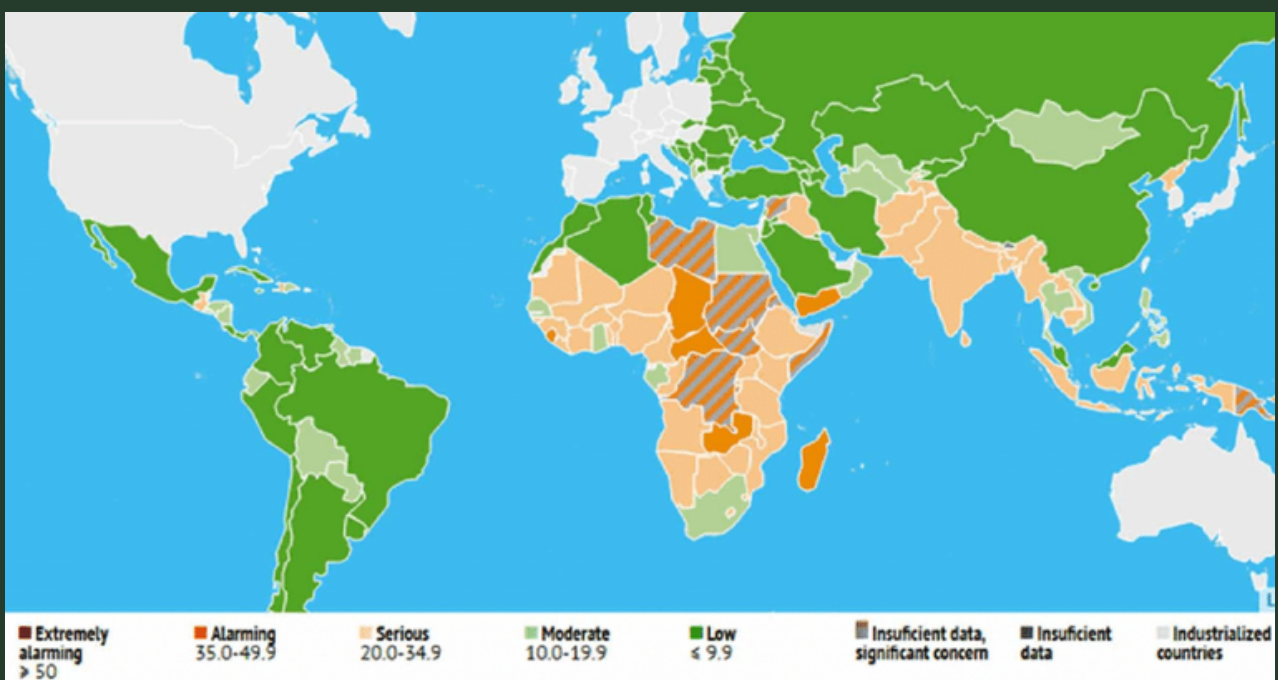
The impacts of the Green Revolution:

With the application of industrial methods (especially fertilizer use) in much of the Global South, the food available per person in the world rose by 11 percent over the two decades of the Green Revolution, while the estimated number of hungry people fell from 942 million to 786 million – a 16 percent drop.

However, there are a number of critiques of these statistics and their attribution to the Green Revolution. In India, yields increased in this period due to factors not directly linked to the Green Revolution, including increased precipitation and market prices that compelled farmers to plant more land in commodity crops.^[23] Furthermore, the inputs used in Green Revolution agriculture were highly dependent on subsidies and price supports. Under a food self-sufficiency program in the Philippines that began in the mid-1960s, price supports for rice increased by 50 percent. In Mexico, the government purchased domestically grown wheat at 33 percent above world market prices, and India and Pakistan paid 100 percent more for their wheat.

Because of the high cost of these subsidies and price support programs, the US government increasingly supplanted philanthropic foundations in assuming the Green Revolution's fiscal commitments through the 1960s – amounting to \$3 billion a year in the mid-1960s.[24] With the end of the Cold War and the rise of neoliberalism and Structural Adjustment Programs, this level of governmental support dried up; this increased the costs to farmers of inputs and therefore led to increased indebtedness.[25]

Although India is widely viewed as a Green Revolution “success” story, increased productivity also did not translate into dramatic reductions in hunger. As of 2006, 21.7 percent of the population was estimated to experience hunger. This marks only a very modest decrease from estimates of 25 percent in the 1970s, when the Green Revolution was still taking hold.[26] Largely due to government-sponsored programs, the rate of hunger decreased to 14 percent in 2020--yet this is still extremely high, comprising 189.2 million people, and means that India ranks 94th out of 107 countries on the Global Hunger Index, despite the production of cereal grains continuing to increase.[27]



The 2016 Global Hunger Index (GHI) (source von Grember et. al., 2016)

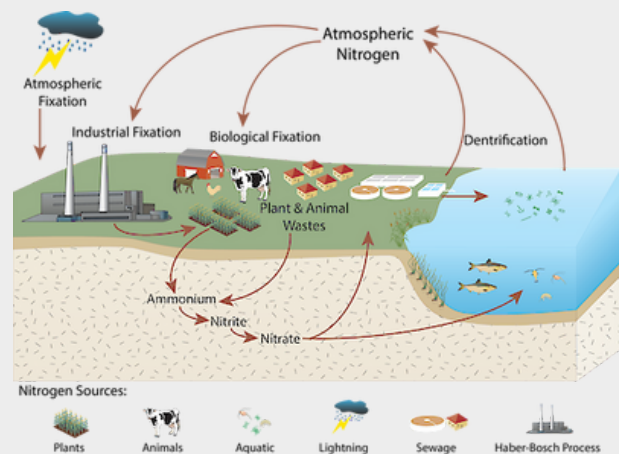
The Green Revolution has also caused numerous environmental problems, further eroding farmers' resilience. Desperate attempts to reap higher and higher yields led to a host of cyclical problems, such as the loss of biodiversity and the increased vulnerability of plants to disease. Increased pesticide use led to resistant strains of pests and as well as insect vectors of human and animal disease in the same environment.[28]

To combat the resistance in pests and achieve desired yields, farmers across the globe have been encouraged to use more virulent pesticides[29] and/or to increase the dose of pesticides, resulting in higher amounts of toxic residues in soil and food consumed by humans and animals worldwide.[30] Consequently, the overuse of toxic pesticides over the last four decades of the Green Revolution practice resulted in soil degradation, water pollution, and human health problems. However, studies show that these technological solutions, coupled with governments' Green Revolution strategies, failed to benefit farmers.[31]

High-yielding varieties are also extremely water-intensive. Historically, civilizations across the globe relied on rain-fed crops which secured food, nutrition, water and soil health for their communities. In places that experienced periodic droughts, more drought-tolerant crops were grown alongside other cereals to minimize the impacts and ensure food supply, even in bad years.[32] Smallholder farmers developed ingenious ecological methods to manage and conserve natural resources, including water. However, the Green Revolution marked an end to such conservation practices by moving towards a culture of extraction. After 1970, India witnessed a shift from traditional rain-fed millets, oilseeds, and pulses suitable to local environments to remunerative and irrigation-intensive crops, such as sugar cane and rice. This led to 1) increased run-off of soil nutrients [33], 2) a rise in malnutrition, due to the decline in nutrition-rich indigenous crops [34], and 3) water stress and related conflicts between regions.[35]

Finally, the increases in yields from the Green Revolution and industrial agriculture track with attendant increases in the use of fossil fuels—especially from nitrogen fertilizers.[36] For most of human history, nitrogen was one of the main limiting factors of agricultural production. Nitrogen comprises 78 percent of the atmosphere, but in a form that is unusable to plants. In the late 19th and early 20th centuries, a rush for nitrogen-rich guano and sodium nitrates transformed Latin American economies and transnational labor relations.[37] And then, during World War I, Fritz Haber and Carl Bosch developed a process for using hydrogen and atmospheric nitrogen, plus natural gas and water, to synthesize ammonia (NH_3), which is more readily usable by plants.[38] This is called **industrial fixation**, as opposed to biological fixation, which occurs in “closed systems” when legumes’ roots form symbiotic relationships with soil bacteria that can process nitrogen into ammonia. Industrial fixation now forms the vast majority of nitrogen fixation that happens on Earth.

From the perspective of climate change, the problem is that industrial fixation requires huge amounts of energy from fossil fuels. The Haber-Bosch process relies on high temperature, high pressure, and hydrogen atoms ripped from fossil fuels. It burns natural gas (3 to 5 percent of the world's total production)[40] and accounts for approximately 1.2 percent of the world's carbon emissions.[41] Additionally, nitrogen fertilizer application on farms has increased emissions of nitrous oxide (N_2O), a greenhouse gas with a warming potential considerably higher than CO_2 . [42]



Conceptual diagram illustrating the nitrogen cycle, including the Haber-Bosch process. (Source : Catherine Ward, Integration and Application Network, ian.umces.edu/media-library/)

Overall, the Green Revolution increased farmers’ vulnerability to ecological problems (like years with low rainfall) and global prices of fossil fuels and chemical inputs. This has led to widespread unpredictability about the continued ability to keep up with and afford the demands of the industrial agricultural system.

While the Green Revolution transformed agriculture in much of Latin America and Asia, its proponents suggested that it bypassed Africa. Although this was not strictly true, Green Revolution-style methods did not take hold in most of the continent, due to various ecological, social, and political particularities, as well as changes in the global economy (including the impacts of structural adjustment on African states and agricultural systems).[43]

Thus, in 2004, Kofi Annan, then-Secretary General of the United Nations called for a “uniquely African Green Revolution.”[44] Taking up this call, the Gates Foundation and the Rockefeller Foundation founded the Alliance for a Green Revolution in Africa (AGRA) with an initial grant of \$150 million in 2006 [45], claiming that this “Green Revolution 2.0” would extend the yield gains of the first Green Revolution to Africa, while learning from its failures

Claim 3: “AGRA is helping African farmers.”

The reality: AGRA has likely benefited some farmers in Africa (especially those who are wealthier, larger-scale, and male commercial farmers), but has **overlooked and/or actively harmed many more**—not to mention food and farming systems as a whole.

Since 2006, the Gates Foundation and other donors have invested nearly \$1 billion in AGRA, claiming to help African farmers and transform African agriculture.[46] But from its inception, AGRA has been criticized by many civil society organizations and farmers’ associations in Africa. Even early on, African farmers and environmentalists were raising concerns about numerous aspects of AGRA, namely:

- AGRA’s promotion of industrial agriculture has systematically undermined food sovereignty and African knowledge systems, seeds, and self-reliance. As laid out in the Declaration of Nyéléni, signed in Selingué, Mali, “food sovereignty is the right of people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems.”[47]



The Nyéléni Forum on Agroecology, 2015 (Source - Flickr.com)

- AGRA seeks to create private-sector opportunities in African agriculture and attempts to make agricultural systems function exclusively as a business. This includes directing funding to lobbying groups that push for national seed commercialization laws, which make it so that farmers in some places can no longer use their own seeds and are encouraged to rely on expensive high-yielding seeds. It also includes opening markets for expensive, harmful chemicals, which increase farmer debt and dependency.
- AGRA has also come under fire for promoting genetically modified organisms (GMOs), which are heavily debated on ecological, safety, and socio-political grounds.[48] Specifically, AGRA supports policy and advocacy efforts that alter African legal regulations and policies in favor of seed privatization—often including GMOs.[49] When AGRA began, only South Africa allowed the commercial production of GMO crops; even now, only a handful do, but many are developing confined field trials and allowing GMO research.[50]



Bill Gates, promoter of GMOs in Africa (Source - <https://revolutionaryfrontlines.wordpress.com>)

After fifteen years, additional critiques of AGRA continue to emerge, including that it has failed to meet its own objectives. AGRA initially promised to increase incomes and yields for 20 million smallholder farming households by 2020 (this goal has since been revised to 30 million farmers in 11 countries by 2021).[51] Specifically, it claimed that its Integrated Soil Fertility Management programs would directly benefit 9 million smallholder farmers and indirectly benefit 21 million. But a 2020 report based on AGRA's own progress reports found that AGRA programs directly benefited fewer than 2 million farmers.[52] Of those, most were mid-scale farmers (with landholdings of 5-100 hectares).

Recent reports have shown that yields remain comparatively low when small-scale farmers apply Green Revolution technology.[53] Many of these technologies are better suited for larger or “emerging” farmers able to take advantage of economies of scale, and/or only have higher yields for a short period of time and in optimal environmental conditions. For example, in Rwanda—often held up as an AGRA success story—only a wealthy minority of farmers have been able to adhere to the strict agricultural intensification mandates imposed by the central government.[54] While the country has experienced increased yields and reduced poverty rates (by conventional measures), AGRA's interventions in Rwanda have increased rural landlessness, replaced polycultures with monocrops, and jeopardized land tenure security.[55]

In contradiction to what it claims, AGRA has not reduced malnutrition, hunger, or poverty in the countries where it operates, and may in fact be contributing to exacerbating these issues. In many countries, the number of hungry people actually increased in the AGRA period. In Kenya, the number of hungry people increased by 4.2 million during the AGRA period and proportionately remained at about the same level. In Tanzania, the number of undernourished people increased by four million from 13.6 million for the period 2004–06 (pre-AGRA) to 17.6 million for the period 2016–18.[57]

Finally, AGRA's monitoring and evaluation has been inadequate. They have been reluctant to share program evaluation reports, doing so only after considerable public pressure and Freedom of Information Act requests.[58] The evaluation they eventually released, for the years 2017 to 2020, included very limited baseline data and no data for the first 10 years of programming.[59] Moreover, the evaluators suggested that AGRA had not met most of its targets related to systems development: only 33 percent of the total direct farmer reach had been achieved, and farmer-level results were unsustainable due to highly subsidized delivery models and incentives.[60] And while their most recent annual report from 2020 claims that they have directly "reached" 10.1 million farmers and indirectly "touched" 44 million farmers, they rely exclusively on these kinds of non-specific verbs, which do not give any real sense of through what mechanisms they have been working with farmers, nor any real demographic information on the farmers they claim to be helping.[61]

So whom is AGRA actually benefiting?

The short answer: Large agribusiness corporations and private companies are gaining a foothold in African agriculture.

The long answer: The Bill & Melinda Gates Foundation (BMGF), the largest private charitable foundation in the world and the largest donor to AGRA, is pioneering a form of philanthropy that has come to be called **philanthrocapitalism**. Unlike earlier models of philanthropy that gave money to the arts, libraries, and other public endeavors, philanthrocapitalism is based on an expectation of long-term financial returns or secondary benefits from investments in social programs.

Of many meanings given since it was coined in 2006, the term philanthrocapitalism can be broadly understood as a tactic of billionaire philanthropists to establish the profit motive and market mechanisms as the best means of achieving the public good--and to generate additional prosperity through so-called "charity." [62]

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- [49] See AGRA (2017), [Seeding an African Green Revolution: The PASS Journey](#) for an example of AGRA's policy interventions. It is very difficult to trace direct engagements by AGRA in drafting explicitly pro-GMO legislation, but it is well-established that they have supported broader legislative frameworks that create an enabling environment for agribusiness corporations and private seed markets. For example, they directly supported Nigeria's Agricultural Promotion Plan for 2016-2020 (more commonly known as the Green Alternative Plan) -- a framework that has since been mobilized to pass Plant Varieties Protection laws privatizing seed and to support GM cowpea and cotton, as indicated in John Komen et al. (2020), [Biosafety Regulatory Reviews and Leeway to Operate: Case Studies From Sub-Saharan Africa](#), in [Frontiers in Plant Science](#). See also [AGRA Nigeria Operational Plan \(2017\)](#) and FMARD, [The Agriculture Promotion Plan \(2016-2020\)](#). It is also worth noting that due to the polemical nature of GMOs, many biotechnology-related interventions are not named as such but are grouped into the broader category of "climate-smart agriculture" -- as is the case in the Green Alternative Plan.
- [50] AUDA-NEPAD (24 Nov 2020), [Development of GM crops in Africa](#); Mariam Mayet (2005), [Biosafety in Africa: A Complex Web of Interests](#), African Centre for Biodiversity; [As health fears ebb, Africa looks at easing GM crop bans](#) (6 June 2013), Reuters; [Africa's GMO landscape](#), Biosafety South Africa (a pro-biotechnology organization); Olalekin Akinbo et al. (2021), [Commercial Release of Genetically Modified Crops in Africa: Interface Between Biosafety Regulatory Systems and Varietal Release Systems](#), in [Frontiers in Plant Science](#)
- [51] DW (nd), [Has Africa's green revolution failed?](#); The Alliance for a Green Revolution in Africa, [Annual Report 2012](#)
- [52] Timothy A. Wise (2020), [Failing Africa's Farmers: An Impact Assessment of the Alliance for a Green Revolution in Africa](#), Global Environment and Development Working Paper No. 20-01
- [53] Alliance for Food Sovereignty in Africa (AFSA) et al. (2021), [A Sting in the AGRA Tale: Independent expert evaluations confirm that the Alliance for a Green Revolution has failed](#)
- [54] Neil Dawson, Adrian Martin, and Thomas Sikor (2016), [Green Revolution in Sub-Saharan Africa: Implications of Imposed Innovation for the Wellbeing of Rural Smallholders](#), in [World Development](#)
- [55] *ibid.*
- [56] Rosa Luxemburg Stiftung et al. (2020), [False Promises: The Alliance for a Green Revolution in Africa](#)
- [57] *ibid.*

[58] Timothy A. Wise (25 Feb 2021), [AGRA Update: Withheld Internal Documents Reveal No Progress For Africa's Farmers](#), IATP Blog

[59] *ibid.*

[60] Rachel Percy et al. (27 Jan 2020), [Mid-term evaluation of AGRA's 2017–2021 strategy implementation](#)

[61] AGRA, [Annual Report 2020](#)

[62] Linsey McGoe, Darren Thiel, and Robin West (2018), [Philanthrocapitalism and crimes of the powerful](#), in *Politix* ; Anand Giridharadas (2018), *Winners Take All: The Elite Charade of Changing the World* ; The Birth of Philanthrocapitalism (23 Feb 2006), *The Economist* ; Matthew Bishop and Michael Green (2008), *Philanthrocapitalism: How the Rich Can Save the World*. See also the 2011 symposium on The Politics of Philanthrocapitalism in *Society* and the summary of research on philanthrocapitalism in Steph Haydon, Tobias Jung, and Shona Russell (2021), "You've been framed": a critical review of academic discourse on philanthrocapitalism, in *International Journal of Management Reviews*.