

Exposing Biases in Agricultural Research: The CGIAR and the Evolution of Global Approaches to Food and Agriculture

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Abstract

As the world approaches a global population of 8 billion, the way in which we manage our food systems matters immensely. The conceptualization and operationalization of global food policy has inextricably significant implications for combatting hunger, improving nutrition and promoting sustainable agriculture worldwide. While there are many actors in global food policy, the Consultative Group on International Agricultural Research (CGIAR)—comprised of 15 international research centers aiming to scale up international agricultural research as a global public good—plays an extremely important role in bridging the gap between global public policy and the implementation of agricultural research on the ground. Through a critical historical analysis of CGIAR's outward projection of itself, its allocation of funding and its research implementation, this paper addresses the question: has the changing political and social climate in the international sphere altered CGIAR's approach to international agricultural development over time? The paper argues that although CGIAR has appeared to adapt to international shifts, its fundamental practices have remained steady over time. Through the lens of political ecology, science is not unbiased, non-political, nor non-ideological. The consortium was created in the confluence of capitalist, scientific, technological development with stark geopolitical and ideological agendas. Its mission has vacillated over time to mirror international norms, but its roots remain steadily grounded in scientific and technological solutions to global agricultural issues.

Introduction

In September 2015, the United Nations (UN), at a high-level plenary meeting of the General Assembly, adopted a set of Sustainable Development Goals (SDGs) that surpass the former Millennium Development Goals (MDGs) both chronologically and in scope. Expanded from 8 to 17 in number, these new global goals emphasize food and agriculture as a fundamental priority in sustainable development. In adopting the SDGs, member states of the UN agreed to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture” by the year 2030.¹ The UN thus declared that it is “time to rethink how we grow, share and consume our food.”²

However, 2015 does not mark the first time the global community has set the norms for international agricultural development. Through time, waves of change have rippled through international development policy and efforts, each wave emphasizing a new focus, a new global agenda. The many international institutions involved in global agricultural efforts must adapt to changing global norms while balancing the interest of donors and remaining politically relevant in subsidiary countries.

Perhaps one of the most important institutions is the Consultative Group on International Agricultural Research (CGIAR). CGIAR, as a consortium of 15 international research centers devoted to advancing agricultural research for development, is one of the world’s largest and most experienced public-sector international agricultural research organizations. The various centers work closely with national agricultural research systems (NARS) in developing countries. Fourteen out of the fifteen centers are located in the Global South. In addition to the consortium, the institution maintains a multi-donor trust fund,” the CGIAR Fund, that supports the strategic agricultural research of its 15 centers. Currently, the consortium consists of five commodity centers, four eco-regional centers, four natural resource management centers, one policy center and one gene pool conservation center.

Founded in 1971 to scale up international agricultural research as a global public good, CGIAR originally adopted six principles to guide research and resource allocation:

1. *Donor Sovereignty*: Each donor has the freedom to choose which center/research to support.
2. *Center Autonomy*: Centers have the decision-making autonomy to utilize resources as desired.
3. *Consensus Decision Making*: Decisions by the CGIAR will be done by consensus.
4. *Independent Technical Advice*: The Technical Advisory Committee (now the Science Council) will provide independent advice for priority setting and resource allocation.
5. *Informal Status of the System*: The CGIAR does not have a formal legal status.
6. *Non-political, Non-partisan, Non-ideological Nature*: International politics should not influence CGIAR decision-making.³

¹ “UN Sustainable Development Goals.”

² Ibid.

³ Adapted from Lele, *The CGIAR at 31*, 18; and Gerrard, “Retaining Scientific Excellence in Setting Research Priorities,” 281.

This paper investigates the reality of the sixth principle, to ignore international politics by addressing the question of whether or not the changing political and social climate in the international sphere has altered CGIAR’s approach to international agricultural development throughout the past several decades. The following represents an in-depth analysis and documentation of the chronology of changing international norms, CGIAR’s mission and focus, and its subsequent practices over time. It traces developments from the 1940s to present day and examines how food policy approaches have changed with time. An historical perspective is important and helpful to understand the political, economic, environmental, and social stage that grounded changes within CGIAR, why these changes took place, and whether these changes were institutional or merely political in the midst of international normative shifts. As one of the largest organizations setting the agenda for agricultural development, the approach in which CGIAR takes to advance research has serious implications for international equity, and hunger and poverty reduction.

The 1940-1950s: The Era of Rapid Industrialization

Beginning in the post-World War II reconstruction period, dominant development thinking and strategy emphasized rapid industrialization through import substitution and exchange rate overvaluation.⁴ Through the creation of two of the Bretton Woods Institutions—The International Monetary Fund (IMF) and the World Bank Group—the international community became heavily involved in economic planning around the world. Structural adjustment programs, conditional loans issued by the IMF, largely emphasized massive deregulation policies and a mandated immediate entry into the world market. Much in tune with this development strategy, the post-war agricultural ideology emphasized industrialization of agricultural sectors and the marketization of national food supplies.⁵ The idea of national food sufficiency was nominalized in the Global North with the creation of the Common Agricultural Policy in Europe, the 1947 Agriculture Act in Britain and the 1949 Farm Bill in the United States.⁶

At the same time, public-private partnerships outside of the Bretton Woods Institutions complemented the international movement to advance agricultural production. In 1943, the Rockefeller Foundation partnered with the Mexican government to improve national wheat and maize production.⁷ This partnership, later recognized as *Centro Internacional de Mejoramiento de Maíz y Trigo* (CIMMYT), is often referred to as the foundation of the CGIAR. Similarly, the International Rice Research Institute (IRRI) formed in 1959 as a partnership between the Philippines Agriculture and Natural Resources Department and the Rockefeller and Ford Foundations. The IRRI’s production of a new, high-yield variety of “dwarf rice,” along with other many global concerns that the world was on the brink of famine, prompted the Green Revolution in the 1960s.⁸

⁴ Todaro and Smith, *Economic Development*, 599.

⁵ Hopma and Woods, “Political Geographies of ‘Food Security’” 773-784.

⁶ *Ibid.*, 773.

⁷ Plucknett and Smith, “Agricultural Research,” 215.

⁸ *Ibid.*

The 1960s: Setting the Stage for CGIAR—Famine and the Green Revolution

Major concerns for the future of the global food supply developed in the 1960s, particularly in northern, industrialized countries. This fear was driven by the belief that “populations in developing countries were growing rapidly, and traditional farming systems were not producing enough to feed them.”⁹ The US Food for Aid Program responded to this fear and emulated a sense of global responsibility by shipping 5 million tons of wheat to India in both 1964 and 1965. In 1967, the Paddock brothers published their best-selling novel, *Famine — 1975! America's Decision: Who Will Survive?*, which predicted that the world would be unable to feed the global population, most particularly because of Asia’s rapid growth, resulting in inevitable famine by the year 1975.¹⁰ In 1968, Paul R. Ehrlich and his wife Anne Ehrlich, published *The Population Bomb* which similarly echoed the global north’s fears of excessive population growth in the global south; the global north feared that food aid would not be sufficient for the times to come.

At the same time, the development of high-yielding rice and wheat varieties by industrialized countries launched an alternative approach to food aid. Technological developments and new crop varieties such as fertilizer-based, high producing seeds led to dramatic crop yield increases in Asia and Latin America. This agricultural transformation became known as the Green Revolution, a term coined by the chief of the United States Agency for International Development (USAID), William Gaud, to symbolize “Western capitalist, scientific, and agricultural development, competing with Soviet Communist ‘red’ values, institutions, and political revolutions in the developing world.”¹¹

With the belief that science—not food shipments—was a more sustainable way to deal with world hunger, the president of the Rockefeller Foundation, George Harrar, called an international meeting, later know as the Bellagio Conference, to establish a comprehensive approach for global agricultural research.¹² Although the meeting housed only 24 participants, it included the director-general of the Food and Agriculture Organization of the United Nations (FAO), the director of USAID, and the president of the World Bank, among other consultants from the science of food and agriculture sectors.¹³

According to Lowell Hardin, a participant in the Bellagio Conference and the Ford Foundation’s Program Officer for Agriculture, “Our thinking was that if the aid groups could grasp more fully the progress being made, they could mobilize the resources needed from governments and other donor organizations. Together, a sustained assault on world hunger could be made.”¹⁴ To meet this objective, the Bellagio participants aspired to scale up the successes of CIMMYT and IRRI, as well as the International Institute for Tropical Agriculture (IITA) in Nigeria and the International Center for Tropical Agriculture (CIAT) in Columbia both established in 1967, to form a consortium of agricultural research centers serving the world.¹⁵

⁹ Hardin, “Bellagio 1969,” 470-471.

¹⁰ Ibid., 470.

¹¹ Nelles, “Environmental Education,” 402.

¹² Hardin, “Bellagio 1969,” 470.

¹³ Ibid.

¹⁴ Ibid.

¹⁵ Plucknett and Smith, “Agricultural Research,” 215.

The 1970s: The Establishment of the CGIAR

In 1971, the World Bank awarded its first significant grant, excluding transfers to its subsidiary International Development Association, to CGIAR.¹⁶ The CGIAR's founding mission was "... to support research and technology that can potentially increase food production in the food-deficit countries of the world."¹⁷ Upon its establishment, it acquired the four standing international agricultural research centers, CIMMYT, IRRI, IITA, and CIAT, as well as opening centers in India (1972), Peru (1973), Kenya (1973), Italy (1974), and Côte d'Ivoire (1975).¹⁸ Many national agricultural research systems across the globe strived to emulate the techniques modeled by the CGIAR. For example, a workshop on agricultural development in Tanzania opened with the following statement:

Following the success of the 'Green Revolution' leading to the development and adoption of high yielding technologies in Asia in the late sixties, it has become increasingly evident to policy makers and administrators in developing countries that agricultural research constitutes an essential component for both short and long-term strategies for agricultural development and poverty alleviation.¹⁹

However, the technology-based solutions of the Green Revolution were short lived as the world faced a "global food crisis" in 1972-1974 despite increased food production.²⁰ The crisis, namely the unprecedented food price spikes and consequential famines most severely concentrated in Ethiopia, alerted the international community of the interconnectedness of the world food system and consequences thereof. Between 1971 and 1974, the price of wheat increased threefold as a result of rising oil prices internalized by the agricultural sector's use of petroleum-based fertilizers.²¹ A severely hit Soviet Union was forced to import 28 million tons of U.S. grains, consequently depleting the world cereal supply and driving up global food prices.²² Economic access to food became unattainable for many, sparking global panic and the fear that "the world food system was running out of control."²³

The U.S. Secretary of State, Henry Kissinger, spearheaded the effort by the international community to assemble and address the pressing problems no longer concerning national food sufficiency but a crisis rooted in global food security.²⁴ The World Food Conference convened in 1974 and, with no surprise, largely emitted a reactionary response focusing on the establishment of national food reserves and the idea that "food surplus areas" had the global responsibility to aid "food deficit areas."²⁵ Instead of producing more food through technology-centered approaches seen previously, this signified a shift in the global community's approach, this time concerning economic access to food. Food security was henceforth defined as "the availability at all times of adequate world supplies of basic foodstuffs ..., to sustain a steady expansion of food

¹⁶ Gerrard, "Retaining Scientific Excellence," 278.

¹⁷ Pardey, Alston, and Piggott, *Agricultural R&D in Developing World*, 321.

¹⁸ Gerrard, "Retaining Scientific Excellence," Appendix 1.

¹⁹ Shao et al., *National Workshop Research in Tanzania*, 1.

²⁰ Maxwell and Slater, "Food Policy Old and New," 531.

²¹ Jarosz, "Comparing Food Security," 168-181.

²² *Ibid.*, 170.

²³ Maxwell, "Food security: A post-modern perspective," 160.

²⁴ Jarosz, "Comparing Food Security," 170.

²⁵ Kissinger, 1974 cited in Jarosz, "Comparing Food Security," 171.

consumption . . . , and to offset fluctuations in production and prices.”²⁶

New institutions were created, such as the World Food Council and the FAO Committee on Food Security, to fulfill the expansionary efforts of global food security as defined at the 1974 World Food Conference.²⁷ “Macro food policy” remained important for years to follow, exemplified in the establishment of the CGIAR’s policy arm, the International Food Policy Research Institute (IFPRI) in 1975 and the creation of the academic journal *Food Policy* in 1976.²⁸

The 1980s: Refocusing Agriculture on Hunger, Entitlements, and Livelihoods

The dominant narrative of international agricultural attention shifted from macro policy strategies focusing on international food security to micro level concerns of individual access in the 1980s. This paradigm shift is largely accredited to the work of Amartya Sen (1981).²⁹ Sen’s work transformed the foci of food discourse from food supply to food demand.³⁰ He argued that access to food through entitlements—monetary, affective, kinship, governmental, etc.—is unequivocally important to the way in which we conceptualize food security. The introduction to his 1981 book, *Poverty and Famines*, argues that “starvation is the characteristic of some people not *having* enough food to eat. It is not the characteristic of there *being* not enough food to eat.”³¹ The international community engulfed his ideas and the concept of personal entitlements to food emerged on a global scale.³²

The FAO revisited and redefined food security in 1983, as “ensuring that all people at all times have both physical and economic *access* to the basic food that they need.”³³ Likewise, others, such as the Bellagio Declaration, the Cairo Declaration of the World Food Council in 1989 and the International Conference on Nutrition in 1992, identified access to food as the “defining characteristic of food security.”³⁴

However, the emphasis on entitlements may have heralded the notion that monetary aid—an entitlement no doubt—could “solve world hunger.”³⁵ Live Aid in 1985, the largest fundraising concert of its time, compelled hundreds of thousands of westerners to not only attend a concert with a cause but to donate millions of dollars for famine relief in Ethiopia.³⁶ As the musicians sang, “We are the world,” and the celebrities declared, “We are going to end hunger today,” money poured into Ethiopia, often without any outlet.³⁷

A year later, the World Bank issued its report on Poverty and Hunger, titled “Options for Food Security in Developing Countries.” This document focused on the temporal dynamics of food insecurity, creating a distinction between chronic food insecurity and transitory food

²⁶ World Food Conference, *Report of the World Food Conference*, 60.

²⁷ Maxwell and Smith, “Food Security,” 156.

²⁸ Maxwell and Slater, “Food Policy Old and New,” 531.

²⁹ Maxwell and Smith, “Food Security,” 156-157.

³⁰ Maxwell and Slater, “Food Policy Old and New,” 531.

³¹ Sen, *Poverty and Famines*, 1.

³² Food and Agriculture Organization, “Food Security,” 1.

³³ “Rome Declaration on World Food Security.” Emphasis added by author.

³⁴ Maxwell and Smith, “Food Security,” 158.

³⁵ Dir. Ziv and Vuijst, *Consuming Hunger*.

³⁶ The concert raised 5 million dollars.

³⁷ Dir. Ziv and Vuijst, *Consuming Hunger*.

insecurity.³⁸ The former describes a situation associated with structural poverty and low incomes while the latter describes a condition created by natural disasters, economic collapse, conflict, etc.³⁹ The report described food security as “access of all people at all times to enough food for an active, healthy life.”⁴⁰

Mirroring international preference changes, CGIAR’s mission statement also shifted in 1986. The new mandate declared that the goals of CGIAR were to “contribute to increasing sustainable food production in developing countries in such a way that the *nutritional* level and general *economic well-being* of low-income people are improved.”⁴¹ The emphasis on economic well-being very much echoed the monetary entitlements approach put forth by the international community. Additionally, the strategic use of the term “nutrition” reiterated the World Bank’s call for attention to “healthy” food and CGIAR furthered its nutritional focus through the International Food Policy Research Institute’s report titled, “Linkages Between Agriculture and Nutrition: Implications for Policy and Research.”⁴² Furthermore, this mission statement introduced the concept of “sustainability” for the first time as a high priority in CGIAR practices.

The 1990s: The Rise of Environmentalism and CGIAR Expansion

In the early 1990s, CGIAR drastically broadened its core objectives to include natural resource management, agroforestry practices, water management, fisheries production, and vegetable agriculture.⁴³ Correspondingly, its mission statement emphasized the institutional changes: “in partnership with national research systems, to contribute to sustainable improvements in the productivity of agriculture, forestry and fisheries in developing countries in ways that enhance nutrition and well-being, especially of low-income people.”⁴⁴ The number of CGIAR related centers exploded from 13 to 18 between 1991 and 1992.⁴⁵ This dramatic growth had disastrous financial consequences. At the International Centers Week conference in 1993—a conference in which all CGIAR centers convene—the chairman reported:

Over the past three years donor support for the CGIAR as expressed in dollars and cents has declined. CGIAR centers have tightened their belts as a result, curtailing programs and reducing staff strength. A recent review indicates an overall reduction of at least 110 international scientists and some 2,000 host country employees, as well as a drop of about 45 percent in training activities.⁴⁶

³⁸ Clay, “Food Security: Concepts and Measurement,” 25-34.

³⁹ *Ibid.*, 27.

⁴⁰ World Bank, “Poverty and Hunger.”

⁴¹ Consultative Group on International Agricultural Research Technical Advisory Committee, “Review of CGIAR Priorities.” Emphasis added by author.

⁴² Kennedy and Bouis, *Linkages between Agriculture and Nutrition*.

⁴³ Walsh, “Greening of the Green Revolution,” 26.

⁴⁴ Consultative Group on International Agricultural Research Technical Advisory Committee, “Review of CGIAR Priorities.”

⁴⁵ Lele, *The CGIAR at 31*, 20.

⁴⁶ Rajagopalan, 1993, cited in Lele, *The CGIAR at 31*, 21.

At the same time, increasing concerns about the implications of development programs prompted the prioritization of impact assessments, monitoring, and evaluation of projects. CGIAR institutionalized this norm and developed the Impact Assessment and Evaluation Group in the late 1990s.⁴⁷ Simply put, “donors and CGIAR administrators have placed increased pressure on CGIAR research managers to demonstrate that research investments represent money well spent.”⁴⁸ Although difficult to know for certain, the stress on impact assessments could have risen as a result of the exposé produced by SPIN Magazine, which investigated the allocation—or misallocation—of the millions raised at the Live Aid concert.⁴⁹ Regardless, the “slow growth in core funding since the 1990s” and the “expanding portfolio of research initiatives” coupled with the added financial stress of administering monitoring and evaluation stretched CGIAR thin.⁵⁰

Upon closer examination, the expansion decision—what could be seen as an “egregious management error” from a financial standpoint—was in fact a strategic political move. Amid the growing worldwide environmental movement, the decision to bolster institutional goals “to include four new Centers with mandates in forestry (CIFOR), agroforestry (World Agroforestry Center), water management (IWMI), and fisheries (WorldFish Center), marked a turning point in the position of natural resource management research within the system.”⁵¹

Major global conferences, most notably the 1992 United Nations Conference on Environment and Development (UNCED) or more commonly known as the Earth Summit, significantly influenced global norms of the time. It becomes obvious from a political perspective that CGIAR needed to join the growing environmental movement not only to remain politically relevant but to secure financial support from existing donors. For example, CGIAR’s largest donor, the World Bank, emphasized their concern for the role of agriculture in environmental issues. Edward Schuh, the Head of Agriculture and World Development at the World Bank, argued:

The scope of the CGIAR System could productively be expanded to include a greater range of food crops, attention to the growing environmental problems around the world, making more effective use of natural resources, and the emerging problems of diversification and adjustment associated with the successes of its programs. There is also much to be gained from expanded work on cash crops, which are so important in generating the income and employment for the rapidly growing agricultural labor force around the world.⁵²

Thus, CGIAR expanded its scope, and joined the international community in implementing the UNCED *Agenda 21* action plan.⁵³ It developed the concept of “production ecology” to address environmental apprehensions. According to the CGIAR Task Force on Sustainable Agriculture, a task force established specifically to address global sustainability concerns, production ecology “integrates knowledge of the basic processes in living production systems in such a way that sustainable land use and natural resource management responds to

⁴⁷ Renkow and Byerlee, “The Impacts of CGIAR Research,” 391.

⁴⁸ Ibid.

⁴⁹ Keating, “Live Aid: The Terrible Truth.”

⁵⁰ Renkow and Byerlee, “The Impacts of CGIAR Research,” 391.

⁵¹ Ibid., 395.

⁵² Schuh, 1987, cited in Lele, *The CGIAR at 31*, 21.

⁵³ *Agenda 21* was the key action item produced from the UNCED Earth Summit in Rio de Janeiro.

well defined socio-economic, ecological and agricultural objectives and constraints.”⁵⁴ This concept provided clear research agendas that would satisfy both global norms and CGIAR’s expertise.⁵⁵

In the late 1990s, CGIAR cosponsored the World Food Summit, a global conference headed by the UN Food and Agricultural Organization. The conference produced the Rome Declaration on World Food Security which charged member states of the UN to “pledge our political will and our common and national commitment to achieving food security for all and to an ongoing effort to eradicate hunger in all countries, with an immediate view to reducing the number of undernourished people to half their present level no later than 2015.”⁵⁶

Subsequently, CGIAR echoed international priorities in its mission statement “to contribute to food security and poverty eradication in developing countries through research, partnership, capacity building, and policy support, promoting sustainable agricultural development based on the environmentally sound management of natural resources.”⁵⁷ While the emphasis on food security reflected the World Food Summit goals, the deliberate use of “poverty eradication” preceded the millennium development agenda for addressing extreme poverty.

The 2000s: Poverty Eradication, Biotechnology, and Food Sovereignty

Spearheaded by the UN, the 8 Millennium Development Goals adopted in 2000 galvanized global action in attempt to meet the needs of the world’s poor. The first goal, to “eradicate extreme poverty and hunger,”⁵⁸ became a springboard for CGIAR to launch biotechnology as a means to “put science to work for the poor.”⁵⁹ The president of the World Bank at the time, James D. Wolfensohn,⁶⁰ stated, “If the world cannot make progress against hunger and poverty, by the year 2025, there could be 4 billion people living on less than US\$2 per day and more than 2 billion living in extreme poverty.”⁶¹

The CGIAR-sponsored book, *Food in the 21st Century: from Science to Sustainable Agriculture*, charged the international community to launch a new “Green Revolution”—or “gene revolution,”⁶² to harness the power of science and technology for the benefit of the world’s poor. The author of the book, also the Chairman of the CGIAR System Review, Maurice Strong, indicated, “new scientific developments have the potential to radically reshape the world’s agriculture and food systems. We need to recommit to science and research to ensure that the poor are not excluded, and that biodiversity and the environment are not undermined.”⁶³

In 2001, the International Fund for Agricultural Development joined the Food and Agricultural Organization (FAO), the United Nations Development Programme (UNDP) and the

⁵⁴ Consultative Group on International Agricultural Research Technical Advisory Committee, “From Decisions to Actions,” 25.

⁵⁵ Nelles, “Environmental Education,” 405.

⁵⁶ “Rome Declaration on World Food Security.”

⁵⁷ CGIAR News: Calling for a New “Green Revolution.”

⁵⁸ United Nations, “Millennium Development Goals.”

⁵⁹ CGIAR News: Calling for a New “Green Revolution.”

⁶⁰ Wolfensohn was also a founder and cosponsor of the CGIAR.

⁶¹ CGIAR News: Calling for a New “Green Revolution.”

⁶² Nelles, “Environmental Education,” 407.

⁶³ CGIAR News: Calling for a New “Green Revolution.”

World Bank, as a key multilateral development institution and donor for CGIAR.⁶⁴ Together, the CGIAR partnerships devoted \$337 million to research “mobilizing science for the benefit of poor people.”⁶⁵ The World Bank argued that CGIAR’s work in biotechnology greatly supported the Millennium Development Goals and that “advocating science-based approaches to solving some of the world’s most pressing development problems” always remained at the heart of CGIAR’s mission.⁶⁶

Critics, however, claimed CGIAR should be called the “Consultative Group on *Industrial Agricultural Research*.”⁶⁷ When the Syngenta Foundation for Sustainable Agriculture, a large, multi-billion-dollar, global agribusiness/biotechnology company, became a new board member of CGIAR in 2002, non-governmental organizations (NGOs), small farmer groups, and grassroots organizations were enraged. La Vía Campesina, an international peasant organization based out of Brazil, criticized CGIAR for their creeping “trend towards the corporatization of public agricultural research.”⁶⁸ Previously, La Vía Campesina led a grassroots movement for the establishment of food sovereignty. Immediately following the Zapatista uprising in Mexico, an uprising characterized partly in response to the massive dumping of American subsidized corn into Mexico as a result of the newly passed NAFTA,⁶⁹ La Vía Campesina introduced the concept of food sovereignty as “the antithesis of the corporate food regime and its (unrealized) claims for ‘food security’ via the free trade rules of the WTO.”⁷⁰

In 2007 and 2008, massive food riots erupted across the globe when rice, corn, and wheat prices spiked dramatically.⁷¹ Possible contributors to the global grain price spikes were the diversion of food for biofuels production, increased grain demand from China’s changing food preferences, higher energy prices, and the negative impacts of climate change.⁷² The situation was exacerbated by the decision of several countries to protect their domestic food supplies through export restrictions on certain commodities.⁷³ By 2008, as many as 14 countries had limited rice exports, 15 countries limited or banned wheat exports altogether, and 12 countries placed restrictions on corn exports including key producers of these commodities such as Argentina and Russia.⁷⁴ These monumental food riots and the consequent political instability provoked an immediate international response.

In 2009, the international community gathered in Rome for the FAO’s World Food Day. Jaques Diouf, the Director General of the FAO, opened the conference with the statement that the number of hungry people in the world, for the first time, rose to over 1 billion people, up 100 million from 2008.⁷⁵ Diouf called for “higher productivity returns from agriculture and also for increasing investments in agricultural development to meet the challenges of the rising numbers of hungry people, the increase in natural disasters, and the rising prices of agricultural inputs and

⁶⁴ World Bank, “CGIAR Alliance at a Glance,” 2002, 3.

⁶⁵ Ibid.

⁶⁶ Ibid.

⁶⁷ Nelles, “Environmental Education,” 407.

⁶⁸ The NGO Committee of the CGIAR, 2002 cited by Nelles, “Environmental Education,” 407.

⁶⁹ The North American Free Trade Agreement (NAFTA) was established in 1994 and the World Trade Organization (WTO) in 1995.

⁷⁰ McMichael, “Historicizing Food Sovereignty,” 934.

⁷¹ Jarosz, “Comparing Food Security,” 168.

⁷² Todaro and Smith, *Economic Development*, 422.

⁷³ Hopma and Woods, “Political Geographies.”

⁷⁴ Dupont and Thirlwell, “New Era of Food Insecurity?” 71-98; Hopma and Woods, “Political Geographies,” 776.

⁷⁵ Jarosz, “Comparing Food Security,” 168.

of food.”⁷⁶ With this response, the international agricultural discourse returned to the Malthusian narrative in which only a drastic increase in food supply would resolve the ever-increasing demand from a growing population.

Simultaneously, “over 600 representatives of 450 NGOs of peasants, fishers, pastoralists, indigenous peoples, youth, women, urban dwellers, and farm workers” also gathered in Rome to form an opposing international convention—the People’s Food Sovereignty Forum.⁷⁷ La Via Campesina, and other NGOs, argued that the international community “was contributing to a gene revolution while the green revolution of the past continued causing immense damage.” They blamed the CGIAR “for not learning from mistakes and chasing a ‘one-technology-fixes-all’ solution through genetic engineering, threats to farmers’ rights through increasing monopolization in agriculture, negative health effects, environmental damage, and failure to prevent contamination and defend genetic diversity.”⁷⁸

Power politics within the international agricultural system played a pivotal role in shaping food sovereignty.⁷⁹ The discussion at the People’s Food Sovereignty Forum moved beyond the rhetoric of hunger and food availability to address the underlying need for restructuring the food regime.⁸⁰ Not only did food sovereignty aim to transform the food and agricultural system, it called for socio-political change.⁸¹

The 2010s: A Return to Agricultural Intensification and Technological Solutions

Today, in the face of climate change and the mounting concern about feeding a growing population, mainstream international agricultural research has largely returned to issues of food production. In “Food Security: The Challenge of Feeding 9 Billion People,” Godfrey and colleagues synthesize information from the World Bank, the Millennium Ecosystem Assessment (2005), the Intergovernmental Panel on Climate Change, and the International Food Policy Research Institute, among others to assess “the challenge of feeding 9 billion people.”⁸² The authors explore the “multifaceted and linked global strategy” that is necessary to produce more food, more efficiently and more equitably. They suggest increasing production limits, sustainable intensification, reducing waste, changing diets, and expanding aquaculture as steps to more efficient and equitable food production. This amalgamation characterizes the international community’s—as well as CGIAR’s—robust return to techno-centered solutions to agricultural issues. CGIAR’s current mission is “to advance agri-food science and innovation to enable poor people, especially poor women, to enjoy increased agricultural productivity, share in economic growth, feed themselves and their families better and conserve natural resources in the face of climate change and other threats.”⁸³

⁷⁶ Ibid.

⁷⁷ Ibid., 169.

⁷⁸ Nelles, “Environmental Education,” 407.

⁷⁹ Patel, “Food Sovereignty,” 664-665.

⁸⁰ McMichael, “Historicizing Food Sovereignty,” 935.

⁸¹ Edelman, “Food Sovereignty,” 959.

⁸² Godfray et al., “Challenge of Feeding 9 Billion People,” 812-818.

⁸³ Consultative Group on International Agricultural Research, “Our Strategy.”

In 2010, both Monsanto, the world's top producer of genetically modified (GM) crops, and the Bill and Melinda Gates Foundation (BMGF) joined the CGIAR Fund Council, committing at least \$400 million for 2009-13.⁸⁴ That same year, Bill Gates, the co-founder of Microsoft and the world's wealthiest individual,⁸⁵ and Warren Buffet introduced the idea of a "Giving Pledge" which prodded billionaires to donate half their wealth to philanthropic foundations and charities throughout their lifetime.⁸⁶ In 2014, Gates pledged \$1.2 billion of his wealth to his foundation, the Bill and Melinda Gates Foundation, for "poverty alleviation" programs and projects in Africa.⁸⁷ Although the Gates Foundation has largely supported health initiatives such as immunization programs and anti-malaria campaigns, in 2015, they proclaimed their belief that:

By growing more varied and nutritious food and getting it to the people who need it at the right time, Africa can achieve food security by 2030. It will still import food when it makes sense to do so, but it will also export much more, eventually achieving a net positive trade balance. Famine will strike less often—and when it does, it will be African countries that take care of the response.⁸⁸

Starting in 2006, the Gates Foundation dedicated more than \$1.7 billion to "assisting small family farmers in sub-Saharan Africa" in support of the newly formed Alliance for a Green Revolution in Africa (AGRA).⁸⁹ AGRA's missions and goals are to "support food security objectives" through partnerships that "make biotechnology products available to smallholders in geographic areas where the private sector currently has little commercial interest."⁹⁰

Today, both the Gates Foundation and AGRA are generously funding IRRI, CIMMYT and the CGIAR system as a whole.⁹¹ For example, AGRA partnered with CGIAR and its subsidiaries to form the Program for Africa's Seed System (PASS) with a goal to release 1,000 new seed varieties in the next 10 years.⁹² Additionally, CGIAR joined the Gates and Ford Foundations, AGRA, Monsanto, Syngenta, and DuPont in a public-private partnership called the African Agricultural Technology Foundation, to realize biotechnology as a "development strategy" for Africa.⁹³ This alliance adopted the Green Revolution's "technological paradigm—prioritizing genetic crop improvement and fertilizer application as the central pillar of their strategy for agricultural improvement."⁹⁴ However, some note the new Green Revolution's major difference from its predecessor: the dominant role of the private sector.⁹⁵ According Raj Patel, one of many critics, "Biotechnology is being marketed as Africa's only way to end cycles of hunger, drought, and poverty, and to deal with the impacts of climate change."⁹⁶

⁸⁴ Nelles, "Environmental Education," 408.

⁸⁵ Morvaridi, "Does Sub-Saharan Africa Need Philanthropy," 152.

⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ Ibid., 153.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Holt Giménez and Patel, *Food Rebellions*, 139.

⁹² Ibid., 138.

⁹³ Ibid., 142.

⁹⁴ Ibid.

⁹⁵ Ibid., 139.

⁹⁶ Ibid., 142.

Conclusions: The Evolution of CGIAR and the Importance of Political Ecology

By contextualizing the CGIAR within the social, environmental, economic, and political dynamics occurring in the international sphere, this paper examined the evolution of CGIAR's mission over time as a proxy to answer whether its approach to international agricultural development has changed with international norms. Looking at events over time, although CGIAR has appeared to alter its approaches to reflect international norms, its priorities have remained steady.

The consortium's significant role in strengthening scientific capacity in international agricultural research is undeniable. Since its inception, CGIAR has produced numerous "international public goods" — including improved crop seeds, better farming methods, incisive policy analysis and associated new knowledge.⁹⁷ However, the extent to which it has "ignored international politics" in the implementation of its practices is questionable to say the least. While CGIAR's mission statement has remarkably mirrored changing international politics⁹⁸ its original priorities in technological driven increases in food production have remained constant over time. Table 1, crafted by the author, outlines the fluctuations within CGIAR's mission statement mirroring the priorities put forth in the changing international climate (see Table 1).

Despite the vacillation of its mission statement, CGIAR's priorities remain steadily grounded in scientific and technological solutions to global agricultural issues. The Consortium rose from the foundation of the Green Revolution and has continued to heavily support agricultural intensification, biofortification, and technocratic solutions to environmental issues. During its inception, CGIAR's mission emphasized technology and increased food production. Their research prioritized scientific solutions to crop yield intensification and crop genetic improvement has remained CGIAR's comparative advantage, its "bread and butter."⁹⁹ However, in the 1980s and 1990s, CGIAR's mission statement absorbed international trends to include the language of entitlements, access, and environmental concerns. This apparent shift in language, however, can be seen more as a political rather than ideological shift. During the excitement surrounding the first-ever international environmental summit, CGIAR needed to position itself alongside the international community in order to maintain international funding that was largely rallying around the increasing environmental concerns. Shortly after, CGIAR eagerly reverted to their techno-centered lens in the new millennium's attention to poverty reduction. Rather than approaching poverty reduction through Amartya Sen's entitlement perspective, CGIAR manipulated the focus of poverty eradication back to a scientific, technical problem that could be resolved, not by increasing political and social access to food, but by increasing food production itself. Thus, CGIAR unveiled its preference for technocratic solutions to agricultural problems and has rooted itself in input-intensive, capitalist ideologies. In the past decade, the consortium has increasingly aligned itself with agribusiness conglomerates and multi-billion dollar funds promoting and advancing scientific and technological agricultural research for development assistance in Africa.

By analyzing the chronology of changing international norms, the institutional shifts within CGIAR's mission statement provide substantial evidence that international politics do influence CGIAR's outward projection of itself. However, despite mirroring global trends,

⁹⁷ Fredenburg, *The CGIAR at 40*, 7.

⁹⁸ See Table 1.

⁹⁹ Renkow and Byerlee, "The Impacts of CGIAR Research," 392.

CGIAR's practices and implementation of services remain rooted in technological and scientific mechanisms. Thus, historicizing the political ecology of CGIAR unearths the importance of analyzing power relations in the development paradigm's impact upon agricultural development. Food policy is not unbiased, non-political, nor non-ideological. The way in which we conceptualize and operationalize food policy greatly impacts local ecologies, hunger, and poverty. Above all, understanding the social, political, economic, and environmental circumstances underlying the history of change is extremely important in shaping the way in which we enact both international public policy and implementation efforts to provide access to nutritious, affordable and culturally appropriate food for all. With a better understanding of CGIAR's institutional groundings despite political shifts comes a better ability to create policies which address hunger more equitably and more sustainably in the coming years.

Abbreviations and Acronyms

AGRA	The Alliance for a Green Revolution in Africa
BMGF	Bill and Melinda Gates Foundation
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
FAO	Food and Agriculture Organization of the United Nations
GM	Genetically Modified
ICRAF	World Agroforestry Centre
IFPRI	International Food Policy Research Institute
IIMI	International Irrigation Management Institute
IITA	International Institute Tropical Agriculture
IMF	International Monetary Fund
IRRI	International Rice Research Institute
IWMI	International Water Management Institute
MDG	Millennium Development Goals
NARS	National Agricultural Research System
NGO	Nongovernmental Organization
PASS	Program for Africa's Seed System
SDG	Sustainable Development Goals
TAC	Technical Advisory Committee
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
USAID	United States Agency for International Development

Table 1: The Political Ecology of CGIAR's Mission Over Time

Year	CGIAR Mission Statement	International Climate	Major Donors*
1977	"... to support research and technology that can potentially increase food production in the food-deficit countries of the world"	Post-green revolution; The World Food Conference	United States, World Bank, Canada, Germany, Inter-American Development Bank, United Kingdom, Rockefeller Foundation, Ford Foundation, UNDP, Sweden
1984	"to contribute to increasing sustainable food production in developing countries in such a way that the nutritional level and general economic well-being of low-income people are improved"	Sen's Capabilities approach; Entitlements; World Bank Report on Poverty and Hunger	United States, World Bank, Japan, Canada, Inter-American Development Bank, Germany, United Kingdom, UNDP, European Commission, Switzerland, Italy
1990	"... in partnership with national research systems, to contribute to sustainable improvements in the productivity of agriculture, forestry and fisheries in developing countries in ways that enhance nutrition and well-being , especially of low-income people"	The rise of environmentalism; United Nations Conference on Environment and Development; The World Food Summit	World Bank, United States, Japan, European Commission, Switzerland, Germany, Canada, Netherlands, United Kingdom, Denmark
1998	"... to contribute to food security and poverty eradication in developing countries through research, partnership, capacity building, and policy support, promoting sustainable agricultural development based on the environmentally sound management of natural resources "	Rome Declaration on World Food Security: Pre-Millennium Development Goals	World Bank, United States, Japan, European Commission, Switzerland, Germany, Canada, Netherlands, United Kingdom, Denmark
2016	"To advance agri-food science and innovation to enable poor people, especially poor women, to enjoy increased agricultural productivity , share in economic growth, feed themselves and their families better and conserve natural resources in the face of climate change and other threats "	Sustainable Development Goals; Climate Change; Biotechnology	United States, World Bank, United Kingdom, European Commission, Canada, Bill and Melinda Gates Foundation, Switzerland, Netherlands, Japan, Germany

Table crafted by author. *Major donors are ordered from largest to smallest.¹⁰⁰

¹⁰⁰ Source for donor column: Fredenburg, Peter. *The CGIAR at 40*.

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