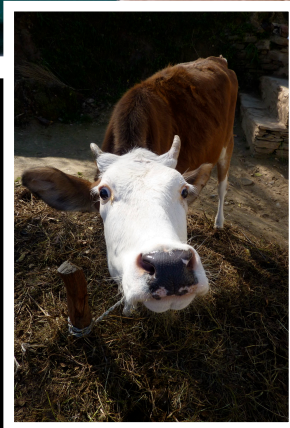


Food Matters: U.S. Food Policy for the 21st Century



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LIST OF ACRONYMS

Acronym	Expanded Title
AATF	African Agricultural Technology Foundation
ACTESA	Alliance for Commodity Trade in Eastern and Southern Africa
AfDB	African Development Bank
AFSI	L'Aquila Food Security Initiative
AGRA	Alliance for a Green Revolution in Africa
AGRA	Alliance for Green Revolution in Africa
AMC	Advanced Market Commitments
AWARD	African Women in Agricultural Research and Development
BMGF	Bill & Melinda Gates Foundation
CAADP	Comprehensive Africa Agriculture Development Program
CAP	Common Agricultural Policies
CBOT	Chicago Board of Trade
CCC	Commodity Credit Corporation
CFA	Comprehensive Framework for Action
CFTC	Commodity Futures Trading Commission
CGIAR	Consultative Group on International Agricultural Research
CIP	Country Investment Program
COMESA	The Common Market for Eastern and Southern Africa
CRED	Centre for Research on the Epidemiology of Disasters
CRP	Conservation Reserve Program
DART	Disaster Assistance Response Team
DCA	Development Credit Authority
E-CAM	Central America Regional Program
ECOWAS	Economic Community Of West African States
EFSG	European Food Security Group
EFSP	Emergency Food Security Program
EISA	Environmental Independence and Security Act
ESA	Agricultural Development Economics Division
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration
FSA	Food Security Act
FTA	Free Trade Agreement
FtF	Feed the Future
GAFFSP	Global Agriculture and Food Security Program
GAIN	Global Alliance for Improved Nutrition
GAO	Government Accountability Office
GCCI	U.S. Global Climate Change Initiative
GFRP	Global Food Crisis Response Program
GHG	Greenhouse gases
GHI	U.S. Global Health Initiative
GMO	Genetically Modified Organism
GSCI (S&P GSCI)	Goldman Sachs Commodity Index
HLTF	High Level Task Force on the Global Food Security Crisis

IAASTD	International Assessment of Agricultural Knowledge, Science, and Technology for Development
IBRD (World Bank Group)	International Bank for Reconstruction and Development
ICRW	International Center for Research on Women
ICWE	International Conference on Web Engineering
IFAD	International Fund for Agricultural Development
IFBC	International Food Biotechnology Council
IFPRI	International Food Policy Research Institute
IFRC	International Federation of Red Cross and Crescent Societies
IHME	Institute for Health Metrics and Evaluation
IMF	International Monetary Fund
IPRs	International Property Rights
ISFP	FAO Initiative on Soaring Food-prices
ITA	International Trade Administration
IUCN	International Union for Conservation of Nature
KARI	Kenya Agricultural Research Institute
LADEP	Lowlands Agricultural Development Programme
LDCs	Least Developed Countries
LIFDC	Low-Income Food-Deficit Countries
LRP	Local and Regional Procurement
M&E	Monitoring and Evaluation
MCC	Millennium Challenge Corporation
MDGs	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
MFI	Microfinance Institution
MtCO ₂ -eq.	Megatons of CO ₂ equivalent
NAFTA	North American Free Trade Agreement
NEPAD	The New Partnership for Africa's Development
NGO	Non-Governmental Organization
NYBOT	New York Board of Trade
OFDA	Office of Foreign Disaster Assistance
OTC	Over the counter derivatives
P4P	Purchase For Progress
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PRAI	Principles for Responsible Agricultural Investment
PVO	Private Voluntary Organization
QDDR	U.S. Quadrennial Diplomacy and Development Review
R&D	Research and Development
RUSF	Nutrient rich ready-to-use supplementary food
SACAU	Southern African Confederation of Agricultural Unions
SAPs	Structural Adjustment Programs
SEWA	Self Employed Women's Association
TB	Tuberculosis
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights

UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
USAID	U.S. Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government
WDR	World Development Report
WEMA	Water Efficient Maize for Africa
WFP	World Food Program
WTO	World Trade Organization

Executive Summary

Grant Nguyen, Heather Campbell and Charles Kauffman

Global food security today is on uncertain ground, with countries, organizations, and individuals still scrambling to respond to the 2007-08 food crisis. Global attention has been fixed on looming structural challenges to global food security that threaten to increase over the rest of this century. While U.S. contributions towards global food security have ramped up significantly over the past three years, the next few years will serve as a crucial turning point for global food security policy. The U.S. and other countries will be forced to balance food security-related commitments within a gloomy economic climate while continuing to set progressive policy and implement innovative approaches in the field. Governments, aid organizations, and donors will be forced to continually improve their efforts and implement strong policy changes in order to stay abreast of the challenges ahead.

Our task force report takes stock of the current global food security situation and offers actionable recommendations for the U.S. government's food security-related efforts. Our report initially focused on U.S. State Department and USAID policies, but soon expanded in scope to account for the complexity and breadth of food security issues. Our report, divided into six sections, addresses: global food security today, U.S. food security policy and structures, non-government stakeholder engagement, the economics of food and trade, socio-cultural implications related to food security, and environmental and energy challenges to agricultural production. The six sections have been organized into two discrete sections: the first four sections deal primarily with U.S. structures, policies, and engagement with other actors, while the final two sections deal with broader global considerations.

Section I offers a snapshot of the current global food security situation, and identifies the embedded structural and proximate causes of food insecurity. Section II offers a broad survey of U.S. institutions and multilateral engagements which deal with food security-related aid. It begins with an analysis of Feed the Future, the main vehicle for engaging in targeted, country-led investment in food insecure countries. It then addresses participation by the U.S. in multilateral agreements and institutions, before closing with a section on U.S. short-term emergency humanitarian aid. In Section III, we identify ways to shift policy to engage various non-government stakeholders and increase the efficacy of existing institutions. A reoccurring theme here is public-private collaborations, in concert with improved engagement with research institutions and smallholder-related organizations, and their importance for creating sustainable agricultural development involving those who need it the most. Section IV acknowledges that food insecurity is not simply a result of production deficits and examines the various economic mechanisms, both domestic and international, responsible for global food distribution.

The remaining sections of our report widen the focus to examine the structural socio-cultural and environmental causes of food insecurity. Section V chronicles how rising middle class demands for food challenge the global food system, impacting price, availability, and the types of food produced. It recommends policy changes to reflect needs for nutritious and culturally appropriate food aid, beyond just providing sufficient calories for every person. The final chapters in Section V recommend policy changes to reduce major barriers to self-sufficiency by increasing smallholder land rights and reducing institutionally implemented gender discrimination. Section

VI focuses primarily on burgeoning threats to the global supply of food, from environmental changes and natural resources constraints, to the rise of biofuels as an alternative to food production.

The report as a whole recommends concrete steps to shift U.S. policy and works toward government structural reform to better implement policy. Since our focus is more U.S. policy-centered, it does not have any explicit regional foci, nor does it specify region-by-region recommendations for policy. It is also important to note that our report does not attempt to solve the problem of global food security right away. Rather, the recommendations are aimed at incrementally creating and strengthening an effective, inclusive, and forward-looking U.S. global food security policy. As such, our recommendations build off of current U.S. policies and structures already in place, taking into account U.S. institutional capabilities and political considerations. Our hope is that the U.S. government will consider incorporating these recommendations, and continue as a global leader in shaping future global food security policy and creating a more food-secure world.

I. INTRODUCTION TO FOOD SECURITY IN THE 21ST CENTURY



Ch.1 Background on Global Food Security

Grant Nguyen

Abstract

This background chapter aims to provide a contextual background for the policy recommendations in the following chapters. Its purpose is to serve as a broad overview of the food security landscape in recent history and today, while giving the reader a sense of the global environment that our group members took into consideration as they formulated their own chapters. In particular, the background chapter makes these key points:

- While investments in food production and improvements in agricultural yield were significant between the 1960s and 1980s, progress has since then tapered off. Even though the proportion of hungry people to the global population has fallen significantly, the total number of hungry has not fallen much at all, especially in Sub-Saharan Africa and South Asia.
- The Food Price Crisis of 2007-08 re-structured the discourse and environment around food security. It galvanized actors and thrust food security back in the global spotlight. Soaring food prices continue to affect the world's food insecure, and threaten to perpetuate civil unrest around the world.
- Significant threats to food security include: barriers to trade, access to food, biofuels production, rising demand for food, climate change, and environmental degradation. Each of these threats will require very different policy approaches to mitigate their effect on global food security.
- Significant opportunities to increase food security include: yield growth and biotechnology, nutrition, and smallholder and female farmer empowerment. Echoing the threats, each of these opportunities will require careful consideration and tailored policy approaches and implementation.
- The current global context of food security centers on the UN Millennium Development Goals (MDGs) and the L'Aquila Food Security Initiative. While the MDGs have catalyzed global action on food security and other issues, progress has been mixed. Similarly, the \$22 billion commitment in the L'Aquila Food Security Initiative has enhanced global action, but pledges by countries have fallen short and it is unclear what next steps countries will take.
- The United States has deep historical, diplomatic, and national security interests in global food security. With the founding of Feed the Future and a significant increase in funding to agricultural development, the U.S. government has committed itself towards concerted action. This report acknowledges this effort and aims to build upon and refine current U.S. engagement so that it is more effective towards improving global food security.

INTRODUCTION

Over the history of the human race, hunger has remained a constant concern. Whether due to issues of poverty, access, or production, people have found themselves time and again without adequate food or nutrition. While gains in economic development and agricultural technology have drastically improved the state of food security since Thomas Malthus's time, the total number of undernourished people in the world reached over 1 billion people in 2009.¹ Even as the proportion of undernourished persons in the world dropped from 26 to 13 percent between 1969 and 2008, the total number of undernourished persons only decreased from 878 to 850 million people.²

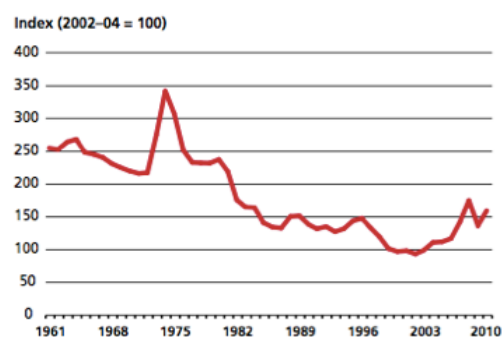
The food price crisis of 2007-08 shone a renewed spotlight on the continued struggles of the food insecure, and the growing pressures of an expanding and increasingly demanding global populace. The global response to date has been strong, marking the urgency that food security now demands. While a number of benchmarks have been set, including a widely disseminated statement by the FAO that global food production must increase by 70 percent by 2050, it remains unclear exactly how countries will act to address the problem of food security and eliminate hunger worldwide.³ It is certain, though, that global cooperation is necessary to achieve this. The United States has significantly restructured and reevaluated many of its aid programs and food policies to produce aid and policy that more effectively combats global food security. However, there still is a long road to travel. This background chapter provides an overview of global food security that will serve as the broader context for the following chapters, which will detail specific recommendations for the United States government on aid and investment delivery, trade and economics, sociocultural considerations, and nature-related issues.

RECENT HISTORY OF FOOD SECURITY

The importance of food security has ebbed and flowed throughout the 20th century, as rapid population growth and consumption demands have overtaken, and been overtaken by, improvements in agricultural production and yield. Thomas Malthus's predictions of a soon-coming worldwide resource crisis did not materialize in the 19th century, in large part due to advances in agricultural technology and the Industrial Revolution. However, the looming threat remains of an ultimate Malthusian constraint on humanity's ability to live off the world's resources and provide for itself. In the 1960s and 1970s, many raised concerns similar to those we face today about the sustainability of the global food system. Fortunately, incredible gains due to fertilizer-intensive, irrigated agriculture introduced by the Green Revolution in the 1960s and 1970s effectively put Malthusian fears to rest, if only temporarily.⁴ Since the Green Revolution, the world has made mixed progress to achieve global food security. On a positive note, the total proportion of undernourished people in the total population has been halved and food security has been significantly bolstered in many countries due to economic development and agricultural productivity gains.⁵ On the other hand, the total number of undernourished people remains at nearly the same level as 1969, with a large number concentrated in Africa and Asia.⁶ Today, it is not so much the past failures as it is the future threats towards food insecurity that worry policymakers. In 2007 and 2008, the dramatic spikes in food prices worldwide acted as beacons that called attention to many of the systemic threats to global food security that have grown over the years and that will decide which direction the world's food security will take in the next few decades.

THE FOOD PRICE CRISIS

Figure 1.1: Food Prices 1961-2010



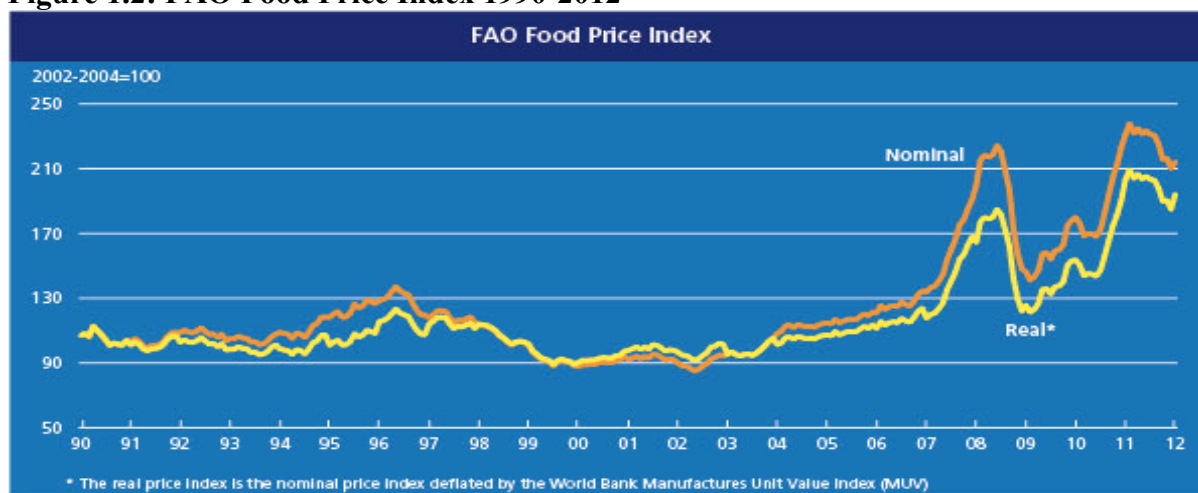
Note: FAO Food Price Index, adjusted for inflation, 1961–2010, calculated using international prices for cereals, oilseeds, meats, and dairy and sugar products. The official FAO Food Price Index has been calculated since only 1990; in this figure it has been extended back to 1961 using proxy price information. The index measures movements in international prices, not domestic prices. The United States gross domestic product deflator is used to express the Food Price Index in real rather than nominal terms.
Source: FAO.

Source: Food and Agriculture Organization of the United Nations, *The State of Food Insecurity in the World 2009*, (Rome: FAO, 2010).

The food price crisis of 2007-08 was an unexpected and violent disruption to global food prices unseen since the 1970s. Food prices actually declined in a fairly stable manner (see Figure 1.1) between the 1982 and 2003.⁷ Looking at Figure 1.2, one sees that from 1990 to 2006, food prices rarely fluctuated beyond the 90-130 range on the FAO's Food Price Index (with 100 as 2002-2004 prices).⁸ However, in 2008 and again in 2011, food prices

spiked to double that of 2002-04, with some crops experiencing even more severe spikes.⁹

Figure 1.2: FAO Food Price Index 1990-2012



Source: Food and Agriculture Organization, "FAO Food Price Index," http://www.fao.org/fileadmin/templates/worldfood/images/home_graph_3.jpg

The impact of the food price crisis was immediately felt by the food insecure, especially those who depended on purchasing food for consumption. As the spikes in food prices began to hit the poor, especially the urban poor, people began to take popular action against their governments. Marco Lagi and other researchers from the New England Complex Systems

Institute cross-examined food prices and the occurrence of food-related riots between 2008 and 2011, concluding, "High global food prices are a precipitating condition for social unrest."¹⁰ In particular, Lagi pinpoints the FAO price index level of 210 as a recent tipping point for food riots, and argues, "A persistence of global food price above this food price threshold should lead to persistent and increasing global unrest."¹¹ In explaining this apparent correlation between food prices and food riots, Lagi claims that food price volatility and price hikes contribute to an erosion of public trust in governments to provide security, in this case food security, for the wider populace.¹² This in turn leads to a decline in public support for the government and manifests in riots and civil unrest.

Figure 1.3: FAO Food Price Index and Incidence of Food Riots, 2004-2012

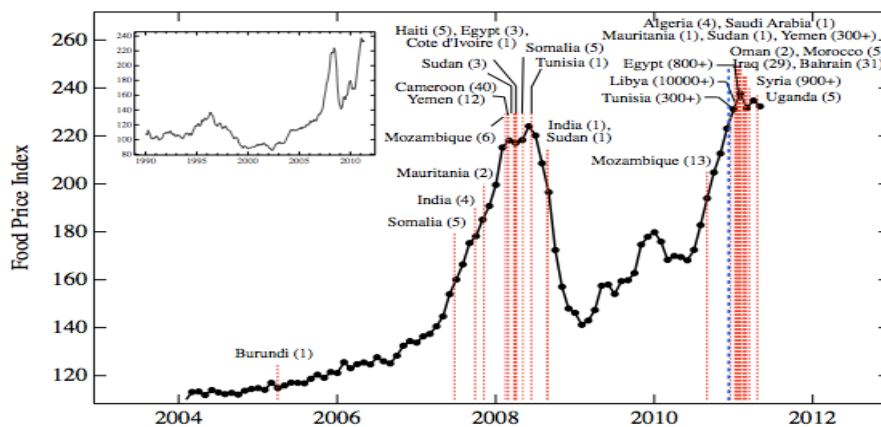


FIG. 1: Time dependence of FAO Food Price Index from January 2004 to May 2011. Red dashed vertical lines correspond to beginning dates of "food riots" and protests associated with the major recent unrest in North Africa and the Middle East. The overall death toll is reported in parentheses [26–55]. Blue vertical line indicates the date, December 13, 2010, on which we submitted a report to the U.S. government, warning of the link between food prices, social unrest and political instability [56]. Inset shows FAO Food Price Index from 1990 to 2011.

Source: Marco Lagi, Karla Z. Bertrand and Yaneer Bar-Yam, *The Food Crises and Political Instability in North Africa and the Middle East* (Cambridge: New England Complex Systems Institute, 2011).

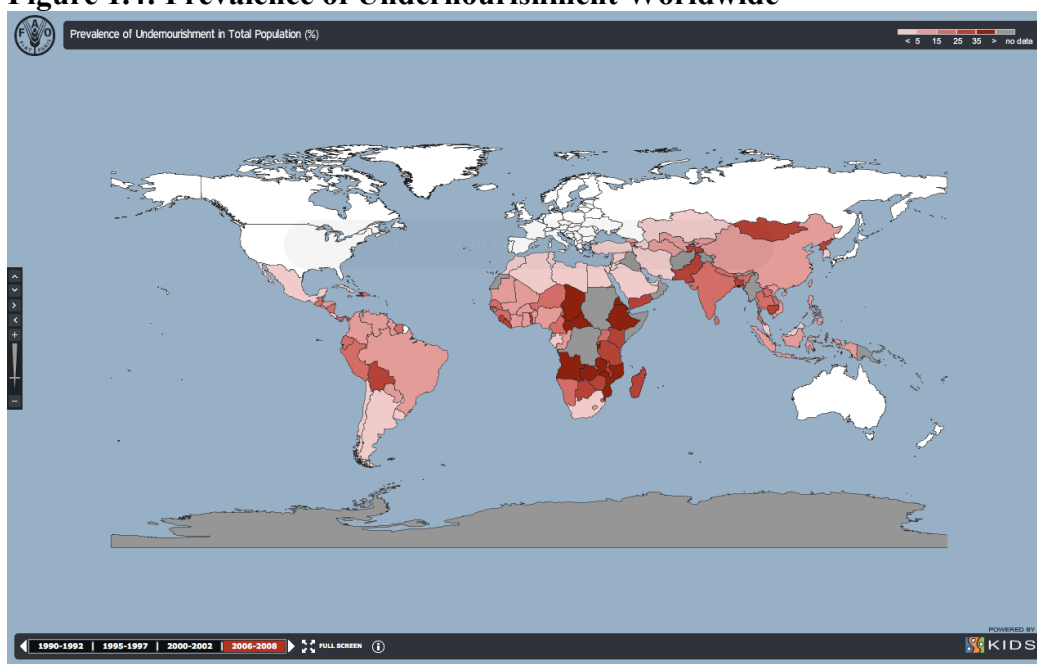
Beyond its impact on the poor and on political systems, the food price crisis had severe reverberations for development aid policy. The food price crisis highlighted both the structural threats to future global food security and the intrinsic importance of food security to the economic development of the Global South. These proximate and structural threats to global

food security include: biofuels production, commodities speculation, stagnant agricultural yields, changing consumer tastes, population growth, unequal access to productive resources, restrictive trade policy, and environmental challenges.

GLOBAL PICTURE

The picture of food security today is mixed: while there is tremendous hope for dramatic improvements in food security, especially in countries that are developing quickly, this hope is tempered by the mixed progress of the past few decades and the food price crisis of 2007-08. Although significant progress has been made in South America, Africa and South Asia remain dangerously undernourished. In Sub-Saharan Africa, 26 percent of the total population is undernourished, compared to 21 percent in South Asia.¹³ Particularly at risk are women and children, who are extremely sensitive to food insecurity. Figure 1.4 illustrates how the global push to address food security has so far failed to fulfill the promise of lofty initial goals.

Figure 1.4: Prevalence of Undernourishment Worldwide



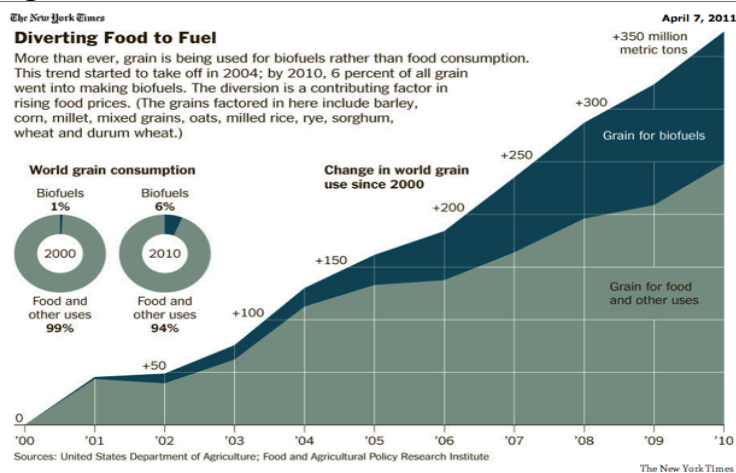
Source: Food and Agriculture Organization, "Hunger," <http://www.fao.org/hunger/en/>.

THREATS

The emergence of food price spikes and the reemergence of Malthusian fears about food security have resulted from impediments to adequate supply and access to food, ongoing increases in demand for food, and emerging ecological threats to sustainable agriculture.

Barriers to trade and access to food have historically hampered the equitable distribution of food around the world. While trade especially has become more open (Chapter 9), access to food still remains a key and complex issue. Current studies from the FAO estimate that around one-third of all food produced for human consumption is wasted either between production and retailing, or in the consumer stage.¹⁴ The prevalence of food waste and the differences of food security between developed- and developing-world people indicate that there is more than enough food produced in the world to feed everyone, but some people simply do not have sufficient access to food. In the global market, price volatility (Chapter 10) and trade barriers play key roles in deciding where food goes and who is left hungry at the end of the day.

Figure 1.5



Source: "Rush to Use Crops as Fuel Raises Food Prices and Hunger Fears," *New York Times*,
http://www.nytimes.com/imagepages/2011/04/07/world/20110407_cassa_ava_graphic.html?ref=earth.

In addition to access issues, the global food supply will face increasing pressures on both the supply and demand-side of the equation. On the supply side, the use of biofuels (Chapter 16) is growing at a significant rate, bolstered by biofuel requirements in the EU and subsidies in the United States. In

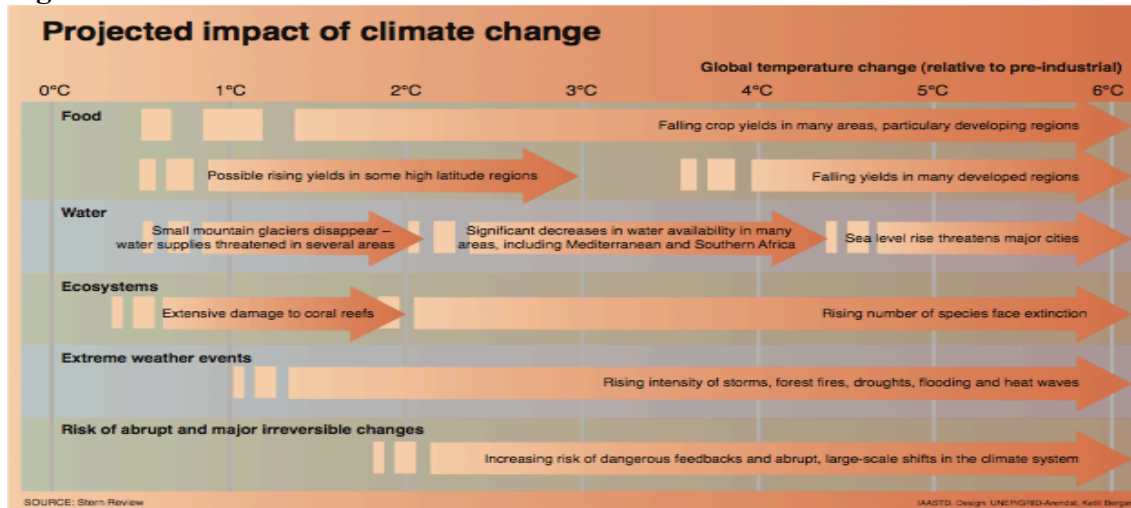
the United States itself, biofuels consume almost 40 percent of total corn produced.¹⁵ More broadly, many have blamed the expansion of biofuels usage for playing a contributing role in the food price crisis.¹⁶

Meanwhile, the demand for food is expected to rise dramatically. As mentioned previously, experts predict that food production must rise by 70 percent by 2050 in order to accommodate both a growing middle class and world population (Chapter 11).¹⁷ The world population is projected to approach 9 billion people by 2050, with much of the population growth concentrated in Africa and Asia, where food insecurity is an especially grave concern.¹⁸ In developing countries and emerging economies, the rise of the urban middle class will create increased demand for more food, especially resource-heavy meats. Current estimates project that meat production must increase by over 200 million tons to 470 million tons annually by 2050, while cereal production must rise from 2.1 to 3 billion tons.¹⁹ This plethora of pressures will create long-term stresses on food supply and food price stability unless concerted action is taken now to mitigate their overall effect in the future.

Finally, the effects of climate change, water issues, soil degradation, and other environmental issues (Chapter 15) pose serious threats to sustainable agricultural production. Temperature increases of more than .2 degrees Celsius per decade are projected by 2030, with even more severe temperature increases possible.²⁰ While impacts of climate change would have very different regional impacts, the net impact of severe climate change would be falling yields in most areas. Future environmental issues may lead to substantial future soil erosion and desertification, clashes over water and other natural resources, and an increased prevalence of extreme climate events.²¹ Water problems may be the most threatening to agricultural production, as "water scarcity will increasingly constrain production," and force new methods of

dealing with water and water problems.²² Meanwhile, land degradation currently affects 38 percent of the world's cropland, and threatens to spread as salinization, pollution, soil nutrient depletion, and pesticide and fertilizer use become bigger issues.²³

Figure 1.6



Source: International Assessment of Agricultural Knowledge, Science and Technology for Development, *Agriculture at a Crossroads Synthesis Report* (Washington D.C.: IAASTD, 2009), 48.

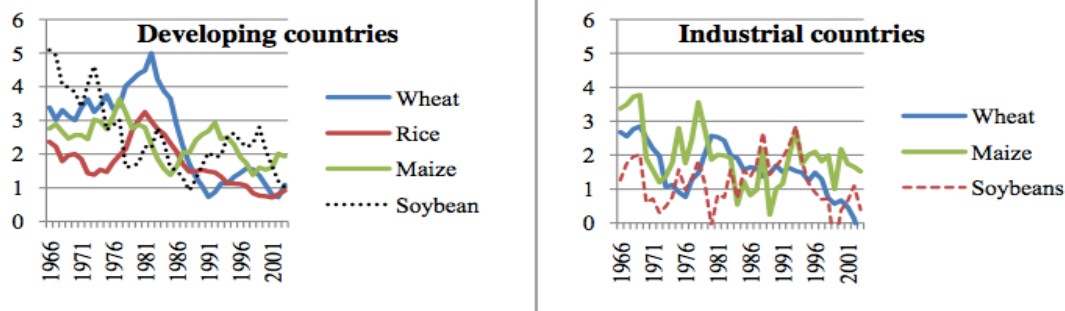
OPPORTUNITIES

While the threats to global food security are significant, countries and development partners have a number of avenues to lower global hunger rates and create a sustainable global food system. In particular, research institutions are developing crops that can produce higher yields, are adaptable to climate change, and that are more nutritious than before. There are also significant opportunities to increase the nutrition of the food insecure, and empower smallholder farmers and women to take greater ownership in agricultural production and policy.

Yield growth is largely pointed to as the primary source of increased agricultural production moving forwards, as opposed to expansion of arable land. The FAO noted that yield growth would have to account for 80 percent of the desired increase.²⁴ However, yield growth has declined to worrisome levels over recent years, with the developing world experiencing 1 to 2 percent average annual growth this decade in wheat and rice yields, as compared to mid-1980s

rates of 3 to 5 percent.²⁵ Even as developing countries strive to close such yield gaps, such efforts have at times resulted in disastrous consequences. The International Land Coalition, World Bank, and others have reported extensively on the growing phenomenon of large-scale agricultural investments (Chapter 13) by businesses in developing countries, popularized as "land grabs," that have exposed rural populations to massive losses in land and resource rights in disregard to local customary land rights.²⁶ Media reports have estimated that investors have attempted to acquire a total of 203.4 million hectares of farmland in the past decade, of which the International Land Coalition has confirmed firsthand the attempted acquisition of 70.9 million hectares of land.²⁷ Because of investor promises to transplant high yield western industrial agriculture to poor-performing farmland, governments have welcomed such investment. Alternatively, public-private collaborations and partnerships (Chapter 5) are leveraging public sector funds to incentivize private sector actors to create sustainable, equitable, and effective global food systems. Biotechnology (Chapter 7) stands as another promising avenue for increasing crop yields. While controversial, the development of GMOs has been strongly backed by the Gates Foundation and other organizations, with developments ranging from yield optimization, nutrition enhancement, and tolerance to environmental factors.²⁸

Figure 1.7



Note: Figures show 10-year moving averages of annual growth rates, estimated by log linear trend regression.

Source: Authors, based on data from FAOSTAT.

Source: Klaus Deininger and Derek Byerlee, *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* (Washington D.C.: World Bank, 2010), 10.

In addition to more direct approaches to increasing crop yields, improvements in nutrition and smallholder and women empowerment can also play significant roles in improving overall food security. Especially within the first two years of a child's life, proper nutrition (Chapter 12) can play a significant role in encouraging proper physiological development and health. Currently, 23 percent of children under five in the developing world are underweight, including 43 percent of Southern Asian children under five.²⁹ Also, smallholder (Chapter 6) and women (Chapter 14) -targeted agricultural development policies hold immense promise for encouraging sustainable agricultural growth. Currently, smallholder farmers make up the majority of farmers in Central America and all major regions of Africa and Asia.³⁰ Development projects targeted directly towards smallholder farmers can better target the bulk of agricultural producers to ensure their long-term food security. Similarly, women farmers make up 43 percent of the global agricultural workforce.³¹ The empowerment of women holds immense potential: it is estimated that women could increase crop yields by 20 to 30 percent with equal access to resources as men, leading to a 2.5 to 4 percent increase in total crop production.³² While investments in nutrition and smallholder and women empowerment may not have as immediate or identifiable impacts on food security, they hold great promise as gateways towards long-term, sustainable food security.

GLOBAL ACTION

Stepping away from the macro-scale picture of food security, it is also important to view the context of global action to better inform suggestions for U.S. policy. The two primary rallying points of global action are the UN Millennium Development Goals and action plan, developed between 2000 and 2005, and the 2008 L'Aquila commitments towards food security, made at the L'Aquila G8 summit.

The UN Millennium Development Goals (Chapter 3) are the culmination of a UN-led movement to develop specific goals for global development by a set date to catalyze action at the global, regional, and national levels.

Millennium Goals Applicable to Food Security

Goal 1: Eradicate extreme poverty and hunger

Goal 3: Promote gender equality and empower women

Goal 4: Reduce child mortality

Goal 5: Improve maternal health

Goal 7: Ensure environmental stability

Goal 1 of the MDGs, to eradicate extreme poverty and hunger, relates directly to food

security, with targets for reducing total and child hunger.³³ Other goals have indirect

impacts on agricultural development and

food security: Goal 3 promotes gender

equality and women empowerment; Goal 4

addresses child mortality; Goal 5 deals with

maternal health; and Goal 7 ensures

environmental sustainability, including

renewable water resources.³⁴ While the

MDGs served as powerful catalysts for

global action, with the United States lending

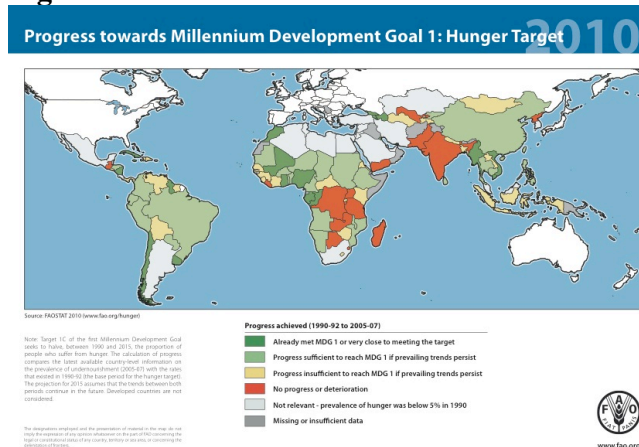
strong support behind them, progress to-date

has been mixed as the 2015 deadline

approaches. As seen in Figure 1.8, while

some countries are on track to meet their

Figure 1.8



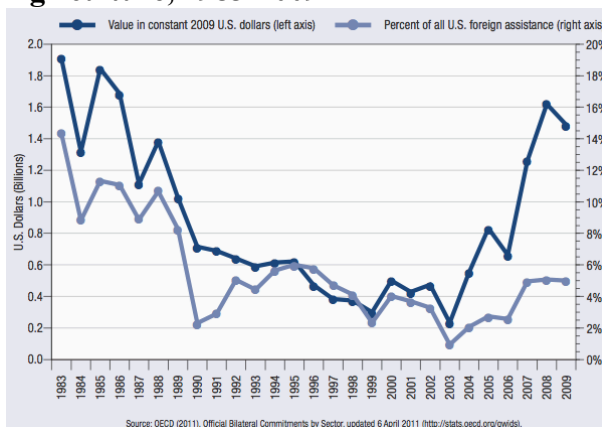
Source: Food and Agriculture Organization,
http://www.fao.org/fileadmin/templates/es/Hunger_Portal/MDG_Progress_Map.pdf

MDG goals, many of the food insecure countries in Sub-Saharan Africa and South Asia are not on track, showing either no progress or negative progress towards their country-specific goals.³⁵

Following the food price crisis, the international community mounted a concerted response at the 2009 L'Aquila G8 Summit. At the L'Aquila Summit, the United States pledged \$3.5 billion in joining 26 other countries and 17 international agencies that pledged \$22 billion towards food security aid.³⁶ The L'Aquila pledges marked a significant turning point in terms of international recognition of food security and of international cooperation towards achieving a food secure world. However, due to a lack of follow through and fiscal reporting issues within many countries, only 22 percent of L'Aquila pledges had been accounted for with just one year remaining in the three-year pledge window.³⁷ With the pledge fulfillment fast approaching, many countries seem destined to fall short of their original commitments. Given the current fiscal crisis, it remains unclear what next steps from the L'Aquila Food Security Initiative, if any, these countries will take. Moving forward in this uncertain climate may allow the United States to spearhead a concerted effort to renew or build on past L'Aquila commitments.

U.S. INTERESTS

Figure 1.9: U.S. Foreign Assistance for Agriculture, 1983-2009



Source: Catherine Bertini and Dan Glickman, *2011 Progress Report on U.S. Leadership in Global Agricultural Development* (Chicago: The Chicago Council on Global Affairs, 2011), 2.

Having established the broader picture of food insecurity, the opportunities and threats facing food security in the future, and the context of global action, we now turn to the United States' interests and recent action in food security. The United States has historically been very involved in agricultural development issues, dating back to the

Green Revolution. Following the Green Revolution in Asia, the world's attention to global development and food security hit a lull. This corresponded with a broader reduction of staff members throughout USAID, during which USAID's permanent staff decreased from 15,000 during the Vietnam War to fewer than 3,000 in 2009.³⁸ As seen in Figure 1.9, funding for U.S. foreign agriculture-related assistance bottomed out in the 1990s and the early 2000s,. However, as noted previously, the 2007-08 food price crisis sparked interest in agricultural development, and funding rose back again in the late 2000s. This trend should continue with the founding of Feed the Future and a more general focus on increased development-related spending, but the U.S. budget crisis may have adverse short-term impacts on funding.

The United States is interested in global food security for a number of economic, diplomatic, and national security reasons. Given the United States' status as a world leader in agricultural production, it has an intrinsic interest to open up markets abroad and promote U.S. agricultural goods in foreign economies. Such concerns and interests are built into the U.S. Farm Bill (Chapter 8) and in the ways that the U.S. government approaches the billions of dollars in humanitarian aid (Chapter 4) it contributes annually, most of which consists of U.S.-produced food. In addition, food security and agricultural development are crucial pillars of broader economic development and political stability in the developing world, especially in predominately rural societies. As such, agricultural development plays a crucial role alongside global health and more general economic development efforts to help foreign countries. Aid for agricultural development, especially if effective, can solidify diplomatic bonds with countries and create more stable economic and political systems. As shown by the food riots following the 2007-08 food price crisis and by the prevalence of food insecurity in many areas of political instability, food security has a strong bond with broader political and economic stability. By

taking preventative measures now to ensure food security, the United States decreases the chances that it will have to take emergency defense or humanitarian measures in the future.

Currently, the U.S. food security program is undergoing major changes in governance, policy, and budget that provide a great opportunity for this report to contribute to. Under the State Department and USAID's First Quadrennial Diplomacy and Development Review (QDDR), the USAID-led Development wing of the U.S. government was elevated as a third pillar of national security alongside Diplomacy and Defense.³⁹ Additionally, USAID began an ambitious reform effort called USAID Forward to deliver more efficient and effective development aid. Most relevantly to U.S. food security programs, USAID Forward aims to "increase use of reliable partner country systems and institutions," while focusing on "strengthening the capacity of local entities" and tightening procurement procedures.⁴⁰ Following its L'Aquila pledges and the QDDR, the U.S. government created the Feed the Future initiative (Chapter 2) to head the implementation of food security-related funds and act as the coordinator of broader global food security efforts within the U.S. government.⁴¹ Feed the Future was intended as a three-year, \$3.5 billion initiative: to date, it has received \$1.9 billion but needs an appropriation of \$1.6 billion in the FY2012 budget to reach its original commitment via L'Aquila.⁴² Feed the Future is implementing country-owned projects in 20 countries accompanied by extensive monitoring and evaluation, and should release its first program review in Spring 2012.⁴³ The U.S.'s other primary food security involvement is its contribution to the Global Agriculture and Food Security Program (GAFSP), a multilateral development initiative funded by the U.S., Canada, Spain, and the Gates Foundation, among others.⁴⁴ In a worrisome turn, recent U.S. budget deliberations have challenged U.S. funding commitments: a two-year

commitment to GAFSP has turned into a four-year one, while FtF funding has increased incrementally, rather than by leaps and bounds.⁴⁵

With its commitments to the L'Aquila Initiative expiring in FY2013 and with the first Strategic Review of Feed the Future due in Spring 2012, the United States has a key opportunity to reevaluate its food security programs. The current budgetary environment is bleak, with potential cuts to foreign assistance on the way, but that possibility does not preclude continued action and investment in programs to enhance global food security. The United States government has the ability to create a cohesive and impactful food security response that can leverage existing programs and accomplish more with less. The policy direction that the United States sets in the coming months and years will have profound effects on food policy and global food security for decades down the road. For the United States government, the challenge comes with setting a policy direction that is realistic, impactful, and sustainable over the long run.

CONCLUSION

The world today faces an uncertain and rapidly shifting picture of global food security. While the food price crisis of 2007-08 shone a stark spotlight on the global food security picture, the picture itself is far from clear. We are certain that climate change, population growth, changing consumer taste, and biofuels demand will have an impact on global food security, but it remains to be seen what exactly that impact will be. Similarly, efforts to increase food security via biotechnology, nutrition enhancement, smallholder farming, and empowerment of women farmers hold tremendous potential, but have an unclear long-term impact. An already difficult policy environment is made even more troublesome by the complexity of global food security and the uncertainty of many of the threats and opportunities surrounding it. Nevertheless, the

United States has a tremendous opportunity to lead the way through the uncertain landscape of food security and to capitalize on the current outpouring of support for food security efforts around the globe. While no one has the exact answers, the following recommendations within this report will outline a number of initial steps that the United States can take to refine and enhance its current food security-related policies. It is our hope that these recommendations can play some role in helping the United States to act as an effective leader of the global food security movement and to contribute to a more food-secure world.

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² Food and Agriculture Organization of the United Nations, "Hunger," accessed February 19, 2012. <http://www.fao.org/hunger/en/>.

³ Food and Agriculture Organization, *How to Feed the World in 2050* (Rome: Food and Agriculture Organization of the United Nations), 2.

⁴ Bill and Melinda Gates Foundation, "2012 Annual Letter from Bill Gates," accessed February 23, 2012, <http://www.gatesfoundation.org/annual-letter/2012/Pages/home-en.aspx>.

⁵ Food and Agriculture Organization, "Hunger."

⁶ Ibid.

⁷ Food and Agriculture Organization, *The State of Food Insecurity*.

⁸ "World Food Situation: FAO Food Price Index," accessed February 19, 2012, <http://www.fao.org/worldfoodsituation/wfs-home/foodpricesindex/en/>.

⁹ Ibid.

¹⁰ Marco Lagi, Karla Z. Bertrand and Yaneer Bar-Yam, *The Food Crises and Political Instability in North Africa and the Middle East* (Cambridge: New England Complex Systems Institute, 2011).

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¹² Ibid., 4.

¹³ United Nations, *Millennium Development Goals Report 2011: Stat Annex*, accessed February 24, 2012, <http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2011%20Stat%20Annex.pdf>.

¹⁴ Jenny Gustavsson, Christel Cederberg, Robert van Otterdijk, and Alexandre Meybeck, *Global Food Losses and Food Waste* (Gothenburg: Swedish Institute for Food and Biotechnology and Rome: FAO, 2011), v.

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- ²² Ibid., 49.
- ²³ Ibid., 59.
- ²⁴ *How to Feed*, 2.
- ²⁵ Klaus Deininger and Derek Byerlee, *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* (Washington D.C.: World Bank, 2010), 10.
- ²⁶ Ward Anseeuw, Liz Alden Wily, Lorenzo Cotula, and Michael Taylor, *Land Rights and the Rush for Land* (Rome: International Land Coalition, Global Commercial Pressures on Land Research Project, 2012)
- ²⁷ Ibid., 23.
- ²⁸ Bill and Melinda Gates Foundation, *Agricultural Development: Strategy Overview*, (Seattle: Bill and Melinda Gates Foundation, 2011), 4.
- ²⁹ United Nations, *The Millennium Development Goals Report 2011*, (New York: United Nations, 2011), 13.
- ³⁰ Deininger, 21.
- ³¹ USAID, "The Global State of Agriculture," accessed February 22, 2012, <http://50.usaid.gov/infographic-the-global-state-of-agriculture/usaaid-agriculture-1000/?size=infographicMedium>.
- ³² Ibid.
- ³³ United Nations, *Millennium Development Goals Report 2011*, 6, 12.
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II. ASSESSING U.S. FOOD SECURITY POLICY: PROGRAMS, DIPLOMACY, DEVELOPMENT



Ch.2 Options for Feed the Future: Expanding Within and Beyond Country Ownership

Grant Nguyen

Abstract

Feed the Future (FtF) is shaped out of recommendations in the First Quadrennial Diplomacy and Development Review (QDDR), promises made during the Paris Declaration on Aid Effectiveness, and U.S. aid pledges towards food security at the 2009 L'Aquila Summit. It has relied on a policy of engaging in targeted country-led investment in food insecure countries. The effectiveness of this strategy is still uncertain, pending upcoming strategic reviews by FtF and others. However, the focus on country ownership threatens to become too narrowly focused and distract from alternative means of investment. Three considerations for the U.S. and FtF are: 1) increased inter-departmental cooperation within USG agencies, including whole-of-government approaches; 2) broadened engagement beyond the current 20 partner countries involved with FtF; and 3) expanded regional and sub-national engagement. By assessing and engaging opportunities within these three areas, the U.S. government may be able to better structure to develop sustainable food security structures at the global, national, and sub-national levels.

Policy Recommendations

- Continue working through existing country structures, while exploring methods of strengthening and building on them.
- Identify potential hires and fill the Global Food Security Coordinator and Deputy Coordinator for Diplomacy positions within USAID/FtF.
- Analyze potential options for "whole-of-government" coordination between U.S. development agencies.
- Engage diplomatically with an additional 10-20 non-FtF partner countries through FtF and multilateral channels.
- Develop an explicit graduation plan to be built into existing multi-year plans for FtF partner countries in the Phase II investment stage.
- Explore forms of regional engagement beyond trade-based capacity building and advising.
- Identify appropriate sub-national engagement strategies, specific to current partner countries.

ISSUE

While the push by Feed the Future (FtF) and other U.S. government initiatives for targeted country engagement and country ownership of development projects is a productive step forward, it also threatens to limit the scope and overall impact of U.S. development efforts. Country engagement primarily through FtF may marginalize regional or sub-national actors, as well as non-partner countries left on the sidelines. In addition, current country engagement lacks significant formal coordination or alignment with other U.S. development initiatives such as Millennium Challenge Corporation (MCC) and the Global Health Initiative (GHI). The U.S. government should take care not to focus too strictly on narrow national-level engagement at the expense of coordinated multi-departmental "whole-of-government" country investment, broader engagement with food insecure countries, and expanded regional and sub-national programs through its food security-related initiatives.

BACKGROUND

During the Bush Administration, a two decade-long decline in agricultural development funding reached a new low, with funding in the mid-2000s averaging only \$270 million annually.⁴⁶ However, in light of the 2007-08 food price crisis and a resulting \$3.5 billion three-year commitment made at the L'Aquila Summit, funding for agricultural development rose to \$813 million in 2010 and \$1.07 billion in 2011.⁴⁷ These budgetary increases came with a restructuring of U.S. agricultural development programs, part of a broader reassessment of U.S. development programs. The USAID and State Department's First Quadrennial Diplomacy and Development Review (QDDR) analyzed the role of programs within Diplomacy and Development, and elevated Development, along with Diplomacy and Defense, "as the core

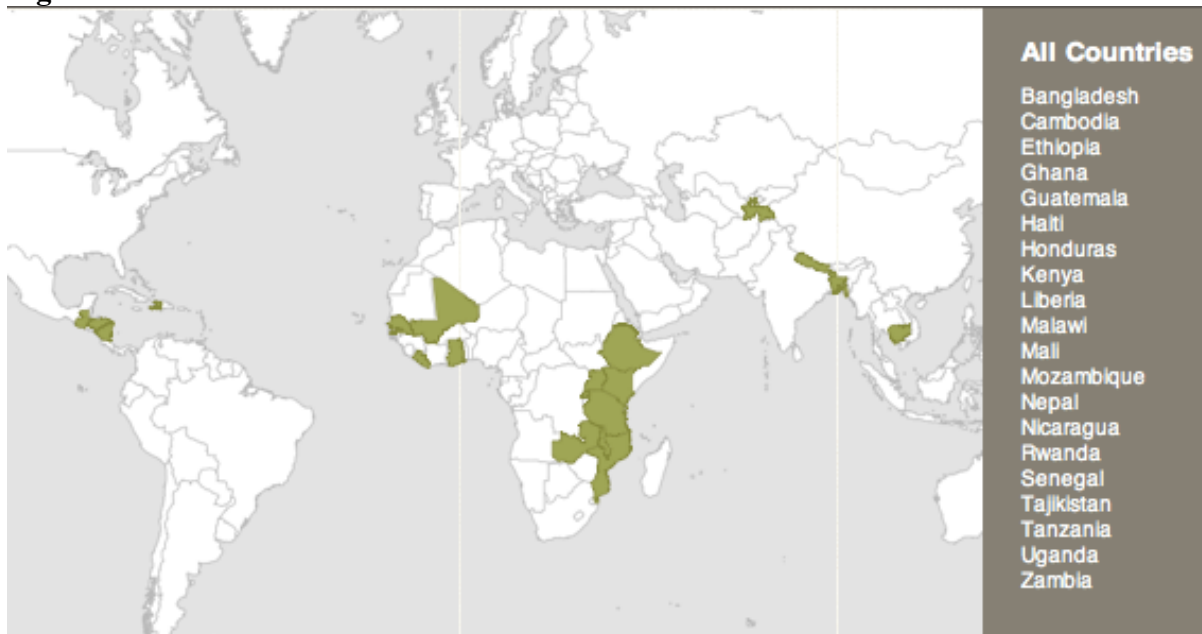
pillars of American foreign policy, [which] must mutually reinforce and complement one another in an integrated, comprehensive approach to national security.”⁴⁸ This re-framing of Development encouraged a restructuring of USAID and related development programs to become more effective, more efficient, and better at scaling up. In May 2010, as a part of this restructuring, President Obama authorized the creation of a new agency, Feed the Future, to head U.S. food security efforts.⁴⁹ With FtF entering its third year of operation and the United States coming close to fulfilling its \$3.5 billion pledge at the L'Aquila conferences, the United States is at an important crossroads where it can concretize the structures, ideologies, and values for its food security programs. The United States can set the stage for more effective long-term food security programs by exploring ways to connect efforts across programs, and by expanding engagement to regional, sub-national, and non-partner country actors.

Feed the Future

Building off of the results from the QDDR and the United States' L'Aquila promises, FtF is now the United States' primary vehicle for long-term agricultural development aid. FtF began as U.S. State and USAID collaboration, but has now shifted under USAID after the QDDR.⁵⁰ To this extent, USAID established a Bureau for Food Security in November 2010 to house FtF's operations.⁵¹ While USAID has implemented food security programs for decades, FtF is marking a new way forward for agricultural development aid. Leveraging the \$3.5 billion L'Aquila pledge as funding, FtF is designed as a more comprehensive, efficient, accountable, and country-focused food security arm within U.S. development circles.⁵² To that aim, FtF has focused much of its attention on two issues: country ownership, and rigorous monitoring and evaluation of projects.⁵³ FtF is also the product of a new level of interagency cooperation, with its planning and implementation handled by a cross-departmental group involving USAID, USDA, MCC, the

U.S. Department of Treasury, and the Peace Corps.⁵⁴ Currently, FtF focuses only on 20 countries around the world, reflecting an emphasis on targeted, significant in-country investment.

Figure 2.1: FtF Partner Countries



Source: Feed the Future, "Countries," <http://www.feedthefuture.gov/countries>.

While initially promising, FtF has had significant issues solidifying its core leadership. Two years into operation, FtF lacks a Global Food Security Coordinator, and only lists on its website two administrators: Tjada D'Oyen Mckenna, Deputy Coordinator for Development, and Jonathan Shrier, Acting Special Representative for Global Food Security and Acting Deputy Coordinator for Diplomacy.⁵⁵ The Coordinator was originally tasked with setting FtF's leadership and strategy, overseeing implementation of projects, allocating resources, engaging with stakeholders, and guiding "joint planning and collaboration" with other USG agencies beyond USAID and State.⁵⁶ While the lack of a Coordinator is not indicative of overall progress, it has had a significant impact on FtF's efforts to establish its identity and role moving forwards. This organizational uncertainty also prevails in other areas of FtF. FtF does not publish information on the number or types of staff below the Deputy Coordinator position, nor any sort

of organizational charts of internal reporting channels. It is thus unclear how FtF organizes its own personnel and its chains of accountability, which also may have an effect on the perception of and functioning of the organization.

Adjoining FtF's uncertain leadership structure is an unclear institutional capacity to implement projects. Employees consist of a historically understaffed but growing corps of staffers to design and implement on-the-ground projects. In 2008, USAID had "only two engineers, 16 agriculture experts and 17 education experts" on its staff.⁵⁷ This led to a perception of an over-reliance on contracting and a deterioration in coherence and effectiveness overall.⁵⁸ In addition, critics bemoaned USAID's fragmented country-level agricultural development strategy and officers' inability to manage many of the small-scale projects within USAID's agricultural development portfolio.⁵⁹ In response to these criticisms and to prepare for implementation of FtF programs, USAID has set a goal to increase its agriculture-related staff by 105 new officers by 2013.⁶⁰ As of March 2011, it had hired 56 new officers.⁶¹ While this influx of new employees should significantly help FtF's ability to implement programs within its 20 countries, it will take time for the impact of the hires to be felt and for new officers to begin handling significant project responsibilities. The extent to which programs will be implemented effectively and scale up will depend on the ability of the new hires to acclimate quickly to FtF and add value to their respective programs.

U.S. Development and Aid Programs

Following the release of the QDDR and the Presidential Policy Directive on Global Development, the Obama Administration authorized the creation of the Global Climate Change Initiative (GCCCI) and the Global Health Initiative, which built off of the Bush Administration's HIV/AIDS-related PEPFAR program. Along with the Millennium Challenge Corporation, the

GHI, GCCI, and FtF were positioned as more efficient, effective, and innovative offshoots of the old U.S. development institutions (USAID and others). These institutions act as the direct oversight institutions for the first four of the six areas of focus for the U.S. Development wing, as outlined under the QDDR: these were sustainable economic growth, food security, global health, and climate change.⁶² This left only democracy and governance, and humanitarian issues as primary focus issues without specific initiatives to head them. Similar themes emerge throughout MCC, GHI, GCCI, and FtF: country ownership, selective partnership, and accountability. Altogether, these institutions specifically address four of the six developmental areas of focus under the QDDR, leaving humanitarian assistance and democracy and governance without new programs. These new programs, taken as a whole, represent a great opportunity for the United States to re-focus its development initiatives to be more effective and impactful.

While the creation of MCC, GHI, GCCI, and FtF demonstrates a commitment to reevaluation and reform, it also threatens to create redundancy and an inability to effectively align in-country programs. Figure 2.2 illustrates the degree of overlap between U.S. in-country agencies related to food security. In one example, FtF may be working to eliminate malnutrition and food insecurity for a set of malnourished African villagers, while PEPFAR may also be providing HIV/AIDS medication to those same people.⁶³ Malnourishment and HIV/AIDS are tightly linked, and thus coordination between these agencies could produce synergistic gains for both programs. Of the \$6.9 billion appropriated to MCC for FY 2005-2009, 56 percent went towards agriculture-related activities that now must be coordinated with FtF.⁶⁴ Past statistics on aid flows help to illustrate the multi-faceted flow of money and aid towards the developing world. In 2008, out of a sample of 12 FtF partner countries in Sub-Saharan Africa, the U.S. expended 68 percent of its aid towards Global Health (primarily HIV/AIDS-related expenditures

through PEPFAR), 17.4 percent to humanitarian assistance, 3.8 percent to agricultural development, and 2.5 percent to non-agricultural economic growth.⁶⁵ Even though various U.S. government initiatives often implement development and aid programs in the same region, Mercier points out that "the existing management and oversight structure of the various U.S. development programs is also an obstacle to more effective linkages between the programs."⁶⁶ Each organization answers to different stakeholders and strives to achieve different goals, complicating jointly managed efforts. Consequently, there appear to be substantial political and organizational impediments against closer collaboration between departments, even where significant benefit can arise from collaboration.

Figure 2.2: U.S. Agencies and Food Security-Related Activities, 2008

Types of activities	USAID	MCC	Treasury*	USDA	State	USYDA	DOC	Peace Corps	USSTR	OMB [†]
A. Food aid										
Emergency food aid	•			•	•		•			
Nonemergency food aid	•			•	•					
B. Nutrition										
Supplementary feeding and micronutrient supplementation	•									
Nutritional education, counseling, and assessment	•			•				•		
Assistance focusing on especially vulnerable groups	•			•				•		
C. Agricultural development										
Agricultural technologies	•	•		•	•	•				
Farming techniques and agricultural inputs	•	•		•	•	•		•		
Agricultural value chains, including investments in food processing and storage	•	•		•		•				
Agricultural market development	•	•		•						
Agricultural risk management	•	•		•	•	•				
Agricultural research and development, education, and training	•	•		•	•		•	•		
Irrigation and watershed management	•	•		•		•	•	•		
Maintaining the natural resource base	•	•		•	•	•		•		
D. Rural development										
Land tenure reform	•	•								
Rural infrastructure	•	•		•			•			
Microlending and access to other credit	•	•		•		•		•		
E. Safety nets										
	•				•					
F. Policy reform										
Government food security-oriented policy reform	•		•	•	•	•				
Encouraging private sector investment	•		•	•	•				•	
Strengthening national and regional trade and transport corridors	•		•	•	•	•			•	
G. Information and monitoring										
	•			•			•			
H. Other types of food security assistance										
	•			•	•	•				
I. Future challenges to food security										
	•	•	•	•	•		•			

Source: GAO analysis of the agencies' responses to the data collection instrument.
 *Treasury reported that its involvement in food security is in the area of policy reform and through its participation as the U.S. representative at multilateral development institutions, which support a range of global food security activities, such as agricultural and rural development.
 †OMB is not an implementing agency for global food security activities and, as such, does not have programs and activities to report.

Source: United States Government Accountability Office, *Global Food Security: U.S. Agencies Progressing on Governmentwide Strategy, but Approach Faces Several Vulnerabilities* (2010), <http://www.gao.gov/new.items/d10352.pdf>

Even though the barriers to inter-agency collaboration are high, there is promise for in-country collaboration between FtF, GHI and MCC. Both GHI and MCC engage in similar country-led partnerships to FtF, with MCC going a step further and creating compacts between government and MCC that are published. While the GHI is still being put into action, it has posted strategies for 8 GHI Plus and 13 other GHI countries, among a total of more than 80 countries where GHI-related activities are underway.⁶⁷ Of those countries, many are also recipients of MCC and FtF aid. MCC, since its creation in 2004, has engaged with countries in Threshold and Compact investment. Threshold investments, similar to FtF's Phase I investments, institute reform and capacity building for MCC Compacts, which are multiyear agreements between MCC and the partner country.⁶⁸ MCC has served 13 Threshold countries and 24 Compact countries, of which 13 are also involved in FtF programming.⁶⁹ The U.S. government can take advantage of the large overlap between MCC and FtF, and presumably with GHI, by ensuring that development programs are well aligned and coordinate with one another.

In addition to long-term development aid, the U.S. must also deal with difficulties in coordinating humanitarian aid. The newly created Bureau of Global Food Security now coordinates all State Department food aid and agricultural development efforts.⁷⁰ However, it does not have the authority to handle humanitarian aid, which is handled by the Bureau for Democracy, Conflict, and Humanitarian Affairs. While agricultural development expanded to 8.2 percent of the aid share by 2010, humanitarian aid still commanded more money with 12 percent of the total share.⁷¹ Especially in food-insecure regions prone to drought, coordination between such short-term and long-term aid could reap immense benefits, but it currently appears as if the structures to do so are not yet in place.

The increasing decentralization of development funds has created a greater need for crosscutting collaboration among agencies. Current U.S. efforts have been significant on paper, but with unclear results. Epstein notes "it is clear that coordination can reap significant benefits for closer cross-program collaboration if (structural impediments to collaboration) can be identified and addressed."⁷² To that end the Bureau of Global Food Security was tasked with leading "a whole-of government effort to implement President Obama's Feed the Future initiative," engaging in interagency coordination between State Department, MCC, USDA, private sector, NGOs, and others.⁷³ In addition, the United States Government launched in 2009 the National Security Council Interagency Policy Committee on Agriculture and Food Security and the Global Hunger and Food Security working team, which "are improving coordination among numerous agencies, particularly at headquarters."⁷⁴ The USG earned a score of 9 out of 10 from the Chicago Council for the Council's progress report benchmark: "Improve interagency coordination for America's agricultural development assistance efforts."⁷⁵ The Chicago Council applauded the interagency cooperation in creating FtF's results framework and indicators, as well as the creation of the Norman Borlaug Commemorative Research Initiative, a collaborative partnership between USAID and USDA, and the 1,000 Days Initiative, a public-private partnership supporting the Scale Up Nutrition movement within FtF.⁷⁶ While macro-scale coordination between the agencies has culminated in the above productive initiatives, there is no clear data on the level of effective country-level collaboration that Epstein, Mercier, and other outside analysts have called for.

Country Ownership and Engagement

The country ownership emphasis of FtF, MCC, and other USG initiatives arose as part of a global donor movement towards country-owned investment and improved aid effectiveness. In

the Paris Declaration on Aid Effectiveness (2005) and Accra Agenda for Action (2008), developed and developing country ministers committed to "[Being] guided by the development strategies and priorities established by partner countries."⁷⁷ Following the Paris Declaration, the L'Aquila Initiative applied the concept of country ownership to food aid-specific organizations, stating, "in Africa, NEPAD (the New Partnership for Africa's Development)'s Comprehensive Africa Agriculture Development Program (CAADP) is an effective vehicle for ensuring that resources are targeted to a country's plans and priorities," and notes that "local ownership must begin with the national political will to develop and implement comprehensive food security strategies..."⁷⁸ The aforementioned CAADP required the 23 involved countries to increase investment spending on agriculture to 10 percent of their budget, increase agricultural growth by 6 percent annually, and produce concrete country investment plans (CIPs).⁷⁹ The CIPs are timely and useful tools for directing investment toward productive activity and established funding gaps in current plans. However, the L'Aquila pledges do not come close to fully closing the funding gaps for many of these countries: this gap is \$36.3 billion total for the 20 African countries in the advanced stage of the CAADP process.⁸⁰

Reflecting the global push for country ownership, FtF highlights its engagement at the country level, noting, "Country ownership provides the most effective means to coordinate development efforts and achieve sustainability in reducing hunger and poverty."⁸¹ Following the lead of the USAID Forward reforms and the L'Aquila Initiative, FtF implementation adopts a "host country-led approach" where FtF works through and strengthens existing host country mechanisms of aid delivery.⁸² FtF develops strategic plans aligned with CIPs, operationalizes them into implementation plans, and implements them on the ground.⁸³ The implementation phase is especially tricky: in working through existing structures, FtF may encounter significant

difficulties in the capacity of host governments and its own ability to help strengthen this capacity.⁸⁴ FtF selected its initial 20 partner countries based on 5 criteria: level of need, opportunity for partnership, potential for agricultural growth, opportunity for regional synergy, and resource availability.⁸⁵ In designing its investments, FtF categorizes countries into three categories (Figure 2.3): Phase I, Phase I/Potential Accelerated Investment, and Phase II countries. Phase I countries receive foundational investments to help develop investment plans and build government capacity for increased investment in Phase II.⁸⁶ Within Phase I, countries can graduate to Potential Accelerated Investment status where, pending successful review, they can move up to Phase II investment.⁸⁷ In Phase II, core investments increase significantly and build off the platform of foundational investment provided in Phase I.⁸⁸ Currently, only two countries are in Phase II, reflecting the newness of FtF's programs, while ten are Phase I and seven are Potential Accelerated Investment countries.⁸⁹

Figure 2.3: FtF Investments by Country

Country Request by Organizational Unit, FY 2012	
Feed the Future	
ORGANIZATIONAL UNIT	AMOUNT
Phase I	\$167,260,000
Haiti	\$35,700,000
Senegal	\$28,000,000
Malawi	\$19,000,000
Liberia	\$17,000,000
Zambia	\$15,000,000
Guatemala	\$13,000,000
Tajikistan	\$11,560,000
Mozambique	\$10,000,000
Nepal	\$10,000,000
Cambodia	\$8,000,000
Potential Accelerated Investment Countries	\$275,751,000
Bangladesh	\$70,000,000
Uganda	\$47,000,000
Rwanda	\$47,000,000
Mali	\$33,751,000
Ethiopia	\$29,000,000
Kenya	\$29,000,000
Honduras	\$20,000,000
Phase II	\$120,000,000
Ghana	\$60,000,000
Tanzania	\$60,000,000
Other Country Agricultural Programs	\$152,261,000
Community Development & Economic Resilience	\$109,000,000
Private Sector Incentive Programs	\$25,500,000

Source: Foreignassistance.gov, "Feed the Future Initiative," http://foreignassistance.gov/Initiative_FTF_2012.aspx?FY=2012#ObjAnchor.

There is little available information on the level of engagement by FtF with countries that are not yet funded by it. Within the 20 FtF partner countries, only Nicaragua has not yet received any developmental assistance. While FtF is officially engaged with Nicaragua in a diplomatic capacity, any funding is dependent upon the successful drafting of its CIP, with a tentative first draft to have been completed by June 2011.⁹⁰ Outside of FtF partner countries, it is unclear how much interaction FtF has with other countries, and what the content of such interaction is.

The increased funding allocations to FtF and other development programs mark a significant commitment on the part of the United States to food security. While this is a reassuring sign for FtF, investments made at the country level with partner countries actually remain comparatively small compared to total country expenditures. For instance, in Bangladesh, FtF investments from 2010 to 2012 (including FtF requests for FY2012) total \$125 million, in comparison to Bangladesh's \$10.05 billion agricultural investment plan over five years.^{91,92} The United States' three-year direct contribution to Bangladesh accounts for slightly more than one percent of the five-year plan's anticipated expenditures. As such, FtF's contribution does not represent a key cog in Bangladesh's agricultural investment plan, but rather a significant drop in the bucket alongside many other donors. This brings back the point that in many countries that it funds, the United States may not be the leading donor, but instead is a role player within the larger development sphere. This reality is reflected in FtF's focus on targeted investments to a small number of countries to maximize the impact of its own funds.

Along with its country investments, FtF makes significant second-order investments in regional programs. FtF spent \$79.8 million in 2010 and \$82 million in 2011 on regional programs, out of a total budget of roughly \$875 million in 2010 and \$968 million in 2011.⁹³ Across regions, investments follow very similar thematic patterns of trade and customs reform,

strengthening information systems and capacity building, and increasing private investment. In Asia, FtF is working primarily with ASEAN on regulatory reforms, improved information sharing, and increasing public private partnerships.⁹⁴ In Central America, it is working through the USAID-led Central America Regional Program (E-CAM) to provide support related to CAFTA.⁹⁵ Meanwhile, in East Africa, it is supporting the Common Market for Eastern and Southern Africa (COMESA), the Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA), and the East Africa Community on common market development, customs and trade reforms, and CAADP implementation.⁹⁶ In Southern Africa, it is working with the Southern African Development Community (SADC), COMESA, regional farmer organization SACAU, and commodity exchanges on market development and trade issues.⁹⁷ Finally, in Western Africa, it is working on improving regional supply of inputs and trade in staple foods through partnerships with the Economic Community of Western African States (ECOWAS).⁹⁸ While FtF's current regional focus is significant, it is unclear how aid is distributed between the different regional entities and how effectively this aid is used. To this aim, FtF would be well served by developing metrics to weigh the costs and benefits of potential regional engagement and measure the effectiveness of current efforts.

POLICY CONSIDERATIONS

Country Ownership

FtF has kept country ownership at the forefront of its policies, working with host country governments to guide the development of investment plans and the implementation of plans on the ground. The Government Accountability Office and other organizations for helping to strengthen country systems have lauded this approach. However, such an approach has its

pitfalls: in particular, country-led development could be hampered by "the weak capacity of host governments -- a systematic problem in many developing countries."⁹⁹ Nevertheless, as FtF increases its own institutional capacity and ability, it will become more able to strengthen host country capacity and implement programs effectively. While implementation through country systems may not be as effective as alternative approaches in the short-run, it has the potential to have significant long-term benefits for host countries. Country ownership still has a major beneficial role to play within FtF's overall strategic plan; however, country ownership should be structured in a manner that effectively leverages investment towards long-term sustainable food systems.

U.S. Whole-of-Government Approaches

FtF has ambitiously pursued and maintained country partnerships with 20 partner countries, but it is just one of a number of U.S. global development initiatives engaging in such country partnerships. In particular, MCC, GHI, and GCCI are undertaking innovative country-owned approaches to economic development, global health, and climate change. In addition, U.S. humanitarian aid is being deployed in many of the most food-insecure countries in the world, often overlapping in countries where USAID and FtF are working to bolster long-term food security. One major challenge for FtF is to identify where gains can be made from increased in-country cooperation with other USG development agencies. Additionally, FtF must figure out how to foster cooperation on the ground and analyze when cross-departmental cooperation would be ineffective or too difficult to implement.

Many outside analysts have suggested that the United States' agricultural development programs could use improved bureaucratic organization and coordination with other initiatives. Roosevelt notes that "Feed the Future lacks even (the) loose central organization" of PEPFAR,

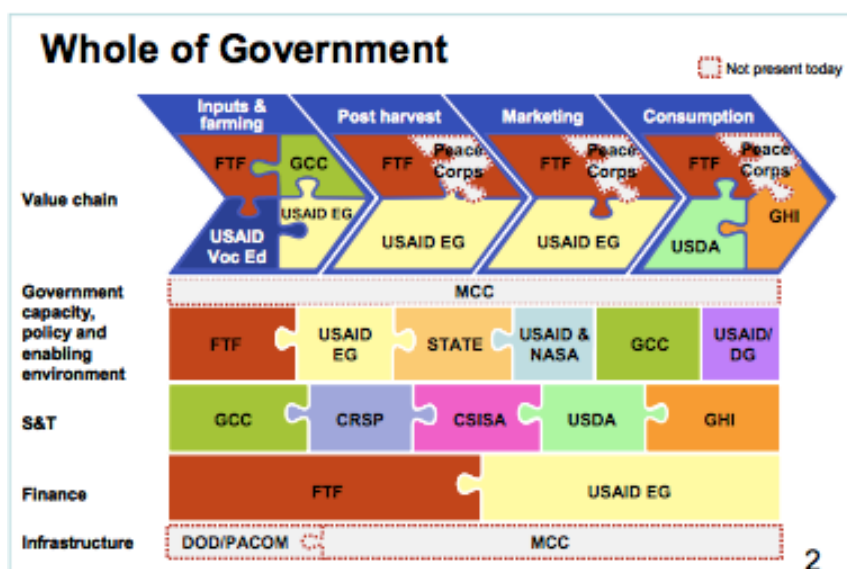
which is organized under the Office of the U.S. Global AIDS Coordinator, and is now a core foundational block of the GHI.¹⁰⁰ Currently housed under USAID's Bureau of Food Security, FtF has suffered from a lack of identifiable, established executive leadership, with a long-unfilled Coordinator position, a recently appointed Deputy Coordinator for Development, and an interim Deputy Coordinator for Diplomacy. The still-absent Global Food Security Coordinator at the head of FtF would have been in charge of multi-stakeholder engagement and "joint planning and collaboration to align complementary programs and capabilities of other agencies and departments to maximize the impact of America's investments in global hunger and food security."¹⁰¹ This uncertain leadership, along with unclear organization lower down on the bureaucratic ladder, severely hampers FtF's ability to effectively coordinate with countries, among teams, and among U.S. government initiatives. While FtF could eventually act as a connections broker and coordinator between U.S. programs related to food security, it would be hard to do so without having clear leadership at the top to drive this movement. Beyond leadership issues, it is difficult without inside access to analyze other institutional or political impediments to FtF's ability to act as an effective coordinator of food security-related programs.

In addition to internal changes to FtF, other agencies carrying out food security-related projects, most notably MCC and the U.S.'s humanitarian aid arm, can also work to better-coordinate in-country development efforts. Specific to the risks in engaging in host country-led approaches, the Government and Accountability Office recommended that the USAID Administrator, Secretary of Agriculture, CEO of the MCC, the Secretary of Treasury, and other heads of agencies to implement global food security strategies.¹⁰² Smith points out that because PEPFAR and FtF work on related facets of women and children's health, there is significant opportunity to reduce overlap and create a balanced approach through focused collaboration.¹⁰³

Even so, such cross-departmental collaboration also carries with it the risk of bureaucratic gridlock and toe stepping. With agencies reporting to vastly different stakeholders and with very different ultimate aims, collaboration may at times prove to be ineffective or politically deadlocked. In addition, collaboration would require collaboration first in Washington D.C., and then collaboration among country-level agency offices. Such difficulties must be balanced against the possible gains from synergy among programs. In cases where programs are unrelated or occur in different regions of the country, coordination may not add value. However, if MCC is planning on infrastructure and road improvement in the same area that FtF and GHI are planning to deliver agricultural inputs and health interventions, coordination between each agency would have a great effect on overall program efficiency.

One option for decentralized inter-agency collaboration is an integrated "whole of government" aid approach. This would build on current USG "whole of government" approaches (Figure 2.4), which identifies various U.S. agencies interfacing with a partner country

Figure 2.4: U.S. Whole-of-Government Involvement in Nepal



Source: USAID Nepal, "Strategic Review: Feed the Future," January 21, 2011.

government and overlap between them, but does not detail the specific linkages or interactions that do or should occur between agencies. Rather than have multiple agencies work with separate host country ministries to work out

multiple sets of investment plans, compacts, and other documents, agencies could coordinate to provide an integrated development compact with the host government. While a multi-agency compact would be uniformly negotiated, agencies would split responsibility for projects among themselves. Both MCC and FtF already implement graduated investment approaches, with initial multi-year investments used for capacity building and governance reform that then pave the way for more intensive program-based investments. In this case, combined investment compacts for MCC and FtF in any given country could be merged together to provide a more coordinated whole-of-government capacity building effort and resulting development influx. By implementing whole-of-government plans, the U.S. government could create in-country development programs that build off one another, and create targeted and mutually beneficial investments. A final benefit of this coordinated development approach would be that its reliance on cross-agency collaboration would also transmit over to the host country, fostering greater interagency collaboration within the host country itself.

However, conflicting political interests and bureaucratic stasis may undermine such collaboration, especially if it is undertaken through a formal multi-agency compact rather than through informal means. Additionally, implementation of an effective "whole-of-government" approach would require true buy-in from each agency involved along with the host country. This would require that agencies work quickly and effectively to identify areas of synergy and joint gain without succumbing to bureaucratic pressures or internal politicking. Effective coordination would also require agencies to clarify responsibilities, accountability, transparency, and information sharing issues across teams and departments. Such barriers and resources costs for cross-agency coordination would require that more intensive collaboration be pursued only when there is clear benefit to it, rather than just for the sake of doing so.

Country Engagement

FtF's current country engagement strategy allows it to focus its resources and attention on a core set of 20 countries. This strategy allows for more coordinated country engagement and monitoring and evaluation of programs at the country level. Given its funding constraints and significant current obligations, FtF could stay the course and continue with its current level of country engagement in its 20 partner countries for the time being. Keeping this narrow focus allows for FtF to concentrate its efforts on a select number of countries and dedicate funds towards longer-term aid development projects. However, this approach neglects a large number of food-insecure countries that do not make the cut. For countries that are not part of the 20 engaged countries, it is unclear what, if any, interaction they have with FtF, or what sort of progress they are making towards their own food security.

Given FtF's upcoming funding difficulties and the impending graduation of a number of Potential Accelerated countries to Phase 2 investment, it appears that FtF has limited current capability for expansion of development aid. However, FtF could still provide informal advice and assistance to non-FtF countries to strengthen country systems and their competitiveness. This diplomatic approach could either happen informally or through a similar engagement to that of Nicaragua. A diplomatic approach could serve as a cost-effective approach to push countries towards better food security, while helping to identify promising countries to receive future FtF funds.

While the current policy of narrow but impactful country engagement has successfully managed to direct FtF resources, it has the problematic side effect of sidelining a large number of food insecure countries. Countries that have not yet drafted CIPs or that have governance issues may be completely neglected by FtF, even if they have significant food security problems and

are truly committed to progress. To reach more countries, the United States could either spread out its aid commitments to more countries, or focus more on diplomatic engagement without attached development aid. Expanding the reach of aid investment would be a very difficult task, especially given FtF's uncertain future budget and the significant aforementioned commitments to countries that are set to graduate to Phase 2 investment levels. Given that past USAID agricultural development efforts were criticized for an inability to coordinate the large number of small-scale investments that it managed, an expansion of responsibility is dependent on staffing and funding increases.¹⁰⁴ Meanwhile, an expansion of primarily diplomatic engagement would be far more cost-effective for FtF. Such engagement, along with capacity building within countries, would help countries grow government capacity and devise strategies to become more viable candidates for future funding. An expansion of diplomatic engagement would open up the current policy of "all or nothing," and instead allow for tiers of engagement with a broader set of countries, without placing unrealistic demands on FtF's funding or oversight abilities.

An additional pathway for the U.S. to reach out to non-partner countries is through its multilateral arms, in particular GAFSP. While 9 out of 12 GAFSP partner countries are also involved with FtF, GAFSP and other multilateral institutions can eventually act as effective gap-fillers for funding and outreach in areas where FtF cannot reach.¹⁰⁵ Through this strategy, a significant portion of GAFSP funds would go towards laying the ground and building capacity for countries that want to eventually attract more funding from FtF and other institutions. However, it is unclear how realistic such a vision would be, especially given GAFSP's multilateral governance structure. Without unilateral control by the U.S. over GAFSP's mandate or country choices, such coordination would require significant agency-to-agency cooperation and may eventually require FtF to be reactive to GAFSP's own initiatives and interests.

A final consideration for FtF is whether and how to develop comprehensive exit strategies from partner countries. Mercier argues that "an explicit graduation strategy" should be implemented for countries to eventually graduate out of aid-dependency and into self-sufficiency.¹⁰⁶ Current FtF aid is graduated into Phase I and Phase II countries, with Phase I setting the stage for more intensive investment throughout the Phase II stage.¹⁰⁷ However, FtF does not yet have any set benchmarks for graduation out of the Phase II stage and into self-sufficiency. This could eventually cause a gridlock as countries graduate to Phase II levels and remain there receiving aid indefinitely. Perhaps more worryingly, the lack of a graduation strategy means that there are no explicit long-term benchmarks for host governments and aid practitioners to accomplish, and implicitly accepts that the development state will exist indeterminately within the host country.

Because an abrupt withdrawal from host countries threatens to impede progress and derail programs, one option for withdrawal is a gradual multiple-year drawback of aid. A graduation plan for countries could be based off of progress with respect to a core set of key indicators drawn from those currently used by FtF, and also by guidelines towards the original planned duration and size of investment by FtF. A combination of these two types of benchmarks would ideally incentivize agencies and host countries to set realistic goals and exercise urgency in meeting them. Consequently, the presence of these long-term benchmarks would create internal accountability towards long-term results, and draw attention to areas of weakness or necessary improvement when country teams stall or fall short of their goals.

Regional, National, and Sub-National Options

In addition to reaching out to more countries, the United States can also examine its balance of country-level commitment with regional and sub-national initiatives. This approach

has allowed diplomats and program officers to focus primarily at the country level when disbursing development monies and implementing projects. While FtF currently does fund regional organizations and oftentimes focuses on specific sub-national regions within its country plans, it should continue to assess its balance between the three levels of engagement. An excessively country-centric development plan may neglect possible effective pathways to development at the regional and sub-national levels. Moving forward, FtF can consider to what extent this balance between regional, national, and sub-national is appropriate. Also, it can explore appropriate channels outside of national governments through which aid can flow.

FtF currently is exercising a targeted and fairly consistent regional strategy among its various regional engagements. As stated previously, support primarily goes towards helping regional organizations establish proper customs and border processes, regional trade standards, and market development. Such support is primarily filtered through existing regional organizations such as COMESA, ASEAN, and ECOWAS, among others. In 2011, FtF devoted \$129.5 million for regional institutions compared to \$716 million for country commitments, indicating a country-centric delivery of aid.¹⁰⁸ While the United States' funding of a narrow scope of activities may be appropriate given the limited funds devoted to regional organizations, it should also explore other ways in which regional organizations can help with food security. Broadening its trade focus, the United States could analyze how appropriate its support would be for regional research consortia, knowledge-sharing organizations, farmers' organizations, and weather forecasting and crop insurance programs. While this expansion in alternative programs would result in a reduction in funding in current regional programs or an increase in the overall regional program budget, these regional programs could have wide-ranging, if diffuse, impacts on the people of multiple countries. In addition, regional aid could be an effective mechanism

through which the United States could indirectly support countries that are not current development partners.

Finally, FtF has an opportunity to assess its current engagement with sub-national groups and stakeholders to explore ways in which this engagement can be productively channeled towards increased food security. Various sub-national stakeholders may include small farmers' cooperatives, county or district governments and ministers, and small-scale research institutions, among others. Effective engagement with sub-national stakeholders would give stakeholders a larger say in development projects targeted at them and validate the country engagement process as truly country-owned, as opposed to government-owned. FtF does focus at the district/county level in some country investments, demonstrating an appreciation of a sub-national strategy. In Nepal, projects are implemented in 16 districts in the lower Hills and the Far West and Mid-West Terai regions.¹⁰⁹ The downside to extensive sub-national engagement and focus is that it may overstretch USG resources and capacity to implement projects. Overstretch could lead to FtF officers spending too much time engaging at the micro-scale level, while diverting attention and resources from the larger picture. One option for FtF programs is to focus on a small number of districts or counties within a country, and intensify attention to consultation with district-level stakeholders. This approach would allow increased engagement beyond the country level without capacity overstretch, but at the expense of broader-reaching initiatives and programs. Ultimately, the scale and type of sub-national engagement by FtF and other USG initiatives will depend upon the unique characteristics of each country and its food insecurity issues. Moving forward, FtF engagement with sub-national groups should be highlighted and taken into consideration as it designs CIPs and implements projects, with a focus on structuring engagement to best serve the country's long-term interests.

POLICY RECOMMENDATIONS

Country Ownership:

- Continue working through existing country structures, while exploring methods of strengthening and building on them.

Coordination:

- Identify potential hires and fill the Global Food Security Coordinator and Deputy Coordinator for Diplomacy positions within USAID/FtF.
- Analyze potential options for "whole-of-government" coordination between U.S. development agencies.

Country Engagement:

- Engage diplomatically with an additional 10-20 non-FtF partner countries through FtF and multilateral channels.
- Develop an explicit graduation plan to be built into existing multi-year plans for countries in the Phase II investment stage.

Regional and Sub-National:

- Explore forms of regional engagement beyond trade-based capacity building and advising.
- Identify appropriate sub-national engagement strategies, specific to current partner countries.

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Ch.3 US Diplomacy: Multilateral Organizations and Agreements

Raksha Thapa

Abstract

The global economic slowdown has implications for financing available for development. The shortfalls in the pledge commitments hamper efforts of providing sustainable food security in the developing countries. United States action is needed to improve the outcomes of the current food crisis, and donor countries failure to follow through with their disbursements. Drawing on the frameworks of international agreements and organizations such as the AFSI, GAFSP, and NAFTA, the role of US Diplomacy in these organizations and agreements is vital in promoting food security. The donors and recipient countries need to deliver on their promises and be committed to reducing food insecurity. This requires strong financial commitment and the improvement of accountability systems to generate greater effectiveness. Renegotiations of multilateral agreements should also be undertaken when they hamper development.

Policy Recommendations

- Develop a more comprehensive accountability framework in the AFSI in which complete funding plans must be outlined by all donor nations and international organizations.
- Create pledge deadlines (with-in the three year time frame of the AFSI) and accountability in submission of transparent progress reports.
- Emphasize the disbursements of committed financing amounts to generate more effective results in the GAFSP.
- Focus on working with the GAFSP funds already available and ensure that the funds are not only allocated but disbursed as well; further fund raising can only be effective if the funds already in place are utilized to its maximum potential.
- Evaluate long-standing programs and agreements that have negative effects on food security.
- Take the lessons learned from these failures and move towards renegotiation of NAFTA that better suit rather than hinder Mexico.

ISSUE

The worldwide economic slowdown means that global aid flows and pledges are falling short on their commitments. The United States is invested in food security through the numerous organizations and initiatives aimed to eradicate world hunger. U.S. action is needed to improve the outcomes of the current food crisis, and donor countries failure to follow through with their pledges. The shortfalls in the pledge commitments hamper efforts of providing sustainable food security in the developing countries. The conditionality placed on multilateral agreements such as the North American Free Trade Agreement also hinder development and growth in Mexico.

The U.S. can work with various multilateral agreements and organizations to further food security for poor people and alleviate world hunger. Drawing on the frameworks of international agreements and organizations such as the AFSI, GAFSP, and NAFTA, the role of US Diplomacy in these organizations and agreements is vital in promoting food security. The current economic condition also has its repercussions and challenges for agricultural development and food security. The United States leadership should be explicit in addressing the food crisis before the situation is worsened. As the threats to global food security increase, funds must be received to help meet the challenges of global food price increases, climate changes and population growth. The donor countries must commit to their pledges in specific areas and countries, and then follow through by disbursing the committed funds. It is only when the funds are disbursed that L'Aquila donors can meet their pledges. Renegotiations of multilateral agreements (NAFTA) must also be undertaken when they hamper development.

In order to increase international prestige and gain legitimacy in food security issues, the U.S. must contribute to the cause through the multilateral organizations and agreements. Participation in the form of contribution and goal achievement will grant the U.S. leadership and

country-country partnership opportunities. The U.S. cannot fail to sustain its leadership in global agricultural development as it could result in significant setbacks for the struggles against food insecurity.

BACKGROUND

Food prices are climbing and volatile but the impact is not felt equally around the world. Volatility has less impact monetarily in the United States, leading to relatively stable food price increases. Meanwhile, the poorest people in developing countries are hit the hardest by soaring food prices. Low-income families in developing countries do not have the purchasing power to afford food due to the inequality of food consumption. Poor countries suffer from food insecurity and must rely on financing and aid from external institutions such as the IMF, World Bank and the United Nations FAO.

The U.S. commits to agricultural development and food security assistance through numerous organizations and initiatives aimed at eradicating world hunger. The Feed the Future initiative invests in sustainability to alleviate poverty and hunger. The initiative works with other countries and multilateral programs such as the Global Agriculture and Food Security Program (GAFSP) and the L'Aquila Food Security Initiative (AFSI) to realize the Millennium Development Goals of halving the population suffering from hunger and poverty by 2015. Development strategies such as Country Investment Plans (CIPs) and strengthening coordination to align resources and multilateral institutions (public and private) are aimed at delivering a more comprehensive approach to sustainable agriculture.

However, countries worldwide are experiencing an economic slowdown.¹¹⁰ The economic slowdown, resulting from the debt crisis in Europe and the recession in the U.S. paired

with the high and volatile food prices have made the developing countries more vulnerable to food insecurity.¹¹¹ The global financial crises in developed countries are forecasted to negatively impact the economic growth in developing countries through trade and financial channels. The global economic slowdown also has implications for the financing available for development. The European crisis has led to risk aversion in the markets and unstable private capital flows. As a result, aid delivery has also become increasingly volatile.

The United States leadership has helped draw in millions from other donor countries willing to invest in food security for the developing countries. The U.S. can play a vital role in lifting farmers out of poverty and providing food security. The agricultural development abroad should be undertaken despite economic distress at home. America's prosperity and security will be improved by the resulting reduction in hunger, higher incomes, more vibrant markets, and more stable societies that agricultural development will make possible.¹¹²

POLICY CONSIDERATIONS

Multilateral Agreements and Pledges

Global aid flows are falling short of their commitments as pledges are not met. Only \$812 million has been allocated of the \$3.5 billion promised by the Obama administration.¹¹³ A member of the GAFSP, the U.S. donor is underfunded and falling behind. Despite the \$22 million G8 pledge, only \$6.1 million has been allocated over the three year commitment.¹¹⁴ Ensuring that sufficient development financing is available in developing countries is necessary to fulfill the UN Millennium Development Goals and achieve sustainable growth.

L'Aquila Food Security Initiative (AFSI)

The L'Aquila Food Security Initiative was launched at the 2009 G8 Summit. Backed by 27 countries and 14 international agencies, the donors pledged \$22 billion over three years. The focus was placed on country-led plans for agriculture with a coordinated and comprehensive strategy. An analysis of the data reveals that the "Hunger Pledge" progress is nearly impossible to gauge due to "inconsistent and erratic reporting methods."¹¹⁵ The lack of transparency means that few donors are clear on their reporting and shortcomings.

While the United States is clear on its reporting and disbursement delays, donors like the EU, Germany and Japan are still unclear on their up-to-date expenditures and have only reported on what they have committed to doing. The accountability reports show that with just one more year left only 22 percent of the \$22 billion has been spent.¹¹⁶ The initiative has helped coordinate efforts but it lacks the transparency in the donor's investments, making it unclear as to what progress has been made and often masking their performance.

Table One: An evaluation of different donors L'Aquila pledge

	Initial L'Aquila Pledge – Level of Ambition? (How much new money?)	Delivering on Pledge? (Disbursements)	Transparency of commitments to date?	Reporting against original categories or cooking the books?
Australia	Good	Low	Good	Good
EU	Average	N/A Notes: Did not provide information	Low	N/A Notes: Did not provide the information
Canada	Good	Average	Good	Average
France	Low	Low	Low	Low
Germany	Average	Good	Average	Low Notes: a very high level of 'other' aid being reported masks a poor track record on aid to agriculture.
Italy	Low	Average	Low	Low
Japan	Low	N/A Notes: Did not provide information	Low Notes: only information about commitments is available.	N/A Notes: the accounting is so poor we can't judge it.
Netherlands	Low	Good	Average	Low Notes: a very high level of 'other' aid being reported masks a poor track record on aid to agriculture.
Spain	Good	Good	Good	Average
Sweden	Low	Low	Low	Low Notes: Reporting is poor making it hard to judge
United Kingdom	Average	Good	Good	Average
United States	Good	Low Notes: Congressional budget challenges have slowed progress.	Good	Good

Table 1 describes the differences between how the various donors who committed funds in L'Aquila are doing. We assess progress according to key criteria, such as commitments, disbursements, and clarity and transparency of data and information available. Clarity and transparency of data are summarized in terms of how easy or difficult it is to draw conclusions from the data supplied individual countries.

Source: Action Aid (<http://www.actionaid.org/sites/files/actionaid/g8-accountability-report-2011.pdf>)

Progress in agricultural sectors is difficult to track without tangible evidence. There is little proof of significant increases in aid for agriculture.¹¹⁷ The disbursement and delivery of pledges are slow, especially in Australia, Canada, France, Germany, Italy and the U.S.

Strategies must be implemented to protect the poor from rising food prices in the short term and to assist long-term sustainability. However, this requires the constant flow of development aid and thus a more comprehensive accountability framework in the AFSI. Complete funding plans must be outlined by all donor nations and international organizations. The donors and recipient countries need to deliver on their promises and be committed to reducing food insecurity. This requires strong commitment financially. Pledge deadlines and accountability in submission of transparent progress reports. Improvement of accountability systems can generate greater effectiveness and more effective use of resources. The donors and recipient countries need to deliver on their promises and should be committed to reducing food insecurity.

The Global Agricultural and Food Security Program (GAFSP)

The Global Agriculture and Food Security Program (GAFSP) is a multilateral mechanism created to address the underfunding of G8 pledges and strategic investment plans already in place. The GAFSP is the United States' response to the G-20 summit Pittsburg meeting in 2009. The GAFSP provides grants for the Comprehensive Africa Agriculture Development Program (CAADP), which carries out the implementation of comprehensive country-led agriculture and food security projects, aiding the Millennium Development Goal 1 of cutting hunger and poverty in half by 2015.¹¹⁸

GAFSP grants are targeted to reach the most food insecure regions and the areas with the highest potential for agricultural growth. The GAFSP is an inclusive and transparent mechanism

with an estimated 7.5 million people projected to benefit from the allocated funds.¹¹⁹ However, the U.S. Treasury's portrayal of the GAFSP grants already awarded brings the total funds allocated to \$337 million (see figure below).¹²⁰ While the funds are described as awarded, the GAFSP website makes it clear that the committed amount is nowhere close to the amount disbursed.

GAFSP Awards as of February 2011:

To date, in several countries, GAFSP projects are already approved and becoming operational:

Country	Grant Amount (date of award)	Project Focus
<i>Bangladesh</i>	\$52.5 million (June 2010)	To enhance agricultural productivity through new technologies and improved water management.
<i>Ethiopia</i>	\$54 million (November 2010)	To promote agribusiness development and the improvement of small-scale rural agricultural infrastructure.
<i>Haiti</i>	\$36.75 million (June 2010)	To support the adoption of higher yielding technologies to boost agricultural productivity.
<i>Mongolia</i>	\$13.125 million (November 2010)	To increase market access to rural livestock-based farm systems and improve livestock quality and productivity.
<i>Niger</i>	\$34.6 million (November 2010)	To create water harnessing infrastructure and address upstream erosion that damage these structures.
<i>Rwanda</i>	\$52.5 million (June 2010)	To finance water management infrastructure, hillside agricultural development, and rural access to financial services.
<i>Sierra Leone</i>	\$52.5 million (June 2010)	To finance the commercialization of smallholder farmers, support small-scale irrigation infrastructure, and improve agricultural services with new technology and training.
<i>Togo</i>	\$41 million (June 2010)	To support the adoption of higher yielding technologies and reduce post-harvest losses of rice, maize, and cassava.
Total	\$337 million	

Source: U.S. Department of the Treasury (<http://www.treasury.gov/about/organizational-structure/offices/Documents/FY2012CPD508.pdf>)

On April 2010, donors pledged \$900 million to the GAFSP trust fund, with U.S. contributing more than half to combat global hunger.¹²¹ Since then eight donors have pledged a total of \$1,104.9 million, of which \$562.2 million has been received.¹²² 25 countries submitted their requests for financing, and GAFSP has allocated \$481 million in grants to 12 countries. Despite GAFSP funding 15 projects in the 12 countries, only 3 have begun disbursement (See

figure below). After two years, the severe lack of disbursement on behalf of the program is disappointing.

Table 3: GAFSP Public Sector Window Projects - Funds Transferred (as of December 31, 2011) and disbursed (as of November 30, 2011) in USD millions

Country	Supervising Entity	Commitment Amount	Funds Transferred*	Funds Disbursed**
Bangladesh	World Bank	46.31	8.68	0
	UN Food and Agriculture Organization (FAO)	3.69	1.1	0.03
Haiti	Inter-American Development Bank (IDB)	25.0	0.5	0
Niger	African Development Bank (AfDB)	46.5	9.0	0
Rwanda	World Bank	50.0	16.0	5.3
Sierra Leone	International Fund for Agricultural Development (IFAD)	50.0	19.0	8.6
Togo	IFAD	20.0	6.0	0
	World Bank	19.0	3.2	0

* From Trustee to SE As of December 31, 2011

** As of November 30, 2011 (based on SE progress reports to the CU)

Source: GAFSP

(<http://www.gafspfund.org/gafsp/sites/gafspfund.org/files/Documents/GAFSP%20Project%20Implementation%20Jan30%202012.pdf>)

The GAFSP was project deployed over two years ago, but finds itself with \$441 still undelivered after these two years due to Congressional allocation shortfalls.¹²³ While many donors are waiting on the U.S. to act before committing more money to GAFSP, the budget scene for the U.S. is worrisome: the House Committee proposed allocating no money at all to GAFSP in FY2012.¹²⁴ Such an act would mark a stark turning point for GAFSP, which has already had to turn down five qualifying country proposals because of its lack of funds.¹²⁵ While GAFSP began as a promising new approach to coordinate country funding for agriculture in a multilateral organization that thus far has been very transparent and inclusive, it may soon find itself short of funds and momentum.

Rwanda is one of the three countries that the GAFSP has disbursed aid to, totaling a \$50 million grant directed towards assisting farmers and bolstering sustainability. Vedaste, the leader of a local farmers group in Rwanda, explains the beneficial values of the project:

Before the project came, this land was marginal and unproductive. The project put in terraces, and provided us with seeds, lime and fertilizers that we pay for after harvest. We got a subsidy for the wheat seeds from the government...Now we are working all together. We didn't have groups before – we were isolated as individuals.¹²⁶

While the success stories are few and far in between, this case shows the ability of the GAFSP directed funds to positively impact the developing countries.

A pledge represents a contributor's expression of intent to make a contribution. Pledges are then converted to commitments through the signing of a contribution agreement.¹²⁷ In Fiscal Year 2011, the requested \$408 million in funding met financial constraints as Congress only proposed to allocate \$100 million to the GAFSP trust fund.¹²⁸ The request towards the trust fund for the Fiscal Year 2012 is \$308 million to meet the shortfalls of the previous year.¹²⁹ However, the congressional shortfalls of the previous year and the current economic crisis in the U.S. make it unlikely that the request of \$308 million will be granted.

Roger Thurow of the Chicago Council on Global Affairs, a think-tank, notes that GAFSP is “already gasping”. Congress has whittled down the president's budget request for a further \$400m to \$100m. Two dozen aid agencies recently warned Mr. Obama of a “strong risk” that GAFSP would cease to exist. Actually funding their promises would do a lot more towards lowering and stabilizing food prices.¹³⁰ GAFSP has received \$531 million of which \$481 million has been allocated to recipient grants. \$441 million of the \$972 million pledged to GAFSP by the seven donors has not been received. The eight recipient countries Bangladesh (\$52.5 million); Ethiopia (\$54 million); Haiti (\$36.75 million); Mongolia (\$13.125 million); Niger (\$34.6 million); Rwanda (\$52.5 million); Sierra Leone (\$52.5 million); and Togo (\$41 million) were approved for financing by June and

November of 2010.^{131 132} Nonetheless, unless the funds are disbursed, the potential for agricultural sustainability and food security cannot be realized in these countries.

The focus is on long term investment, but disbursements through implementation of the GAFSP's financed projects are slow to materialize despite available funds. The proposals submitted by the developing countries are detailed and should further assist the advancement of the projects.¹³³ This reduces the preparation time for project proposals meaning that the funds should be disbursed at a faster rate with the entire necessary project planning already in place.

The United States Constitution grants the Congress national economic policy authority. As a G-20 member country, the U.S. Congress must play a more active role in the G-20 commitments. The food and agricultural policy is governed under the rules of Congress while the international food aid programs and foreign agricultural development assistance agencies are all funded by the Congress. It is vitally important for Congress and its governing bodies to continue the U.S. financial leadership in attracting additional resources from the donors, while displaying its own commitment to the GAFSP by allocating funds as pledged. Unless the funds are available, the U.S. diplomatic efforts will not be realized. Emphasizing the disbursements of committed financing amounts can generate more effective results. The focus must be placed on working with the GAFSP funds already available and ensuring that the funds are not only allocated but disbursed as well. Further fund raising can only be effective if the funds already in place are utilized to their maximum potential. While donor countries can assist by committing to their pledges, leaders must make public commitments together, leading to more action ensuring food security.

Multilateral Agreements

The weakened national funding geared towards agricultural productivity and the current macroeconomic crisis of “sovereign debt, budget imbalances, and high unemployment- the priority of agriculture and food security issues may be downgraded accordingly.”¹³⁴ The faltering contributions from nearly all donor countries have paralyzed their ability to operate.¹³⁵ It is now important more than ever to examine the multilateral agreements and programs already in place that are hindering development rather than their intended purposes of assistance.

The North American Free Trade Agreement (NAFTA)

Seventeen years after the NAFTA agreement, millions of Mexicans have joined the hungry while malnutrition is at its highest. “The number of people living in ‘food poverty’ (the inability to purchase the basic food basket) rose from 18 million in 2008 to 20 million by late 2010”.¹³⁶ Mexico’s government statistics report that 25% of the population does not have access to basic foods.¹³⁷ The rising international food prices can further the spread of starvation and lead to riots. The riots are potentially violent, leading to social disruptions similar to the Arab countries. It is thus in the best interest of the United States to focus on providing economic, social and political stability in Mexico.

Mexico’s farm families used to produce enough food to feed the nation until the signing of the North American Free Trade Agreement. The NAFTA and the principle of comparative advantage deemed Mexico unfit to produce their staples such as corn. The corn producers could not compete with cheaper imports of corn. Since NAFTA, 2 million farmers have been forced off their land, while the price hikes in the international market mean that Mexican consumers pay more for food, pushing the basic foods out of reach for the millions suffering from food poverty.¹³⁸

A transnational corporation, Corn Products International (CPI) filed a NAFTA claim against the Mexican government for the tax levied on high fructose corn syrup. The Mexican government reasoned that the imposed tax was to protect their sugarcane industry and the jobs it provided. Nonetheless, the NAFTA tribunal ruled that Mexico had to pay \$58.4 million to CPI.¹³⁹ CPI received the payment on January 25, 2011.¹⁴⁰ The fine could have provided the poor families with basic food for years.

The NAFTA agreement has decimated Mexico's once thriving food sector. Before NAFTA was enacted, Mexico spent \$1.8 billion dollars on food imports and now it spends \$24 billion.¹⁴¹ The U.S. Department of Agriculture estimates that if current trends continue Mexico will acquire 80 percent of its food from other countries (mostly the U.S.). NAFTA has increased food dependency in Mexico and increased the number of people living in food poverty. These policies are clearly not working as intended. Further considerations such as allowance of certain impositions of taxes to protect their domestic industries must be taken.

Small farmer organizations in Mexico, the U.S., and Canada are calling for renegotiations of the NAFTA to fix the food crisis before it worsens. However, the Obama Administration has backed out on the pledge to open negotiations citing the economic downturn. This has left little room for any free trade reforms.¹⁴² This is a threat to the food and agriculture sectors and unless these issues are addressed, the ongoing fight against food insecurity will continue to persist and worsen. NAFTA has generated economic gains for the U.S. as the trade supports U.S jobs, but at the cost of Mexico and its increasing food security concerns.

The World Bank, USAID, and other donor institutions have acknowledged that previous policies that undermined local agricultural production and overemphasized the role of the private sector – especially in Africa -- were a mistake and have increased spending to rebuild domestic production, processing, and distribution capacity. Continuing to insist on further liberalization of trade is also a mistake. Farmers need clear, predictable signals and support to increase food production and establish stable local markets.¹⁴³

Any new trade agreements must be enacted with caution and with an assessment of their impacts on poor households and farmers. Long-standing programs and agreements that have had negative effects on food security should be evaluated. The lessons learned from these failures should be considered while moving towards renegotiations of NAFTA that better suit and do not hinder the development of Mexico. Failure to address these issues may be costly in the long-run.

POLICY RECOMMENDATIONS

L'Aquila Food Security Initiative:

- Develop a more comprehensive accountability framework in the AFSI in which complete funding plans must be outlined by all donor nations and international organizations.
- Create pledge deadlines (with-in the three year time frame) and accountability in submission of transparent progress reports.

Global Agriculture and Food Security Program:

- Emphasize the disbursements of committed financing amounts to generate more effective results.
- Focus on working with the GAFSP funds already available and ensure that the funds are not only allocated but disbursed as well; further fund raising can only be effective if the funds already in place are utilized to its maximum potential.

North American Free Trade Agreement:

- Evaluate long-standing programs and agreements that have negative effects on food security.
- Take the lessons learned from these failures and move towards renegotiation of NAFTA that better suit rather than hinder Mexico.

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Ch.4 Humanitarian Aid: Local and Regional Involvement

Lindsey Moulton

Abstract

The United States Government (USG) has long been the largest donor of humanitarian aid, accounting for more than half of the aggregate assistance. However, increasing prevalence of disaster situations, both natural and man-made, and increasing population size has forced a larger percentage of the global population to feel the adverse effects of disasters. Furthermore, an increase in demand for food aid, compounded with significant budget cuts has caused the USG to consider time and cost-efficient measures as well as policies that encourage long-term disaster preparedness. In light of shifts in global humanitarian aid, considerations for policy reform rely on (1) the definition of disaster to prioritize quality disaster response; (2) investment in disaster risk reduction to provide capacity building for governments and civil society of effected areas; and (3) reassessment of current food aid programs to encourage local and regional engagement. By evaluating these three areas of policy considerations, the USG will be able to better provide quality assistance without undermining effected communities and their preexisting structures but rather engage these areas in producing the means to mitigate future disasters.

Policy Recommendations

- Redefine and prioritize disaster response based on scale of size, cost and type to ensure effective use of resources.
- Invest in Disaster Risk Reduction programs to provide government and civil society capacity building to ensure long-term disaster mitigation resources.
- Eliminate the use of monetization of food aid to decrease counterproductive use of funds and resources by undermining local markets and US interests by discouraging commercial exports while encouraging black market activity
- Eliminate institutional restrictions to Local and Regional Procurement as investment in LRP will decrease costs and improve time in delivery by decreasing the chances of interfering with current food pipeline; provide opportunities for local farmers by pumping funds into local economies creating jobs and economic growth.
- Align emergency food policies and disaster risk reduction with long-term food aid policies, such as Feed the Future, to address country specific issues.
- Align emergency food policies with UN and NGOs to improve efficiency of relief.

ISSUE

At a time when more and more people are hungry, emergency food aid is declining. In 2010 emergency food aid shipments decreased by 21 percent although 40 million individuals needed assistance according to the World Food Program, a 200 percent increase from the previous decade.^{144,145} An increase in emergency situations, both natural and man-made, and an increase in demand for humanitarian aid, necessitate that the U.S. develop effective emergency food aid policies to ensure efficient use of resources in a timely matter.

BACKGROUND

While the United States remains the largest supplier of food aid, with a 68 percent share of emergency food aid donations of the aggregate amount provided by the Development Assistance Countries (DAC), the current share of the federal budget dedicated to foreign assistance remains less than 1 percent.^{146,147} Nearly \$47 billion was allocated to the United States Agency for International Development (USAID) and the Department of State in 2010, which provided \$1.307 billion in funding for the Office of Foreign Disaster Assistance (OFDA) and \$1.3 billion for USAID Food for Peace. Both OFDA and Food for Peace remain extensions of USAID's Bureau of Democracy, Conflict, and Humanitarian Assistance; however, OFDA primarily provides non-food disaster assistance but is responsible for the initial declaration of disaster by which Food for Peace can allocate aid.

Disaster Definition and Response

Defining Disaster

In order to effectively address the onset of a disaster, the terms of what defines a disaster must be addressed to ensure that assistance targets affected individuals while efficiently using resources.

Currently, OFDA responds to “all types of natural disasters” in addition to providing assistance “when lives or livelihoods are threatened by catastrophes such as civil conflict, acts of terrorism, or industrial accidents”.¹⁴⁸ While an exact definition remains inconclusive in terms of disaster response, the definition of humanitarian aid is often dependent on the organizations involved whether it is governments, NGOs, or multilateral organizations. Thus, the International Federation of Red Cross and Crescent Societies (IFRC) has sought to define what is considered a disaster in order to narrow the focus of response and eliminate inefficient use of resources by stating,

A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. Though often caused by nature, disaster can have human origins.¹⁴⁹

Disasters are therefore categorized by the origin of the event, often natural or manmade (technological). Disasters can also be categorized by the lapse of time: rapid onset, slow onset, long-term and continuing. While disasters can include a variety of events, they are assessed based on a set criteria provided by the Centre for Research on the Epidemiology of Disasters (CRED) in which ten or more people reported killed; hundred or more people reported affected; declaration of a state of emergency; and a call for international assistance.¹⁵⁰

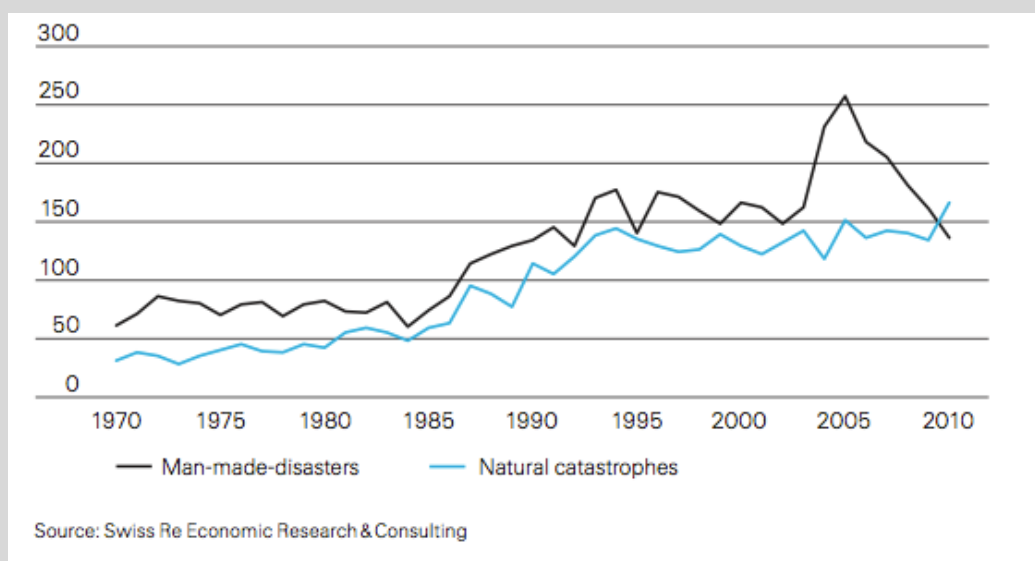
Types of Disasters

As previously stated, disasters are defined based on the origins of the event: natural or man-made. Natural disasters include a range of events including geophysical events (such as earthquakes, landslides, volcanoes and tsunamis), hydrological (avalanches, floods), climatological (drought, fire), meteorological (cyclones, storms) and biological (disease epidemics, insect or animal plagues).¹⁵¹ In addition, man-made or technological disasters are

disasters produced by humans within human settlements, including complex emergencies, famine, displaced populations, financial crisis, industrial accidents or transport accidents.¹⁵²

2010: Disasters at a Glance

Figure 4.1: Number of Events from 1970-2010



Despite the relatively normal onset of natural and man-made disasters in 2009, 2010 brought an unprecedented number of disasters, death and economic reconstruction. 2010 therefore experienced a total of 385 natural disasters and 137 man-made disasters, claiming 304,000 victims, ultimately costing an economic loss of \$218 billion (USD).¹⁵³ In comparison to the disasters in 2009, which cost \$68 billion USD, economic losses increased by 60 percent in 2010.¹⁵⁴

Among these disasters, 2010 was most noted for the massive earthquake in Haiti, which cost 222,570 lives and affected more than 39.1 percent of the population.¹⁵⁵ In addition, extreme fluctuations in weather patterns in Russia, including heat wave and wildfires claimed 56,000 victims. Aside from Haiti and Russia, 2010 was marked by a significant increase in earthquake disasters as noted by earthquakes in Chile, New Zealand and Northwestern

Europe. Furthermore, 2010 experienced an increase in man-made disasters from 2009, when 5,970 lives were taken. The most significant man-made disaster of 2010 was a lead poisoning outbreak in Nigeria, which claimed 400 lives; a stampede in Cambodia, claiming 375 lives; and the collapse of a gold mine in Sierra Leone, which killed over 200 people.¹⁵⁶

As a leader in disaster response and aid allocation, USAID's Office of U.S. Foreign Disaster Assistance (OFDA), responded to 73 disasters in which \$855 million was allocated to 56 countries for disaster support.¹⁵⁷ Due to the fact that Haiti was the largest disaster of 2010, OFDA provided \$367.6 million in response to the disaster. Other emergencies in which USAID responded to include: floods in Pakistan (\$115.0 million), complex emergency in Sudan (\$92.9 million), complex emergencies in Iraq and Afghanistan (\$41.0 million and \$29.9 million, respectively).¹⁵⁸

How the U.S. Government Provides Humanitarian Aid

In response to an international disaster, the U.S. Government (USG) gives international disaster aid mandate to USAID's OFDA. Acting as the lead coordinator for US humanitarian aid, OFDA coordinates disaster relief on behalf of other government branches and nongovernment organizations, including Food for Peace. OFDA thereby monitors and evaluates global crises and potential at-risk areas. However, in order to provide humanitarian assistance, OFDA must respond to a declaration of an International Disaster. In order for an event to be considered an international disaster, a U.S. Ambassador, Chief of Mission or U.S. Assistant Secretary of State (if a U.S. Mission is not present) must declare an emergency if the event of the "magnitude of the disaster is beyond the capacity of the host country to respond; the host country requests, or is willing to accept assistance; and a response is in the interest of the USG".¹⁵⁹ OFDA is therefore unable to respond to an emergency without an official disaster declaration. OFDA will coordinate disaster response with the U.S. Embassy or USAID Mission in the affected country.

Disaster response, on behalf of OFDA takes a variety of roles depending on the scale and the needs of those affected.

Disaster Risk Reduction

With an increase in disasters and food insecurity that is intrinsically linked to such events, disaster risk reduction programs have been put in place to create resiliency among communities and lessen the effects of disasters. As stated by the World Food Program, the “most food insecure people live in areas prone to natural hazards and they are the least able to cope with shocks”.¹⁶⁰ Disaster risk reduction programs look to “reduce the exposure to shocks, make food production systems more resilient and capable of dealing with shocks”.¹⁶¹ Thus, agencies such as the World Food Program or USAID provide disaster risk reduction initiatives that look to reduce vulnerability to emergencies through “better preparedness and integration of risk prevention and mitigation into policies, programs and interventions”.¹⁶² In addition, investment in disaster risk reduction has shown to be cost effective, as seen by the statistic that for every dollar invested in disaster risk reduction, four or more dollars is saved in future relief costs.¹⁶³

Disaster risk reduction has become of interest due to an increasing understanding of the role local and national structures take in disaster response and recovery. As Oxfam International states, neighbors, families and community members consistently provide assistance in the wake of a disaster when large agencies are unable to gain access to affected areas, as illustrated by the international response to floods in Pakistan in 2010 and 2011. Reinforcing local structures and ensuring they have the resources to respond to disasters, not only mitigates funding but also provides an alternative to timely disaster responses.¹⁶⁴

While each country varies in capacity to invest in disaster risk reduction, the USG and multilateral organizations such as the UN through the World Food Program (WFP) and Food and

Agricultural Organization (FAO) have provided frameworks for participating countries. USAID maintains both regional and global initiatives that focus on providing assistance in “planning, strengthening, and centralizing the role of national organizations in disaster management”. The World Food Program, on the other hand, provides weather index insurance to ensure farmers do not experience the shortfalls of volatile weather as well as early warning systems.

U.S. Foreign Assistance Programs

For the financial year 2010, \$855 million was allocated for disaster response programs, as administered by both USAID and USDA.¹⁶⁵ While majority of humanitarian aid is carried through USAID’s Food for Peace Program, the U.S. Government provides funding for other programs including Food for Progress, Section 416 (B) of Farm Bill, and Local and Regional Procurement Pilot Project.

Food For Peace

The Agricultural Trade Development and Assistance Act (Public Law 480) was signed into law under President Dwight Eisenhower in 1954 as an extension of the Marshall Plan to increase development in the wake of World War II. However, in 1961, President John F. Kennedy famously renamed the Act to Food for Peace by stating that “Food is strength, and food is peace, and food is freedom, and food is a helping to people around the world whose good will and friendship we want”.¹⁶⁶

Food for Peace, originally served as a mechanism to use U.S. exports and agricultural products to reach new markets abroad, benefitting both the United States and the recipients of food aid. As of today, Food for Peace has provided over 106 million metric tons of food, benefitting approximately 3 billion individuals from over 150 countries.^{167,168} The Food for Peace program is currently present in 44 countries.

Food for Peace is structured to include three separate programs: Title I Economic Assistance and Food Security, Title II Emergency and Private Assistance Programs, and Title III Food for Development. Title I, controlled by the U.S. Department of Agriculture (USDA), “provides low-cost, long-term loans to developing countries for the procurement of commodities”.¹⁶⁹ While this was the primary program for food aid, its popularity declined in the early 90’s and is no longer funded. Title II is administered by USAID but implemented by nongovernmental organizations, cooperatives or multilateral organizations, such as the UN’s World Food Program. Title II is currently the main food aid program, in which USAID responds to emergencies by providing donations of commodities to decrease the susceptibility to food insecurity for poor, malnourished populations.¹⁷⁰ Title III, similar to Title I, is administered by USAID to provide commodity donations for development programs but has not received funding since 1994.

Title II: Food For Peace

Title II, the largest mechanism for food aid as administered by USAID, receives nearly \$1.3 billion in funding under U.S. Public Law 480. The program is used to target food insecurity by providing assistance in emergencies to relieve suffering among vulnerable groups. Title II does address food assistance in terms of non-emergency aid, but for the context of this report, it will not be discussed.

Under Title II, U.S. agricultural commodities are used to respond to the needs caused by emergency situations, both man-made and natural disasters as well as promote food security through economic and community development. In order to carry out this program, USAID works with myriad of organizations. Organizations include: USDA, U.S. Agribusiness, WTO, U.S. shipping industry, United Nations (especially the World Food Program) and private

volunteer organizations.¹⁷¹ Among these partners, United Nations' World Food Program serves as the primary multilateral pipeline for food aid. The U.S. therefore makes a pledge every two years to the WFP to manage both development and emergency aid. Food aid under WFP is administered based on appeals.

Food aid under Title II is delivered in kind or monetized. In-kind food donations, also known as direct distribution, entails the procurement of commodities from USDA and distribution of such goods to targeted groups that are in need of assistance by U.S. shipping companies. Monetization, on the other hand, entails a system in which "commodities are sold on local or regional markets to generate cash resources for program implementation, and is built around two objectives: enhancing food security and generating foreign currency to support development activities".¹⁷² The cash generated from monetization is used to fund infrastructural development, agricultural programs and community capacity building.

Food for Peace also maintains a program called Emergency Food Security Program (EFSP), in which cash is provided for local and regional purchases of food, food vouchers and cash transfers. EFSP is used in the case that "Title II in-kind food assistance cannot arrive in a sufficiently timely manner through the regular ordering process or through the use of prepositioned stocks"; market conditions limit the use of in-kind assistance; and if more beneficiaries can be served using EFSP.

For both EFSP and Title II (emergency and non-emergency), PVOs and intergovernmental organizations must request food aid. However, allocation of food aid is based on an assessment of need in which "identifying the nature of the crisis, the number of people who will receive assistance, the types and amounts of commodities needed, the manner in which the food aid will be given to the targeted groups, and the cost of distribution".¹⁷³ Food aid is

distributed from the Kansas City Commodity office but in times of crisis, pre-stocked reserves are positioned in ports around the world. Furthermore, USAID can redirect ships or modify the use of commodities by PVOs and direct them away from development programs towards emergency situations. In the case that USAID does use commodities provided for PVOs, USAID would reimburse the PVO.

For FY 2009, Title II received \$2.165 billion, which consisted of \$267 million from agreements with PVOs, and \$1.9 billion from agreements with WFP.¹⁷⁴ However, in the case that USAID does not have enough funding for allocations of emergency aid, USAID can request supplemental funding from Congress but this is not necessarily the timeliest of options. Thus, USAID can depend on funds reserved under the Bill Emerson Humanitarian Trust.

Bill Emerson Humanitarian Trust

The Bill Emerson Humanitarian Trust, administered under the Secretary of Agriculture, is a food reserve for P.L. 480, Food for Peace. The trust serves as a resource for additional assistance in case of unanticipated emergencies. Until recently, the trust has been fitted with U.S. commodities in which the trust is authorized to hold 4 million tons of wheat, corn, sorghum, and rice. However, in recent years, the trust has held funds instead of commodities.

If the needs of an emergency cannot be met by the resources provided by Food for Peace, the Secretary of Agriculture is authorized to release commodities or cash. In a given year, the Secretary of Agriculture is authorized to release up to 500,000 metric tons in addition to 500,000 metric tons that “could have been, but was not, released in prior years”.¹⁷⁵ The Secretary of Agriculture can also release commodities if the U.S. domestic supplies are unable to meet the demands of P.L. 480 foreign aid programs due to an impediment in U.S. agricultural production. Furthermore, the Secretary of Agriculture is able to exchange commodities from the reserve with

other commodities of the same value. For example, for FY 2002, profits from the sale of wheat were used to purchase corn, vegetable oil and dry beans in response to a crisis in southern Africa.¹⁷⁶

While the Secretary of Agriculture is authorized to distribute commodities from the reserve, these commodities act as an asset to the Commodity Credit Corporation (CCC), meaning whatever is used must be reimbursed. When commodities are released from the trust, the cost is reimbursed with funds from P.L. 480, either past, present or future funds. Under the 1998 Act, P.L. 480 must reimburse the CCC with either the actual cost incurred or the export market price at the time of release; however, this does not include non-commodity costs such as transportation. In order to replenish the reserves held by the trust, the CCC can use the funds incurred by reimbursement to purchase new commodities.

For FY 2009, the Bill Emerson Humanitarian Trust was used both for commodity release and reimbursement. Over \$4.43 million (USD) was provided for the purchase of commodities to assist North Korea while \$4.62 million (USD) was recovered due to reimbursements made for 2003 and 2005 releases.¹⁷⁷ FY 2003 marked an unprecedented year for use of the trust, in which two releases were made consisting of a total of 800,000 metric tons. On March 19, 2003, 200,000 metric tons were released to assist an unanticipated emergency in Ethiopia and Eritrea. The following day, 600,000 metric tons were released to aid emergencies in Iraq and Africa.¹⁷⁸ Similar to the disbursements made in 2003, 500,000 metric tons were released in 2005 to address the repercussions of famine and relieve suffering in Ethiopia and Eritrea.

Haiti Disaster Relief: The Role of OFDA and Food for Peace

On January 12, 2010, a magnitude 7.0 earthquake struck Haiti, with an epicenter located 10 miles southwest of the capital, Port-au-Prince. The earthquake and its subsequent aftershocks caused significant infrastructural damage and carnage, in which 316,000 deaths were reported, as well as the displacement of 2 million people. Overall, the earthquake affected an estimated 3 million individuals.¹⁷⁹

The following day on January 13, 2010, U.S. Ambassador Kenneth H. Merten declared a disaster. In response, President Barack Obama gave USAID mandate to coordinate humanitarian efforts, in which USAID provided a multi-agency response. Initially, OFDA provided \$50,000 through the U.S. embassy to initiate relief efforts and deployed a Disaster Assistance Response Team (DART) within 16 hours of the event. For FY 2010, USAID provided a total of \$367.6 million in assistance for programs ranging from food security and agriculture to economic recovery.¹⁸⁰

In addition to funding from OFDA, Food for Peace responded to the disaster by providing cash-for-work activities, food vouchers and 115,320 metric tons of Title II emergency food aid.¹⁸¹ Thus, the U.S. provided a total of \$177.5 million in emergency food assistance, which is broken down between \$130 million for WFP and PVOs, in addition to \$47.5 million to Emergency Food Security Program (EFSP).¹⁸²

Local and Regional Procurement Pilot Program

Local and regional procurement has long been a controversial issue in addressing the use of federal funds for emergency assistance. Yet, it has been argued that LRP increases the efficiency in terms of timeliness as well as effectiveness of U.S. response to emergency by eliminating transportation.¹⁸³ Despite the reluctance of the United States to shift from domestic food purchases to LRP, both the European Union and the United Nation's World Food Program (WFP) have used LRP.

For the FY 2006, the Administration of President George W. Bush, proposed a program that would allow USAID to use 25 percent of Title II funds to procure food aid in local or

regional markets in response to emergencies. This proposal marked a significant departure from the historical trend of purchasing U.S. commodities for emergency assistance. While this program would allow for greater flexibility on part of USAID when responding to disaster situations, the proposal gained little popularity in Congress. However, in 2008, the Farm Bill authorized a pilot program based on the Administration's previous requests for use of Title II funding for local and regional procurement. Under the Farm Bill, the pilot program allowed for field-based studies for the period of FY 2009 to FY 2012 to assess the impact of local and regional procurement on the efficiency of food assistance. According to the USDA, the objective of the LRP Pilot "is to use local and regional purchasing to help quickly meet urgent food needs due to food crises and disasters. This will protect against a decline in food consumption, build local food systems, save lives and reduce suffering".¹⁸⁴ Thus, \$60 million from the Commodity Credit Corporation was made available to fund the program over the extent of four years. The program has been divided into four separate phases: study prior local and regional procurement programs, develop guidelines, implement field-based projects, and independent evaluation. To date, USDA has completed the first three phases in addition to independent evaluations by USDA and GAO.

In addition to USDA's LRP pilot program, USAID was granted funding to supplement another LRP. Thus, for FY 2008, Supplemental Appropriations Act (P.L. 110-252) provided \$125 million in funding for a LRP in developing countries. Of the \$125 million funding, \$75 million is allocated towards international disaster assistance while \$50 million is for development assistance (DA). The funds are being used to meet the needs of disaster stricken areas and will be available until exhausted. Disaster assistance LRP will be evaluated based on

“general procurement information, timelines, impact on procurement market, and beneficiaries”.¹⁸⁵

Similarly, the World Food Program maintains a global LRP under the name of Purchase for Progress (P4P). P4P is aimed at extending WFP’s local and regional procurement programs that “enable smallholders and low-income farmers in developing countries to supply food to WFP’s global operations”.¹⁸⁶ Despite the fact that WFP uses LRP due to its cost and time efficiency, the program focuses mainly on providing smallholder farmers with the opportunity to become players in the global agricultural market. This is done through the purchasing of commodities through farmers’ associations, which in effect creates numerous incentives such as the production of quality foods. P4P is a 5-year pilot program that began in 2008 and has produced projects in 21 countries. With \$76 million of funding from the Bill and Melinda Gates Foundation, Howard Buffet Foundation and the U.S. government, P4P is expected to benefit 350,000 farmers.¹⁸⁷

POLICY CONSIDERATIONS

Redefinition of Disaster

Currently, the definition by which the USG abides by in disaster situations is vague and allows for a wide range of interpretation in terms of US assistance. The USG, most often through USAID, responds to disasters at the request of the affected country by stating that USG responds to all types of disaster so long as the host government is unable to provide relief, the government requests or assistance remains in the interests of the USG.¹⁸⁸ The current process allows for disasters, big and small, to be addressed by the USG causing an unbalanced approach resulting in misallocation of funds. For this reason, the USG should consider adopting a graduated approach

to disaster response, in which disasters must fit minimum criteria in order to receive assistance. Such criteria should include (1) a minimum amount of personal loss, (2) minimum amount of affected individuals, (3) minimum infrastructural loss, (4) lack of capacity on behalf of local and national governments to provide assistance, and (5) declaration of state of emergency.

Whether the USG abides by a definition of disaster that includes strict criteria is unclear due to a lack of transparency, which results in a lack of accountability. Despite the fact that the USG remains the largest donor of humanitarian assistance, aggregate assistance does not determine the quality or the success of aid. As Oxfam International states, “Special interest continue to pervert food aid in many countries. The USA is the world’s biggest food aid donor, providing roughly half the world’s food aid. But its programs deliver more to the pockets of agribusiness and shipping companies than to the mouths of hungry people”.¹⁸⁹ The USG interests have clouded disaster assistance in the form of food aid, by profiting US businesses and ultimately losing the humanitarian sentiment of disaster relief. Thus, it has become of utmost importance to clearly define disaster to ensure the USG acts within the constraints of a system guided by humanitarian principles.

Disaster Risk Reduction

Due to the rising number of disasters and the number of people affected by disasters, disaster risk reduction focused on community capacity building provides long-term cost-efficient benefits by reducing vulnerability and increasing resilience to disasters. Weather-related disasters alone have increased nearly 233 percent since 1980 due to increasing populations and climate change that has resulted in erratic weather patterns.¹⁹⁰ Between varied rainfall patterns and increasing prevalence of flooding, it is expected that weather patterns will become more volatile in the future. Weather volatility, compounded with population growth, infers that more

people will be exposed to the adverse effects of natural and man-made disasters. Thus, disaster risk reduction looks to increase opportunities for communities to prepare and mitigate the effects of disasters.

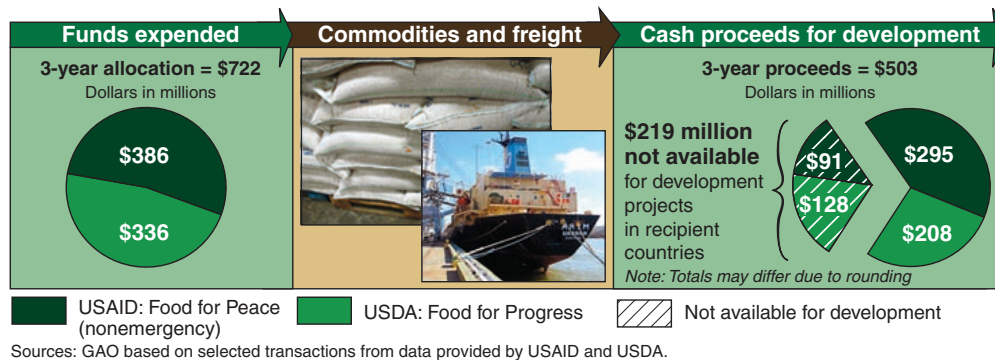
Currently, USAID allocates \$90.6 million towards disaster risk reduction programs. However, USAID should consider reallocating funds under OFDA to provide increased investment in disaster risk reduction. Disaster risk reduction is reliant on increasing the capacity of preexisting civil society and governmental structures. As previously noted, these structures provide initial response in the wake of a disaster. By increasing their capacity and resilience, the USG is ensuring that national governments will be able to provide appropriate assistance without the need of the international community. Furthermore, investing in disaster risk reduction builds accountability on behalf of affected countries.

The most recent drought and famine in Somalia provides an example, in which disaster risk reduction could have provided life saving tools. It took nearly a year after the Famine Early Warning System Network (FEWSNET) sounded for an international response to occur.¹⁹¹ It has been thought that response was due to the significant media coverage. However, response has been limited by threats of terrorist activity causing a lack of large-scale intervention. Had the international community facilitated cooperation between Western aid agencies and preexisting INGOs through previous disaster risk reduction, local civil society structures would have had the resources to effectively mitigate the effects of famine.¹⁹² Thus, disaster risk reduction provides an opportunity to spearhead the effects of disaster prior to its onset. Furthermore, disaster risk reduction provides a cost-efficient way to empower countries to be accountable and resilient in disaster situations.

Title II

Title II, the major component of U.S. emergency and non-emergency food aid, has consistently provided assistance since 1954. As previously stated, Title II emergency and non-emergency food aid is compiled of in-kind food donations and monetization. Monetization is authorized under the Food Security Act of 1985, allowing the U.S. to sell U.S. food aid commodities in local markets in the developing world. The funds procured from these sales are used to fund development projects with the goal of addressing hunger and food insecurity. In 2010, nearly \$300 million was allocated to ship 540,000 metric tons of food for monetization.¹⁹³ Despite the quantity of food be used for monetization efforts, monetization has proven to be controversial and inefficient in meeting the objectives of the program.

Figure 4. 2: Economic inefficiencies of Monetization



Despite the fact that food under the monetization program has benefited nearly 7 million people, inefficiencies in terms of the process of monetization and its long-term effects need to be considered. Monetization entails a process in which money is allocated to USAID and USDA to purchase U.S. commodities. From here, the food is shipped on U.S. vessels to a developing country where it is sold on local markets. However, studies provided by the Government Accountability Office show that USAID's average cost recovery is 78 percent while USDA's cost recovery remains at 58 percent.¹⁹⁴ As a result, over a 3-year period, the U.S. lost nearly \$219

million for development projects. As Care USA states, “Purchasing food in the US, shipping it overseas, and then selling it to generate funds for food security programs is far less cost-effective than the logical alternative—simply providing cash to fund food security programs”.¹⁹⁵ It is therefore in the interest of the U.S., especially in a time of budgetary constraints, to consider altering or eliminating the monetization system in lieu of direct cash transfers.

In addition to economic inefficiencies of monetization, monetization has adverse effects on local and regional markets, which deters local production and undermines the objectives of the development projects that monetization supports. It was found in GAO’s report that monetized food aid made up 25 percent of commercial import volume in nearly a quarter of cases between FY 2008- FY 2010.¹⁹⁶ Furthermore, it was found that monetization would not affect local markets if the volume of monetized food did not exceed 10 percent of commercial import volume for a given country in a given year.¹⁹⁷ By exceeding import flows, monetized food depresses local markets and undermines the value of locally produced food. While funds procured by the sale of monetized foods are used for development programs that serve local communities, monetization undermines structures that are key to alleviating hunger and achieving food security, such as smallholder farming. Thus, USAID and USDA should consider assessing the current monetization process to better achieve local objectives without destabilizing markets and the communities that are dependent on these markets.

Local and Regional Procurement Programs

Due to an increase in emergencies and the onset of increasing food insecurity, food assistance has become vital to the livelihood of populations on a global scale. However, with the most recent budget cuts, in which food aid has been cut by 5 percent for FY 2013, cost efficiency as well as time efficiency have become of utmost importance.¹⁹⁸ Thus, the current system under

which the U.S. government allocates aid does not provide the most efficient means for meeting the needs of individuals in emergency situations.

According to study done by the United States Government Accountability Office (GAO), local procurement in sub-Saharan Africa cost 34 percent less than in-kind donations that were purchased from U.S. agribusiness and shipped using the U.S. shipping industry. GAO also found that local and regional procurement, on average, takes about 35 days and 41 days, respectively. In-kind donations, on the other hand, take an average of 147 days.¹⁹⁹ While comparison of the two systems for providing aid, it is clear that LRP provides significant benefits for both the U.S. government and for beneficiaries of humanitarian aid. There are, however, challenges that need to be considered prior to implementing LRP programs including, funding restrictions and weak legal systems that may prevent the enforcement of contracts. Furthermore, restrictions such as increasing demand and the subsequent increase in prices prove to be a risk to local markets that LRP seeks to benefit.

POLICY RECOMMENDATIONS

- Redefine and prioritize disaster response based on scale of size, cost and type to ensure effective use of resources.
- Invest in Disaster Risk Reduction programs to provide government and civil society capacity building to ensure long-term disaster mitigation resources.
- Eliminate the use of monetization of food aid to decrease counterproductive use of funds and resources by undermining local markets and US interests by discouraging commercial exports while encouraging black market activity.
- Eliminate institutional restrictions to Local and Regional Procurement as investment in LRP will decrease costs and improve time in delivery by decreasing the chances of interfering with current food pipeline; provide opportunities for local farmers by pumping funds into local economies creating jobs and economic growth.
- Align emergency food policies and disaster risk reduction with long-term food aid policies, such as Feed the Future, to address country specific issues.
- Align emergency food policies with UN and NGOs to improve efficiency of relief.

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III. BRIDGING THE GAP : IDEAS TO AGRICULTURAL



A man sends money through M-Pesa, a pioneering mobile phone service in Kenya.

Ch.5 Public-Private Collaborations: Using Capitalist Motives to Meet Public Objectives

Jillian Zemanek

Abstract

Governments and philanthropic organizations have fallen short in their attempts to fulfill missing market competition in agricultural and food production. Governments can make aid more efficient and effective by channeling it through the private sector, and creating investment incentives for market expansion into the developing world. Capitalism's inherent profit seeking goals, dynamic, opportunistic, and mutually beneficial characteristics can be combined with the public sector's goals of providing greater food security. This section will address noteworthy existing and potential public-private partnerships working in effort for greater food security, and suggest new ways in which the government can encourage the private sector to invest in the market of food security and agricultural development.

Policy Recommendations

- Expand the USAID DCA and Credit Guarantee capacities
- Use Government endorsement and promotional incentive strategies to encourage R&D in food security for low-income countries
- Apply FDA priority status to companies contributing to R&D in food security related issues
- Launch a Government issued AMC program investing in private sector R&D in food security
- Maintain a working, understanding partnership with Monsanto in food security goals, complete with political and economic rewards for Monsanto in exchange for smallholder farmer rights
- Increase funding for long term research initiatives in food security issues through public universities and other public institutions

ISSUE

Overall quality of life and health standards are improving, but these life and health advancements do not reach everyone, and they are not spreading quickly enough to keep up with global food insecurity predictions for the next 50 years. Today's private sector is largely focused on the developed world. R&D in technology, product variation, and food growing processes all largely adhere to the 'wants' of the developed world, and rarely seek to address the needs of the developing world. This creates a systematic flaw in the free market system for two reasons. First, it limits the market of the private sector, while in the wake of the 2008 economic downturn we should be expanding our markets. Second, it prevents the poor from experiencing the capitalism and constant innovation that the developed world benefits from. At the same time, current public donation strategies to private sectors in low income countries creates dependency and impedes the development of competition, which is necessary for capitalism to flourish.²⁰⁰

The public sector needs to more actively participate in public-private partnerships and to create incentives for the private sector to invest more heavily in food and nutritional markets in low-income countries. By combining the food security goals of the public sector with the profit seeking and innovative private sector, public-private partnerships and other collaborations can increase food security for the poor while generating a profit.

BACKGROUND

Through private sector engagement in public and government goals of food security, private sector strengths such as efficiency, competitiveness, and innovation can be redirected to help solve growing global food insecurity. With public-private collaborations in food security issues, business structures can be altered to be more suitable for the dynamism of world markets

than governments are able to achieve alone. The current economic crisis allows for these alterations. Awareness of foreign and underdeveloped markets is rising. The CEO of PepsiCo, Indra Nooyi has referred to it as “performance with a purpose”, Bill Gates calls it “creative capitalism”, and Muhammad Yunus, founder of the Grameen Bank has made public calls for the expansion of “social business”.²⁰¹ Favorable results from public-private partnerships suggest that they could be key components in MDG achievements, and may be crucial in the achievement of goals 1; eradicate extreme poverty and hunger, and 8; develop a global partnership for development.²⁰²

Utilizing Capitalism in the Private Sector

The Benefits of Capitalism

Capitalism has benefited dozens of countries and billions of individuals through its correlation with democracy and economic growth. The private sector has flourished throughout the western world, profiting from the needs and wants of the middle and upper classes. Entrepreneurs are only just beginning to realize that there is an untouched market; the market of the global lower class, who’s voices and demand have been ignored or unheard by capitalist ventures. Governments and non-profit organizations have attempted to fill the social and economic needs of those restricted by poverty, but progress is slow as there is no adequate replacement for the mutually beneficial business that capitalism supplies the western hemisphere. In order to bridge the gap in food security, and other issues those afflicted by poverty face, the goals of the public sector must be combined with the abilities of the private sector. This means expanding new markets in new ways that help the poor while benefiting those companies involved, and spreading the advantages of capitalism.²⁰³

Capitalism is inherently dynamic, flexible, and innovative. Competition assists in lowering production costs, maximizing production, hiring the best people, and delivering quality goods. Professor of economics William Easterly stated, “Could any market systematically and persistently reward failure and consistently insulate decision makers from the consequences of failure without quickly exhausting its investment capital? I doubt it.”²⁰⁴ It is important to remember that despite the economic crisis of 2007-2008, capitalism has fostered a “mass escape from poverty” beginning in the 1960s. Easterly makes the important note that “Capitalism does indeed have very bad times, and it goes off the rails temporarily. But it is self-correcting, which is why the rails lead so steadily upward and onward.”²⁰⁵ It is due to capitalism’s inherent ability to self correct and innovate, all the while operating under optimum cost efficiencies, that it may have the ability to solve the issues of poverty and malnutrition where public and philanthropic endeavors have floundered.²⁰⁶ In an attempt to increase food security where market competition is lacking, philanthropy and traditional government aid has essentially hindered competition in the existing markets of agriculture and food.²⁰⁷ The most important task for the government then becomes to increase the level of competition, open the markets for innovation, and encourage participation in this economic field. Esther Duflo sums up the need to include private sector innovators and business leaders with her statement, “We want to lure the successful entrepreneurs to the development business so that they will bring their business acumen, technical expertise, and creativity to the problems at hand- all of which are badly needed.”²⁰⁸

Understanding Public-Private Collaborations

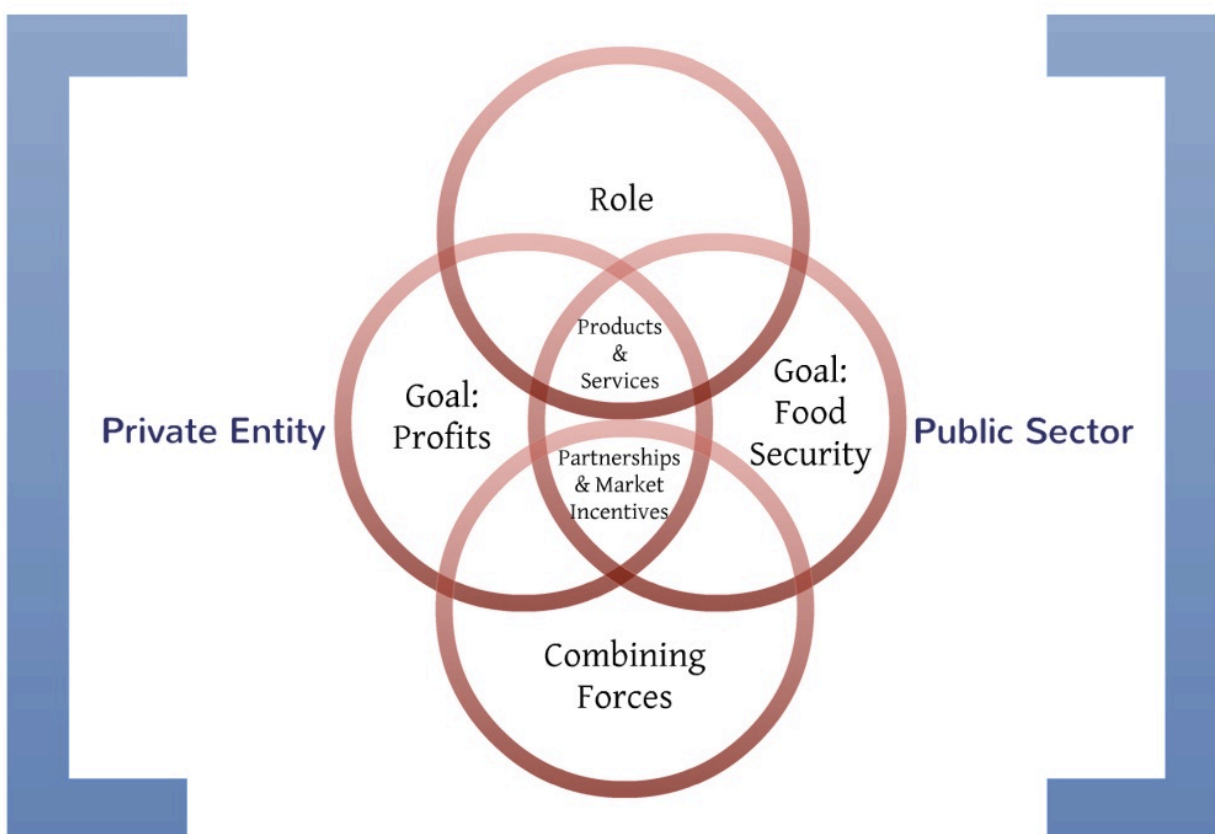
Public-private collaborations include public-private partnerships, knowledge exchange networks, research consortia, technology joint ventures, public-private-non-governmental extension services, and hybrid organizations among others. A public-private partnership is a

collaborative system in which the public and private entities share resources, information, and risks in effort to increase efficiency in the production and distribution process of goods and services.²⁰⁹

According to Bill Gates, the two driving forces of humanity are self-interest and compassion. Both characteristics can be represented and enacted on through public-private collaborations. Capitalism represents self-interest through profit seeking, and government represents compassion through collective resources and security.²¹⁰

It is important to note that there is a distinction between a private company's goal and its role. The goal is to generate profits, while the role includes products and services. The major problem that arises in utilizing the private sector for good is that a company almost always forgoes a portion of its profits in an attempt to achieve alternative enterprise, thus preventing them from successfully competing against profit maximizing firms. Many private sector entities hesitate to engage themselves in public-private partnerships and other types of public-private collaborations because of the assumption that their goals will be mutually exclusive. It is thus a challenge to pursue many businesses in fully developed countries to expand their motivations beyond profit seeking, and to become enthused about the prospect of increasing global food security.²¹¹ Figure 5.1 shows that interests are not necessarily mutually exclusive. The government can help to shift some company roles to include products and services that help to increase global food security, while maintaining the company's goal of profit seeking.²¹²

Figure 5.1: Public-Private Collaboration Framework



Source: Jillian Zemanek, “Public Private Collaboration Framework”, (2012)

According to the International Food Policy Research Institute (IFPRI), there are five primary advantages to the application of public-private partnerships in food security initiatives as opposed to other types of R&D administrations. They are: 1) reduction of costs and risks entailed in research, 2) improvement of the quality and relevancy of research results due to synergies among partners, meanwhile ensuring greater adoption by user groups, 3) the accumulation of complimentary abilities, skills, and resources, 4) higher levels of competition and better market positioning as a result of improved competencies, and 5) promotion of development and poverty reduction by providing small-scale farmers with access to knowledge and technologies.²¹³ In order to establish a mutually beneficial partnership with sustainable results, the public and

private entities should consider the following five criteria: 1) partners must identify a common interest (see figure 5.2), 2) in which the benefits should outweigh the costs of the partnership, 3) the combined benefits resulting from the partnership should be greater than the benefits accrued in the case of individual efforts, 4) the resulting benefits should be relatively evenly distributed between partners, and 5) the results of the partnership should be non-conflictive with interests of surrounding groups.²¹⁴

Improvements in Public-Private Partnerships

Public-private partnerships and other types of collective impact initiatives have been gaining momentum over the past five years, in part due to the economic recession. Government funding cuts have required the private sector to become more creative, forcing upon them the realization that governments cannot always solve societal and health problems, and thus transferring a sense of responsibility.²¹⁵ More women receive higher education than ever before, global average lifespan is on the rise, and the era of transnational travel and communications has arrived. With increasing global food insecurity however, quality of life, sustainable practices, and nutritional source access and choice aren't spreading fast enough.

Public-private partnerships and the channeling of market forces could be the most efficient and mutually beneficial way to win the race against accelerating international food

Figure 5.2: Area of Common Interest



Source: Frank Hartwich, et al., “Building Public-Private Partnerships for Agricultural Innovation”, Food Security in Practice technical guide series. (Washington DC: International Food Policy Research Institute, 2007)

insecurities.²¹⁶ But the government has done little in efforts to accelerate the engagement of the private sector in working towards greater food security.

The Value of the Private Sector in Smallholder Farming

The private sector is the key to sustainability and success of smallholders. Long-term access to new technologies and their maintenance means that there needs to be supplying industries within reasonable distances of smallholders. When policy and development strategies are being created, a collaborative effort between farmer's cooperatives, the private sector, and nonprofit organizations can synergize with the help of government and USAID to create a holistic development plan for food security.²¹⁷ This is particularly important for access to resources that development projects use to enhance smallholder agriculture. Most smallholders live in rural areas and access to supplies to build, maintain, and fix new agricultural systems need to be available to them within reasonable means.²¹⁸

Lessons from Public-Private Collaborations in Pharmaceutical and Vaccine Industries

Over the past decade, the international community has made significant headway in the field of global health through the expansion of public-private partnerships between pharmaceutical companies and the public sector. This approach has led to new laws and regulations such as the Agreement on Trade Related Aspect of Intellectual Property Rights (TRIPS), the Doha Declaration, and improved production and access around the world. All of this has taken place with considerable profits for the private sector pharmaceutical companies, and increased access to vaccinations, drugs, and resulting health benefits within developing countries. Similar public-private partnerships in the fields of food and nutrition have yet to fully develop, opening possibilities for new markets, innovative products, and research initiatives. We can use the progress of the public-private partnerships in pharmaceuticals and vaccines both as

proof that public-private partnerships can have positive impacts in broad goal achievement, and as a model from which the U.S. Government can transfer ideas for organization and incentives in utilizing and further developing the competitive global market of food.

Major Agencies Involved in Public-Private Partnerships

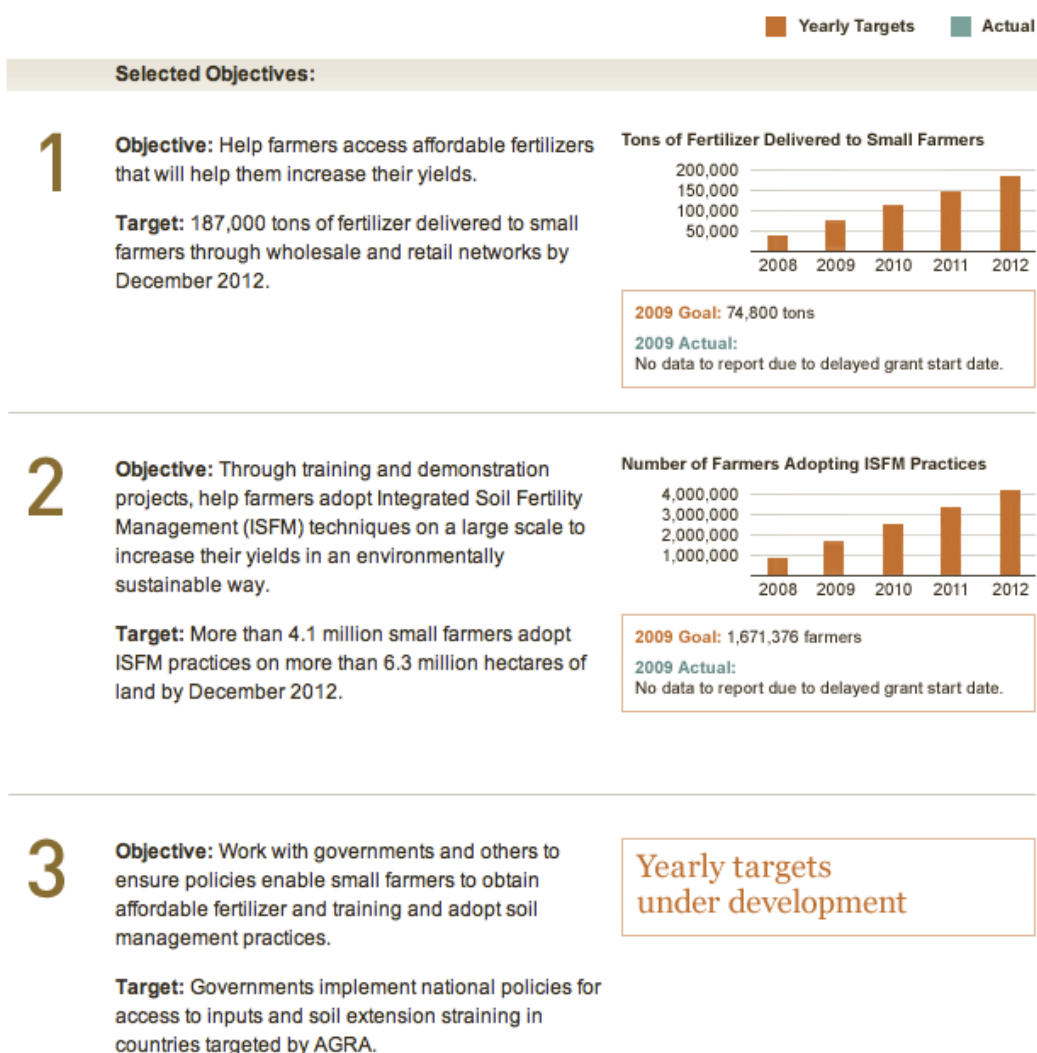
The Bill and Melinda Gates Foundation (BMGF) and the Alliance for a Green Revolution in Africa (AGRA)

U.S. dealings with Public-Private relationships in favor of the U.S. are not necessarily limited to U.S. Government and private sector actors. The BMGF is a large-scale private sector institution located in the U.S. state of Washington which partners with governments of other countries and public universities in the U.S. and abroad in efforts to lessen the burden of poverty in innovative ways. The BMGF is worth exploring in terms of partnerships in food security issues for two reasons. The first is that the BMGF is comparable in both efforts and efficiency to other big dog players such as the UN and WTO. The second is that the U.S. government can both politically encourage and benefit from the works of the BMGF through host country association.²¹⁹ One major asset of the BMGF is its flexibility in funding and projects. The BMGF does not believe in a “one size fits all” strategy across national or regional borders. Mr. Gates himself has been known to travel to grant seeking countries to meet with government officials and regional political and religious leaders to discuss courses of action.²²

The BMGF has made substantial donations in agricultural development efforts, many of which have operated through public-private partnerships. In 2006, the BMGF and the Rockefeller Foundation founded AGRA, a public-private organization that works to improve food security through smallholder farming initiatives. In 2008 Gates announced additional grants, totaling \$120 million to AGRA in 2009 with the goal of assisting 4.1 million household farmers to increase their food yields by 50-100 percent. Strategies include educating farmers how

to use fertilizers effectively and sustainably and to regenerate soil fertility,²²⁰ as well as help AGRA to develop policies protecting smallholders, information and communication technologies for smallholders, and training and resource provisions for African country governments to build on, as biotechnologies are further integrated.²²¹ The objectives and targets of the grants are outline in figure (5.3).

Figure 5.3: Selected Objectives



Source: Bill and Melinda Gates Foundation, “2010 Progress Report: Soil Health Program for Farm Households in Africa”, online, <http://www.gatesfoundation.org/learning/Pages/2010-progress-report-agra-soil-health-program-farms-africa.aspx>, (2011)

Monsanto

Monsanto has conventionally shared its knowledge with the public sector. Monsanto does not give away finished products, but shares processes and technological findings with which the public sector can work with in collaboration with Monsanto to create products more viable for smallholder farms. Partnerships between USAID, universities, government laboratories, and intergovernmental organizations all exist to further efforts in technology transfer to smallholder farms.²²²

Partnerships and technology transferring have not come at a cost to Monsanto. Since forming these partnerships, Monsanto has broadened its market reach, and has furthered its reputation as “Lord of the Seeds”.²²³

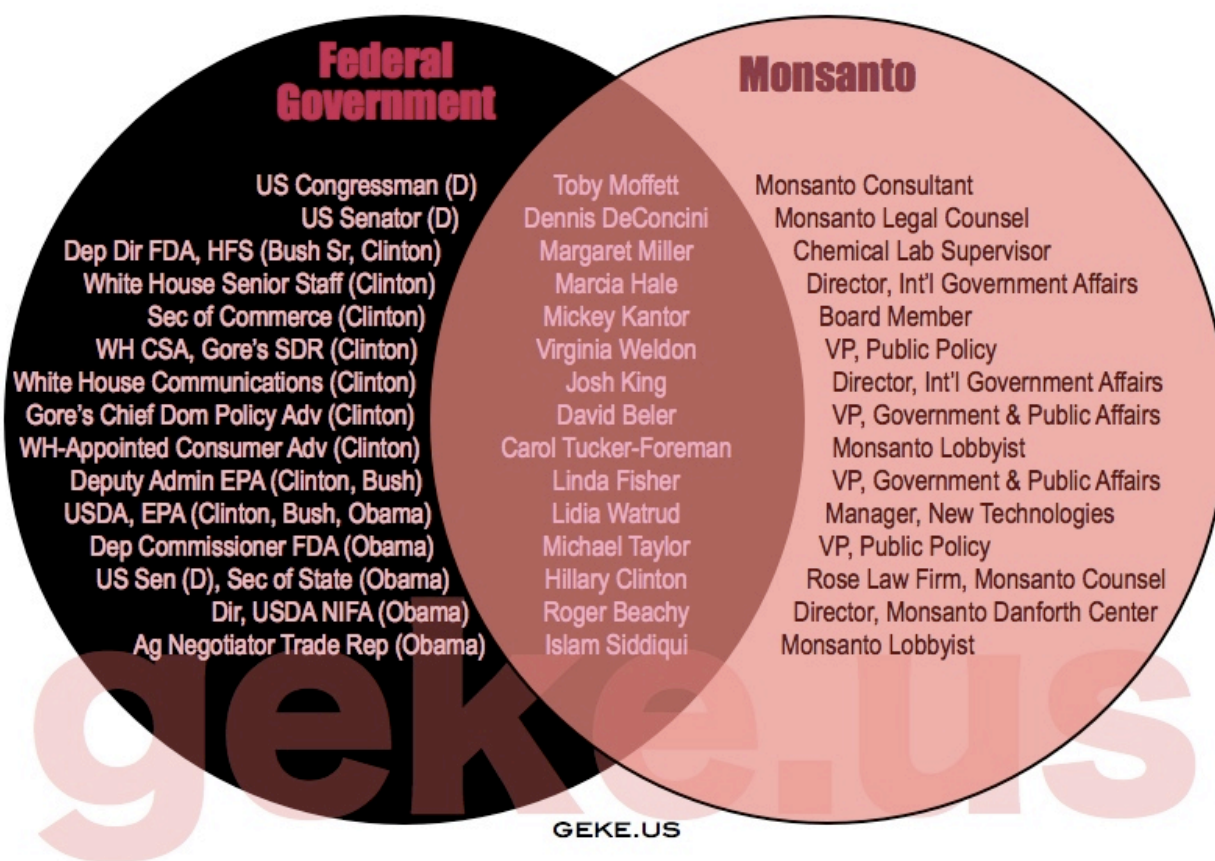
Monsanto has provided research, development, and application of biotechnologies to GM open markets such as the United States, but these technologies require additional R&D to generate favorable outcomes for smallholders elsewhere. Government partnerships decrease the risks that Monsanto must assume in the application of new products and technologies in developing markets. Government sector collaboration also ensures that the products and services align with the needs of the agricultural markets and communities.

The Kenya Agricultural Research Institute (KARI) is an example of one of Monsanto’s public-private partnership successes. KARI is the product of a Monsanto partnership with USAID. KARI is designed to develop and distribute new technologies appropriate for the markets and environmental challenges specific to Kenya. KARI’s primary project right now is the development of a virus-resistant sweet potato, which will ultimately increase smallholder sweet potato yields and enter the market. “Many great ideas emanate from universities and our company has demonstrated that it can translate great ideas into technologies that create value for our customers and shareholders, said Dr. Robb Fraley, Chief Technology Officer for Monsanto

Company. “Accordingly, we are always looking to participate in creative research and educational partnerships with universities.”²²⁴

Monsanto and the U.S. Government have huge amounts of overlap and knowledge sharing. Below is a graphic displaying the personnel that have held titles with both the U.S. Government and Monsanto.

Figure 5.4: Federal Government, Monsanto Venn Diagram



Source: Geke.us, “Federal Government, Monsanto Venn Diagram”, *online*, <http://geke.us/MonsantoVenn.html>, (2011)

Monsanto also has a variety of public university partnerships, including those with Michigan State University and Texas A&M in the United States, the University of the Philippines-Los Baños, and Kasetsart University in Thailand. Michigan State University has been an important source of R&D for beta-carotene mustard in India, while the University of the Philippines-Los Baños and Kasetsart University have both made significant contributions to virus-resistant papaya in their partnerships with Monsanto. Below is a table of current major public-private partnerships involving Monsanto and the Monsanto owned technology focus for each project.²²⁵

Figure 5.5: Examples of public-private agricultural technology cooperation projects

Table 1. Examples of public-private agricultural technology cooperation projects.

Crop	Technology	Geography	Partners
Mustard	Beta carotene enrichment	India	TERI, USAID, Monsanto
Papaya	Virus resistance	SE Asia (Indonesia, Malaysia, Philippines, Thailand, Vietnam)	ISAAA, national agriculture research organizations, Monsanto
Potato	Virus resistance	Mexico	Rockefeller, CINVESTAV, ISAAA, FMDR, Monsanto
"Golden Rice"	Enabling technologies (license only)	Global	Inventors, Humanitarian Board, Monsanto
Rice and related crops	Rice genome sequence data	Global	IRGSP, national rice genome sequencing programs, Monsanto
Sweet potato	Virus resistance	Africa (Kenya and South Africa)	KARI, ISAAA, ARC-VOPI, Danforth Center, Monsanto

Source: Horsch and Montgomery, "Why We Partner: Collaborations Between the Private and Public Sectors for Food Security and Poverty Alleviation through Agricultural Biotechnology", *The Journal of Agrobiotechnology Management and Economics*, (2004)

USAID

"One of the explicit assumptions that underlines the U.S. strategy for food security, is that driving economic growth through agriculture will be reliant on upon leveraging private sector investment," Josett Lewis, the Director of Agriculture of USAID stated in 2010 speech.²²⁶

USAID works to gain access to the technology that exists in the private sector and apply it to

public food security initiatives Investments are often directed towards promising markets in which the private sector cannot foresee immediate economic return.

Two primary functions in the encouragement of private sector engagement with public sector food security initiatives drive many of USAID's investment strategies. The first is to invest in the development and delivery of technology for areas where the market has not yet matured. The second function of USAID is to assume and reduce risks that the private sector normally faces when entering an underdeveloped market. USAID achieves these is several nonconventional and effective ways.²²⁷

USAID financially supports the Alliance for Green Revolution in Africa (AGRA), Enterprise EthioPEA, the African Agricultural Technology Foundation (AATF), all of which work with smallholder farmers. These organizations are discussed later in this chapter. Partnered with the International Food Biotechnology Council (IFBC), USAID provides direct assistance to smallholders as well with a system of vouchers and subsidies, which makes new agricultural products and technologies such as GM seeds more accessible and inviting to invest in. Farmers are trained and encouraged to use the new profits from crop yield increases from the seeds or fertilizer so that they do not need vouchers in future years, discouraging dependency.²²⁸

USAID has partnered with the private insurance firms for the R&D of a weather indexed insurance plan for smallholder farms. The public sector invested in the collection of weather data, training and outreach, and production design, which allowed private investors to more confidently enter the market with fewer risks for the institutions involved in the marketing and distribution investments.

USAID also works to break down legal and regulatory barriers that prevent private entities from investing in a country or region. The process of investing in low-income areas

becomes strenuous, complicated, and costly when many countries have differing regulations despite being geographically clustered and compromised of similar environmental and market characteristics. In order to make regions more open to private sector investments, USAID works to harmonize and streamline these regulations.

Another way in which USAID has both assumed and reduced risks for the private sector is through Development Credit Authority (DCA) incentives.

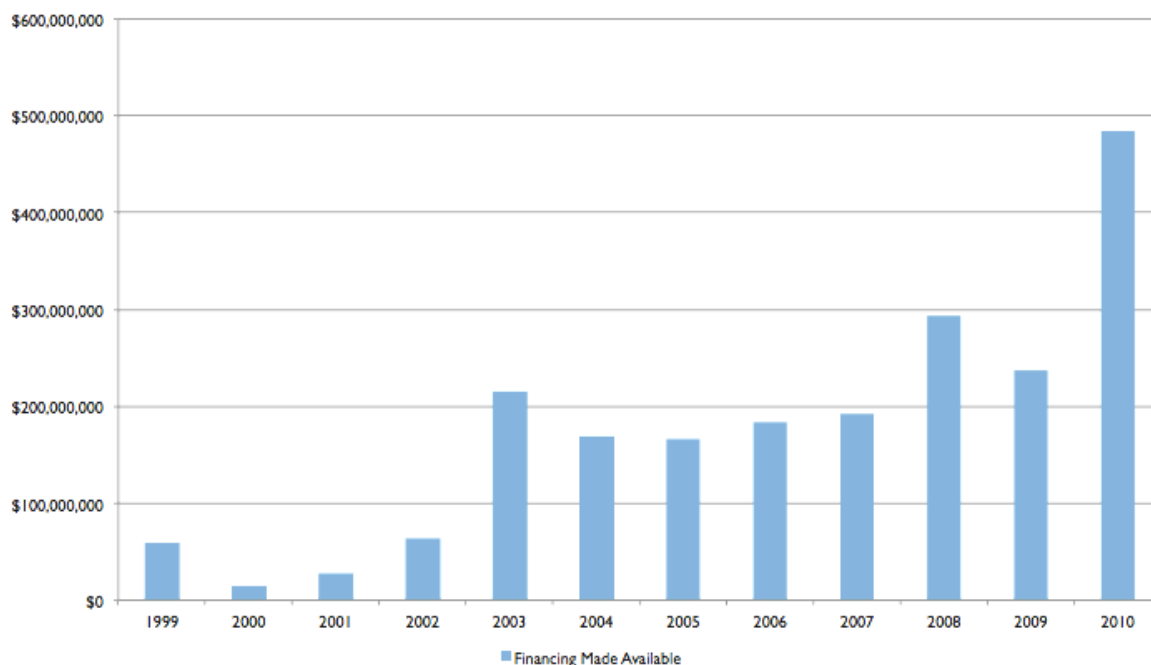
Development Credit Authority (DCA) Incentives

The DCA is a government authority that enables USAID to mobilize and increase funding for development projects through the use of credit guarantees. The guarantees encourage lenders to invest in new and developing markets by assuming some of the risks associated with loans. Areas of distribution and project types are flexible within the specified development priorities and objectives of the U.S. Government.²²⁹ The DCA has empowered social and development entrepreneurs in food security ventures by magnifying their economic capacities. It is estimated that \$16 million in government debt guarantee can equate to \$165 million dollars of private sector investment.²³⁰ USAID has generated more than \$2.3 billion in private sector credit at a cost of \$82 million since the DCAs inception in 1999. Figure (5.6) shows dollar amount of DCA Guarantees by Fiscal Year, totaling \$2.3 billion in credit.²³¹

Figure 5.6: DCA Guarantees by Fiscal Year

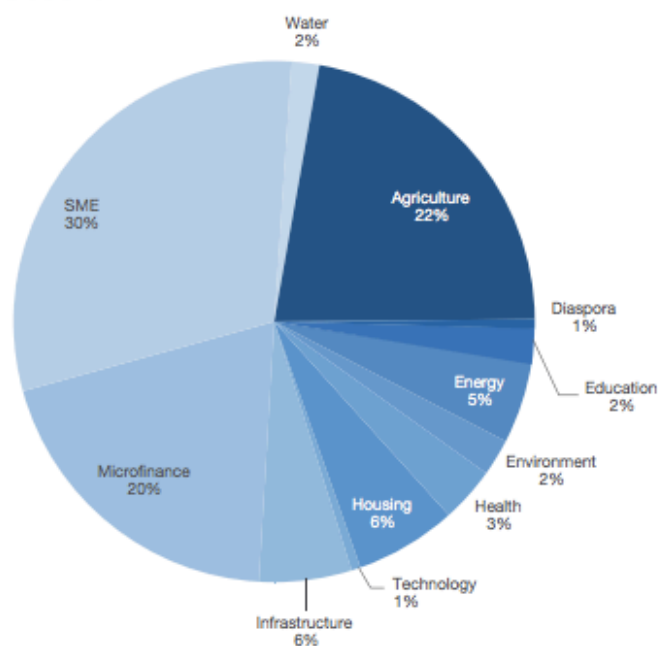
DCA Guarantees by Fiscal Year

(\$2.3 Billion / 267 Guaranteed Parties Total)



Source: USAID, “Credit Guarantees”, *2010 Year in Review*, (2011)

Figure 5.6 shows total fiscal percent dedicated to each sector for the years 1990-2010, including 22 percent for agriculture and 2 percent to the environment, both of which directly contribute to food security, as well as 30 percent to small and medium enterprises, 3 percent to health, 1 percent to technology, 6 percent to infrastructure, and 20 percent to micro financing, all of which also significantly contribute to food security.²³²

Figure 5.7: Credit Mobilized by Sector [1990-2012]**Credit Mobilized by Sector:**

Source: USAID, “Credit Guarantees”, *2010 Year in Review*, (2011)

Since the 2007-2008 economic crash, credit lenders have restricted their lending, hindering market development. In response, USAID constructed six credit guarantees with the intent to increase entrepreneurial credit access in the midst of financial crisis. These first six credit guarantees, costing just \$12 million in U.S. Government funds, is predicted to leverage a total of \$213 million for private sector investment in development. USAID has identified seven target countries for credit guarantees. They are: El Salvador, Ghana, Haiti, Indonesia, Liberia, Mongolia and Tanzania.²³³ As seen in figure (4), Credit Guarantees are not limited to these seven countries. According to USAID, “The 46 guarantees account for \$485 million of DCA’s portfolio, representing the highest annual amount of credit made available in any year since the Development Credit Authority began. The 2012 guarantees were made available at a cost of \$23 million to USAID.”²³⁴

Figure 5.8: DCA Activity in 2010

Country	Type	Sector	Amount Mobilized	Cost to USAID
Azerbaijan	Agriculture	LPG	\$1,000,000	\$44,600
Azerbaijan	Agriculture	LPG	\$1,000,000	\$44,600
Azerbaijan	Agriculture	LPG	\$1,300,000	\$57,980
Bosnia Herzegovina	SME	LPG	\$20,000,000	\$728,000
Bosnia Herzegovina	SME	LPG	\$20,000,000	\$688,000
Colombia	Microfinance	LPG	\$25,900,000	\$207,200
Dominican Republic	SME	LPG	\$1,690,000	\$57,500
Dominican Republic	SME	LPG	\$1,690,000	\$57,500
Georgia	Microfinance	PG	\$5,000,000	\$209,000
Georgia	SME	LPG	\$9,000,000	\$367,200
Georgia	Health	LG	\$8,000,000	\$515,200
Georgia	Health	LPG	\$20,000,000	\$1,306,000
Ghana	Agriculture	LPG	\$9,304,000	\$454,966
Global	Microfinance	LPG	\$100,000,000	\$5,880,000
Global	Agriculture	LPG	\$22,170,000	\$964,395
Haiti	SME	LPG	\$15,000,000	\$2,301,000
Haiti	SME	LPG	\$5,000,000	\$828,500
Indonesia	Microfinance	LPG	\$13,000,000	\$605,800
Indonesia	SME	LPG	\$19,175,000	\$899,308
Indonesia	Microfinance	PG	\$8,000,000	\$308,800
Kenya	Agriculture	PG	\$4,280,000	\$128,828
Kenya	SME	LPG	\$5,750,000	\$276,575
Liberia	SME	LPG	\$6,868,000	\$1,199,840
Mongolia	SME	LPG	\$5,000,000	\$199,500
Mongolia	SME	LPG	\$14,000,000	\$558,600
Mongolia	SME	LPG	\$6,000,000	\$239,400
Mozambique	Microfinance	LPG	\$2,000,000	\$81,200
Mozambique	Agriculture	LPG	\$4,540,000	\$226,546
Nigeria	Health	LPG	\$400,000	\$19,880
Nigeria	Health	LPG	\$8,300,000	\$331,170
Peru	Agriculture	LPG	\$3,000,000	\$73,200
Peru	Agriculture	LPG	\$3,000,000	\$73,200
Peru	Agriculture	LPG	\$2,000,000	\$48,800
Peru	Agriculture	LPG	\$3,000,000	\$73,200
Peru	Agriculture	LPG	\$1,000,000	\$24,400
Peru	Agriculture	LPG	\$3,000,000	\$73,200
Rwanda	Agriculture	LPG	\$1,575,000	\$101,115
Senegal	Agriculture	LPG	\$8,000,000	\$312,000
Senegal	Agriculture	LPG	\$2,000,000	\$80,800
South Africa	SME	PG	\$20,000,000	\$54,000
South Africa	SME	PG	\$25,000,000	\$75,000
South Africa	SME	PG	\$20,000,000	\$114,000
Tanzania	Microfinance	BG	\$10,000,000	\$858,000
Uganda	Agriculture	LPG	\$6,000,000	\$208,200
Uganda	Agriculture	LPG	\$6,000,000	\$216,600
Uganda	Agriculture	LPG	\$3,000,000	\$116,700
Total			\$484,967,000	\$23,039,734

Source: USAID, "Credit Guarantees", 2010 Year in Review, (2011)

In conjunction with FTF, the DCA also targets borrower from the agricultural value chain. USAID has mobilized a total of \$551 million in private sector investments in agriculture over the course of eleven years. In 2010, seven FTF identified countries were issued \$8.7 million in credit guarantees, resulting in \$106.8 million in local credit. Due to increases in credit access and local entrepreneurship, many agribusinesses can invest in product and process improvements. Resulting use of equipment and technologies have enabled farmers to compete in regional and global markets.²³⁵

Public Universities

Research in GMOs for tropical climates and in nutritional sciences and dietary needs for citizens of LDCs is lacking. A study of a selection of 1716 articles published in the nutritional sciences shows that approximately 83 percent were on the topic of obesity, and only 5 percent of authors under all categories of nutrition were from India or China, which represent 40 percent of the world's population. One article in the study was representative of the entire African continent.

Nutritional science and food studies are needed for solutions for food security, and an emphasis is necessary for underdeveloped LDCs. One way to achieve this is to recruit and fund public universities to conduct these studies. An example of a public-private research initiative can be seen in the University of Washington's Institute for Health Metrics and Evaluation, spearheaded by the BMGF with a \$105 million grant in 2007. UW's IHME is made sustainable through long term funding both from the BMGF and Washington State. The institution prides on its combination of "academic excellence of a university research institute with the independence and entrepreneurial spirit of an NGO".²³⁶

Filling in the Gaps: Examples of Public-Private Projects investing in Food Security Niches

Cell Phones

Companies such as Vodaphone and Safaricom have utilized the market for cell phones in developing countries. Safaricom has accommodated for low-income users by charging customers by the second instead of by the minute. Cell phones have a high demand because of their ability to be used for finding the best market prices for both sales and purchases of agricultural goods, and for transferring money wirelessly, making traveling to markets safer as the risk of being robbed in transition is much higher if you are carrying cash.²³⁷

Breast-milk

The nutritional problems associated with short-term breastfeeding in developing countries are an example of a niche for public-private partnerships to flourish. Nutritional shortages within the first two years of life can lead to severe stunting, a condition that affects about 178 million children worldwide. Natural breastfeeding would be the ideal and most cost-effective solution, but mothers often cannot sustain milk production, or are required to return to work early in the infant's life, resulting in a breastfeeding term as short as one month. When public institutions such as the UN and individual country governments supply an initial incentive for food companies to develop a wider range of nutritional weaning foods and supplements. One example of such a product is Plumpy'Nut, produced by Nutriset in South Africa. These products and partnerships remain few despite the world's market for them. Incentives could be added too, for the production of maternal dietary supplements, for the health of the mother and increased breast milk production.²³⁸ Food companies could play a more significant and beneficial role in nutrition for the poor if public institutions provided incentives.

Enterprise EthioPEA

Enterprise EthioPEA is an official public-private partnership between the U.S. Agency for International Development, PepsiCo Inc., the PepsiCo Foundation, and the United Nations World Food Program. The objective of the program is to sustainably increase chickpea production within Ethiopia with the intentions to promote nutritional and economic security. Enterprise EthioPEA works in alignment with the Ethiopian state issued agricultural development plans, and is working towards three defined goals: 1) Enable 10,000 farmers to double their chickpea production with the inclusion of modern agricultural and irrigation practices and advancements. The integration of advanced irrigation and fertilizers will promote soil quality, and the resulting dramatic yield increase will assist Ethiopian farmers in the development of a reliable market for Ethiopian chickpeas for domestic trade and international export. 2) Produce a locally sourced, nutrient rich ready-to-use supplementary food (RUSF) to improve malnutrition in Ethiopia. The initial target population for the RUSF is approximately 40,000 Ethiopian children, ranging from ages 6 months to 2 years, but all involved partners have a long-term goal of expanding the product and distribution throughout the Horn of Africa. 3) Increase the distribution and export capacities of the Ethiopian chickpea supply chain to capitalize on domestic and export markets, and to increase local access to regionally produced and highly nutritious foodstuffs. This particular goal is imperative to the advancement of PepsiCo's \$30 billion global nutrition business, scheduled to appear by 2020. PepsiCo's partnership in the Enterprise EthioPEA partnership reflects the company's ultimate goal of becoming a global leader in sustainable agriculture. "PepsiCo's partnership with the World Food Program and USAID is well designed to address the needs of many of our most important stakeholders, including customers and communities," said Indra Nooyi, Chairman and CEO of

PepsiCo. "We are pleased to be combining powerful local networks, proven experience in development assistance and strong industry expertise to help create new domestic and export food markets. This initiative will positively impact the livelihood of local farmers, address the critical issue of famine in the Horn of Africa and create sustainable business opportunities for PepsiCo."²³⁹

Chickpeas composition average at 22 percent protein, and are a sustainable alternative to meat. Ethiopia is currently the largest chickpea producer in Africa, but careful assessment reveals room for yield improvement and a viable market expansion. "This Unique partnership illustrates how we can develop market-based solution and leverage resources to make a sustainable impact in reducing hunger and poverty", stated Rajiv Shah, USAID Administrator.²⁴⁰

Water Efficient Maize for Africa (WEMA)

The partnership, known as Water Efficient Maize for Africa (WEMA) is designed to alleviate hunger and poverty through the reduction of maize crop failure throughout the four participatory countries: Kenya, Uganda, Tanzania and South Africa. The partnership announced in 2008 includes AATF, Monsanto, the International Maize and Wheat Improvement Center, and national agricultural research systems within each participating country. Additional grants from the BMGF and Howard G. Buffett Foundation total \$47 million to the project. The BMGF has also funded an independent assessment program through the University of Toronto to monitor the social, cultural, ethical and commercial issues affected by WEMA. The conglomerate of public, private, and nonprofit sector organizations joined forces in response to the devastating effects of recent and increasing

Maize is the most widely grown staple crop in Africa: more than 300 million Africans depend on it as their main food source. It is severely affected by frequent drought.

draught on smallholder farmers. The long-term goal of the partnership is to making drought-resistant GM maize available royalty-free to small scale and smallholder farmers.

The drought resistant crop technology has already been licensed to AATF, which will develop, test, and distribute the new seeds to regional seed companies. “The national agricultural research systems, farmers’ groups, and seed companies will be responsible for country-specific implementation including project governance, testing, germplasm evaluation, seed production and distribution.”²⁴¹

The entire process is royalty free, making the agro-technology of the developed world more available to smallholder farmers. The new maize varieties are estimated to increase crop yields by 20 to 30 percent within ten years, given moderate drought. This estimate equates to approximately two million tons of additional food, supplying 14 to 21 million people with food and profits.²⁴²

POLICY CONSIDERATIONS

Incentives

Studies show that the poorest two-thirds of the world population has approximately \$5 trillion in purchasing power.²⁴³ Currently, the market for food security provisions lies largely undetected by first world private sector food corporations and nutritional scientists. One major reason why the first world private sector has failed to invest in developing country markets is that the needs of those markets remain largely unexplored.

Governments can assist in market expansion for food security through the use of incentives. Generally, the problem of investing in developing markets arises because the people

who often need the research and products for advancement are the least able to pay, and so the developments and products never actualize (ex: GMOs designed for resource poor areas).

Publicity

Rewards can be as simple and cheap as public praise and positive publicity for those companies providing R&D and market access for the poor by the government. Publicity and positive recognition can help to boost a company's reputation, attracting both customers and employees.

Publicity promises more tangible rewards when consumers buy their products, and can feel good supporting a company with a philanthropic edge. An example of this can be seen in the U.S., where upper and middle class citizens are willing to pay more for organic foods. The recent (RED) campaign launched by Bono also proved that people who can afford it are willing to pay more for products from companies or organizations that dedicate a percent of their profits to a cause.²⁴⁴ Likewise, companies directing their attention toward the developing world will be able to "recruit and retain" valuable employees. Today's graduating generation have a desire to work for an organization that they can be proud of. Employees are often willing to take a lesser salary in exchange for working for a socially or environmentally responsible organization.²⁴⁵ By applying business with philanthropy, employees will be more excited and dedicated to their work.²⁴⁶ Economist and social entrepreneur Esther Duflo states the role of publicity clearly; "Corporations have a unique role to play in producing good things for the world's poor, and harnessing their power, with public recognition as the currency, seems like the way to go."²⁴⁷ When publicity alone is not be enough to entice companies to invest in developing agricultural sectors for the poor, the implementation of economic incentives can help.

FDA Priority

In 2007, the U.S. Government enacted a law that allowed any drug company with developments in neglected diseases such as malaria and TB to receive priority review for any other pending product by the FDA. Priority reviews for private sector could result in hundreds of thousands of dollars for the company. Government favorability in the FDA review process means that a company with R&D in malaria treatment could put its drug for high cholesterol in the U.S. a year earlier. The U.S. Government could implement a similar system with companies working towards GMO seeds better suited for tropical climates, or with a nutritional additive for breast milk, for example. In this way, the U.S. Government can channel market forces to provide aid and increase economic feasibility of products designed for the poor, because it would provide significant economic incentives for the private sector to become more involved in R&D for the food insecure at a very low cost to the government.

Advanced Market Commitments (AMCs)

AMCs are another kind of incentive launched in 2010 used to encourage pharmaceutical companies manufacture and develop vaccines for low-income countries. Five country governments (Italy, Canada, Norway, Russia, and the United Kingdom) and the BMGF promised \$1.5 billion in purchases of pneumococcal vaccines as soon as they have been developed.²⁴⁸ This gives an incentive for companies to invest in the manufacturing and development of vaccines most needed in low-income country populations, and allows developing countries to purchase vaccines at set prices determined by the Governments who made the initial purchase. Without AMCs for vaccines, a low-income country population could have to wait up to fifteen years before IPRs and other laws allowed for their access.²⁴⁹

The U.S. Government could initiate a new form of AMCs, designed as an incentive for the private sector to invest more in the R&D of food security. The government could commit a set amount of their aid money to go toward the purchase of agricultural development technologies such as seeds and the fulfillment of nutritional market niches such as condensed nutrition milk for infants. Promises of immediate profit for private sector actors in food and agricultural development will result in greater R&D in food security issues, as well as a lower prices and shorter waiting period for those countries who have the most to benefit from such innovations and findings. Additionally, the use of AMCs as an incentive for development and provision for access to food security related innovations would eliminate the discussion and conflict encompassed by what technological processes and products are most feasible for initial investment. The Government needs only to declare a price value on developments in food security and let private sector players compete for government purchases.²⁵⁰

The DCA and Credit Guarantees

The DCA is a powerful tool for creating and mobilizing funds for furthering investments in food security. By assuming some of the risks associated with loans and magnifying the capacity of loans, investment in developing markets becomes much more feasible, impacting, and inviting for the private sector. The U.S. Government could expand the DCA, and direct more of its aid to this authority. This is an excellent option for USAID to consider, as it requires a relatively small taxpayer or USAID dollar amount to deliver huge amounts of capital investment of the private sector for food security development.

Utilizing Public Universities

The U.S. Government can increase the interest of new graduates by investing in and placing value on R&D in global food security. Universities have the captive human capacity to conduct

quality and long-term data with continued analysis in food security issues, but often lack the financial ability to conduct such research. This research is highly applicable toward private sector investments in technology, geography, transferability and results tracking. Universities have the capacity for R&D, but generally have little successes in transferring the R&D into products or systems outside of the academic world without assistance. The U.S. Government can utilize existing universities to provide such valued information for private and public sector investments in food security.

POLICY RECCOMENDATIONS

- Expand the USAID DCA and Credit Guarantee capacities
- Use Government endorsement and promotional incentive strategies to encourage R&D in food security for low-income countries
- Apply FDA priority status to companies contributing to R&D in food security related issues
- Launch a Government issued AMC program investing in private sector R&D in food security
- Maintain a working, understanding partnership with Monsanto in food security goals, complete with political and economic rewards for Monsanto in exchange for smallholder farmer rights
- Increase funding for long term research initiatives in food security issues through public universities and other public institutions

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Ch.6 Smallholder Engagement

Madison MacKenzie

Abstract

Smallholders account for a vast majority of the world's agricultural production. Over the past thirty years, investment in agricultural production in developing countries was on the decline and contributing to the world's food insecurity. Smallholders have the potential to increased productivity per acre of land and expand from subsistence to commercial agriculture if the right tools and strategies are implemented. Significant production gains have been recorded with smallholder projects when Information and Communications Technology (ICT) infrastructure is established, industrial technology is made accessible and affordable, and adequate infrastructure supports rural areas. As the largest foreign aid provider in the world, the United States' influence on smallholder engagement in global development discourse and in current partner-country projects has enormous potential to improve worldwide food security through smallholder production.

Policy Recommendations

- Maintain fiscal support for the continuation of development projects and research programs that benefit smallholders, including: *Feed the Future*, SANREM CRSP, IFAD, USAID's Farmer to Farmer Program, Millennium Challenge Corporation, and independent NGO's that receive funding from the people of the United States.
- Establish a U.S. Foreign Policy stance for smallholder engagement considerations in international aid and development projects.
- Promote policy within partner countries to foster smallholder agricultural development, stabilize commodity markets, and incentivize investment.
- Increase allocated funding within development programs with partner countries for agriculture and infrastructure initiatives that would benefit smallholders and rural economies.
- Invest in research and industrial technologies that will enhance smallholder productivity, reduce physical burdens, produce higher yields, and improve resource management.
- Incorporate U.S. expertise in ICT development projects: multinational corporations, universities, and NGO's.
- Include smallholder cooperatives in decision-making processes, policy-making, and needs assessment analysis within recipient countries.

ISSUE

Smallholder farms stabilize food security in vulnerable regions and grow developing economies. According to the United Nations, investment in agricultural production has fallen significantly over the past thirty years throughout in the most food insecure regions. The effects have been felt with increased hunger and malnourishment, poor resilience to the food crisis of 2007-2008, and increased reliance on emergency food aid in many regions.²⁵¹

The recent trend in development has been to use agriculture for economic growth and poverty reduction, utilizing the increasing integration of markets in agricultural commodities trade. There are a few challenges to the success of smallholder engagement in the world. They include the lack of connectedness through communication, information, and geographical/infrastructure barriers, access to obtain industrial tools and resources to increase efficiency, compounded by the market volatility and consequences of climate change.

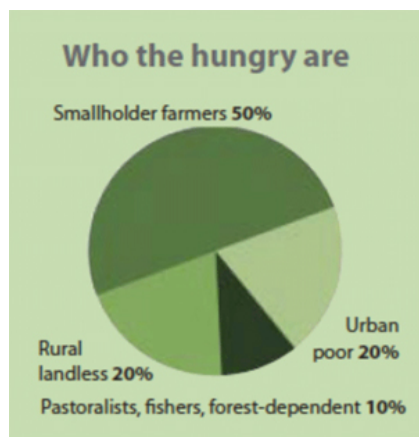
Investing aid through specific channels in target countries can promote market access through ICT development and infrastructure initiatives, and drive higher production yields and sustainability through agricultural research for smallholder farms. This integrative plan is a development model that would address smallholder difficulties of accessing and succeeding in volatiles global commodity markets and allowing regional economies to grow while increasing food security.

BACKGROUND

Over two billion people base their livelihoods from smallholder farms in developing countries. Over time, the agricultural productivity growth rate on smallholder farms has decreased from 3.5 percent in 1980 to 1.5 percent in 2011, in direct correlation with the

reduction in agricultural investment programs. Commodity price volatility has left these farmers in economically precarious situations where most live on about \$2 per day.²⁵² Smallholders are

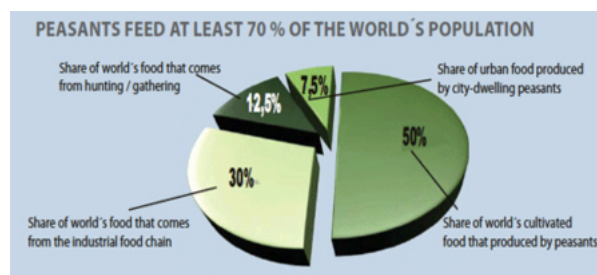
Source: A Viable Food Future & ETC-Group



an underutilized resource in world food security. The recent 2007-2008 food crisis has illuminated the importance of smallholders on regional food security and the disastrous effects of food import reliance in poor regions.²⁵³

World food security and regional economies will benefit greatly if subsistence agriculture were expanded to small-scale commercial agricultural production. In most cases, these farmers already have the necessary land and resources but lack tools and capabilities, such as higher-yielding seeds and collective marketing.²⁵⁴ The United States is a leader in agricultural production and innovation, and can enable smallholders to access these tools such as higher-yielding seeds, irrigation and resource management technology, pesticide and land erosion education, and financial services. Entrance into the commercial agricultural market system from subsistence farming for smallholders can be achieved through long-term investment plans of various technologies, infrastructure systems, and enabling policies.

Agricultural growth is at least twice as effective in reducing poverty as non-agricultural growth, according to the World Bank, and an IFPRI study shows that “a 1 percent increase in agricultural income per capita reduces the number of people living in extreme poverty by between 0.6



Source: A Viable Food Future & ETC-Group

and 1.8 percent.”^{255 256} If smallholder production is increased, it will not have the potential to integrate more producers into the world food market by moving them from subsistence to commercial agriculture.

Demand for food is expected to increase by 50 percent within the next twenty years.²⁵⁷ The broad global trend of increasing urbanization means that rural populations involved in agriculture will be producing food for larger urban populations. As of 2009, 3.4 billion people live in urban areas out of the total 6.8 billion²⁵⁸ (current total population for February, 2012 is 6.99 billion).²⁵⁹ This trend is at a different stage in much of Asia and Africa, where six of every ten people live in rural areas, and around 70 percent are involved in agriculture for subsistence or commercially.²⁶⁰ High exodus rates from rural to urban areas puts increasing pressure on the remaining rural farmer left to produce food for these new urban demographics.²⁶¹ Currently, smallholders in certain regions do not have the capacity to produce food with enough efficiency to maintain food securities. USAID addresses this issue through its Feed the Future, Millennium Challenge Corporation, Global Health Initiatives, private sector leveraging, collaborating with and funding agricultural and market research institutions, and facilitating ‘Farmer to Farmer’ networks.²⁶²

Feed the Future is particularly relevant to smallholders because one of the top objectives is increasing smallholder productivity and incomes within each of the five regional programs.²⁶³ The non-region-specific programs provided to smallholder farmers through USAID include technical training in management, marketing, business promotion, lobbying, and developing policy reforms. These skills are invaluable for creating an effective and efficient marketplace for commodities. The second general program is technical training of resource management with an emphasis on the restoration and development of irrigation systems. This program also provides

training for management and maintenance procedures of water resources such as tariffs, collection of user fees, enforcement mechanisms, and efficiency conservation techniques. Some examples of region-specific programs include private-sector grants to provide technical training to youth in the agricultural sector, training and educational programs for farmers on new seeds, technologies, and inputs.²⁶⁴ All of these programs are new, and the time and adjustments necessary have not been completed, but they hold enormous potential for transforming the viability of smallholder farmers.

In order to implement the most effective resource allocations, policies within programs such as Feed the Future and the Millennium Challenge Corporation are created with input from various stakeholders. These policies include funding research for new technologies applicable to smallholders, the development and increased access to local markets, improved resource management education and strategies, and better methods of monitoring and evaluation so ineffective plans can change quickly.²⁶⁵

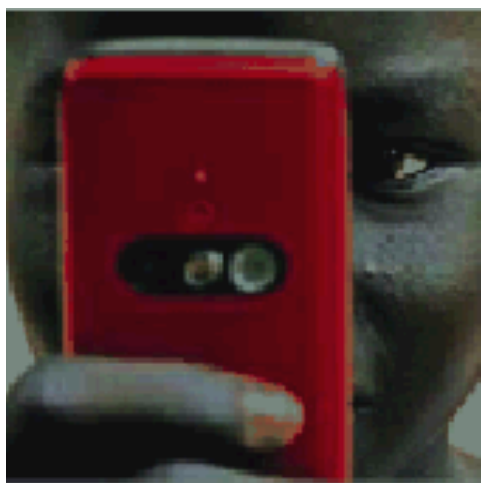
Access to Information/Communications Technology and Smallholder Growth

Rural livelihoods are now considered the central component to poverty alleviation and increased food production. At the World Summit on the Information Society in 2005, the roles of ICT in food security and poverty reduction were officially endorsed and have been supporting programs and policies to improve smallholder production, market access systems, and communication networks.²⁶⁶ The two most successful communication technologies for smallholder empowerment are radio programs and mobile phones. They have increased access to and knowledge of markets, politics, climate and geographic conditions, and have also facilitated cooperation and collective action.

Mobile phones have been a major and unexpected contributor to rural livelihoods and the economic systems in developing countries. The development of mobile phone systems in countries lacking in infrastructure, particularly sub-Saharan Africa, have allowed a technological leap-frog to occur of mobile phones over landlines.²⁶⁷



Populations deficient in communications technology also lack access to larger market economies. National policies can promote private sector investment in the telecommunication system infrastructure to areas currently with limited or no providers.²⁶⁸ The policies enacted by governments have the potential to be either an obstacle or enabler to providing communication infrastructure in rural areas. An example of this would be an investment program to expand electric and technical infrastructure to a rural farming community and establish public payphones in centralized areas. Another policy could be to create a financial incentive for ICT companies to utilize and invest in new systems. Both of these are policies enable smallholders. When



Source: USAID Policy Framework 2011

governments subsidize a single company and give it exclusive rights on its use to establish infrastructure, it is both an enabling and inhibitive policy. Although it provides infrastructure, it does not allow for competition because other private sector companies cannot compete with the subsidies, which leaves space for potential abuse by the monopolizing company and is bad for the local economy. Barrier policies such as taxation, fees, and

certain stipulations create disincentives for private sector investment to expand ICT systems to rural communities and hinder overall development.²⁶⁹ Once smallholders obtain access to ICT systems, it improves access to market and allows them to be more efficient and financially strategic, and allows for more competition and stimulates economic growth and productivity.²⁷⁰

Mobile banking has created substantial new opportunities for rural agricultural producers. What began as transferring phone credit for calls and SMS has transformed into money transfers and credit accessibility through banking institutions on mobile phones.²⁷¹ The World Bank states that in developing countries, every ten new mobile phone subscribers results in 0.8 percent GDP growth.²⁷² According to the *Policy Matters Journal*, mobile banking is reducing poverty by increasing savings rates, creating jobs, and increasing access to financial products and services.²⁷³ Providing these kinds of financial services allows smallholder farmers to make more informed and strategic decisions in utilizing their capital. Mobile banking reduces transaction and opportunity costs, since information is transferred electronically and inexpensively, and does

Figure 1: Africa – Mobile Subscribers and Penetration (2002-2012)

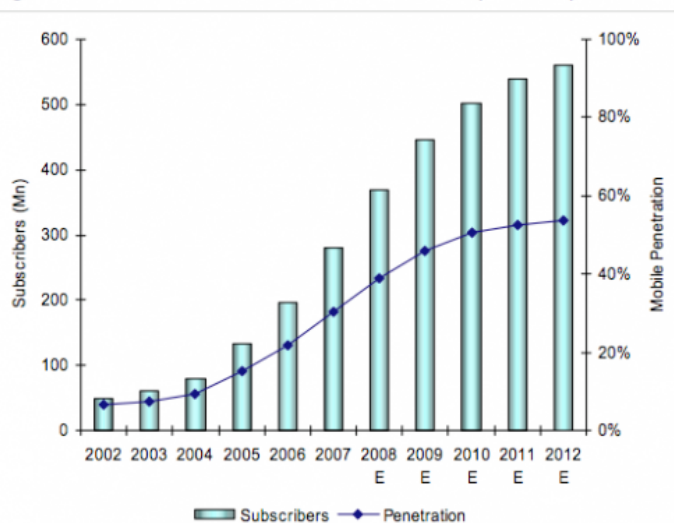


Figure 6.1: Source: Africa & Middle East Telecom News: 2011 Mobile Subscriber Data

not require the time or cost of physical presence at a banking institution. In Kenya, mobile banking through M-PESA is growing at nearly the same overall rate as mobile phone use and first-year mobile phone access.²⁷⁴

Another feature of increased mobile phone use is the multitude of knowledge sharing networks and market access tools. Communication technology facilitates

market interactions, organization, and efficiency.²⁷⁵ In farming communities in sub-Saharan Africa, there is a growing trend of access to mobile phones and the number of farmers' cooperatives and sales coordination.²⁷⁶ Programs such as the ZNFU4455 in Zambia have promoted smallholder producers' market access. This particular program coordinates over 180 active local traders for various commodities with price and location via SMS to a network of smallholders.²⁷⁷ The ability to locate desired markets and information results in greater market efficiency and a reduction in wasted resources. Programs such as these increase opportunities and production growth for smallholders.

The Association for Progressive Communications is an organization that expands the internet, ICT technology, influences information and rights policy, creates networks between communities, organizations, and governments as well as promotes environmentally sustainable technological practices within the countries they are involved in. This innovative and dynamic



Source: Asia-Pacific Telecommunity: ICT Development

approach to ICT technology and development has facilitated social change and created opportunities through Internet access in communities that previously had none.²⁷⁸ This is a model organization that can be replicated in techniques and methods of improving ICT access to rural poor.

Mobile phones have also resulted in many knowledge sharing and educational programs via SMS in both the developed and developing world. These programs range from texts of reminders, educational notifications, information sources, and event invitations among many others and range from topics of public health to commercial production and many topics in between.²⁷⁹ Particularly for rural smallholders, access to information can be invaluable where infrastructure is less developed. One such example comes from the organization Green Dream: Organic Farming in East Africa that has a mobile phone knowledge sharing program called iCow, which is a program that provides knowledge on how to produce livestock more effectively by tracking cow fertility cycles and sending educational reminders on cow care, nutrition, and breeding. It is also a network that provides breeding contacts to minimize inbreeding and disease.²⁸⁰ Access to such resources will promote agricultural production while simultaneously improving quality and local economies.

The use of mobile phones has also been utilized for smallholder educational outreach programs. An example of this is the GMSA Foundation who provides a Farmer Helpline, now available internationally. This service provides highly demanded information such as weather forecasts and strategic solutions for adverse weather conditions, as well as agricultural knowledge such as pest control, land preparation and management, harvesting and marketing of commodities as well as current price and economic conditions in nearby markets. Farmers are also introduced and connected with new sources of capital, which create opportunities that were

not previously available. The programs have been established in twelve sub-Saharan African countries and in various regions of India have been highly successful since their creation in 2009.²⁸¹

The challenge presented by this innovative system is that regulatory systems are difficult to impose. There are high barriers to entry for new mobile banking institutions, and the social pressures that encourage loan repayment are reduced because of the digitization of credit.²⁸² Government policies and enforcement mechanisms can alleviate these challenges by allowing third-party agents to facilitate transactions and handle cash from mobile transactions. Currently, only forty percent of countries allow third parties for this purpose, and only one-third of those countries allow private parties to create new accounts for potential beneficiaries.²⁸³ In order for countries to successfully expand mobile banking to its fullest potential, consumer protections and regulatory government policies need to be provided and enforced.

A recent article from *Future Tense* and the New America Foundation states that mobile phones and banking programs, such as M-PESA in Kenya, are excluding the poorest of the poor and furthering the inequality gap. The research conducted by Arizona State University shows that while the enabling benefits of access to credit and reduced transaction costs for banking has resulted in higher incomes, but sixty percent of the poorest quartile in Kenya have not used the service and do not reap any economic benefits from it because the cost of M-PESA is prohibitive.²⁸⁴ The program is currently unrivaled in a sector with extremely high cost to entry, which allows for no market competition and little to no incentive for M-PESA to expand to the rural and very low-income markets. The result, the article states, is further economic stratification and continued disadvantages in the poorest populations. In order to address this problem, the article states that policy makers need to invest in universal and accessible mobile

connectivity to the entire population, but thus far have been unwilling or unable to enact such policies and regulatory programs.²⁸⁵

Industrial Technology Development for Smallholders

The development of innovational technologies is transforming the agricultural industry. Beneficial practices such as waste management, resource allocation, increasing productivity, reducing soil degradation, and protecting products are all ways in which technology has advanced the sector. In rural areas of developing countries, these tools and resources are not available to farmers, and even if they are the knowledge of proper implementation may not always accompany it. The goal of many long-term USAID projects is to not only provide the research and the development of technologies, but to establish training institutions through private sector partnerships.²⁸⁶

As Dr. Foley, director of the Institute on the Environment at the University of Minnesota says, “there is no silver bullet [to solve the food security problem], but a silver buckshot.”²⁸⁷ The buckshot is farming more effectively with the combined use of organic methods, local production, the selective use of GMO’s, reformation of subsidies, improved irrigation techniques, harvesting and maintenance technologies, and improved transport and storage methods of agricultural commodities.²⁸⁸ By combining these newer, smarter ways of farming, (defined as “terraculture” by Dr. Foley) smallholders can produce more on less land than before while also being sustainable. As of now, small-scale agriculture is more destructive to the environment and less sustainable than larger agribusiness. What smallholders lack, Foley argues, are the mechanisms such as proper waste removal and recycling, modern and efficient machinery, thorough research and the knowledge and products that stem from it, and helpful government policies.²⁸⁹

Irrigation technology is vital to the success and resource management of smallholder farmers. Innovations have been made to provide low-cost drip irrigation systems that use local supplies and are sustainable.²⁹⁰ The gravity-driven design of these drip irrigation systems are ideal for small farmers because they are very simple, a series of plastic tubes attached to a water



Source: The Earth Institute: Columbia University

reservoir, and can reduce water usage by thirty to fifty percent. The problems with these are that even with the simplicity, the access to knowledge and expertise to assist in implementation and maintenance are not always available. Also, this type of irrigation can lead to uneven water distribution, especially in uneven land conditions and slopes. A USAID-funded

SANREM CRSP program has been successful in India and parts of Latin America. In this program, a 100 square-meter system was installed on various farms in rural areas, technicians were trained to use and maintain them, local resources were used to build them, and data was collected on their effectiveness. Adjustments to systems were made according to the characteristics of the land, and the process by which the most effective methods were recorded. Models such as these can and have been replicated to enhance smallholder water management.

Another facet of smallholder farming that is an obstacle to efficient production practices is the physical burdens on agricultural laborers. Smallholder production could be elevated if some basic mechanization processes were available to decrease physical burdens on farm laborers without reducing empowerment. The technologies can range from tools to till the soil,

harvest crops more efficiently, carts and transport mechanisms to carry product, waste, etc. or tools to assist in the dispersion of seeds and pesticides.²⁹¹ Investment in companies and incentive policies to expand distribution of enabling technologies would improve production on smallholder farms. Production would be increased because of the increased time and energy efficiency the technology provides, and also the energy once expended on these activities could be allocated towards more financial and practical strategizing.

Infrastructure Initiatives

Adequate infrastructure is a necessary component to a successful market economy. Investing in a countries' road, water, electric, transit, educational and health institutions not only have immediate benefits, but also promote long-term economic growth in all sectors.

Poor road and transport systems inhibit economic activity due to the travel time, energy, and opportunity cost required. Smallholder farmers are greatly affected by poor roads because the extra time results in higher rates of product spoilage and they often live the most rural areas and are distanced from commercial centers. Local governments realize the potential of better

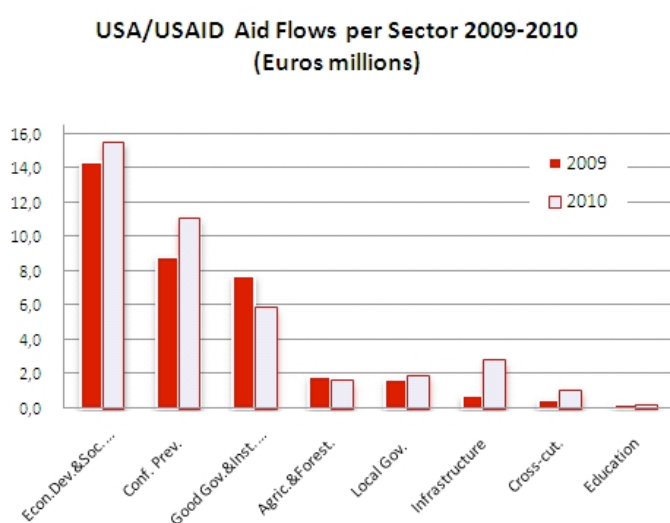


Figure 2: Source: USAID: Bosnia & Herzegovina DCF

transport systems, but have to prioritize other essential projects first. By providing funding for road projects would increase commercial activity in rural regions and enable smallholders to access markets more effectively.²⁹²

Figure 6.2 is demonstrative of the pattern of USAID long-term aid allocation. Each region is slightly different depending on specific

needs, but this is roughly the proportion of aid allocated to each development category.

Food crises in certain regions reoccur because agricultural methods of production have remained the same, and systems to improve resilience do not exist. This problem stems from a lack of financial capacity for smallholders to improve productivity and production.²⁹³ Smallholders often lack access to financial services that would increase their viability and potential into the market chain. Current development projects, such as Farm Concern International, have been improving smallholder access into the marketplace by providing financial services such as credit, savings, education, and accounting.²⁹⁴

The global market economies for smallholders have changed drastically in the past twenty to thirty years. The increasing number of global supermarkets offers efficiency and profitability, but is offset by high entry costs and risks of non-inclusion due to high product standardization.²⁹⁵ Another market that smallholders produce is regional marketplace economies, which are not as profitable but have lower costs of entry and risks. Case studies have shown that greater stability and smallholder participation into these markets is increased through collective smallholder action and involvement in policy-making.²⁹⁶

The trend of infrastructure investment correlating with agricultural growth has enabled subsistence farmers to increase regional food security, obtain higher incomes, and develop more stable livelihoods from agriculture. The challenges that subsistence farmers are faced with once these improvements on infrastructure are made are volatility in commodity markets, which can be countered by domestic policies that shield and alleviate farmers from severe price fluctuations.

Infrastructure initiatives by local governments can be effective, but the Asian Development Bank argues that projects initiated and provided by the private sector are more

efficient and result in limited structural and maintenance problems. In developing countries, 15 percent of total investment focus on power, telecommunications, and roads come from the private sector and are steadily increasing. The incentives throughout Latin America such as bidding procedures and tariffs have encouraged private investment on both small and large-scale projects ranging from solar energy to tolled highways. An important component to the stimulation of local economies is transparency and targeting beneficial features of the economy to subsidize and invest in.²⁹⁷ In agriculture, quality regulation policies are required to promote long-lasting markets. The United States has highly developed agricultural industry policy models, and can be used as a framework for developing agricultural industries. However, with smallholders, the dynamics of the market are different from agribusiness and therefore the models should be adapted and customized through collaboration between farmers, the government, civil society and the private sector.²⁹⁸ Policies that take into account smallholders in development and trade support aid and project initiatives and make them more effective.



Source: Asia-Pacific Telecommunity: ICT Development

Investment in agricultural development can lead to subsistence farmers to move into the commercial marketplace. An example of this is in the Manupali River valley in the Philippines. Recent investment by the Philippine government for road improvements and expansion of communication infrastructure in the highland region has resulted in subsistence farmers to expand cultivation to include crops such as corn, cabbage, and potatoes, which have a high market value due to domestic policy.²⁹⁹ Similar instances have occurred across Central America with increased integration into the world market with the CAFTA reforms. Accessibility, stability, and opportunity are required for subsistence farmers to consider commercial production of agricultural commodities.

The methods of infrastructure investment can vary, but numerous case studies have shown that policies either facilitate or hinder development projects, which have direct effects on smallholders. An example of policy hindering development takes place in Gurgaon, India, where rampant corruption, lack of government funding for basic services and infrastructure projects has led to the private sector to create and maintain their own security, water management, electricity, roads and transportation systems. With inefficient bureaucracy and impeding development and trade policies, development projects struggle to fruition and their potentials are hindered. Beneficial policies are necessary for USAID to be effective for smallholders.

POLICY CONSIDERATIONS

The large development programs such as FTF, SANREM CRSP, IFAD, MCC that the United States has direct control over have the potential for significant impacts on smallholder production, overall GDP growth, poverty reduction, and increasing food security. Over the past thirty years in many of USAID's target countries, investment in agriculture has reduced and

programs benefiting farmers have been cut, resulting in continually declining smallholder productivity. To increase production to what it used to be and increase to supply the increasing global food demand, investment in agriculture is necessary to promote food security in developing countries. The programs that the U.S. is currently funding are having substantial impacts on the way development and food security are addressed worldwide. If these programs are cut or reduced, the goals of increased food production necessary to provide for the growing populations will not be reached. More time is necessary to fully comprehend the long-lasting effects as well as the inefficiencies of these programs and to work out any potential complications in the programs. Once the initial funding plans expire, it is crucial that the State Department continues to provide USAID programs with our partner countries so that they can continue to grow and develop in a sustainable and innovative way. Food security for future populations depends on the investment in agricultural development now.

Some of the challenges facing these current programs are that depending on the region, the circumstances surrounding the programs are highly variable, along with the resources, time, and energy needed to implement measurable change.³⁰⁰ Establishing new programs requires flexibility and adjustment, so most have limited or no requirements, which results in no actual enforcement. With Feed the Future in particular, there is a major focus of collecting data for, and on, the “performance indicators” which crowds out holistic evaluation. Especially in the beginning phases of educational programs, knowledge acquirement by recipients is very difficult to measure because not all knowledge translates into tangible statistical changes, or the foundation is laid but still developing in practice. Another weakness of these programs is the various complexities of local politics and special interests. Particularly with programs developing

public/private partnerships, there is vulnerability of potential conflicts of interests, or in the worst-case scenario, corruption.³⁰¹

The United States can promote investment in agricultural development and smallholder engagement in partner countries in various ways. The first would be to take a rigid stance and demand certain policies from governments to cater to the in-country development projects from USAID. This would make the projects more effective, but would not take in to account regional needs and complexities. They could potentially result in disturbances of current market economies. The second option would be to leave partner country policy to its own accord and let the natural process of domestic policy adjustment develop with the projects at its own speed. This is a passive stance, and it would not function well because of the speed of economic change, growth, and dynamics as development projects unfold. The current policies in the countries in most cases are not established well enough or developed fully enough to be supportive of the projects of USAID and others. The third option would be for the United States to make a clear stance on what kinds of policies contribute to economic growth, agricultural development, and food security. Within each partner country, USAID could appoint researchers to analyze data collected from specific regions and make policy suggestions to local delegates that would improve project and targeted economic effectiveness.



Source: ILRI Clippings: News on Livestock and Development

USAID can provide investment in the research, development, and distribution of tools and technology to help farmers reduce physical burdens. This is an important feature of smallholder development and would

assist in increasing production capacities. Taking on a project of this scale would require many resources to account for research on specific local needs, development of efficient tools and technology, and sustainable and market-friendly distribution of the products. USAID could initiate a separate agency to obtain full control over the aid money, projects, and inputs into the agricultural sectors they are involved in. What has proven to be more practical and efficient has been to engage local and international universities, research institutions, and NGO's to specify needs and develop the technology and tools to address farmer's specific needs, then to use USAID money to incentivize the private sector in the industry to engage regional sustainable markets for the smallholders.

The United States government can address the development of ICT infrastructure in multiple ways. One way would be by proposing economic policy models to recipient countries through the country-owned investment plans. This can be done by requiring a specific model that has shown to be a successful model in the United States or any other developed country and require implementation of these policies in order for the recipient country to receive aid money. This plan would be contradictory to the idea of country-owned investment plans, and the imposition of functional U.S. systems could have unintended consequences and inefficiencies in a specific economy with different features. The second way the U.S. could promote ICT infrastructure is to enact domestic policies that would incentivize United States corporations to enter into target economies to build up ICT. This would not work most of the time due to the lack of regional and cultural knowledge by U.S. corporations. Furthermore, the costs of foreign investment without substantial practical motivation would create dependency on USAID by the company, and in many cases would not result in a sustainable solution. The third way the U.S. could promote ICT infrastructure investment to rural areas in partner countries would be to

create a space to engage key constituents in this development process. This can include governments, NGO's, farmer collectives, potential private sector players, and research institutions to formulate comprehensive policies, plans of action, and cooperative completion and maintenance of projects.



Source: IFAD Reporting Blog

POLICY RECOMMENDATIONS

Promotion

- Maintain fiscal support and the continuation of development projects and research programs that benefit smallholders, including: Feed the Future, SANREM CRSP, IFAD, USAID's Farmer to Farmer Program, Millennium Challenge Corporation, as well as independent NGO's.
- Establish a U.S. Foreign Policy stance for smallholder engagement considerations in international aid and development projects.
- Support policy within partner countries to foster smallholder agricultural development, stabilize commodity markets, and incentivize investment.

Development

- Increase allocated funding within foreign development programs for agricultural development and infrastructure initiatives that would benefit smallholders and rural economies.
- Invest in industrial technologies and research that will enhance smallholder productivity and reduce physical burdens, produce higher yields, and improve resource management.

Engagement

- Incorporate U.S. expertise in ICT development projects: multinational corporations, universities, and NGO's.
- Include smallholder cooperatives in decision-making processes, policy-making, and needs assessment analysis within recipient countries.

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Ch.7 Biotechnology's Role in the Developing World

Charles Kauffman

Abstract

The planet has the potential to sustain lives of 7 billion people today as a result of advances in chemistry and intensive farming, collectively known as the Green Revolution. Food security in the 21st century will require the sustainable intensification of agriculture through biotechnological advancements in genetically modified crops. Although strides have been made to increase agricultural production in the developing world with biotechnology, most of the benefits thus far have been harnessed by large-scale industrial farms and non-food crops in developed countries. To increase global food security, it is imperative that the institutional mechanisms conducive to the increased research and development of GMOs applicable to issues in the developing world are altered, and policy directed to facilitate the transferability of such technologies to small-scale farmers. Regulatory mistakes from the green revolution have created unfounded fears that the use of biotechnology will have detrimental consequences analogous to its chemical counterparts, pesticides and fertilizers of the past. It is necessary to quell these fears domestically and to increase the public's acceptance of GM foods in order to successfully promote these new technologies in the developing world.

Policy Recommendations

- Ratify the International Treaty on Plant Genetic Resources for Food and Agriculture giving farmers the right to save their seed.
- Promote intellectual property transferability to developing countries by supporting the same TRIPs flexibility for WIPO and maintaining TRIPs language.
- Return to a regulatory system that treats GMOs and traditionally bred plant varieties as one in the same.
- Allocate AFRI grant budget to incorporate patents considered key enablers to food security into public domain.
- Invest in the creation of educational resources to quell the public's fear of GMOs through the comparison of traditional, organic and GM crops.

ISSUE

Biotechnological advancements in genetically modified organisms (GMOs) have been a contentious point of ethical and environmental debate since the introduction of commercial genetically modified products in 1996. In the absence of longitudinal studies relating to the safety of new products, risk-benefit analyses have provided most of the guidance for their approval and use. While biotechnological advances offer many realistic solutions to food security issues persistent in the developing world in terms of food nutrition, quality and production quantity, most of the benefits in industrialized economies are harnessed primarily across large-scale industrial farms through efficiency gains, increases in corporate profit and less visibly, through reduced environmental stress.³⁰² The FAO has projected a required grain increase of nearly 50 percent by 2050, with only 20 percent of the gain resulting from the expansion of arable land. The majority must come from efficiency improvements in all regions of the world, and a narrowing of the yield gap across all sectors of agricultural production.³⁰³ As Florence Wambugu of the ISAAA Kenya said, “the great potential of biotechnology to increase agriculture in Africa lies in its packaged technology in the seed, which ensures technology benefits, without changing local cultural practices.”³⁰⁴ The U.S., a global leader in biotechnological research has the ability to encourage the adjustment of institutional mechanisms to increase both the research and development of GMOs applicable to issues in the developing world and the transferability of such technologies to small-scale farmers.

BACKGROUND

Food biotechnology can be broken down into two groups: The first encompasses genetically modified organisms (GMOs) derived from either random or forced mutations, or

recombinant DNA biotechnology in which genes from one species are transferred into the genome of another along with the advantageous phenotypic traits of the transferred gene. The second being the products of GMOs, mostly protein enzymes which do not include recombinant DNA.³⁰⁵ Biotechnology can make farmed fish grow faster than wild varieties, with immune systems resistant to the most common viruses and diseases, potentially reducing stress on the world's fisheries and the precariousness of farming fish with weak immunities. Farmed salmon take an average of three years to reach maturity while salmon with genetic alterations mature up to 11 times faster and take less than a year to mature.³⁰⁶ Crops can also be bioengineered to tolerate herbicides and pesticides and to resist drought and harsh environmental conditions, reducing the volume of chemicals applied to crops and the prevalence of soil erosion and degradation. Plants can also be genetically altered to increase the nutrient content and ingestible vaccines can even be added into the genetics of the plant, potentially reducing the distribution costs of important vaccines.

Growth in agricultural output will need to grow at an average of 1.7 percent per year or higher in order to meet demand through 2050. Agricultural output varies throughout the world; figure 7.1 below highlights the variance, the aggregate of which makes up the average annual yield increase of 1.4 percent per year. Figure 7.2 shows the dramatic drop in the growth in agricultural productivity between 1976 and 2000.

Figure 7.1: Average Annual Total Factor Productivity Growth

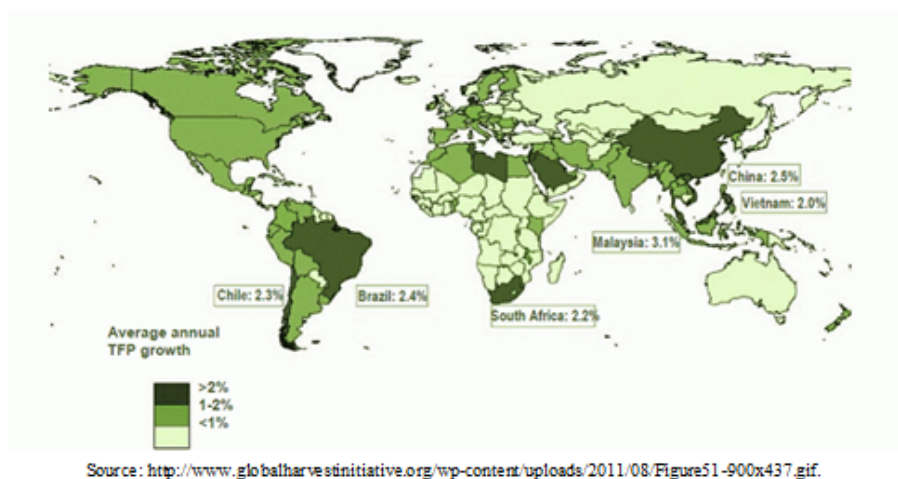
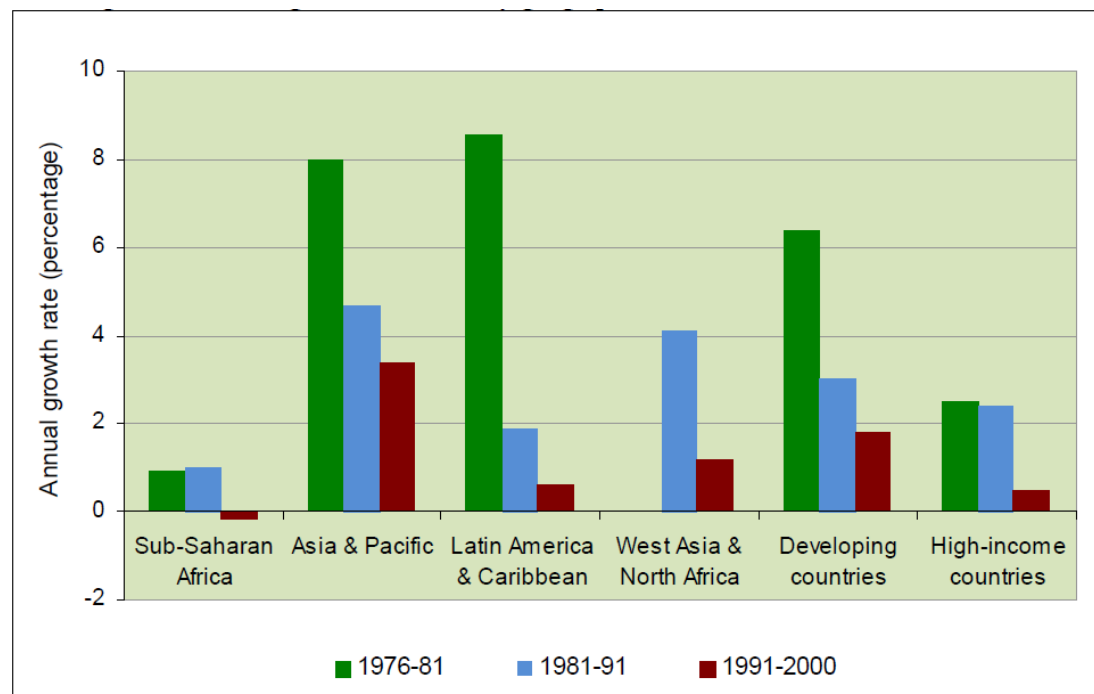


Figure 7.2: Total Factor Productivity Growth by Region Between 1976-2000



Source: Feed the World in 2050

Plant genetic modifications alongside other technological improvements and the enhancement of traditional practices have the potential to narrow the yield gap between

industrialized and developing economies. Maximum yields are dependent on environmental factors such as land quality, climate, and water availability, but most food systems are producing far less than their potential. In various regions of Southeast Asia, average maximum climate-adjusted rice yields should rest at about 8.5 metric tons per hectare, but the average yield achieved is around 5 metric tons per hectare.³⁰⁷ Functional protein enzymes produced as a result of the altered genetics of various bacteria and fungi can be added to animal feeds which then enable animals to metabolize nutrients more efficiently so as to produce less waste.³⁰⁸

Safety

As far as safety is concerned, the general consensus among the scientific community and regulatory agencies in the United States is that genetically engineered organisms are roughly equitable to organisms which evolve naturally through point mutations or are bred through hybridization. Until recently, no further tests beyond what was typically required of plants and animals bound for consumption was necessary.³⁰⁹ However, the ability of a few voices to instill fear in the public has been detrimental to the acceptance of GMOs. The EU spent \$450 million dollars on a longitudinal study on the effects of biotechnology and determined that bioengineered varieties were as safe as or safer than their parent varieties.³¹⁰ Still, biotechnological products are accused of posing threats to human health, and for creating environmental hazards. There have been no peer-reviewed instances of GMOs threatening human health. While the physiological state of the human body is unlikely to be altered from consuming GM plants and animals, allergens and increased antibiotic resistance are two realistic threats.³¹¹ First, allergen inducing proteins could accidentally and unknowingly be transferred from one organism to another, and with current molecular biological knowledge, it is impossible to gauge the allergenic potential of new proteins.³¹² Second, in recombinant transfers of genes between multiple organisms,

antibiotic markers known as ARM proteins are used to help scientists ensure genes are successfully transferred from organism to another. The fear is that such genetic material could recombine with bacteria in the guts of animals to form antibiotic resistance. However, most animal feeds do not contain live organisms, but rather enzymes. Such proteins excreted by GMOs pose virtually no threat because the protein has no way of reproducing or interfering since it is not a replicating organism.³¹³

Biotechnology has the potential to improve or degrade human health but it can also be either beneficial or detrimental to the environment. Cross-pollination between traditional and non-GMO crops has given rise to the occurrence of genetic pollution in which the traditional plant adopts the characteristics of the genetically modified version. However, seed technology is dynamic and can be adjusted to meet emerging issues as they arise.³¹⁴ The fear of genetic pollution could be scientifically countered through the advancement of pollinator specific genes. Such genes allow the plants to reproduce only when germinated with specific pollen. These alterations would prevent the further cross-pollination of native varieties with the genetically altered varieties. Research in this area is almost nonexistent following the outcry against terminator genes.³¹⁵ The second realistic environmental threat is the generation of superweeds and viruses resistant to the expressed resistance built into the seeds. Terminator genes have been touted by large biotech firms as a solution to superweeds and viruses, but have also been accused of being a corporate protectionist strategy requiring farmers to purchase new seed every year. Regardless, such terminator genes make biotechnological advancements more expensive to transfer to small-scale farmers in developing countries, but they also offer the potential for the protection of biodiversity by reducing native pollution with bioengineered pollen. For these reasons, risk-and-benefit schemes are necessary in determining the boundaries of agricultural

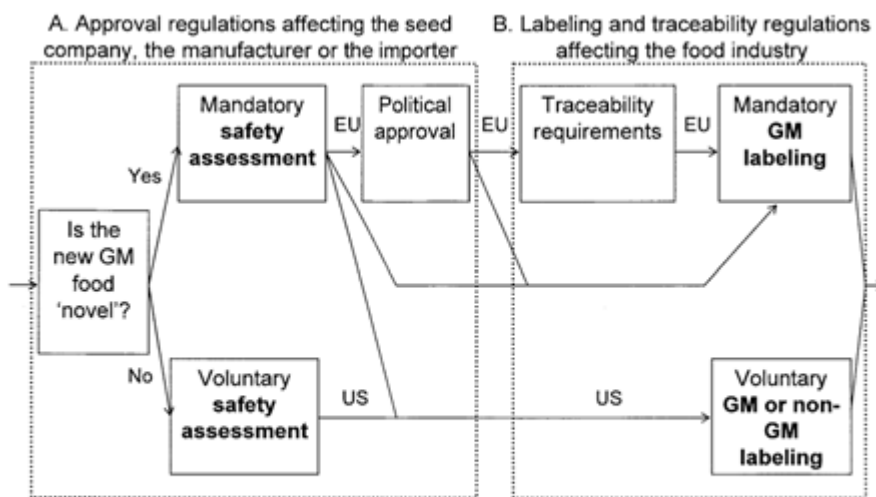
research and will be the topic of further discussion. Currently the FAO's International Treaty on Plant Genetic Resources for Food and Agriculture gives farmers around the world the legal right to save their seed protecting them from terminator seed abuse. As of February 2012, this treaty, which is crucial to the future food security of farmers around the world, has not been ratified by the United States, and as such its existence is threatened.³¹⁶ As another precaution, more than 1.5 million samples of genomic plant material are held amongst 1,750 genebanks, preserving traditional varieties.³¹⁷

Regulation and approval

In terms of global food security, the consensus of the US agricultural regulatory authorities is that the potential benefits of biotechnology far outweigh the realistic threats because modifications can be directed to nutritionally fortify crops, increase yields and provide resistance to drought with the alteration of a few genes to create a superior product. Unlike chemical additives and pesticide residues, the altered proteins from GM crops pass through the human digestive system in a manner identical to that of conventional crops. USDA policy asserts that modified foods "will not cause undue harm" and that "a biosafety protocol would interfere with research and development of the biotechnology industry."³¹⁸ To gain approval of a recombinant DNA product, companies may be required to seek approval from a combination of the FDA, USDA, or EPA, depending on the nature and function of the product. The Food, Drug, and Cosmetic Act require most genetically modified plants and animals destined for human consumption to receive the approval of the FDA. Under the Fungicide & Rodenticide Act (FIFRA) and the Toxic Substances and Control Act, the EPA regulates any product that (1) acts as or is resistant to a pesticide or (2) produces any chemical. The USDA's approval is required for any plant or animal that is to be grown on a large-scale, beyond subsistence farming.³¹⁹

Figure 7.3 below highlights the differences in regulatory frameworks between the United States and the European Union.

Figure 7.3: United States vs. EU Regulatory Comparison



Source: Carter Colin

Transferability

GMOs are not exclusively beneficial to large-scale industrial agriculture. Similarly to how many people in developing countries skipped the landline telephone and

went straight to the cellphone, farmers in the developing world can bypass harmful chemical technologies of the 60's and go straight to biological technologies for a more sustainable and productive farming future. Despite economic and cultural obstacles which often interfere with the transferability of new technologies, proper institutional support could make GMOs transferrable and useful to small-scale agriculture in the developing world. Critics accuse agrobiotech companies of being profit-driven and consequently oblivious to the needs of small-scale farmers. This view reflects a misunderstanding of the economic and social forces that define markets. Likewise, it is wrong to rely solely on private companies to export biotechnology to the developing world.³²⁰

Misguided public dissent for GMOs in developed countries confines biotech research to cash crops and prevents the dissemination of useful technologies to the developing world.

Opponents of biotechnology, which are commonly social scientists such as Miguel Altieria and Peter Rosset, claim that “the real thrust of the genetic engineering industry is not to make third world agriculture more productive, but rather to generate profits.”³²¹ However, this argument does not take into account the fact that more research would be done on improving the nutrition and reducing the chemical inputs of food crops if the developed world were not so reluctant to consume it.³²² Conventional potatoes are among the most toxic and polluted vegetables due to their susceptibility to potato blight. Farmers spray 10-15 rounds of fungicides per season and still suffer losses.³²³ BT resistant potato varieties have been developed, yet farmers will not plant them because their largest customers will not purchase them due to the GMO stigma. McDonalds along with other fast-food chains refuse to purchase GM potatoes out of fear that customers will boycott GM food. In reality, conventional varieties are proven to be far more dangerous to human health because of their fungicide content.³²⁴

Extensive pesticide usage is not confined to potato crops, or to any region of the world. Figure 7.4 below highlights the pest pressure and the potential of GM crops to reduce pesticide usage. India is no exception. Brinjal, the second most consumed vegetable in India has to be

Figure 7.4: Pest Pressure, Chemical Alternatives and Yield Effect Potential of GM Crops

Region	Pest pressure	Availability of chemical alternatives	Adoption of chemical alternatives	Yield effect of GM crops
Developed countries	Low to medium	High	High	Low
Latin America (commercial)	Medium	Medium	High	Low to medium
China	Medium	Medium	High	Low to medium
Latin America (noncommercial)	Medium	Low to medium	Low	Medium to high
South and Southeast Asia	High	Low to medium	Low to medium	High
Africa	High	Low	Low	High

Source: Martin Qaim and David Zilberman: Yield Effects of Genetically Modified Crops in Developing Countries.

sprayed with pesticides 25-80 times per harvest to kill the fruit and shoot borer, a weevil which would otherwise devastate the crop causing crop losses of 50 to 70 percent. It is considered so

toxic by farmers that many brinjal growers will not eat their own produce; instead, it is sold to the city. Bt Brinjal was developed through a public-private partnership between Mahyco and publicly funded universities. Field tests have shown efficacy of 98 percent, and government tests have found no damaging consequences to humans the ecosystem.³²⁵ Bt crops are some of the most widely used crops; they are genetically modified to carry genetic material from the soil bacterium *Bacillus thuringiensis*. Bt genes allow the crop to produce a Bt-toxin, which deflects insects during the growth-stage of the plant while simultaneously being harmless to humans.³²⁶ Widespread use could significantly reduce use of pesticides and improve safety for millions of consumers. However, due to protest and opposition exported from the EU and dissent from local chemical manufacturers, the Supreme Court of India moved to block Mahyco from distributing the seeds.³²⁷

Legal decisions like this make private companies reluctant to improve food crops until markets accept their safety; during this interim period it will take the continuation of public and private partnerships to expand the scope of applicable GM food crop research. Successful partnerships utilize the comparative advantages of different actors to achieve a common goal. Bio and VIRCA cassava were two such crops specifically targeted for use among small-holders throughout Africa. Cassava is the most popular vegetable on the African continent because of its natural drought resistance and the edible nature of both the leaves and the root. Unfortunately the staple crop lacks any significant nutrient content beyond carbohydrates. BioCassava Plus is fortified with vitamin A, Iron and protein. It was developed by the Danforth Center which is partially funded by USDA grants. The program was also sponsored by the Gates Foundation and a wide variety of patent-holders who donated intellectual property. Moreover, the Danforth Center exchanged scientists between Nigeria and the United States to ensure the socio-cultural

and economic stability of the program. Before the development of the ‘Golden Cassava’ researchers went into villages around Nigeria and surveyed farmers and consumers regarding their likelihood to plant and consume the cassava. Although taste did not vary in the new variety, the enriched vitamin A changed the color of the root from white to yellow. Royalties are not collected for the rights to distribute the seed technology, but small traders in Nigeria are able to profit through seed sales. By 2025, 60 percent of the current cassava acreage in Nigeria will be replaced by Golden Cassava and more than 20 percent of farm families will plant the new variety.³²⁸

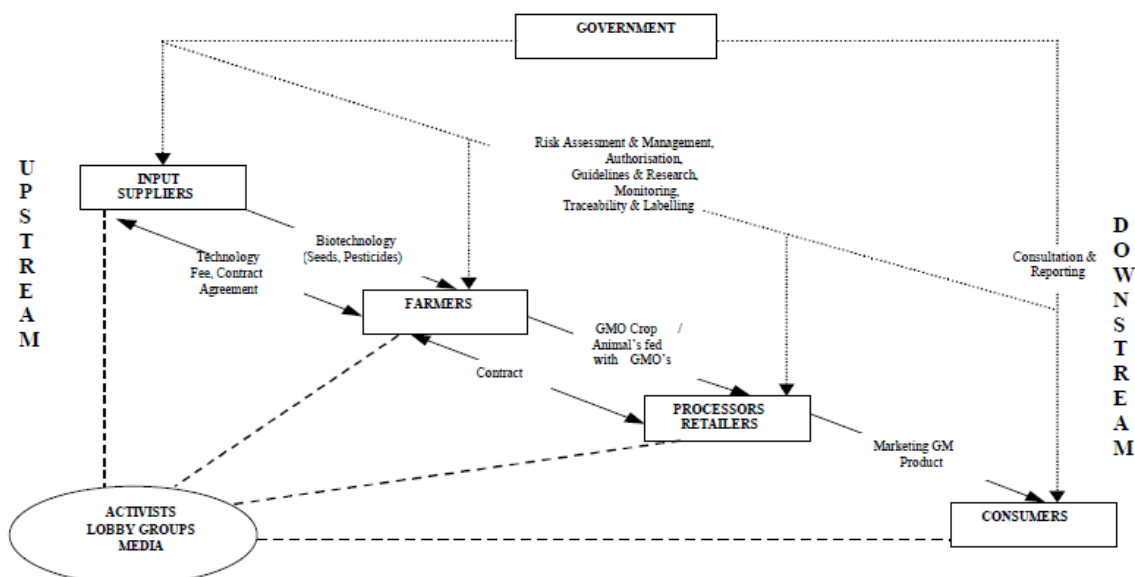
Enriching cassava improved nutrition, but the vegetable crops were still susceptible to mosaic and brown streak disease until Virus Resistant Cassava for Africa (VIRCA) was developed. It was the result of expansive private-public partnerships including the Danforth Center, Uganda Natural Resource Organization (NARO), the Kenya Agriculture Institution (KARI) Monsanto and other donors of intellectual property. The new crop has a cost-benefit-ratio of 31 compared to its parent variety as a result of royalty free distribution, reduced chemical inputs and foremost, the reduction of crop loss.³²⁹

Maintaining biodiversity is important both culturally and ecologically, therefore fortifying just one crop such as the Golden Cassava is not enough to ensure food security. Opponents of biotechnology believe that GMOs are developed as one-size-fits-all solutions, when in reality the scientific community strongly rejects this claim in favor of localized solutions.³³⁰ There are over 350 varieties of cassava throughout Africa, and different varieties are used for different dishes which reflect a diverse array of cultural preferences.³³¹ Continuous monocropping also leads to diminishing yields over time due to pest resistance and decreasing soil fertility.³³² This makes collaboration and the expansion of projects of utmost importance.

The exchange of scientists between food insecure countries and the United States facilitates the further development of new GMOs abroad. Part of what continues to make BioCassava Plus a success is the transnational partnerships, as well as the free use of certain intellectual properties critical to the development of new cassava technologies. Despite the relatively small number of regulatory agencies new products must pass through to seek product approval, the high cost of altering a trait in a crop and bringing it to market still rests at between \$5 and \$50 million per crop in the United States after research, development, and FDA approval.³³³ While the United States continues to pioneer cutting-edge research, the continuation of such research in developing countries is necessary to expand the variety of fortified and resistant crop varieties.

The cost of converting from conventional crops to genetically modified varieties varies immensely by crop and is a reflection of the seed's development process and the technical changes required to make the switch. Technical changes to seeds that increase yields by resisting pests or drought enable farmers to increase their incomes by selling more of their surplus production. Quality-enhancing and input-switching require different economic calculations because such technical changes do not necessarily fetch higher prices at market. For example, consumers cannot tell the difference between Bt corn and non-Bt corn treated with a variety of pesticides, so the cost of the Bt seed must be cheaper than the cost of seed plus the cost of the chemical inputs. Likewise, it is difficult to quantitatively determine whether or not consumers are willing to pay more for fortified crops before they are developed. The cost of the seed is dependent on the regulatory pathways the seed follows through development. In the absence of intellectual property fees upstream, seed costs would be much lower downstream and to consumers.

Figure 7.5: Upstream and Downstream Factors Influencing Costs of GMOs



Source: Economic Impacts of Genetically Modified Crops on the Agri-Food Sector

In developed markets, GM crops have been profitable for GM farmer and have provided cost savings for consumers and conventional farmers, even when the input costs for the GM variety are not cheaper than the conventional alternatives. Soybean producers using Bt seeds paid a premium of \$6.25 per acre while their cost savings from using less herbicide was only \$4.07 per acre, and the total cost per acre rested at about \$78.86. Conventional farmers enjoyed savings on herbicide which fell in cost by \$5.00 an acre between 1995 and 2000.³³⁴ On the other hand, the environmental savings are immense. Bt crops reduced the use of insecticides by more than 850 million gallons worldwide and reduced the need for soil management by enhancing no-till agriculture, reducing the loss of topsoil, increasing organic matter in soils, retaining soil moisture and reducing soil compaction. Bt seeds also reduce the use of farm machinery, saving fuel sufficient to power 7-8 million vehicles per year.³³⁵ When yield surpluses are combined with pesticide and herbicide savings, GM farmers benefit. In the US Bt cotton market yields grew from between 3 and 11 percent while cost reductions for pesticides fell by between 5 and 18

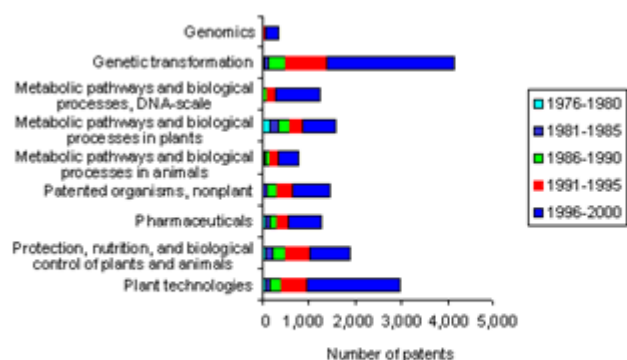
percent. This created an additional surplus of \$97 million per year for cotton farmers.³³⁶

Therefore, even if small-scale farmers in developing countries are not as quick to adopt GM varieties as their large-scale neighbors, they will still benefit from downward pressure on the price of chemical inputs.

Protection and Enforcement of Intellectual Property Rights

The Supreme Court ruling over *Diamond v. Chakrabarty* set the precedent by enabling companies to patent single-cell organisms. From 1980 onward, companies have had the incentive to invest heavily in GMOs and Biotechnology because their finished products can be patented and sold.³³⁷ Figure 7.6 below highlights the massive growth in the number of agricultural biotechnology patents awarded by the U.S. Patent Office following the 1980 ruling.

Figure 7.6: AG Biotech Patents Issued Between 1976-2000



Source: John King. <http://www.ers.usda.gov/data/agbiotechip/Images/chart2.gif>

Today there is not a single key grain that is not heavily patented in the United States. Golden Vitamin A rice was the result of a Swiss/German public research project

that transferred a beta-carotene producing gene naturally occurring in carrots to rice. Widespread use of rice enriched with vitamin A could combat diseases almost exclusive to the developing world such as xerophthalmia, which causes 250,000 children to go blind every year.³³⁸ Yet because Golden Rice is the result of 70 patents held by 31 different organizations with different expectations as to how their technologies should be distributed and utilized, widespread use has

yet to materialize.³³⁹ Important patents which often cause IPR bottlenecks are called key enablers. If key enablers were made freely available to small biotech institutions, advancements would progress much faster by allowing researchers to start where other researchers have left off.³⁴⁰

The international protection of intellectual agriculture property manifests itself through trade-related aspects of intellectual property (TRIPS), the World Intellectual Property Organization (WIPO) and through bilateral trade relationships. TRIPS does have language conducive to increasing food security abroad with biotechnology. Articles 30 and 31 allow exemptions if the patent holder would not be affected by the use of the technology. Article 27.3(b) permits countries to exclude plants and animals from patentability altogether, provided an alternative system of protection is provided. This allows farmers to save their seed for the next year and to use protected varieties to breed new ones.³⁴¹

Agricultural Biotechnology Research

In 2008, Congress created The National Institute of Food and Agriculture (NIFA) through the Food, Conservation, and Energy Act of 2008. The institute is an agency within the USDA which seeks to advance research and educational technologies in order to mitigate various quality-of-life problems, both domestically and internationally.³⁴² Shortly after, the National Institutes of Health (NIH), National Science Foundation (NSF), and Department of Energy (DOE) convened:

*to examine the current state of biological research in the United States and recommend how best to capitalize on recent technological and scientific advances that have allowed biologists to integrate biological research findings, collect and interpret vastly increased amounts of data, and predict the behavior of complex biological systems.*³⁴³

The results of the committee produced a report entitled “New Biology for the 21st Century: Ensuring the United States Leads the Coming Revolution.” The report recognizes that issues of food security cannot be addressed without biotechnology’s ability to help:

- 1) *Generate food plants to adapt and grow sustainably in changing environments*
- 2) *Understand and sustain ecosystem function and biodiversity in the face of rapid change*
- 3) *Expand sustainable alternatives to fossil fuels*
- 4) *Understand individual health*³⁴⁴

The Agriculture and Food Research Initiative (AFRI) within NIFA defines the objectives of agricultural research and funds research, education and extension grants accordingly.³⁴⁵ The stated purpose of the AFRI has been to address six key issues.

Research Funding Priorities of the AFRI

- A) Plant health and production and plant products;
- B) Animal health and production and animal products;
- C) Food safety, nutrition, and health;
- D) Renewable energy, natural resources, and environment;
- E) Agriculture systems and technology; and
- F) Agriculture economics and rural communities.³⁴⁶

The coalescence of “New Biology for the 21st Century” and AFRI form the basis of USDA science objectives in supporting the following five challenges:

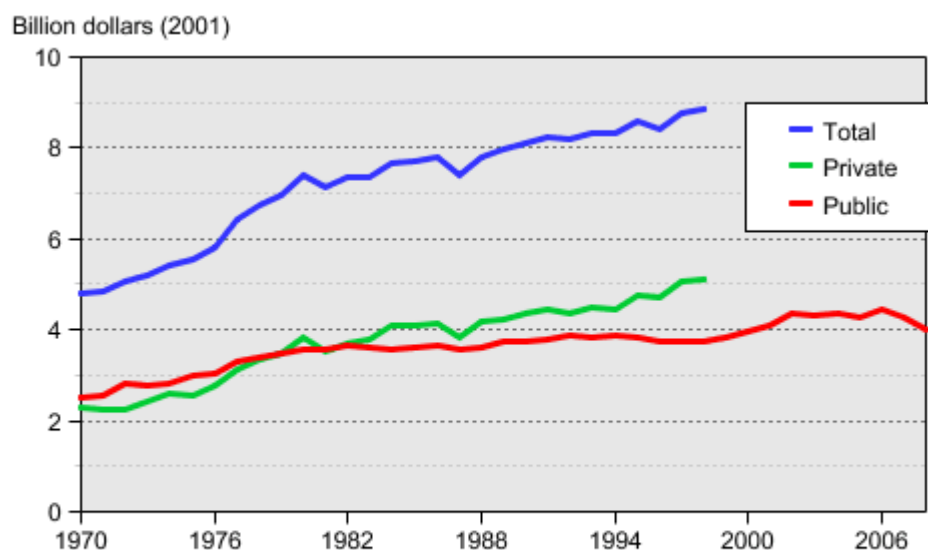
Five Primary Challenges

- 1) Keep American agriculture competitive while ending world hunger
- 2) Improve nutrition and end child obesity
- 3) Improve food safety for all Americans
- 4) Secure America’s energy future
- 5) Mitigate and adapt to climate change³⁴⁷

Public agricultural R&D is conducted on the plants and animals used in agricultural production throughout both federal and State. Public research expands beyond natural science

development fields into areas of economics, nutrition, community systems, families, policy and administration. Conversely, private R&D is typically applied and is conducted with the intent of solving a particular problem.³⁴⁸ Figure 7.7 below shows the growth in agricultural research in both the public and private sectors. Private research has increased tremendously since the 1980 Bayh-Dole Act, a policy which enables U. S. universities to sell the rights to patents generated with public funding. Although beneficial to cash-strapped universities, it gives what were once unbiased researchers incentives to parallel their research interests with those of corporate interests.³⁴⁹

Figure 7.7: Real Agricultural R&D Funding 1970-2008



Source: <http://www.ers.usda.gov/Data/AgResearchFunding/AgResearchFunding.gif>

Cooperation between public and private institutions will facilitate the development of technologies targeting food insecurity.

Figure 7.8 below describes key assets held by public and private national agricultural research systems and highlights areas for public and private partnerships (NARs).

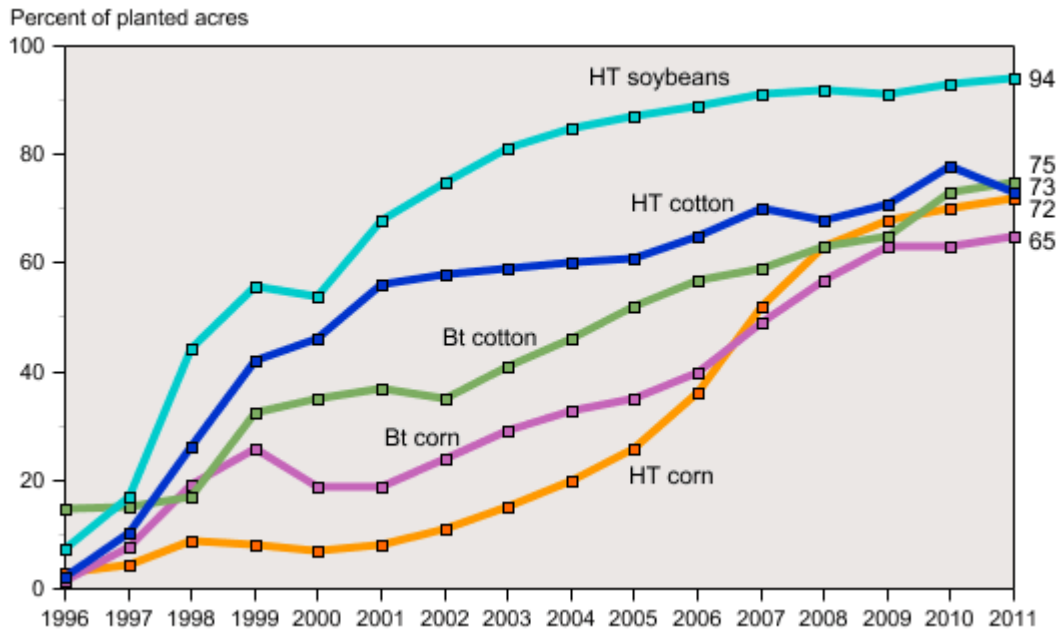
Figure 7.8: Assets of Public and Private Sectors in Agro-biotechnology Research

	Public sector	Private sector
National level research organizations	Public NARSs	Local seed companies
Key assets	<ul style="list-style-type: none"> —Local diverse germplasm —Local knowledge —Breeding and evaluation programs and associated infrastructure —Access to delivery system including extension —Upstream capacity (type I NARSs only) —Mostly positive public image 	<ul style="list-style-type: none"> —Local knowledge —Breeding programs and infrastructure —Seed delivery system —Marketing network
Regional and global level organizations	CGIAR International Centers	Global life science companies
Key assets	<ul style="list-style-type: none"> —Diverse germplasm —Breeding programs and associated infrastructure —Global germplasm exchange and evaluation networks —Economies of market size —Upstream capacity in a few centers —Mostly positive public image 	<ul style="list-style-type: none"> —Biotechnology tools, genes, know how —Access to capital markets —Economies of market size —Skills in dealing with regulatory agencies —Flexibility and speed in decision making

Source: Derek Byerlee and Ken Fischer

Farmers in the United States generally agree and have been eager to espouse the products of biotechnology. The concentration of crops which are biologically resistant to herbicides and insecticides has grown dramatically since commercial introduction in 1996. Figure 7.9 ranks Herbicide Tolerant (Ht) soybeans, also known as Roundup Ready soybeans as the genetically modified crop with the highest market share compared to non-GMO soybeans. Notably, none of the most frequently grown GMO crops in the United States directly address food security issues in the developing world. The majority of Bt corn and Ht soybeans are not destined for human consumption, but rather for use in animal feeds.³⁵⁰

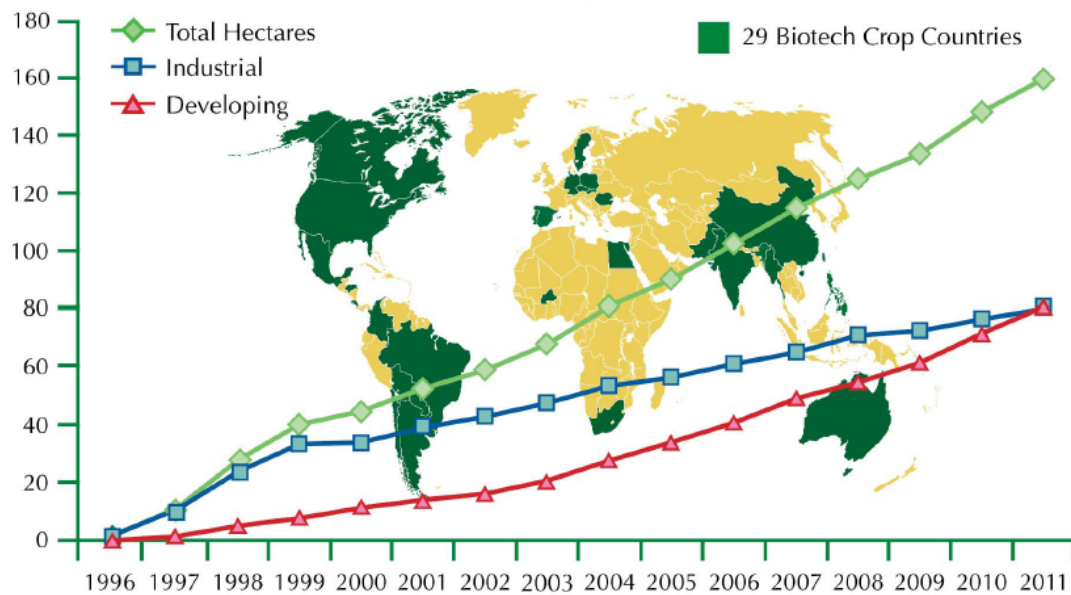
Figure 7.9: Growth in Adoption of Genetically Engineered Crops in the U.S.



Source: <http://www.ers.usda.gov/Data/BiotechCrops/>

Prevalence of GMO crops in developing countries has increased exponentially in the past few years due to HT soybean crops in Brazil and Argentina as seen in Figure 7.10 below.³⁵¹

Figure 7.10: Global Area of Biotech Crops 1996-2011 (Million Hectares)



Source: Clive James, 2011

POLICY CONSIDERATIONS

Companies, universities and NGOs across the United States are heavily vested in agricultural biotechnology and research. The Green Revolution was driven largely by chemistry and is the reason the planet hosts 7 billion people today. As stated in “*New Biology for the 21st Century*,” *biology as a science will define the coming revolution as the planet continues to replace chemistry (pesticides, herbicides, insecticides and synthetic fertilizers) with genetics for a more productive and sustainable future.*³⁵² Continuing to value research in agricultural technology is the only way NIFA and the USDA can meet their primary objectives of keeping American agriculture competitive while ending world hunger. Policies considered are therefore mutually beneficial to both American agriculture, and global food security. The adjustment of institutional mechanisms to increase research and development of GMOs to address issues in food insecure countries benefits farmers around the world, and keeps an industry which employs between 500,000 and 1.2 million people innovative and thriving.

Safety and Regulation

The impact of biotechnology regulation in the United States reaches around the world, especially through its influence on global treaties. The International Treaty on Plant Genetic Resources for Food and Agriculture is an influential document that would ultimately leverage corporate power over agricultural production. If the U.S. ratifies this agreement, it would ensure that farmers have the right to save their seed, even if they plant a genetically modified version of the seed.³⁵³ Biotechnology companies and seed distributors can still profit through the sale of new seed, but it is imperative that farmers in developing countries are continually allowed to save their seed. Rejecting the International Treaty on Plant Genetic Resource for Food and Agriculture would in turn prevent the development of formal seed markets beyond the

industrialized world. It would also significantly reduce the transferability of biotechnology to the developing world as most small-scale farmers would not be able to purchase new seeds annually.

Among developed countries, the United States is still one of the most open with regards to biotechnological investment in agriculture. This has in turn has led to a net inflow of foreign direct investment from European companies whose products are banned within the EU.³⁵⁴ This has changed over the past five years as regulation has increased to examine certain GM products on a case-by-case basis. Since there is no evidence to discredit the safety of GM crops it is pertinent that the USDA continues to perceive agricultural biotechnology research and traditional agricultural research as one in the same to keep the United States' comparative advantage in research and development. A recent shift led to the ban of GM alfalfa for nearly four years over concerns that it the GM variety could contaminate neighboring organic varieties. In this case, and like most GM crops, the benefits outweigh the dangers by making it easier to control weeds that make animals sick. On January 29, 2012 GM alfalfa was deregulated marking a step back in the direction, away from unnecessary regulation, by realizing that "both GM and conventional crops can coexist and thrive into the future."³⁵⁵ By reducing regulation in the United States, domestic consumers will in time become more comfortable with biotechnology. Products developed in the United States by U.S. universities and companies in partnerships with similar institutions across the world will contribute to the pipeline of products conducive to increasing food security in the developing world. When consumers in the United States realize the benefits of eating potatoes and brinjal that are not contaminated with fungicide, consumers in countries such as India will be eager to adopt the new and improved seeds.

Much of the resistance to biotechnology and agricultural research in general stems from a lack of understanding of the science behind it. People clamor to what they believe to be

traditional agricultural practices, when in reality GM food is often safer for human health than the ‘traditional’ chemical-intensive practices. Every American receives basic nutritional education and consumption recommendations from the USDA regarding the food pyramid in secondary school. This curriculum could be expanded to include a survey of agricultural production and the similarities between organic, conventional and GM produce. If attitudes in the United States shift to favor biotechnology and GM crops become mainstream in the food system, the potential to export such technologies abroad greatly increases.

The USDA could alternatively choose to strengthen its regulatory procedures by making them more in line with those in the EU. This would strain an already tight budget and raise development costs for critical applied research. Since countless studies including the European Union’s 20 year, \$450 million longitudinal study have not discovered any negative externalities pertaining to GM crops, further regulation is considered by many to be unnecessary.³⁵⁶ Furthermore it would scale back the volume of research and with detrimental consequences for scientific innovation in the United States.

Protection and Enforcement of Intellectual Property Rights

While IPR protection drives and incentivizes innovation, companies can still flourish even if certain exemptions pertaining to food security are granted. The World Intellectual Property Organization Treaty would make a single patent valid worldwide. This would make it easier for companies to patent their products, but it would stunt GM crop innovation in the developing world. Collaboration is necessary to solve and integrate complex food security problems with technology, and in order for such partnerships to be successful it is imperative that certain IP obstacles be avoided. Instead of ratifying WIPO, the United States can preserve

flexibility for developing countries by supporting the same TRIPs flexibility for WIPO under which:

Developed countries shall provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least developed country members in order to enable them to create a sound and viable technological base.—provide incentives in the form of tax credits and subsidies for companies to encourage transfer to public and private enterprises involved in enhancing developing world food security.³⁵⁷

It is necessary to move a step further and facilitate the transfer of certain key enabling patents into the public domain. The AFRI arm of the USDA currently makes grants for new research.³⁵⁸ However, without any budgetary increases the USDA could increase the scope of the AFRI to include patent purchase proposal grants. Small research institutions could pursue various areas of biotechnological research without having to deal with complex licensing agreements and the costs associated with them if key GM patents were brought into the public domain. Such a process would be analogous to bringing the alphabet into the public sphere if each letter were trademarked. Companies would still profit by selling their licensing agreements, and small institutions and large corporations alike could patent new words from the free-to-use letters. Public domain patents would provide the necessary foundation for GM research of different levels and reduce budgetary constraints for small institutions by enabling the collaboration required of future research while working to achieve global food security.

POLICY RECOMMENDATIONS

- Ratify the International Treaty on Plant Genetic Resources for Food and Agriculture giving farmers the right to save their seed.
- Return to a regulatory system that treats GMOs and traditionally bred plant varieties as one in the same.

- Promote intellectual property transferability to developing countries by supporting the same TRIPs flexibility for WIPO and maintaining TRIPs language.
- Allocate AFRI grant budget to incorporate patents considered key enablers to food security.
- Invest in the creation of educational resources to quell the public's fear of GMOs through the comparison of traditional, organic and GM crops.

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IV. THE ECONOMICS OF FOOD



Ch.8 The Farm Bill: The Effects of Domestic Policy on Food Security

Erin McLaughlin

Abstract

In the upcoming year, the Food, Conservation and Energy Act of 2008 will undergo renewal. Farm Bills contain policies spanning food, farms and foreign realms. Each of these sections should reflect our responsibility to provide accessible, healthy food to all people. In order to accomplish this goal, more funding needs to be allocated into the three core nutritional assistance programs: SNAP, WIC, and the school meal programs. It is critical that low-income households find healthy food easily accessible. Funding is needed for the newly developed Healthy Urban Food Enterprise Development Center, a newly established institution, which supports accessibility to local, healthy food in underserved communities. Subsidies, which are only provided to specific commodity crops, need to be spread more evenly for farmers in order to lower the price of fruits and vegetables. Although the price of wheat and corn products could slightly increase, it would lower the price of specialty crops in order to make them cheaper to households that struggle to afford them.

Policy Recommendations

- Ensure all 50 states have minimal barriers for individuals and households who struggle with food insecurity and need to receive nutritional assistance.
- Increase spending on SNAP, WIC, and the school meal program by an additional \$30 billion and increase funds for additional nutritional programs aimed towards vulnerable populations by \$30 billion.
- Reallocate more funding to the Healthy Urban Food Enterprise Development Center in order to increase accessibility of healthy, local foods in underserved communities.
- Implement an evaluation program to determine the usefulness of nutritional assistance programs, especially in SNAP, WIC, and the National School Lunch Program, to decrease obesity in order to establish how practices can improve.
- Establish subsidies for specialty crops to decrease their price and promote accessibility to healthy foods.
- Invest in programs that develop local economies of developing countries to decrease their need for importing products that they could produce themselves.

ISSUE

The United States Farm Bill influences both domestic and international food security. This piece of legislation includes nutritional assistance programs, commodity subsidies, crop insurance, rural development, biofuels and conservation issues. It dictates prices and products consumers find on the shelves of their grocery stores, and it influences forms of U.S. aid to developing countries. The purpose of this chapter is to propose how the 2012 Farm Bill can be revised to provide a more food security in the U.S. and abroad. Nutritional assistance programs and commodities will be the main focus.

BACKGROUND

Congress renews the Farm Bill every four to eight years. The most recent Farm Bill is the Food, Conservation and Energy Act of 2008, a 1700 page piece of legislation that addresses three distinct (but not separate) issues: food, farms and international food aid. This bill will be revised and renewed in 2012. In recent months, Congress began discussions about where to make improvements on the new Farm Bill. It is critical that the new Farm Bill supports the promotion of U.S. food security and rural development, while staying mindful of the effects of U.S. policy on international market capability and food security.

Farm policy began with the Agricultural Adjustment Act (AAA) of 1933, which was part of President Roosevelt's New Deal. Farmers then accounted for 31.5 percent of the American workforce, and agriculture accounted for 7.7 percent of the nation's gross domestic product (GDP).³⁵⁹ The New Deal protected farmers from the effects of extreme weather and price volatility, as experienced during the Great Depression. The policies only covered commodity farmers and commodity crops, including corn, soybean, cotton, milk and a variety of grains.³⁶⁰

These initial policies made it possible for farmers to sell their goods at prices lower than the costs of production, because the government paid the difference. These subsidies made prices consistent and affordable for consumers.

Historically, farmers harvested all of their land, producing a surplus of food. This forced down prices. When extreme weather occurred, prices significantly increased. In order to maintain consistent prices and prevent extreme surpluses, the government paid farmers to keep a portion of their land fallow.³⁶¹ Although the AAA implemented measures to reduce surpluses, they still existed and as a result, they acted as a disruption to the international agriculture market. These initial farm policies set the stage for future policies.³⁶² The New Deal encouraged commodity crop farming and, as a result, monoculture commodity crops are produced by today's largest scale agribusiness. The subsidies in the New Deal marked this beginning of the shift into agribusiness. The number of Americans in agriculture quickly decreased. By 1945, 16 percent of the population worked in agriculture and farm work accounted for 6.8 percent of the GDP.³⁶³ Today, less than one percent of the population works on a farm, but the food industry is responsible for one out of twelve jobs in the U.S.³⁶⁴ Although fewer people do direct farm work, the industry accounts for a major part of the labor market that should to be recognized in the renewal of the 2012 Farm Bill.

After farms recovered from the Great Depression, the U.S. debated whether more agriculture policies should pass or if the government should remove itself from agriculture. In 1965, Congress passed the Food and Agriculture Act, the first official Farm Bill. The current Farm Bill is a continuance of this 1965 policy set, which have evolved through each renewal of the bill. The most recent farm bill, The Food, Energy and Conservation Bill of 2008, included

programs that the next farm bill will work to improve to ensure a sustainable food system that feeds the healthiest possible foods to the most possible people.

Nutritional Assistance Programs

Nutritional assistance programs work to alleviate domestic food security and promote healthy food to people living in low-income communities and households. Food insecurity is on the rise in the United States. Throughout the last decade, food insecurity consistently affected 10 percent of American households. After the 2008 food crisis, that number rose to 15 percent. In 2010, the number of families living in food insecure households continues to hold at 15 percent.³⁶⁵ A recent poll by the Food and Research Action Center reported that 80 percent of Americans believe that there is a serious food insecurity problem in the U.S., and it is the government's responsibility to address the issue.³⁶⁶ These numbers show the great need for ending food insecurity in the United States. It is in the interest of the American people to improve domestic nutritional assistance programs in order to promote food security to all families living in the United States.

The three core programs funded by the Farm Bill are the Supplemental Nutritional Assistance Program (SNAP), the National School Lunch Program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program. The Food, Conservation and Energy Act of 2008 changed the name of the Food Stamp Program to SNAP. These three bills are the most funded nutritional programs in the Farm Bill, although there are 20 programs that contribute to addressing food insecurity. The chart on the following page shows the allocation of USDA funds to nutritional assistance programs in the 2010 fiscal year:

Figure 8.1: Federal Spending on USDA Primary Food and Nutrition Assistance Programs

Major Program Areas	Fiscal Year 2010 Spending \$ Millions
SNAP	68,310.0
National School Lunch Program	10,875.0
WIC	6,704.0
Child and Adult Care Food Program	2,641.0
School Breakfast Program	2,858.0
Sub Total	91,388.0
Selected Additional Program Areas	
Nutrition Assistance for Puerto Rico	2,001.0
Entitlement Commodity Obligations for Child Nutrition	1,304.0
Elderly Nutrition Program (HHS Program)	658.0
Summer Food Service Program	359.0
The Emergency Food Assistance Program (TEFAP)	606.0
State Administrative Expenses for Child Nutrition	146.3
Emergency Food and Shelter National Board Program	140.1
Commodity Supplemental Food Program	100.4
Food Distribution Program on Indian Reservations	112.8
Fresh Fruit and Vegetable Program (FFVP)	65.0

Food Distribution to American Indians (FDPIR)	75.0
Senior Farmers' Market Nutrition Program	22.5
Special Milk Program	11.9
WIC Farmers' Market Nutrition Program	20.0
Sub-Total	4,218.0
Total	95,606.0

Source: USDA, Food and Nutrition Service, Program Information Report, December 2010.

SNAP total amount includes Nutrition Assistance Programs for American Samoa and the Northern Mariana Islands, as well as funding for SNAP Outreach and Participation Grants and Food and Nutrition Service Disaster Assistance.

In total, over 70 percent of the USDA's spending is contributed to these programs. The funding for these programs increased by over \$30 billion between 2008 and 2010.³⁶⁷ The USDA reports that this increase of funds for these nutritional assistance programs shows the increase of efforts to keep families out of food insecurity. In 2010, these programs served one in four Americans. Over 50% of SNAP recipients were seniors and children; the program helped over 3.9 million Americans. The USDA aided 24 states in changing policy that changed the eligibility requirements for these programs, but this still left 26 states with too narrow of eligibility requirements.³⁶⁸ This policy change allowed for more people living in poverty to have access to nutrition assistance. The Food, Conservation and Energy Act of 2008 made major strides in alleviating food insecurity. Although the number of people living in food insecurity continues to stand at 15 percent, that number would be significantly higher if these programs did not exist.

One program that Congress establishes in the Food, Conservation and Energy Act of 2008 is the Healthy Urban Food Enterprise Development Center, which promotes healthy, local food to underserved communities. This new resource is called the Healthy Urban Food Enterprise Development Center (HUFEDC). It gives sub-grants to local organizations, which

increase accessibility to locally grown, healthy food in impoverished communities. Congress allocated \$1 million to the HUFEDC for each year from 2009 to 2011. In 2012, the program received \$2 million.³⁶⁹ This program begins by correcting the disconnect between the allocation of funds and the promotion of not only food. Instead, it is important to support the promotion of healthy food that will decrease obesity, which HUFEDC works to accomplish.

Even though there is an abundance of information supporting the utilization of these programs, information supporting the connections between these nutritional assistance programs and support for healthy food is missing. Because obesity is quickly on the rise in the United States, Congress needs to promote a healthy food program that shows results. Currently, 33 percent of adults and 17 percent of children suffer from obesity. In 2008, diseases caused by obesity accounted for \$147 billion of medical costs.³⁷⁰ With obesity on the rise, these programs must ensure they address obesity. The U.S. Government Accountability Office reports that little research has developed surrounding the effectiveness of these three core programs in health, which makes it difficult to understand how useful the programs are in meeting their nutrition goals. These goals include increasing the level of nutrition in impoverished households and enhance nutrition of American children. The GOA concludes that the households utilize the programs and that the programs are associated with “positive health and nutrition outcomes consistent with the program’s goals.”³⁷¹ Individuals who struggle with food insecurity need these types of programs. In order to be as efficient as possible, Congress needs to ensure these programs accomplish all goals.

Commodity Subsidies

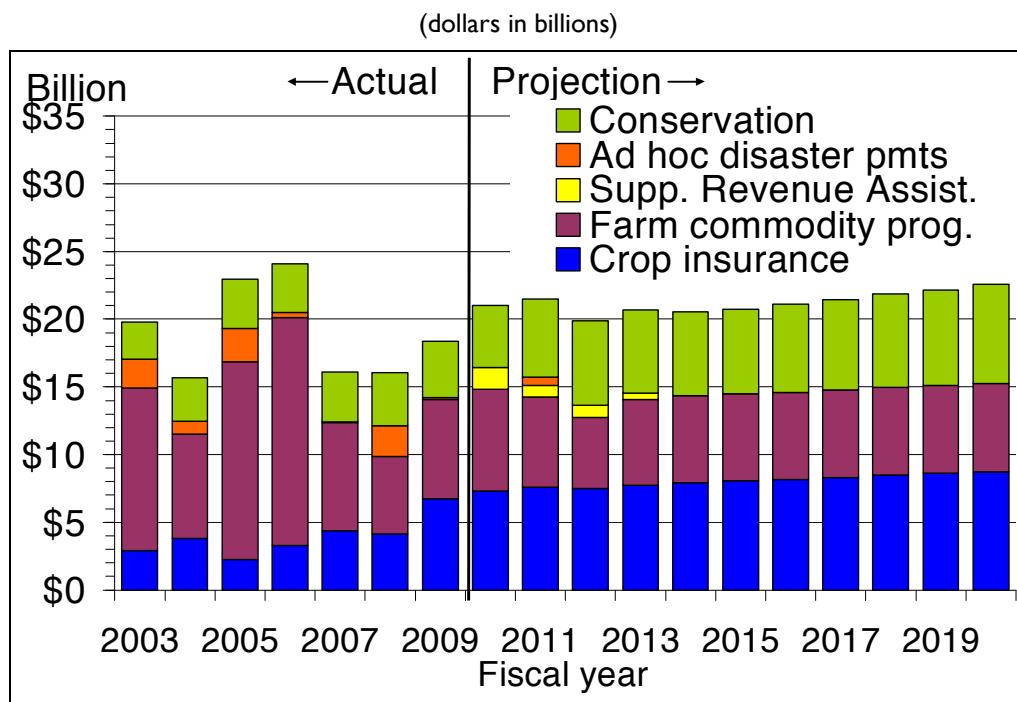
The Farm Bill is also responsible for rural development. During the 1980s, the U.S. experienced a farm crisis, which contributed to two major reforms: the liberalization efforts of agricultural trade in the General Agreement on Tariffs and Trade (GATT) Uruguay Negotiations and the Food Security Act (FSA) of 1985, focusing on American agriculture.³⁷² This farm failure resulted in the disruption of rural life. As a result of 235,000 farms underwent bankruptcy in the early-1980s, 60,000 additional rural businesses also failed.³⁷³ Farms proved themselves to be a significant aspect of rural life, which found it difficult to function in their absence. The FSA worked to reverse that catastrophic incident in rural development. Although farmers in the mid-1980's experienced major droughts and, consequently, crop shortages, the public saw the FSA as a success in alleviating disaster, proving the market power of Farm Bills. This bill set the loan rates for wheat and feed grains at around 80 percent of the average price received by producer in the previous years, and raised the loan rates for cotton and rice.³⁷⁴ The FSA allowed for the sale of U.S. commodities overseas in developing countries. This was meant to boost the economies of these countries. Today, this program allows for over \$300 million (as of 2010) worth of commodities to be sold in developing countries. Critics refer to this practice as "dumping." One third of these dumping prices are due to overhead costs, such as the transportation of over 540,000 tons to foreign, developing markets.³⁷⁵ Although this program initially meant to assist developing countries, the results have had adverse impacts on their markets.

These policies are continued in each of the Farm Bills. Congress supports commodity farmers with multiple high-spending programs. These include: the marketing loan program, counter cyclical program payments, direct payments, crop insurance subsidies, conservation program, and dairy subsidies. However, these programs only support farmers that grow a specific

set of commodities. Although over twenty-four commodity crops exist, five commodity crops receive over 70 percent of all assistance payments. These crops are corn, soybean, wheat, cotton, and rice.³⁷⁶ Initially, commodity crops were subsidized in order to work as a safety net to combat severe weather and price putting a portion of the risk on the government instead of only on farmers.³⁷⁷ The current format of these programs promotes food insecurity domestically and abroad.

The marketing loan program pays farmers the difference between loan rates and market rates. Counter cyclical program payments are given to farmers who are historically used for production of the program crop. If a farmer chooses to grow fruits or vegetables, they are not eligible for this program.³⁷⁸ The direct payment program gives historical producers of specific commodity crops payments based on the historical yield and payment rates. Farmers are able to grow crops on the land that the land was not historically used for, except if the producer chooses to farm fruits or vegetables.³⁷⁹ Conservation programs pay farmers to keep a set amount of land idle. Crop insurance subsidies pay producers as a premium for growing subsidy crops. The last major program gives subsidies to dairy farmers, called the Milk Income Loss Contract (MILC).³⁸⁰ The government pays the difference between the market price and the price set in the farm bill. Figure 8.2 provides information about spending that is contributed to each program:

Figure 8.2:



Source: Based on CRS Report R41317, *Farm Safety Net Programs: Issues for the Next Farm Bill*, using the August 2010 CBO baseline projections for FY2010-FY2020.

Unfortunately, these programs exclude subsidies for specialty crops, such as fruits and vegetables. This makes the market price for vegetables at the relative level of supply and demand, but the price level of commodities is skewed downwards because the government pays the farmers money to keep their prices low. This affects the food that Americans find on the shelf and its price. In the last fifteen years, Congress allotted over \$77 billion to corn producers and over \$32 billion to wheat producers.³⁸¹ These payments make these products much cheaper for consumers on the shelf than they would be otherwise. In some ways, this makes certain foods more affordable and accessible for consumers. Unfortunately, corn and wheat products are main ingredients in today's least healthy foods. This forces consumers to prioritize goods by price

over their health benefits. Since fruits and vegetables receive minimal subsidy payments, consumers are less likely to purchase them over their cheaper replacement items.

Wheat and corn sell for prices much lower than they would without these price supports, causing the United States to export surplus product. Although foreign countries have the ability to grow their own commodity crops, governments of developing countries do not have enough resources to subsidize their farmers in order to compete with U.S. production. This makes it cheaper for these developing countries to import the crops from the U.S. and choose foreign products over their own. This unfortunate choice provides them with cheaper food, but at a high cost to society. These commodity programs allow for over \$300 million (as of 2010) worth of commodities to be sold in developing countries. One third of this price is due to the transportation of over 540,000 tons to foreign, developing markets.³⁸² Although this program initially meant to help developing countries, due to significantly lower costs, the results have had adverse impacts on their markets. For example, the subsidies given to corn crops are estimated to suppress foreign corn production by 5 percent in developing countries.³⁸³ It disrupts their local markets and lowers the amount of available jobs. Buying food from the U.S. at a cheap price may work as a short-term solution, but it is not sustainable.

POLICY CONSIDERATIONS

The 2012 Farm Bill will affect consumers and producers in the U.S. and abroad. The most important interests of our government are domestic interests. The most possible amount of money should be going towards Americans who struggle with food insecurity and programs that will contribute to the lowest possible prices. The existence of nutritional assistance programs in the U.S. does contribute to low numbers of food insecurity, compared to international levels. The

USDA Environmental Research Service found that SNAP reduces the likelihood of an individual being food insecure by 30 percent.³⁸⁴ This number is significant, but other factors must be considered, including the stagnant level of food insecure people in the U.S. and the accessibility these programs give to affordable healthy food.

In order to promote healthy food, Congress must educate consumers about the benefits of healthy foods and ensure low-income households have sufficient funds to choose the healthy choice. Healthy eating will be easiest to promote in programs where USDA provides food, not just money to buy foods. In programs such as SNAP, a sum of money is given to consumers every month. This money can be used in any way the recipient chooses. It is important that Congress chooses to fund institutions that support the goal of attaining a food secure world. A critical institution in achieving this goal is the Healthy Urban Food Enterprise Development Center. HUFEDC will benefit consumers who struggle with obesity and price constraints, by enabling them to buy foods that are typically more expensive. Since HUFEDC is in its early years, it is in the interest of households struggling with food security for Congress to fund this important establishment and ensure it has enough power to be sustainable.

Government funding of nutritional assistance programs encourages more consumer spending and market involvement. This money returns directly back into the economy with high returns; in fact, federal investment in nutritional assistance programs results in the most beneficial economic stimulus. Every dollar that USDA spends on a food assistance program generates \$1.73 of market activity. This is significantly more than other federal investment options, including unemployment insurance, infrastructure funding, and aid to state governments.³⁸⁵ It is in the interest of the American people who suffer from food insecurity to increase spending on nutritional assistance programs significantly, but it is also in the interest of

the U.S. economy. In order to see decreasing numbers of households that suffer from food insecurity, the U.S. needs to increase spending by at least \$60 billion, especially towards the three core programs and any other programs that aim towards helping vulnerable populations. In the past three years, spending on these programs increased by over \$30 billion. Over 17 million households use these nutritional assistance and they have proven themselves to be valuable to both individual food security and the American economy. However, even with the increased funds allocated towards these programs, 15 percent of Americans struggle with food insecurity. Increasing funds towards these programs is one major way to permanently decrease food insecurity in the U.S.

It is important that Congress supports more funding for these programs and broadens eligibility for all people struggling with food insecurity. Between 2009 and 2011, Congress succeeded at encouraging broader eligibility requirements for nutritional assistance programs in 24 states. This costs over \$30 billion in program spending, but it also provided millions more Americans with much needed food. The 2012 Farm Bill must ensure that the 26 states also broaden their eligibility requirements to ensure all Americans living in hunger are fed. The Food, Conservation and Energy Act of 2008 did not implement an evaluation to determine the usefulness of nutritional assistance programs at combating obesity. This resulted in lack of knowledge about the effectiveness of programs, such as SNAP, WIC and the National School Lunch Program, in providing families with healthier options that will reduce obesity related diseases.

In order to establish food security both domestically and internationally, the Farm Bill needs to shift subsidies away from large commodity farmers towards local farmers. This does not mean terminating all subsidies going towards commodity farmers, but instead leveling the

playing field for specialty farmers. This could decrease local produce prices and decrease the foreign dependence on American goods. More funding could be allocated towards helping foreign farmers develop sustainable agricultural practices. If the U.S. were to fund more small farmers, it would decrease the prices of fruits and vegetables, which would increase domestic employment and increase healthy eating in the United States. Although our main interests with the Farm Bill are domestic, it is still necessary to consider repercussions on international populations. If the 2012 bill were to decrease commodity subsidies, the international price of these crops would be more leveled. This means that countries could decrease imports of commodity crops from the U.S., and then they could focus funds on supporting their own farms. Although there would be a period of uncertainty both in the US and outside the U.S., it could lead to an era of more sustainable agriculture, both inside and outside of the United States.

POLICY RECOMMENDATIONS

- Ensure all 50 states have minimal barriers for individuals and households who struggle with food insecurity and need to receive nutritional assistance.
- Increase spending on SNAP, WIC, and the school meal program by an additional \$30 billion and increase funds for additional nutritional programs aimed towards vulnerable populations by \$30 billion.
- Reallocate more funding to the Healthy Urban Food Enterprise Development Center in order to increase accessibility of healthy, local foods in underserved communities.
- Implement an evaluation program to determine the usefulness of nutritional assistance programs, especially in SNAP, WIC, and the National School Lunch Program, to decrease obesity in order to establish how practices can improve.
- Establish subsidies for specialty crops to decrease their price and promote accessibility to healthy foods.
- Invest in programs that develop local economies of developing countries to decrease their need for importing products that they could produce themselves.

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- ³⁵⁹ Dimitri, Effland, and Conklin, *The 20th century transformation of U.S. agriculture and farm policy*.
- ³⁶⁰ *Food and Water Watch*, "Farm Subsidies 101."
- ³⁶¹ Ibid.
- ³⁶² Moyer and Josling, *Agricultural policy reform : politics and process in the EC and the USA*.
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- ³⁶⁴ Vilsack, *Agriculture Secretary Vilsack on Priorities for the 2012 Farm Bill*.
- ³⁶⁵ United States Department of Agriculture, *Domestic Food Assistance: Complex System Benefits Millions, but Additional Efforts Could Address Potential Inefficiency and Overlap among Smaller Programs*.
- ³⁶⁶ Adach, "FRAC Releases New Polling Data Showing Overwhelming Support for Federal Efforts to End Hunger."
- ³⁶⁷ Paggi, "Food and Nutrition Programs in the Next Farm Bill."
- ³⁶⁸ Vilsack, *USDA Accomplishments: 2009-2011*.
- ³⁶⁹ Congress, "House Report 110-627: Food, Conservation and Energy Act of 2008."
- ³⁷⁰ Paggi, "Food and Nutrition Programs in the Next Farm Bill."
- ³⁷¹ USDA, *U.S. Department of Agriculture: More Effective Management and Performance Can Help Implementation of the Farm Bill*.
- ³⁷² Moyer and Josling, *Agricultural policy reform : politics and process in the EC and the USA*.
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- ³⁷⁵ United States Department of Agriculture, *International Food Assistance: Funding Development Projects through the Purchase, Shipment, and Sale of U.S. Commodities Is Inefficient and Can Cause Adverse Market Impacts*.
- ³⁷⁶ *Food and Water Watch*, "Farm Subsidies 101."
- ³⁷⁷ Hansen, *Gaining access : Congress and the farm lobby, 1919-1981*.
- ³⁷⁸ USDA: Economic Research Service, "Farm and Commodity Policy: Program Provisions: Marketing Assistance Loans and Loan Deficiency Payments."
- ³⁷⁹ USDA: Economic Research Service, "Farm and Commodity Policy: Program Provisions: Direct Payments."
- ³⁸⁰ United States Department of Agriculture, "2008 Farm Bill Side-By-Side."
- ³⁸¹ *Environmental Working Group*, "2011 Farm Subsidy Database: The United States Summary Information."
- ³⁸² United States Department of Agriculture, *International Food Assistance: Funding Development Projects through the Purchase, Shipment, and Sale of U.S. Commodities Is Inefficient and Can Cause Adverse Market Impacts*.
- ³⁸³ Sumner, "U.S. Farm Bill Subsidies and World Commodity Markets."
- ³⁸⁴ Paggi, "Food and Nutrition Programs in the Next Farm Bill."
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Ch.9 Trade Relations: Free Trade Agreements and WTO Interaction

Alex Pollack

Abstract

Food Security is heavily impacted by stipulations behind trade agreements between countries and interactions through the WTO. There is much debate surrounding what is considered the most effective way to go about the liberalization of trade while maintaining the promoting food security. The United States supports many new goals of food security during the Obama Administration. In order to ensure that these efforts are effective and meaningful, it is important to make sure they are not contradicted by current or future free trade policy. Important groups and institutions to consider when examining trade and food security are: The WTO and the Doha Round, NAFTA, the Korean/Colombian/Panama Free Trade Agreements, and the Trans-Atlantic Partnership. Much of the effective policy considerations surrounding trade agreements and the promotion of food security have to do with interactions of other states during the current Doha Rounds, the reform of Free Trade policies for past and future Agreements, and the consideration of the environmental, health and job impact that U.S. Free Trade Agreements can have both at home and abroad.

Policy Recommendations

- Review the provisions in existing free-trade agreements such as NAFTA and launch processes to reform any that contradict current U.S. policy (explained and presented through *Feed the Future*) by undermining Food security abroad.
- Make it official policy to exempt Least Developed Countries from U.S. free-trade agreements and export-promotion goals.
- Enact policies promoting food security and improving rural livelihoods in developing countries by supporting proposals at the Doha round and negotiations for the Trans-Pacific Partnership for potential Special Products and Special Safeguard Mechanisms.
- Ensure that U.S. trade policy reflects the more specific (and domestic) concerns about rising obesity problems by supporting agricultural industries that produce nutritionally valuable foods during the creation of Free Trade Agreements.

ISSUE

Free Trade Agreements signed by the U.S. deeply affect food security of the U.S. and the world. Although the world produces enough to feed everyone, many go hungry. However, a large problem is inadequate distribution that can often be accomplished through the World Trade Organization (WTO) and free trade agreements among countries. Agreements on the terms of trade such as tariffs and subsidies can have both positive and negative effects on the states involved. FTAs such as the North American Free Trade Agreement (NAFTA) have proven to increase imports and exports between member states but also revealed many problems with U.S. Free Trade Agreement policies in regards to food security. It is argued that U.S. policy in regard to FTA is “old” and more suited to 20th century problems³⁸⁶. Additionally, many of the goals stated by the Obama administration through the *Feed the Future* Program are contradicted by current FTA policies. After the events of 2008 food crisis in which commodity prices skyrocketed, it is apparent that a new approach is needed to address free trade agreements and expansion that will cater towards the transforming food security climate. Issues such as proper nutrition, investment relationships in FTAs, and appropriate trade partnerships should all be addressed. In the following policy recommendation, issues regarding trade relations and food security will be concentrated on and beneficial approaches to Free Trade Agreements and WTO negotiations will be suggested.

BACKGROUND

Free Trade Agreements dominate U.S. trade interaction with the rest of the world. The United States has served as a leader in the liberalization of trade that is further promoted by the World Trade Organization (WTO). The United States currently has Free Trade Agreements

(FTAs) in force with 17 countries. Its most recent FTA was resolved between the US and South Korea to create the U.S.-Korea Free Trade Agreement that was approved by Congress along with the Panama and Colombia FTA in 2011. Currently, the U.S. is in negotiations for a large regional Asian-Pacific free trade agreement known as the Trans-Pacific Partnership. The U.S. is also participating in the Doha Development Agenda negotiations through the WTO. These negotiations aim to lower trade barriers around the world. In the effort to promote global food security, FTAs and WTO negotiations are extremely significant. These Agreements dictate tariffs, levels of competition between countries and therefore global food prices. They also dictate the nature of agricultural production in different countries. For example, if a country such as Colombia begins to rely on the United States for the majority of its grain products, that sector of agriculture will go down domestically. In order to best understand the impact of trade interaction on Food Security Policy, the following background section will give details about the World Trade Organization, the North American Free Trade Agreement, the Korea/Colombia/Panama Free Trade Agreements, and the Trans-Pacific Partnership.

World Trade Organization: The Doha Round

The World Trade Organizations main function is to serve as a “forum for governments to negotiate trade agreements... and settle trade disputes” while operating a system of trade rules.³⁸⁷ It serves as a base for which producers of goods and services, exporters and importers can create legal ground rules for commerce. It began operations in 1995, but serves as a stronger version of the General Agreement on Tariffs and Trade, or GATT, that was set up after World War II to prevent the damaging protectionist policies from the 1930s that fueled the Great Depression.³⁸⁸ The WTO was created as a result of the Uruguay Rounds that happened between 1986 and 1994. This round also produced the Uruguay Round Agreement on Agriculture, which brought

agricultural trade, and therefore food trade, directly under the GATT. The United States itself has been a member of the WTO since the 1st of January 1995 and has contributed approximately 12.4 percent to the WTO budget as of 2011.³⁸⁹

Since the founding of the GATT in 1947 and later on, the creation of the WTO, international free trade rules have been broadened. Today, the current round of global trade talks are occurring in Doha, Qatar beginning in November 2001. Negotiations came to a halt in 2008 during the food crisis but have been restarted with further efforts by the WTO. They have been tackling problems pertaining to recent issues in all trade due to the current economic climate including agriculture and food.³⁹⁰

The Doha Round's aim is "to achieve major reform of the international trading system through the introduction of lower trade barriers and revised trade rules" and covers about 20 areas of trade, focusing primarily on improving trading prospects of developing countries.³⁹¹ It is also working to address problems with the process of implementing current WTO agreements. The Director-General of the Round Pascal Lamy, said in his report to the General Council this February (2012) that, "the current political environment dictates that the most realistic and practical way forward is to move in small steps, gradually moving forward the parts of the Doha Round which are mature, and re-thinking those where greater differences remain."³⁹² he hopes that members of the WTO are realistic in their targets and goals.

Some of the issues currently being debated in the Doha Round are a proposal put together from 2008 that aims to significantly liberalize trade. Issues concerning this proposal include the unintended consequences of such policies on Least Developed Countries or LDCs, aid packages provided by wealthy countries and the levels to which protection can be reduced. It is feared that without the successful completion of the Doha Round, protection would double, unleashing a

negative backlash on the global economy.³⁹³ Overall, the Doha Round holds a lot of weight in the future of International Free Trade, making any policy implemented by the United States extremely important.

Figure 9.1: Proposed Doha commitments and de minimis percentages

Table I—Proposed Doha commitments and <i>de minimis</i> percentages								
	US	EU27	Japan	Norway	Brazil	China	India	Philippines
	US\$ billion	€ billion	¥ billion	NOK billion	US\$ billion	RMB billion	US\$ billion	PHP billion
Base OTDS	48.5	118.9	5,450.3	21.2	13.1	584.4	25.6	117.2
Full reduction percentage from Base OTDS (%)	70.0	80.0	75.0	55.0	37.0	–	–	–
Final Bound OTDS	14.5	23.8	1,362.6	9.5	8.3	584.4	25.6	117.2
Pre-Doha FBTAMS	19.1	72.2	3,972.9	11.4	0.9	–	–	–
Full reduction percentage from pre-Doha FBTAMS (%)	60.0	70.0	70.0	53.0	30.0	–	–	–
FBTAMS after reduction	7.6	21.7	1,191.9	5.4	0.6	–	–	–
Blue-box limit ^a	4.9	6.5	246.2	3.6	2.4	116.9	5.1	23.4
<i>De minimis</i> percentage (%)	2.5	2.5	2.5	2.5	6.7	8.5	10.0	10.0
Commitment as a share of base-period value of production (%)^b								
Final Bound OTDS	7.4	9.2	13.8	42.1	17.0	25.0	25.0	25.0
FBTAMS	3.9	8.4	12.1	24.0	1.3	–	–	–
Blue-box limit	2.5	2.5	2.5	15.7	5.0	5.0	5.0	5.0
Commitments in US\$ billion^c								
Final Bound OTDS	14.5	33.1	14.6	1.5	8.3	85.5	25.6	2.5
FBTAMS	7.6	30.1	12.7	0.9	0.6	–	–	–
Blue-box limit	4.9	9.0	2.6	0.6	2.4	17.1	5.1	0.5

Source: D. Orden, D. Blandford, and T. Josling, ed., *WTO Disciplines on Agricultural Support: Seeking a Fair Basis for Trade* (Cambridge, UK: Cambridge University Press, 2011).

Note: – indicates zero. ^a Special rules apply to Norway. ^b Base period for OTDS is 1995–2000 for developed countries and 1995–2004 for developing countries. ^c Based on 2009 IMF average yearly exchange rates.

“Doha Round,” International Food Policy Research Institute, last modified 2011. <http://www.ifpri.org/book-6308/ourwork/researcharea/doha-round>

North American Free Trade Agreement (NAFTA)

NAFTA was implemented on January 1st of 1994 with the goal of removing barriers to trade and investment between the U.S., Canada, and Mexico. Under NAFTA, all non-tariff agricultural trade barriers between the U.S. and Mexico were eliminated, while tariffs were removed in stages, allowing for a free trade transition period. As of January 1st, 2008, NAFTA

has been in full effect. Provisions between the U.S. and Canada have been in effect since 1989, wherein all agriculturally related tariffs were removed with the exception of a few items covered by tariff-rate quotas.³⁹⁴

Since its inception in 1994, NAFTA has accounted for 55% of U.S. agricultural export growth, and has an average annual growth of \$847 million. Dismantling trade barriers leads to increased market integration. Canada is now the U.S.'s primary export market, while Mexico is second. U.S. is the primary export market for both Canada and Mexico. Agricultural trade has increased by 150% between the US and Mexico since NAFTA was taken into effect, rising from \$6.3 billion in 1993 to \$15.7 billion in 2005.

Agricultural trade between the three countries, which support different agricultural climates, allow for greater food choice and nutritional value for human consumption. The trade agreement also supports jobs. NAFTA supports 258,000 U.S. jobs in agricultural exports. The mutually beneficial trade agreement has increased agricultural trade by 150% between the U.S. and Mexico since NAFTA was taken into effect, rising from \$6.3 billion in 1993 to \$15.7 billion in 2005.³⁹⁵

Country-country partnerships in the form of agricultural trade agreements have proven both mutually beneficial, and in the NAFTA case, especially favorable toward U.S. economic growth. However, NAFTA policies have had some negative impacts as well, specifically on smallholders in all three countries, but most prominently in Mexico. After many years of monitoring NAFTA implementation, it has become clear that the agreement has not reached all expectations and utilizes policies that are not applicable to free-trade issues today.

Unfortunately, however, this agreement was not entirely beneficial for the parties involved. Although the numbers look good and exports increased, the benefits of these sales

failed to trickle down to many rural communities.³⁹⁶ Farmers in some regions became unable to compete with cheap imports leading to more than two million leaving the agricultural sector, a drop of nearly 25 percent. Rural Poverty in Mexico has increased, causing many to migrate to cities in search of manufacturing jobs.³⁹⁷ The trend is that since NAFTA U.S. agricultural production itself has increased while rural employment and livelihoods have fallen.³⁹⁸ This suggests that some reforms are needed to the NAFTA model in order to produce the most positively effective FTAs possible in the future.

Korea/Colombia/Panama Free Trade Agreements

The most recent FTAs to be negotiated by the United States are the U.S.-Korean Free Trade Agreement (KORUS FTA), the U.S.-Colombia Trade Promotion Agreement and the U.S.-Panama Trade Promotion Agreement. Both Free Trade Agreements were approved by Congress on October 12, 2011 and are beginning their implementations and procedure for the liberalization of trade between both Countries. Because they were formulated at approximately at the same time and approved by Senate together, they are often grouped in discussion as the most recent FTAs. President Obama, the U.S. Trade Representative Ron Kirk, and the US Agricultural Secretary Tom Vilsak commended that passage of these agreements. Many other agricultural stakeholders also voiced there approval of the passage of these most recent FTAs such as the American Farm Bureau Federation, the American Meat Institute, the National Association of Wheat Growers, U.S. Wheat Associates, National Milk Producers Federation, U.S. Dairy Export Council, National Pork Producers Council, and Texas and Southwestern Cattle Raisers Association.³⁹⁹ Agricultural Secretary Tom Vilsack claims that the “passage of these deals will contribute to a positive U.S. trade balance, create jobs, and provide new income opportunities for our nation’s agricultural producers, small businesses, and rural communities.”⁴⁰⁰

The KORUS FTA is noted as the United States' most commercially significant free trade agreement in more than 16 years.⁴⁰¹ Under this FTA, the tariffs and quotas on a broad range of agricultural products will be eliminated or phased out. The United States was already one of Korea's top suppliers of a broad variety agricultural products totaling nearly \$5 billion in 2010, making Korea the fifth largest export market for U.S. farm products, a number that is expected to expand due to the KORUS agreement.⁴⁰² A point of contention about U.S. agricultural products was hesitation about the liberalization of the beef trade due to health concerns stemming from U.S. reports of mad cow disease in 2003 and inadequate slaughterhouse standards and enforcement. However, South Korea eventually agreed to a compromise in which the "voluntary private sector" made arrangements to improve Korean consumer confidence in U.S. beef by ensuring certain standards.⁴⁰³ Some U.S. citizens were unsupportive of the FTA because of fair labor and smallholder farming concerns from labor unions and other groups such as Public Citizen.⁴⁰⁴ This group argues that this is a "NAFTA-style" agreement is a "job-killing deal" that threatens jobs, the economy, security and the environment and is backed by other groups such as the Sierra Club and R-Calf United Stockgrowers of America.⁴⁰⁵ Despite these doubts however, the Obama Administration still maintains that the agreement serves as an important accomplishment in U.S.-Asia relationships and overall food security for both countries.

The U.S.-Colombia Trade Promotion Agreement states that over 80 percent of U.S. exports of consumer and industrial products to Colombia will become duty free immediately after its institution with other tariffs being phased out over 10 years.⁴⁰⁶ The Obama Administration claims that serious and immediate labor concerns have been addressed in negotiations with Colombia, producing an agreed "Action Plan Related to Labor Rights."⁴⁰⁷ This was created in a response to labor rights violations occurring in Colombia. The International

Trade Commission (ITC) stated that the tariff reductions from this agreement should expand exports of U.S. goods by more than \$1.1 billion increasing the U.S. GDP by \$2.5 billion.⁴⁰⁸ Objections to the Agreement are by the same groups opposed to KORUS-FTA with similar arguments against it claiming that the President's "Action Plan Related to Labor Rights" is not enough to prevent labor violations in Colombia. However, leaders that produced the Agreement maintain that it will be beneficial to the United States as "our economies are largely complimentary in terms of the goods we ship each other." Colombia tends to import large amount of grains from the U.S. while we import tropical fruits from Colombia.⁴⁰⁹ This agreement is particularly significant to agriculture because the US and Colombia have significant ties directly to each others food production as well as other products that contribute to food production such as fertilizers, agro-chemicals, information and technology equipment.

In 2010 the United States exported over \$450 million worth of agricultural products, mainly corn, soybean cake and meal, wheat, rice and horticultural products, to Panama. The Panama Free Trade Agreement immediately eliminates all duties on half of U.S. farm exports and all remaining tariffs within 15 years.⁴¹⁰ This agreement also includes a Tax Information Exchange Agreement (TIEA) which will allow for the two states to improve their tax information exchange transparency networks globally. Panama itself took a series of legislative and administrative actions to further strengthen its labor laws as a part of the Agreement.⁴¹¹ Despite these provisions, however, groups such as Public Citizen, the Sierra Club and R-Calf United Stockgrowers of America are still openly opposed to the agreement claiming Panama's changes were not enough and the FTA still had issues similar to NAFTA.

Trans-Pacific Partnership

The Trans-Pacific Partnership (TPP) is a Free-Trade agreement in progress between nine countries: Australia, Brunei Darussalam, Chile, Malaysia, New Zealand, Peru, Singapore, Vietnam, and the United States. On November 12, 2011, the leaders of these states announced that they had completed the broad outlines of an agreement that is meant to enhance trade and investment among the TPP partner countries, promote innovation, allow for economic growth and increase development.⁴¹² The United States, along with the other eight TPP countries have agreed to finalize a FTA within the coming year. The Leaders Statement of the TPP states that the group is “delighted to have achieved this milestone in our common vision to establish a comprehensive, next-generation regional agreement that liberalizes trade and investment and addresses new and traditional trade issues and 21st century challenges” and hope that this agreement “will be a model for ambition for other free trade agreements in the future.”⁴¹³

President Obama has included the TPP as a part of an effort to double U.S. exports and boost U.S. economic growth while supporting American jobs, which he refers to as his “number one priority”. In regards to agriculture, and therefore food security, Obama specifically states that this agreement will work to address issues that are not adequately covered in past agreements such as market regulations. He asserts that, “creating opportunities for small and medium-sized businesses in the growing global marketplace” including “high standards to protect workers rights and the environment.”⁴¹⁴ His statement aligns with goals that are stated in the *Feed the Future* initiative.

POLICY CONSIDERATIONS

Policy Considerations regarding Trade Interactions and Food Security will center mostly on the actions and stance the United States should take during the current Doha Rounds, negotiations for the Trans-Pacific Partnership, and general policy for any future Free Trade Agreements. Economists have different schools of thought when it comes to the effectiveness of Free Trade Agreements. In a report conducted by the Congressional Research Service, the author William Cooper points out three groups of thought in the debate of the effectiveness of FTAs. The first is a group of people (mainly economists) who oppose FTAs because they believe that they undermine development of the multilateral trading system acting as a “stumbling block” to global trade liberalization. The second is a group that supports FTAs because they believe it is a “building block” to trade liberalization as it allows for a more controlled and formal approach to liberalization that opens surrounding markets. And finally, the third group consists of individuals and groups that are opposed to trade liberalization in general due to its impact on workers, the environment or because it undermines U.S. sovereignty.⁴¹⁵ The United States has historically taken the second stance that Free Trade Agreements are mutually beneficial and serves as “building blocks” to international trade liberalization. This is confirmed by the many FTAs existing as a part of current U.S. trade policy. This Policy Recommendation also falls into Coopers second group in the FTA debate but includes suggestions about how the U.S. can improve their trade relation policies.

Future Free Trade Agreements such as the Trans Pacific Partnership

The Institute for Agriculture and Trade policy (IATP), an organization that works “locally and globally and the intersection of policy and practice to ensure fair and sustainable food, farm and trade systems” suggests that the main goals to consider in the drafting of further

FTA's or any more U.S. agricultural and development policy are ending global hunger, enhancing incomes and employment (both domestically and abroad) and encouraging a transition to more climate-friendly agriculture.⁴¹⁶ These goals may seem ambitious but correspond with policy already enacted and published by the United States. The *Feed the Future* web site states that the "focus areas" for improving international security are; an inclusive agricultural sector growth, improved nutrition, private sector engagement, research and capacity building, gender integration and environmental-sensitive development.⁴¹⁷ Statements by President Obama about the progress currently being made in the Trans-Pacific Partnership suggest a positive change. However, recent agreements like those with Korea and Columbia do not seem to follow the same path.

In a report titled "Making U.S. Trade Policy Serve Global Food Security Goals," the IATP outlined some of the problems with past FTAs. It claims that policies do not focus enough on the goal of promoting food security and too much on tactics. The report challenges the U.S. to think more deeply about how changes negotiated through FTAs affect our societies and environments.⁴¹⁸ During the G-8 Summit, President Obama took the initiative to commit to scale up food security spending and encouraging other countries to do the same.⁴¹⁹ This naturally suggests that it would be beneficial to include the further consideration of the implications of FTAs on rural communities as a legitimate part of U.S. policy. If more consideration into the impact of such Free Trade Agreement Policies is not implemented in the future, much of the spending that is reported to be going to increase the production of smallholder farmers will be contradicted by a trade climate incompatible to these agricultural communities.⁴²⁰ Due to the current economic state, it would not be beneficial for the United States to fund programs

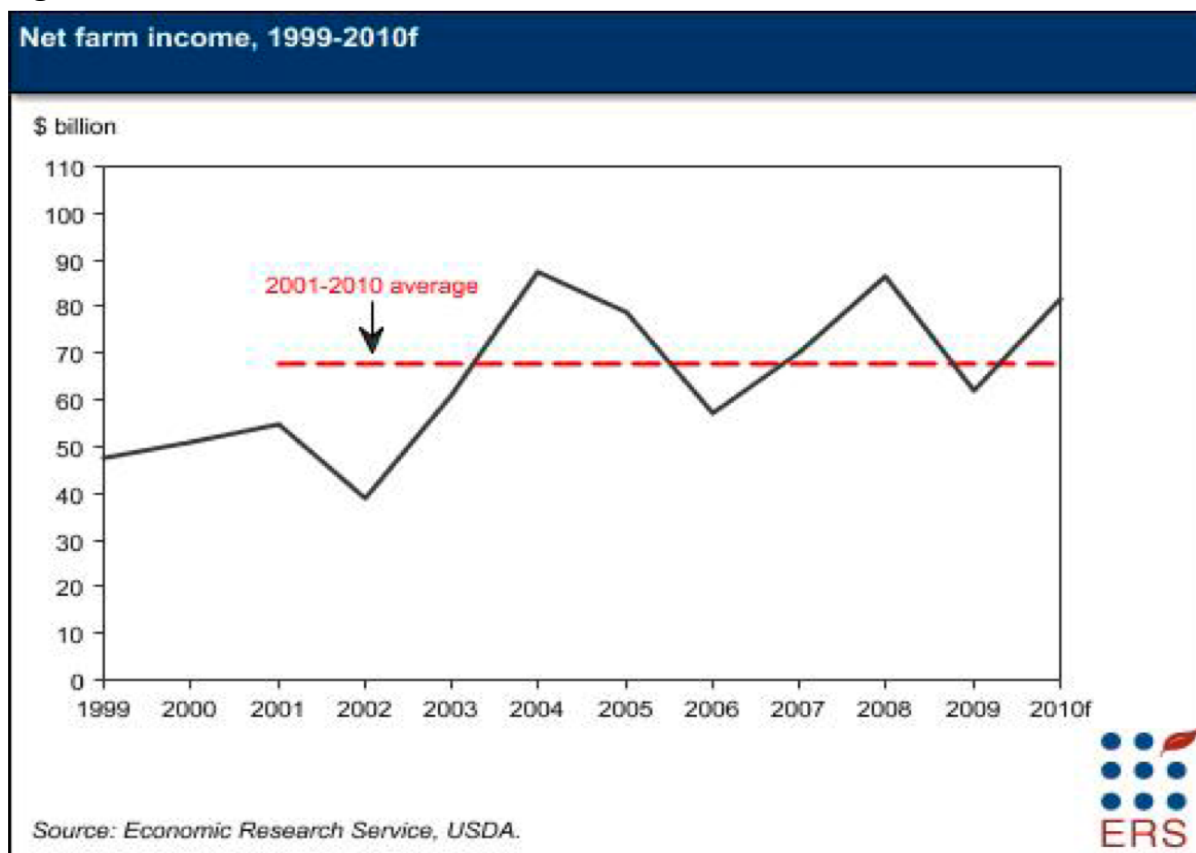
promoting rural communities and smallholders through *Feed the Future* when U.S. efforts are immediately contradicted by policies agreed to in FTAs.

The U.S. government should work with developing countries to establish agreements that contain the appropriate levels of trade protection in order to avoid the significant loss of agricultural jobs. Another change to include in future FTAs is the presence of an investment chapter, often referred to as the investor-state provision. This allows foreign investors to sue governments for compensation for any changes or programs that undermine the expected profits in their industry. Investor-state arbitration is a main theme of international investment agreements. NAFTA and CAFTA are both examples of trade agreements that contain chapters on investor-state arbitration, which allows multi-national corporations to sue the governments of countries they are investing in. Lawsuits of this nature derive from private companies losing profits as a result of a change in the governmental policy of the country they are investing in. In terms of food security, investor-state arbitration gives multinational corporations authority that threatens the actions of developing countries' governments.⁴²¹ This has the potential to cause many problems for local (and especially rural) communities because it reduces their power to interfere with an industry that is negatively affecting the environment or not reaching proper health or living standards without being sued.⁴²² Discussions on reforming the investor-state provision to better allow for the discretion of the local community in efforts to promote the environment and health should be included in any new FTAs.

Due to the highly volatile nature of agribusiness because of unpredictable factors such as the weather and in agricultural commodity input for things such as feed, fuel and fertilizers, it seems appropriate that FTAs should allow for some level of reserves in times of particular emergency and to attempt to regulate prices to prevent crises such as the one in 2007-2008. Price

volatility is an issue that is enflamed by the restrictions put on food reserves and price problems produced by U.S. dumping, which is the introduction of a product to a foreign market sold at less than the cost of production. This makes it almost impossible for local agricultural communities to compete domestically. The creation of agricultural policies that would tend to stabilize prices at levels nearer to the cost of production could provide the signals and incentives for farmers to stay on their land and produce a stable food supply. It could also prevent both parties from experiencing the issues that arise due to the volatility of the food market. The United States is often hesitant to push for any type of policy that might be viewed as an over-interference of the government, but in the case of food security, the creation and protection of reserves could solve many of the previously mentioned price volatility problems.

Figure 9.3:



Hansen-Kuhn, Karen, “ Getting our Priorities Straight: Making U.S. Trade Policy Serve Global Food Security Goals,” Institute for Agriculture and Trade Policy, (January 2011), 3.

When it comes the Doha Round

The Doha Rounds serve as an important opportunity for the United States to implement policies that will ensure both domestic and foreign food security. The agreements and negotiations that could come out of the newly rekindled negotiation of the Doha Round give rise to a new opportunity for the U.S. to implement policies that follow more closely to those stated in the *Feed the Future* initiative. The most beneficial policies concerning Food Security to bring to the table during the current WTO Doha Rounds include the same philosophy that created programs such as *Feed the Future* and EAT. *Feed the Future's* mission is to use a \$3.5 billion pledge to tackle global food in security by investing in agriculture and economic growth through the power of the private sector and research.⁴²³ EAT stands for Enabling Agricultural Trade and is an initiative by USAID to support the U.S.'s global efforts to create conditions for agricultural growth.⁴²⁴ President Obama's campaign promised to put domestic and international food security as a top priority during his presidency. This can be accomplished through a modification of trade negotiation policy including potential changes to WTO legislation and new approaches to future WTO agreements.

The previously mentioned food preserves are also a potential solution that is greatly supported by the Institute of Agriculture and Trade Policy. The WTO Agreement of Agriculture, however, introduced some rules and regulations restricting public spending on domestic support for agriculture.⁴²⁵ Another policy suggestion produced by the institute entitled "Trade and Food Reserves: What role does the WTO Play?" analyzes the levels to which trade rules and grain reserves conflict. As a whole, the IATP takes the stance that "grain reserves are an important part of a food security strategy" and are "an obvious and practical tool" that have proven to be effective.⁴²⁶ For the promotion of food security, the creation and protection of reserves could also

solve many of the previously mentioned price volatility problems. They provide a way for governments to reduce price and supply volatility and are seen by some who are pro trade liberalization as a market distorting public expense. The United States is often hesitant to push for any type of policy that might be viewed as an over-interference of the government. Additionally, the WTO Agreement of Agriculture introduced some rules and regulations restricting public spending on domestic support for agriculture.⁴²⁷ However, there is a way that both trade and reserve policies could be complementary strategies. Many of these restrictive policies were created in the 1980s to address problems that arose in the EU, Japan and the U.S. of overproduction. In today's unstable market, the proper management of such a surplus so that it does not interfere with trade agreements would be appropriate and beneficial.⁴²⁸ If the WTO were to modify rules to allow for governments to establish price bands for food and develop policies that allow for surplus capacity to produce food in a controlled reserve, as a cushion should normal supplies fail, fears of famine around the world will be greatly reduced.⁴²⁹

Another issue that should be addressed in the context of the Doha Rounds by the United States is the levels of interaction of the U.S. with UN classified LDCs or Least Developed Countries. LDCs are classified by the UN use a criterion including: a low income based on a three-year average estimate of the gross national income per capita; a weakness in human resource involving a composite Human Assets Index based on indicators of nutrition, health, education, and adult literacy; and finally, measurements of economic vulnerability involving a composite Economic Vulnerability Index based on the instability of agricultural production, the instability of exports of goods and services, the economic importance of non-traditional activities, merchandise export concentration, the handicap of economic smallness and the percentage of the population displaced by natural disasters.⁴³⁰ The negative impacts of trade

negotiations between large, wealthy and developed countries such as the U.S. and slowly developing countries placed into the LDC list can be outlined by interactions between the U.S. and Haiti. Haiti as recently as the 1980s produced about 80 percent of its own rice needed for domestic consumption. However, after Haiti lifted import controls, 80 percent of its rice is received through substantial food aid for reoccurring shortages.⁴³¹ Bill Clinton admitted and testified to this flaw in policy-making saying that “It was a mistake” and that he would “have to live every day with the consequences of the lost capacity to produce rice crop in Haiti to feed those people.”⁴³² Putting large amounts of food aid into a struggling agricultural climate can have very negative effects. This instance outlines the reason why the U.S. should make it official policy to exempt LDCs from any new Free Trade Agreements. These fragile economies do not have the resources to compete with United States industrial and agricultural technologies. Instead, any efforts to help these nations should be aimed at improving agricultural education and access to new technologies to establish a strong domestic farming system.

Domestic Concerns

During the 2009-2010 Congressional year a new bill was introduced called the Trade Reform, Accountability, Development and Employment (TRADE) Act. This bill would mandate reviews of all current trade agreements, establish new standards for future trade agreements, require new labor standards, and impose higher authority to Congress for oversight of any trade agreements.⁴³³ Many economists and activist groups that oppose previous “NAFTA-style” free trade agreements were large supporters of a bill like the TRADE Act. The bill had 106 bipartisan cosponsors amounting to about one-fourth of the 435 members of the House of Representatives.⁴³⁴ Some of the provisions for this bill included a review of existing trade pacts such as NAFTA and the WTO as well as the inclusion of environmental, human rights, labor

standards, product safety and national security stipulations for any future free trade agreements. While this bill did not make it through to implementation, it represents a significant U.S. policy option for further promoting food security. A new bill passed along these lines would effectively phase out any old or ineffective policy measures that are currently being put into free trade agreements.

RECOMMENDATIONS

- Review the provisions in existing free-trade agreements such as NAFTA and launch processes to reform any that contradict current U.S. policy (explained and presented through *Feed the Future*) by undermining Food security abroad. Make a special effort to exclude any such provisions in the structure of future Free Trade Agreements. A review the inclusion of investor-state provisions from past and future FTAs would also be beneficial.
- Make it official policy to exempt Least Developed Countries from U.S. free trade agreements and export-promotion goals and instead promote further agricultural progress through programs such as *Feed the Future* and EAT.
- Enact policies promoting food security and rural livelihoods in developing countries by supporting proposals at the Doha round and negotiations for the Trans-Pacific Partnership for potential Special Products and Special Safeguard Mechanisms. This should also include the introduction of a modification of WTO rules to allow for controlled surplus reserves for member states.
- Ensuring that U.S. trade policy reflects the more specific (and more domestic) concerns about rising obesity problems by promoting agricultural industries that produce nutritionally valuable foods. Take into consideration health safeguards for exports.

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Ch.10 Commodity Futures Speculation and Food Price Volatility

Robert Sepler

Abstract

Unregulated speculation by non-commercial entities in agricultural commodity futures markets, in conjunction with other major economic forces, created the dramatic price increases that led to the 2007-2008 World Food Crisis. The same type of speculation is again threatening existing high price volatility and no effective measures are in place to counter this threat to world food prices. The level of non-commercial speculation has recently reached the same levels as during the crisis itself. If left unchecked, rampant speculation in commodity futures by non-commercial investors has the potential to destabilize world food prices through the contango effect in what amounts to a never-ending upward spiral of agricultural commodity prices. Through increased regulation of the commodity futures market by the Commodity Futures Trading Commission (CFTC) and a tightening of Dodd-Frank reforms, U.S. policy may be able to prevent the same kind of speculation that contributed greatly to the 2007-2008 World Food Crisis.

Policy Recommendations

- Increase the regulatory powers and expand the oversight of the U.S. Commodity Futures Trading Commission (CFTC), specifically in the areas of over the counter (OTC) agricultural commodity derivatives.
- Repeal the section of the Commodity Futures Modernization Act that allows OTC derivative trading beyond CFTC oversight; achieve greater government supervision of the trading of national agricultural commodities.
- Establish a floating position limit on the number of agricultural futures non-commercial speculators can hold monthly in order to limit the influence such traders have over agricultural futures prices.
- Establish CFTC oversight of the floating position limits to monitor against non-commercial market manipulations that can lead to contango and disrupt the benefits of a well-functioning futures market for commercial traders.

ISSUE

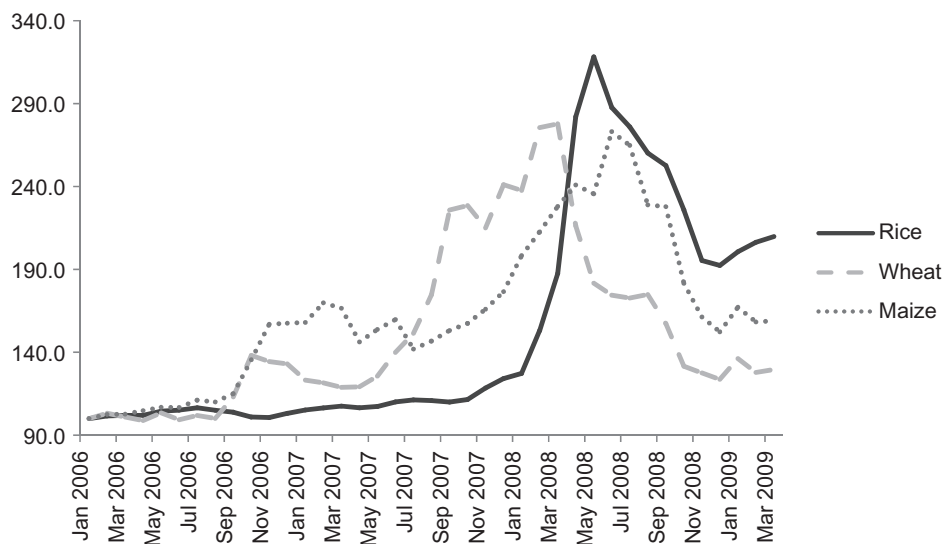
Beginning in 2000, rampant speculation in the world commodity markets has created a speculative bubble that, in conjunction with several other factors, has raised global food prices to record levels. The resulting price increases further amplified the pressure on food prices posed by the rapidly expanding global demand for food and the volatile global supply of food commodities. This speculative bubble in the food commodities market exacerbated other factors affecting price and led to a large price spike, which played a contributing role in creating the 2007-2008 Food Crisis. The zero-sum, unilateral policy responses of world leaders to the high prices then further exacerbated the effects of the crisis. The speculative bubble in the food commodities market has not gone away and it is sustaining volatile prices. Food prices are currently nearing new record highs and the same broken system that led to the 2007-2008 crisis has been left largely intact. In order to avoid a repeat crisis, the speculative bubble that sustains these volatile prices needs to be regulated. This policy report will focus on how speculation in agricultural commodity futures increases world food prices and how U.S. domestic policy can regulate this speculation.

BACKGROUND

Dramatically increasing prices characterized the 2007-2008 World Food Crisis; The UN Conference on Trade and Development (UNCTAD) estimated that between 2006 and 2008 food prices rose by 83 percent overall; highlighted by a 127 percent increase in the price of wheat, a 170 percent increase in the price of rice and a tripling of the price of maize in under three years.⁴³⁵ Between them, these three crops make up nearly 60 percent of the world's food energy intake.⁴³⁶ Rising food prices saw the number of people in extreme poverty increase from 130

million to 150 million.⁴³⁷ The crisis further drove another 40 million more people into chronic hunger, and by the end of 2008 nearly a billion people were living in hunger globally. The dramatic increase in prices that characterized the food crisis is apparent in Figure 10.1, which plots the average monthly price of major food crops, as represented by FAO price index numbers, beginning in January of 2006.

Figure 10.1: FAO index numbers of world trade prices



Source: Jayati Ghosh, “The unnatural coupling: Food and Global Finance” (2010), at 76. Using data accessed on 29 March 2009, from: <http://faostat.fao.org/>.

These unprecedented price increases most severely affected the developing world, where the poorest 2 billion spend between 50-70 percent of their income on food; in the context of the world’s poor, even a modest increase in prices can spell the difference between two and three meals a day.⁴³⁸

Unregulated speculation on commodity futures by global financial institutions was a significant factor in the increase in world food prices that led to the 2007-2008 Food Crisis. This non-commercial speculation was closely linked to the other financial activities that led to the global financial crisis later in 2008. The effects of this speculation on world food prices were

then further exacerbated by the ad-hoc, uncoordinated, and zero-sum responses of world leaders during the crisis itself, which led to a breakdown of the world market for food. The exact cause of the 2007-2008 World Food Crisis is hotly contested among politicians, financial investors, and academics. This policy report will focus on how commodity futures speculation affects world food prices and ways that U.S. policy can control non-commercial commodity speculation.

Agricultural futures markets, when properly regulated, are a boon to farmers and successfully prevent extreme price volatility of the kind that led to the price spikes that contributed to the 2007-2008 crisis. They do this by helping commercial traders, buyers and sellers who have a physical stake in the food production, determine prices through speculation based on market fundamentals.

Traditionally, agricultural price volatility is largely due to either natural disasters or disequilibrium between supply and demand; if farmers grow too much food, the price plummets, and if they grow too little then prices soar. A well-functioning futures market encourages equilibrium between supply and demand through the buying and selling of future crops at predetermined, present-day prices. For example, if risk-averse farmers have a guaranteed buyer for a future harvest at a predetermined price, they can productively and efficiently invest in infrastructure that raises both their income and production levels because they know how much money they are going to earn in advance. Buyers of food commodities also benefit because by agreeing to a futures contract they both guarantee their supply, and are able to efficiently invest in their own infrastructure because they know how much they are going to pay in advance. Without futures contracts, farmers and buyers are forced to wait to sell their future harvests at spot prices, or the market-clearing price, which neither group has control over. If left to deal at

spot prices, the farmers and buyers become price-takers and must sell at whatever the market price is, be it lower or higher than anticipated.

Although it is possible to gain more by selling at spot prices, a form of speculation known as arbitrage, it is more likely that prices will be lower or higher than anticipated. Thus commercial traders usually favor the guaranteed prices found in the futures market. The result being that in a traditional agricultural futures market futures prices are ordinarily lower than spot prices, a phenomenon called “normal backwardation”.

The United States is home to two of the three centers of the global agricultural futures trade that directly affect world food prices via speculation in commodity futures; the Chicago Board of Trade (CBOT) and the New York Board of Trade (NYBOT), with the third largest being the London International Financial Futures Exchange.⁴³⁹ In 2011, the CBOT and the NYBOT accounted for over 30 percent of the global volume of agricultural futures trading done in the 75 major exchanges worldwide, emphasized by the two trading volume-wise nine of the top 20 agricultural futures and options contracts globally.⁴⁴⁰ American wheat and corn futures are two of the most-widely traded agricultural commodity futures in American exchanges as they are both two of the top agricultural goods produced domestically, and two of the top agricultural goods exported. Specifically in regards to exports, trading in U.S. corn and wheat futures has the potential to directly affect the prices of these two commodities in countries dependent on U.S. imports of them. Figure 10.2 highlights the dependency on U.S. imports of corn and wheat for different parts of the world. The size of the U.S. agricultural commodity futures market combined with the dependency many countries have on imports of U.S. corn and wheat means that U.S. policy towards agricultural futures speculation has the potential to directly affect world prices.

Figure 10.2: Dependency on U.S. Imports: Corn and Wheat

Region	U.S. wheat imports (% consumption)	U.S. corn imports (% consumption)
<i>Middle East & N. Africa</i>	2	15
<i>Caribbean</i>	28	36
Dominican Rep.	46	49
Haiti	26	n.a.
Trinidad & Tobago	48	95
Jamaica	26	100
<i>Central America</i>	45	24
Costa Rica	55	47
El Salvador	31	21
Guatemala	46	20
Honduras	45	21
Mexico	20	13
Nicaragua	46	9
Panama	44	80
<i>South America</i>	4	1
Colombia	23	31
Ecuador	9	23
Peru	9	6
Venezuela	27	22
<i>Sub-Saharan Africa</i>	10	0
SSA nonoil		
Ghana	10	0
Nigeria	42	0
<i>East Asia</i>	2	7
Hong Kong	1	49
Japan	26	90
Korea, Rep.	16	28
<i>South Asia</i>	0.3	0.4
<i>Southeast Asia</i>	12	1
Thailand	19	0
Philippines	32	0

Source: Derek Headey and Shenggen Fan, "Anatomy of a crisis: the causes and consequences of surging food prices," *Agricultural Economics* 39 (2008): 389-390

The Commodity Futures Trading Commission (CFTC) is the branch of the U.S. federal government in charge of regulating the domestic commodities market. However, due to the scope of the U.S. commodity futures market CFTC regulations directly affect global commodities markets in general. Prior to the year 2000, CFTC regulation required traders to disclose their holdings of each commodity and stick to specified position limits in order to prevent market manipulations by non-commercial traders, such as banks, who had no physical use for the commodity being traded and only sought to gain through speculation. Therefore, prior to 2000, commercial players dominated the commodity futures market, using it constructively in

order to reduce price volatility and minimize risk.⁴⁴¹ The distinction between commercial and non-commercial traders is largely this: commercial traders enter futures markets in order to hedge against price fluctuations while non-commercial traders speculate in the futures market in search of financial profits and have no use for the physical food harvests promised by futures contracts.⁴⁴²

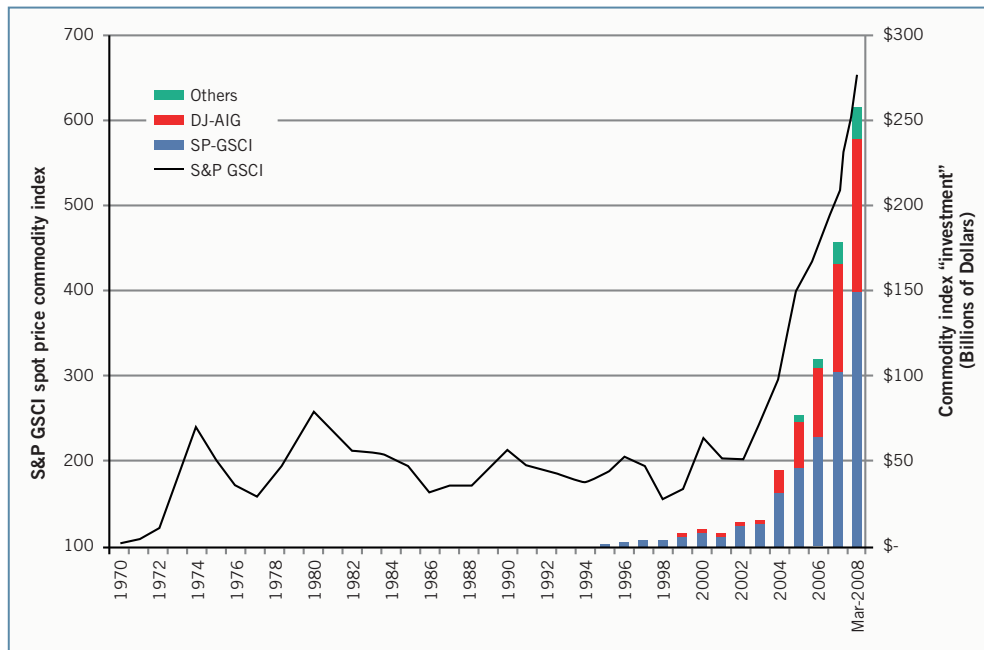
In 2000, the passage of the Commodity Futures Modernization Act by Congress changed this dynamic by deregulating commodity trading by exempting over-the-counter (OTC) commodity trading from CFTC oversight. OTC trading involves the trading of commodities not listed on any federally regulated exchange. With this deregulation, anyone could trade in the commodities market and take whatever position they liked, which opened the door for speculation on a large scale by non-commercial traders.

Goldman-Sachs was the first such non-commercial trader to invest heavily in the commodities market due to the deregulation. Goldman-Sachs had long eyed the commodities market as a source of possible profits; in 1991 they developed the Goldman-Sachs Commodity Index (initially the GSCI, now the S&P GSCI), the first commodity derivative available for financial investment.⁴⁴³ A commodity index is a form of a tradable derivative whose value is representative of the returns of a particular selection of commodity futures. The S&P GSCI consists of 24 commodities from many different sectors including energy, industrial metals, and agricultural goods. Food commodities, both agricultural and livestock, make up roughly 13 percent of the S&P GSCI. The Goldman Sachs investment strategy in commodities futures differed greatly from traditional commercial traders; whereas traditional speculation relied on arbitrage gained through both short and long positions, the Goldman Sachs strategy mandated nothing but a “long” position. By only going long, Goldman Sachs continually rolled over

positions in futures prior to their maturity date and reinvested the proceeds in new contracts with the idea being that the price will only ever increase (a long position). However, this stance leaves no room for investors to go short (sell in anticipation of a price decline), meaning that profits can only be gained and the S&P GSCI market maintained through ever-increasing prices, a phenomenon called contango.⁴⁴⁴

This investment strategy proved immensely profitable and encouraged Goldman Sachs' competitors to enter into the commodity futures market and emulate the S&P GSCI in their own indexes. As more non-commercial traders took long positions, the commodity markets were thrown deeper into contango, leading to a vicious circle of prices spiraling upward. As the demand for futures grew, the price of futures rose, which in turn led to a rise in spot prices due to traditional commercial traders anticipating future price increases. As spot prices increased, futures prices rose reflecting the belief that prices at the time of the next harvest would reflect the higher spot prices at present. As the futures prices increased, non-commercial speculators profited and the higher profits attracted more investment by non-commercial traders, which began the process anew. The whole structure of the commodity index speculation started by the S&P GSCI was premised upon this very contango; as Olivier de Schutter, the UN Special Rapporteur on the Right to Food contends, "Commodity index speculation was the gift that was designed to keep on giving."⁴⁴⁵ Figure 10.3 represents the effects of this contango on food prices by plotting commodity index investment by non-commercial traders against the S&P GSCI spot price commodity index, which represents the world market price at a specific time. A rise in the S&P GSCI spot price commodity index indicates a rise in the prices of the commodities that make up the index, including food products.

Figure 10.3: Commodity index investment compared to S&P GSCI spot price commodity index



Source: Jan Kregel, “The impact of changing financial flows on trade and production in developing countries” (August 6–7, 2008) Presentation to Seminar on “Estructura productiva y dinámica de precios: efectos macro-micro y respuestas de política” Escuela de Verano de Economías Latinoamericanas, CEPAL, Santiago, Chile.

As figure 10.3 highlights, since the passage of the Commodities Futures Modernization Act in 2000 there has been a fifty percent increase in dollars invested in commodity index funds, highlighted by a 238 percent increase in the S&P GSCI from 2003-2007.⁴⁴⁶ In numerical terms, the commodities futures market grew from \$13 billion in 2003 to \$318 billion by July of 2008.⁴⁴⁷ Figure 10.4 highlights the key food commodity futures price increases during this same period. What is important to note is the correlation between the entrance of non-commercial speculators into the commodity market and the dramatic increase in commodity futures prices.

Figure 10.4: Food Commodity Futures Price Increases (March 2003 – March 2008)

Agricultural	Cocoa +34% Coffee +167% Corn +134% Cotton +40% Soybean Oil +199% Soybeans +143% Sugar +69% Wheat +314% Wheat KC +276%
Livestock	Feed Cattle +34% Lean Hogs +10% Live Cattle +23%

Source: Dr. Steve Suppan, “Commodities Market Speculation: The Risk to Food Security and Agriculture,” (2008), 8. Using data from U.S. Senate Testimony, May 2008

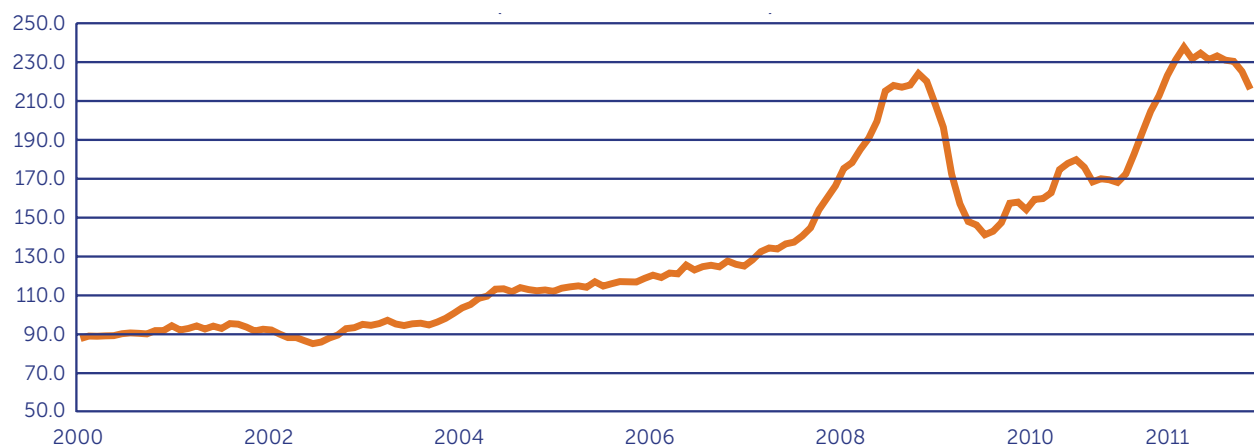
The rampant and unregulated investment in commodity indexes formed a speculative bubble. Spot prices began to increase due to the demand for futures contracts; food producers were eager to capitalize on higher prices generated by the contango. As futures prices outstripped spot prices, normal backwardation collapsed – futures prices were growing unsustainably. Thus, speculation in commodity indexes had the effect of creating a speculative bubble in the commodity market that pushed up the world price of food.

The 2007-2008 World Food Crisis is considered a crisis because of the unexpected price spikes stemming in part from the effects of the speculative bubble in the commodities futures market disrupting market fundamentals. However, the name itself is a misnomer; the crisis is still very much in effect, only the price spike that led to the 2007-2008 shortages subsided. One of the main reasons for the drop in world prices following the 2007-2008 crisis did not stem from government action nor regulation; prices dropped because the global financial industry was unable to continue maintaining their long-only positions in commodity markets due to the collapse of their investments in other markets.⁴⁴⁸ The volume of agricultural futures trading decreased dramatically between the height of the food crisis in 2008 and the drop in food prices

experienced in 2009; between January 2008 and January 2009 the volume of corn and wheat futures traded on the CBOT declined by 27.8 percent and 47 percent respectively.⁴⁴⁹ With the sudden departure of many non-commercial speculators, commodity futures markets were able to again function properly, and thus help lower world food prices. However, as non-commercial speculators reemerged following the financial crisis, world food prices began to rise again. Within two years the volume of corn futures traded on the CBOT had doubled from January of 2009, an increase of 50 percent on the volume traded in January 2008, and wheat futures had regained a volume of trading not seen since the crisis itself.⁴⁵⁰

Figure 10.5 plots the UN Food and Agricultural Organization's (FAO) monthly food price index from 2000 to the end of 2011. The first peak on Figure 10.5 represents the 2007-2008 Food Crisis, and the subsequent dramatic decrease in world prices following the effects of the world financial crisis on non-commercial commodity speculators. The second peak beginning in late 2010 represents the reemergence of these speculators and the continued existence of the broken system that led to the 2007-2008 crisis.

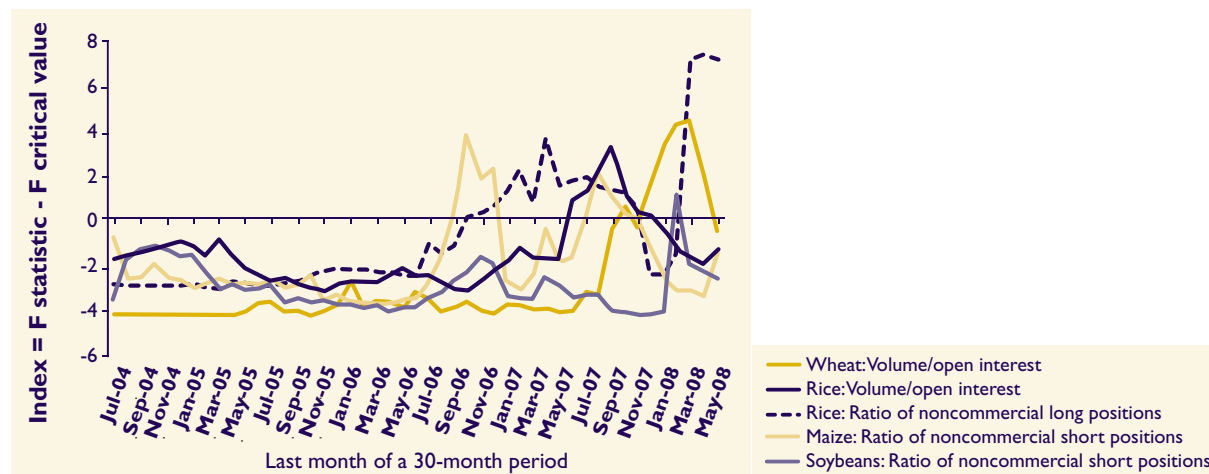
Figure 10.5: FAO Monthly Food Price Indices (2002-2004 = 100)



Source: Timothy A. Wise and Sophia Murphy, "Resolving the Food Crisis," (2012), 9. Using data from the FAO Food Price Index (2011)

A 2009 study by the International Food Policy Research Institute (IFPRI) concluded that speculation in the commodities futures market likely played a part in creating the price spikes that led to the 2007-2008 food crisis. The study analyzed four indicators using data from the CBOT: 1) volume of futures contracts, 2) open interest in futures contracts, 3) the ratio of volume to open interest in futures contracts, and 4) positions in futures contracts by noncommercial traders. The IFPRI study used an economic method called the Granger Causality Test to produce an indicator called an F statistic that is compared with a baseline F critical number. A positive difference between the two indicates causality, with the bigger the difference the more statistically significant the evidence. Figure 10.6 represents the study's findings; IFPRI concluded that across the three major grains whose futures are traded on the CBOT, wheat, rice, and maize, there is statistical evidence that speculation by non-commercial traders was likely to have played a role in influencing food prices.⁴⁵¹

Figure 10.6: Evidence of speculation influencing commodity prices, July 2004 - May 2008



Source: Miguel Robles, Maximo Torero, and Joachim von Braun, "When Speculation Matters," *IFPRI Issue Brief 57* (February 2009): 7

Note: Positive numbers on vertical axis show evidence of causality

Following the 2007-2008 Food Crisis and the 2008 Financial Crisis, Congress took action to regulate the American financial industry, including the domestic commodity futures market. This regulation took the form of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was signed into law by President Obama on July 22nd, 2010.⁴⁵² The Dodd-Frank Act was a comprehensive reform of the entire American financial industry, however it specifically addressed the commodity futures market in tasking the CFTC to expand its oversight over the market in order to limit the excessive speculation that contributed to higher commodity prices. The act did this by expanding and reemphasizing a key section of the Commodity Exchange Act (CEA), the law that both created and governed the actions of the CFTC. The bulk of regulatory changes instituted by the Dodd-Frank Act involved section 4 of the CEA, which deals with the regulation of position limits in the commodity futures market. The Dodd-Frank Act specifically works to regulate speculation on agricultural futures markets in domestic exchanges by inserting section 4a(c), which requires the CFTC to establish a limit on the number of agricultural commodities that can be held by any one trader within 270 days of the passage of the Act.⁴⁵³ In addition, the Dodd-Frank Act works to establish limits on the aggregate number of positions in certain commodity futures that may be held by any one group or class of traders for each month with the aim of limiting speculation through hoarding, as well as the contango effect of large investment entities holding long-only positions on futures. The effect of this would be that large non-commercial traders of commodity futures such as Goldman Sachs would be unable to invest as heavily in domestic commodity futures markets, and thus restore a greater market share of futures trading to commercial speculators.

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POLICY CONSIDERATIONS

The volume of commodity future speculation by non-commercial traders has risen to the same levels seen just prior to the 2007-2008 World Food Crisis. The price bubble created by such speculation is set within almost the same environment that led to the price spikes in the 2007-2008 crisis. The question is: in what ways can U.S. policy diminish the threat to food prices posed by non-commercial speculation?

The most basic option would be to do nothing and count on the Dodd-Frank regulations to prevent the speculative bubble in the commodity futures market from getting out of hand. As previously stated, the Dodd-Frank Act instructs the CFTC to limit the number of positions non-commercial entities can hold in agricultural commodities, and sets a deadline of 270 days after the passage of the Act for these limits to be set. However, several aspects of the proposed position limits and the Dodd-Frank act itself come together to muddy the benefits of increased regulation.

Compared to past financial reform acts, the Dodd-Frank Act is a bloated behemoth. The Glass-Steagall Act, the legal reforms of the financial industry following the Great Depression, ran only 37 pages; Dodd-Frank is 848 pages long.⁴⁵⁴ Although its goal of being a comprehensive reform of the American financial industry is enviable, the act itself does not set many rules. Instead of providing in depth regulation to govern the financial industry, the Dodd-Frank Act creates a bureaucracy to oversee the implementation of regulation changes. For example, in order to regulate the commodity futures market the act does not provide any clear-cut regulation nor numerical guideline on how the futures market should be regulated; it instead instructs the CFTC to implement some sort of position limits in order to limit market distortions based on non-commercial speculation, but leaves the size of the limits to the CFTC. The vague nature of this

directive was intended to give the CFTC the necessary leeway to use its expertise in commodity trading to determine appropriate limits. The CFTC, however, has used this leeway to declare that under the instructions given by the Dodd-Frank Act to reform the commodities futures market the “Commission is not required to make a finding as to whether position limits are effective or necessary to address excessive speculation,” and only needs to set some arbitrary limit in order to satisfy the legal requirement of the Dodd-Frank Act.⁴⁵⁵ Without clear cut directives, the vast amount of leeway that the Dodd-Frank Act gives regulators allows for the creation of a vast system of loopholes and conflicting regulations that becomes unintelligible and thus unenforceable; many sections of the vast Dodd-Frank Act give similarly vague directions to regulatory agencies, with the resulting regulations never being aggregated into one concrete law. Even today nearly two years after its enactment into law, many of the Dodd-Frank reforms have yet to be decided on. Figure 10.7 emphasizes the vague nature of the Dodd-Frank provisions by highlighting the number of missed deadlines for rules regulatory agencies have had. These deadlines are missed because the Dodd-Frank Act creates a legal framework that is unworkable and unenforceable.

Figure 10.7: Number of rule-making requirements for Dodd-Frank



Source: Tom Easton, “The Dodd-Frank act: Too big not to fail,” *The Economist*, February 18, 2012, accessed February 18, 2012, <http://www.economist.com/node/21547784>

An attempt could be made to try and revise the Dodd-Frank Act and insert clear guidelines and regulations into the text. However, such a legal revision would require a new law to be passed in Congress and then signed by the President. The Dodd-Frank Act took over a year to win congressional approval and even today the exact rules of the legislation are still being written and clarified. In order to provide concrete regulations in place of the vague directives of the original act, even more time would be required to consult experts and draft proposals. With both Congressional and Presidential elections less than a year away and with the partisan atmosphere in Congress, it is unlikely that the political will would exist to undertake such a revision.

The entire Dodd-Frank Act, however, does not need to be revised in order to deal with speculation in the commodity futures market, only the directions given to the CFTC. This could be accomplished in a single, marketable bill to congress that would both show the American public that congress is still working to reform the financial industry that led to the Great Recession and end the threat that speculation in agricultural commodities poses to world food prices. Non-commercial speculation in commodity futures raises world prices of agricultural goods through the contango effect. Contango occurs when large numbers of speculators take long-only positions in commodity futures, leading to lower spot price and higher future prices. There are two ways to eliminate the contango effect; 1) repeal the section of the Commodity Futures Modernization Act that allows over the counter derivative trading in commodity futures and thus remove many of the non-commercial speculators from the market, or 2) strengthen and more thoroughly define position limits for non-commercial traders while expanding CFTC oversight and regulation of domestic commodity futures exchanges.

Barring non-commercial speculators from commodity futures markets altogether would eliminate the contango effect by removing the kind of speculation that has inflated future prices and thus affected world food prices. Without the non-commercial speculators, future and spot prices would return to levels determined by market fundamentals, which would benefit commercial speculators by removing volatility. The absence of non-commercial speculators would also have the effect of removing agricultural commodities from indexes that could be dragged up or down by fluctuations in other included commodities, such as oil. However, many ordinary individuals have invested in commodity futures through these non-commercial speculators and thus if these actors are suddenly removed from the agricultural commodity futures market ordinary citizens will lose money.

Strengthening and clearly defining position limits for non-commercial speculators in agricultural futures would avoid harming the investments of ordinary citizens, but still diminish the agricultural commodity futures market's exposure to the price volatility associated with non-commercial speculation. The best way to accomplish this would be through a floating position limit for non-commercial speculators established by the CFTC. The CFTC could monitor the environment of the domestic commodity futures markets; if the effects of contango were evident, then the position limits could be reduced for the following month, thus keeping future prices stable. This regulation would increase the accountability of the CFTC to control and regulate the actions of non-commercial speculators while not directly barring these speculators from the market. In order to make CFTC oversight feasible, the Commodity Futures Modernization Act would have to be repealed, and OTC agricultural derivatives in particular would have to again pass through CFTC monitored exchanges.

POLICY RECOMMENDATIONS

- Increase the regulatory powers and expand the oversight of the U.S. Commodity Futures Trading Commission (CFTC), specifically in the areas of over the counter (OTC) agricultural commodity derivatives.
- Repeal the section of the Commodity Futures Modernization Act that allows OTC derivative trading beyond CFTC oversight; achieve greater government supervision of the trading of national agricultural commodities.
- Establish a floating position limit on the number of agricultural futures non-commercial speculators can hold monthly in order to limit the influence such traders have over agricultural futures prices.
- Establish CFTC oversight of the floating position limits to monitor against non-commercial market manipulations that can lead to contango and disrupt the benefits of a well-functioning futures market for commercial traders.

⁴³⁵ A. Mittal, “The 2008 Food Price Crisis: Rethinking Food Security Policies”, (June 2009) G-24 Discussion Paper Series No. 56, UNCTAD, 1

⁴³⁶ Toni Johnson, “Food Price Volatility and Insecurity,” *Council on Foreign Relations*, August 9, 2011, <http://www.cfr.org/food-security/food-price-volatility-insecurity/p16662>.

⁴³⁷ World Bank, “Global Economic Prospects.” *Commodities at the Crossroads*, 2009, 96

⁴³⁸ Lester R. Brown, “The New Geopolitics of Food,” *Foreign Policy*, May/June 2011, http://www.foreignpolicy.com/articles/2011/04/25/the_new_geopolitics_of_food

⁴³⁹ Dr. Steve Suppan “Commodities Market Speculation: the Risk to Food Security and Agriculture,” *Institute for Agriculture and Trade Policy*, November 12, 2008, <http://www.iatp.org/documents/commodities-market-speculation-the-risk-to-food-security-and-agriculture>

⁴⁴⁰ Futures Industry Association, “Jan-Jun 2011 Volume Trends.” [www.futuresindustry.org/downloads/Complete_Volume\(11-11_FI\).pdf](http://www.futuresindustry.org/downloads/Complete_Volume(11-11_FI).pdf)

⁴⁴¹ Jayati Ghosh, “The Unnatural Coupling: Food and Global Finance,” *Journal of Agrarian Change* 10.1 (2010): 72-86

⁴⁴² Joachim von Braun and Maximo Torero, “Physical and Virtual Global Food Reserves to Protect the Poor and Prevent Market Failure,” *IFPRI Policy Brief 4* (June 2008): 1-4

⁴⁴³ Peter Robinson, Asjlynn Loder, and Alan Bjerga “Amber Waves of Pain,” *Bloomberg Businessweek*, July 22, 2010, accessed February 18, 2012, http://www.businessweek.com/magazine/content/10_31/b4189050970461.htm

⁴⁴⁴ Ibid.

⁴⁴⁵ O. De Schutter, “Food Commodities Speculation and Food Price Crises,” (September 2010) Briefing Note 02, *UN Special Rapporteur on the Right to Food*, 1-14

⁴⁴⁶ Suppan, “Commodities Market Speculation: the Risk to Food Security and Agriculture.” 7

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- ⁴⁴⁷ Kaufman, "How Goldman Sachs Created the Food Crisis," *Foreign Policy*, April 27, 2011
- ⁴⁴⁸ O. De Schutter, "Food Commodities Speculation and Food Price Crises," 6
- ⁴⁴⁹ Chicago Board of Trade (CBOT) January 2009 Monthly Volume Report,
<ftp://ftp.cmegroup.com/webmthly/>
- ⁴⁵⁰ Chicago Board of Trade (CBOT) January 2011 Monthly Volume Report,
<ftp://ftp.cmegroup.com/webmthly/>
- ⁴⁵¹ Miguel Robles, Maximo Torero, and Joachim von Braun, "When Speculation Matters,"
IFPRI Issue Brief 57 (February 2009): 1-8
- ⁴⁵² *Dodd-Frank Wall Street Reform and Consumer Protection Act*, (Pub.L. 111-203, H.R. 4173).
Signed into law by President B. Obama on July 21, 2010.
- ⁴⁵³ *Commodity Exchange Act*, section 4a (USC 6a).
- ⁴⁵⁴ Tom Easton, "The Dodd-Frank act: Too big not to fail," *The Economist*, February 18, 2012,
accessed February 18, 2012, <http://www.economist.com/node/21547784>
- ⁴⁵⁵ Commodity Futures Trading Commission (CFTC), "Position Limits for Futures and Swaps,"
Federal Register Vol. 76 No. 223, (Friday 18, 2011): 71629. Accessed February 18, 2012,
<http://www.cftc.gov/ucm/groups/public/@lrfederalregister/documents/file/2011-28809-1a.pdf>

V. SOCIO-CULTURAL IMPLICATIONS



Ch.11 The Rising Middle Class and Animal Products

Jillian Zieske

Abstract

Global middle classes are rapidly increasing and requiring the production of more food. The majority of these population growth is occurring in developing countries and the populations desire more animal products in their daily diets. Increased animal product consumption creates challenges for developing countries' attempting to provide adequate food for their growing populations. Industrialized developed countries are able to produce large quantities of food, but the environment is impacted by the harsh production methods. As a global producer, exporter and consumer of animal products the U.S exemplifies production standards and methods that could be used to assist in providing animal products in developing countries. The disparity between countries that need more access to food, such as animal products, and the developing countries that possess the technological ability to produce large quantities of food can create political and economic opportunity for the U.S. livestock and agricultural sector to export food to growing middle class populations and educate countries about how to properly produce adequate food for their populations. This chapter will explore why and how U.S. policies initiatives can assist and supplement developing countries' pursuits to feed their middle class populations.

Policy Recommendations

- Increase global demand for U.S. livestock by creating trade relationships with countries experiencing fast growing middle classes.
- Promote local livestock breeding that are more geographically available and sustainable for those middle classes in Feed the Future programs.
- Encourage the use of U.S. food production technology in Feed the Future countries' as they are building production infrastructure.
- Provide educational support and capacity for *Feed the Future* countries on disease control methods and environmentally friendly production methods as emphasized by WHO policies as well as proper trading in a global market.
- Invest in, promote and closely monitor private sector U.S. farming.

ISSUE

The global middle class is rapidly growing, especially in populous developing countries such as India, China and many Sub-Saharan African countries. By the year 2030, the global middle class is expected to reach 4.9 billion people.⁴⁵⁶ A large global middle class means changes in the type of food desired and consumed. The new consumption habits of these middle classes will potentially resemble those of the American middle class, whose diet centers on animal products like milk, eggs and most importantly, meat.⁴⁵⁷ Consumption habits such as these may create issues concerning inadequate production capacities in developing countries that may not have the technological infrastructure or properly sanitary facilities to handle industrialized and commercial animal product production.

Increased global use and trade of animal products increases the risk of spreading food borne illnesses. Usually, these diseases develop from poor sanitation practices when slaughtering and transporting livestock. The raising and slaughtering of livestock is also harsh on natural resource and ecological diversity. Therefore increasing this process in developing countries can create unfortunate consequences for countries' land and resources. Furthermore commercial livestock production can hinder market success of small farms in various cultures. Properly managing the methods of production will become necessary for developing countries.⁴⁵⁸

BACKGROUND

Projected Growth of the Middle Class

Population growth is generally measured in terms of GDP and urbanization. In 2009, the OECD predicted that the global middle class will reach 3.2 billion people by 2020 and then grow to 4.9 billion in 2030.⁴⁵⁹ This growth is especially prevalent in developing countries. The same

OECD analysis found that in 2009, Asia Pacific countries accounted for 28 percent of the global middle class and by 2030 the same region will likely account for 66 percent of the middle class. Additionally, monetary spending of these Asia Pacific middle classes is projected to grow from 23 percent of total middle class spending in 2009 to 59 percent of total spending in 2030.⁴⁶⁰ This represents a portion of a large population income growth that occurs globally, as seen in Figures 11.1 and 11.2.

Figure 11.1: Numbers (millions) and Share (percent) of the Global Middle Class

	2009		2020		2030	
North America	338	18%	333	10%	322	7%
Europe	664	36%	703	22%	680	14%
Central and South America	181	10%	251	8%	313	6%
Asia Pacific	525	28%	1740	54%	3228	66%
Sub-Saharan Africa	32	2%	57	2%	107	2%
Middle East and North Africa	105	6%	165	5%	234	5%
World	1845	100%	3249	100%	4884	100%

Source: OECD 2010

Figure 11.2: Spending by the Global Middle Class, 2009 to 2030 (millions of 2005 PPP dollars)

	2009		2020		2030	
North America	5602	26%	5863	17%	5837	10%
Europe	8138	38%	10301	29%	11337	20%
Central and South America	1534	7%	2315	7%	3117	6%
Asia Pacific	4952	23%	14798	42%	32596	59%
Sub-Saharan Africa	256	1%	448	1%	827	1%
Middle East and North Africa	796	4%	1321	4%	1966	4%
World	21278	100%	35045	100%	55680	100%

Source: OECD

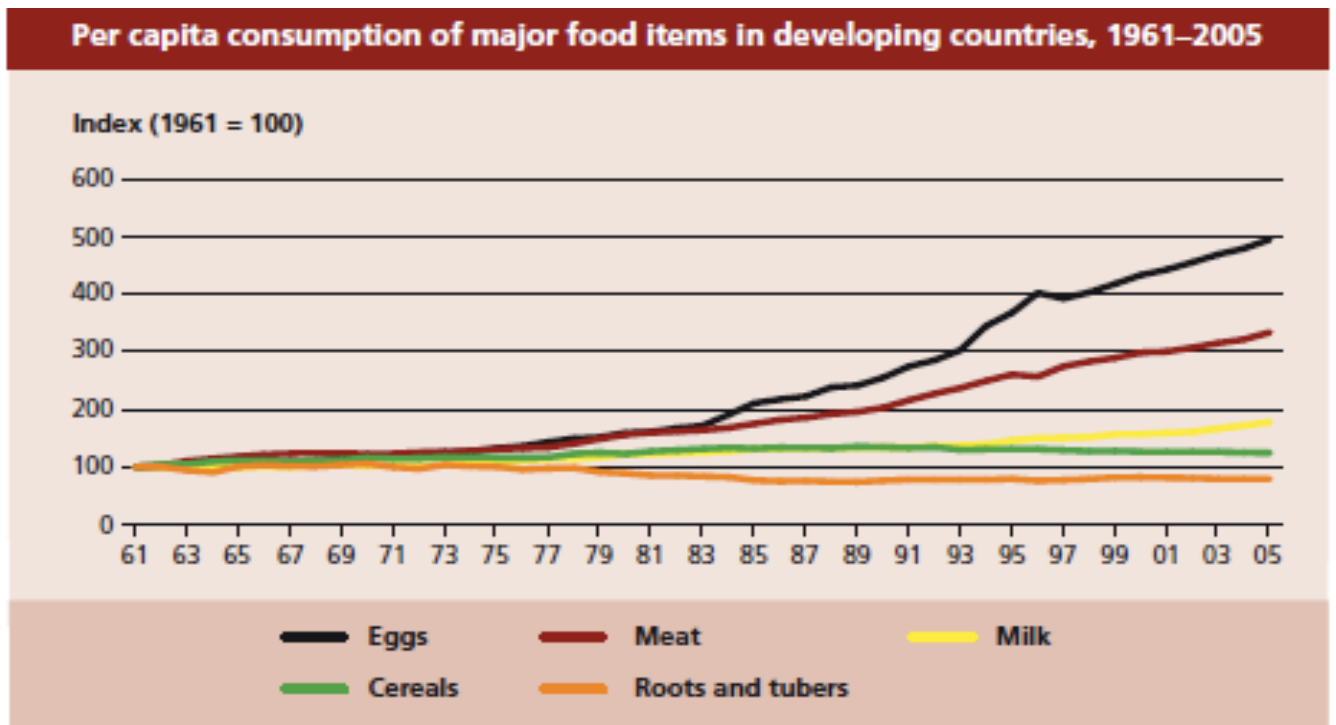
Specifically in East Asia, egg and meat consumption habits across in the region support this projection by experiencing the highest global growth between 1961 and 2007. This occurred in correlation with to growing populations of the region.⁴⁶¹ While other regions may not be projected to grow as quickly in population and spending as the Asia Pacific region, this kind of growth is still expected globally as seen in figures 11.2 and 11.3. Countries currently with large middle classes, such as the U.S., will continue to increase in population, but at constant rates. This means food production rates will need to increase at similar rates to supply new middle class consumers with enough food. In 2011 U.S. Secretary of Agriculture, Tom Vilsack stated that to feed the growing global population it is be necessary to increase current global food production by 70 percent by the year 2050.⁴⁶² In terms of the changing demands and spendable incomes of middle class consumers, the foods in developing countries will need to be more diverse than currently available.

According to analysis by the UN WFP, overall food demand will increase by 50 percent by 2030, while specific demand for meat will increase by 85 percent⁴⁶³. This illustrates the shifts in the types of consumed food because middle classes are becoming more financially able to purchase animal products such as meat and dairy. This magnitude of growth is visible in Figure 11.4, which highlights the dramatic increase in animal product consumption.

The rise in animal product demand is most prevalent in countries with strong urbanization trends such as China and India. For example, China has seen its per capita meat consumption quadruple, milk consumption increase tenfold and consumption of eggs increase eightfold since 1980.⁴⁶⁴ China currently limits its animal product importation but as China's GDP continues to rise and arable land for feed grain and the raising of pork begins to reach production limits, the demand for animal products still continues to grow. It is probable that

meeting these animal products demand of the middle class will happen through importation from developed and commercially exporting countries.⁴⁶⁵

Figure 11.3: Changes in Types of Food Desired by Developing Countries.



Source: FAO 2009

Increasing Demand for Animal Products

In 2009, the FAO estimated that livestock accounted for 15 percent of total consumed food energy and 25 percent of total dietary protein globally. The same report found that in accordance with nutritional guidelines of the FAO and WHO, developing country populations do not consume enough animal-based food while developed country populations are actually consuming too much.⁴⁶⁶ This suggests that populations in developed countries likely consume a

large portion of the 25 percent consumption mentioned above. However, populations of developing countries have been shown to be more likely to change their diets when experiencing changes in income than populations of developed countries.⁴⁶⁷ This suggests that as the global middle class continues experiencing increases in population, available income and urbanization, the types of food desired may shift from only what people can afford to what they would like to purchase. This may look like these preference shifts from basic grain and starchy food used for basic energy to preferences of more diverse diets including animal products as well as more fruits and vegetables.⁴⁶⁸

Cultural Preferences

Cultural preferences also influence the type of food demanded. Some countries or regions do not consume large amounts of meat because of religious or cultural traditions, even when experiencing increased urbanization. However, this does not mean that animal product consumption will not increase in these locations. The disparity between animal product consumption in developed countries and that of developing countries will alter, and may decrease, as populations' demands change and urbanize. This is seen in the Figure 11.5 where the projected animal product consumption of four rapidly growing global regions is highlighted. Different regions consume these animal products differently which can be seen in milk consumption trends.

Figure 11.4: Meat consumption by region

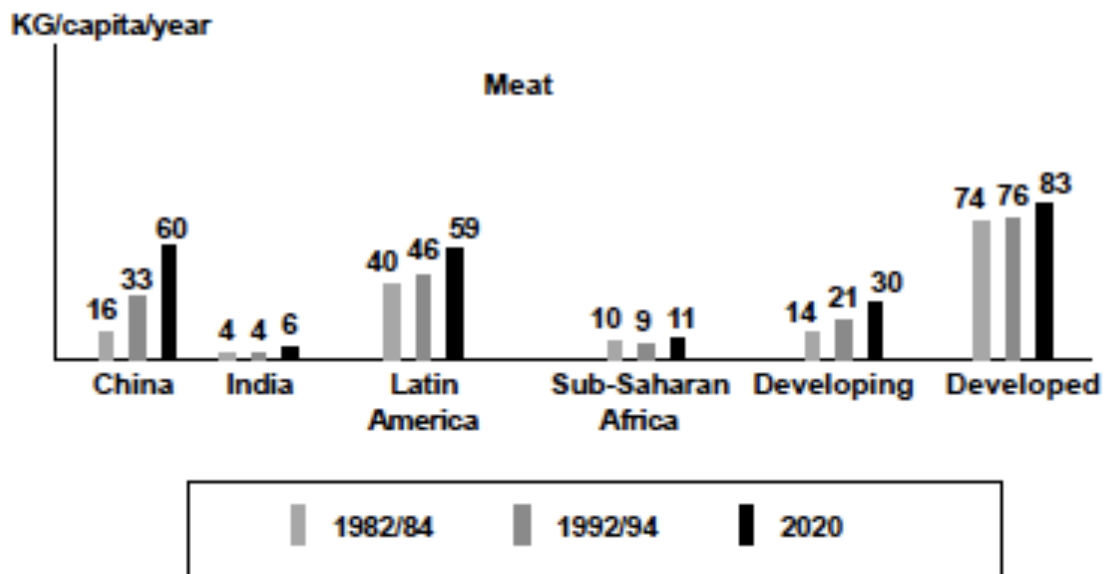
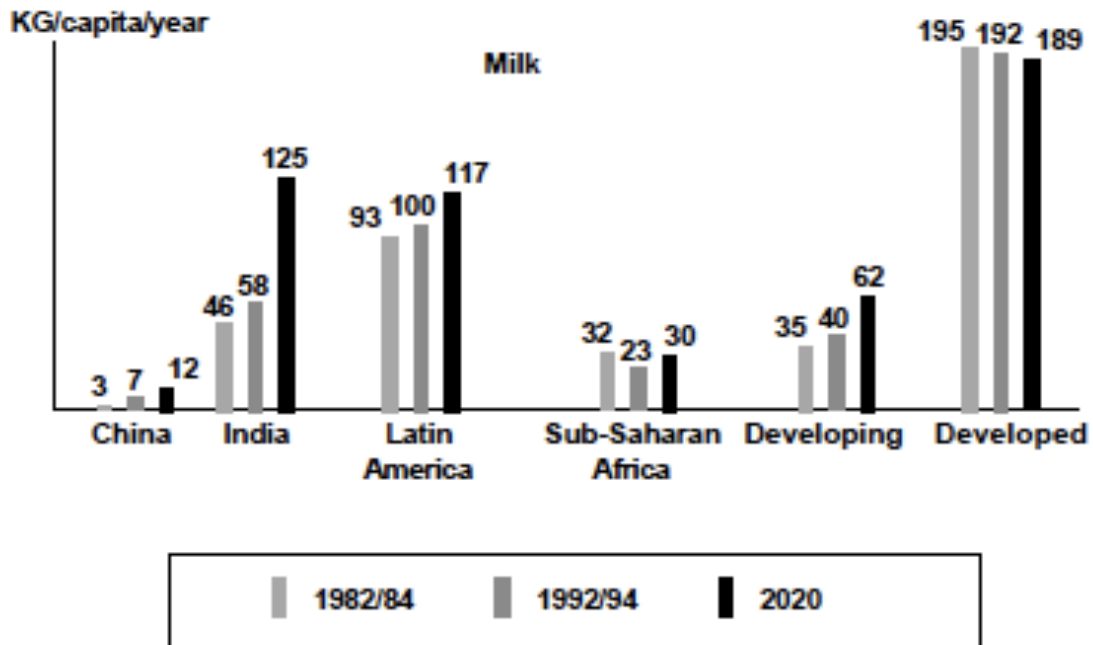


Figure 11.5: Milk consumption by region



Sources: FAO data and IMPACT projections reported in Rosegrant and Ringler 1998 and Delgado et al. 1999.

Notice in Figures 11.4 and 11.5 that meat consumption trends in India and Sub-Saharan African countries remain relatively stable, yet overall global meat demand rises. The meat trends of India and Sub-Saharan African can most likely be attributed to cultural and religious traditions in these regions. For example, portions of India's population are concerned with how cattle are slaughtered because religions in the country view the slaughter of cattle as a sacred ritual.⁴⁶⁹ In contrast, milk consumption trends in areas such as India and other developing countries increase, illustrating diverse uses of animal products beyond meat. The World Bank provides another estimate stating that by 2030 the worldwide demand for meat will increase by 85 percent.⁴⁷⁰

Value of Regional Livestock

Traditions of some developing countries place high cultural value on livestock and care for it in a safe, and sometimes sacred, manner. This influences the ways populations consume animal products. However for these types of producers, the increasing livestock demand may actually decrease the prevalence of these traditional livestock methods to decrease because the methods are not as efficient as industrial methods in producing mass quantities of livestock and animal product, such as eggs and dairy. Large livestock producer can threaten the economic food security of these smaller producers because large producers are able to dominate global markets and produce animal products in mass quantities quickly.⁴⁷¹ Furthermore, mass livestock production requires more land use than most traditional food sources⁴⁷² as well as more grain use to feed animals. The feeds used for animals are the same grains used as staples in poor populations' diets.⁴⁷³ The amount of water necessary for proper livestock production threatens the environment in addition to regional food and water security because a kilogram of poultry require 3,500 liters of water, while beef needs 15,000 liters.⁴⁷⁴

Affects of Technology

Technological advances in livestock breeding, feeding and processing have led to more efficient commercial production methods. Technologies such as artificial insemination and hybrid breeding; modified feed; and antibiotics to reduce animal illness allow large livestock production industries to handle growing demands of animal product consumption.⁴⁷⁵ This contrasts with the livestock production capacities of some developing countries, especially some in Southern and Eastern Africa, that have not yet been able to meet rising demand. This may create a need for animal product exportation from developed countries into other countries' markets to satisfy the growing demand for animal product consumption.

The access, or lack of access, to production technology in developing countries widens the economic gap between small producers and larger producers. Large commercial production allows some developing countries to benefit from exporting animal products. For example, in 2002 Brazil overtook the U.S. as the world's largest meat exporter.⁴⁷⁶ This type of industrialization is not always beneficial for all, because smallholding livestock production is often a source of livelihood for rural populations. Therefore industrializing animal production can threaten the economic food security of these populations.⁴⁷⁷

Additionally, increased livestock production can threaten ecosystem diversity because industrial-breeding methods can lead to loss of local breeds. Often, smaller farmers utilize local breeds more than industrial farmers because these breeds can be more culturally valuable and geographically available. For example, some Latin America countries related a rural farmers' wealth to the farmer's quantity of cattle.⁴⁷⁸ Yet as demand for foreign breeds, often from the U.S. become more popular, local breeders find it more difficult to economically compete with large producers in the same market.⁴⁷⁹

The more spatially prevalent the livestock production is in a country, the more likely it is for livestock to be in close proximity to humans. This can increase the spreading of animal borne diseases to populations if the waste management and zoning systems are not properly established.⁴⁸⁰ Diseases like Salmonella and E-coli especially threaten poor populations in developing countries because countries may not have proper infrastructure to prevent the cultivation and spreading of livestock diseases. Within urban settings the spreading of these diseases can more evident in urban settings when countries are without strictly enforced livestock regulations. FAO found this to be true in urban cities such as Beijing, Mumbai and Lima.⁴⁸¹ Working with the WHO animal health policies and countries in the Feed the Future to lessen these disease threats creates healthier trading on a global scale.

U.S. Livestock Industry and Increase in Animal Product Demand

The impact of the U.S. animal product sector is wide spread. On average one U.S. farmer feeds 170 people of the global population. This vast sphere of influence means the U.S. exemplifies standards for global food producers to reference.⁴⁸² These standards are outlined in WHO policies such as the Organization for Animal Health as well as Sanitary and Phyto-Sanitary Agreement, which are both regularly updated under the WHO Terrestrial Animal Health Code.⁴⁸³ By working closely with developing countries to increase their domestic livestock production, as in the Feed the Future initiatives, the U.S. can assist with providing technology and knowledge about livestock production, while creating strategic trading partnerships. Because the U.S. is a leader in food production technology, using and funding these technological advances in developing countries would mean the countries depend on the expertise of U.S. for future technological innovations in the livestock industry, creating consistent profit and product trade for the U.S.⁴⁸⁴ The need for trading partnerships such as these is especially evident in

increasing trade statistics of animal products seen in Figure 10.4 where world export figures in 2006 illustrate large increases since 1980.

Figure 10.4: Animal product global trade

Global trade in livestock products, 1980 and 2006

PRODUCT	WORLD EXPORTS		SHARE OF TOTAL PRODUCTION	
	1980	2006	1980	2006
	(Million tonnes)		(Percentage)	
Total meat¹	9.6	32.1	7.0	11.7
Pig	2.6	10.4	4.9	9.8
Poultry	1.5	11.1	5.9	13.0
Bovine	4.3	9.2	9.1	14.2
Ovine	0.8	1.1	10.6	7.7
Dairy²	42.8	90.2	8.7	12.7
Eggs	0.8	1.5	3.1	2.2

¹ Includes other types of meat than those listed below.

² Milk equivalent.

Source: FAO, 2009b.

Some developing countries may not be able to domestically provide desired food of middle class populations and therefore rely more on the importation of certain, if not most, animal products. The U.S., as a major food producer and exporter, can enter these markets, and with careful cultural considerations. Cultural traditions and religions in developing countries limit the quantity and type of animal products consumed. For example, Chinese urban dwellers consume high amounts of meat from diverse livestock sources, especially pork⁴⁸⁵ where as Sub-Saharan African countries tend to consume lower quantities of meat, especially pork. This is because many Sub-Sahara African populations observe Muslim traditions and therefore do not

consume pork.⁴⁸⁶ This differs from the U.S. middle class population that on average consumes meat at least once a day in their diets.⁴⁸⁷ To develop stronger trade relationships with growing middle class consumers in areas like urban China and Sub-Saharan African countries it is important for the U.S. to understand what kind of food products are desired in different regions.

Domestic Consumption Trends

There are also new trends arising in the U.S. middle class's animal product consumption. Understanding and adhering to these domestic trends will allow U.S. farmers to secure economic success with U.S. domestic populations, which will most likely remain as the largest U.S. animal product consumers.⁴⁸⁸ Some Americans are willing to pay 30-50 percent more for "grass-fed meat" believing it to be healthier and more ethically produced.⁴⁸⁹ While not all global middle classes are as concerned with this dimension of meat production, it is important to consider these trends so U.S. livestock producers can meet both U.S. and global demand for animal products.

Environmental Considerations

Animal product production methods can be detrimental to the environment, creating issues of poor waste management, reduced air quality, degradation of rural grazing areas, pollution into other agriculture systems, increased deforestation, as well as reallocation of grains for feeding livestock.⁴⁹⁰ Growing middle classes desiring western influenced animal based diets may become less satisfied with their local livestock breeds because these consumers are more economically able to afford western dietary habits. This threatens food security derived from ecological diversity. On average one genetically unique breed of livestock is eradicated from the planet per month because industrial livestock methods, such as artificial insemination, enable specific hybrid breeding to create animals that are based on the market potential of specific animal products.⁴⁹¹ Hybrid and inbreeding can threaten the food security of ecological diversity.

The western livestock breeds that are becoming increasingly popular, like specific types of beef, chicken and pork, may not always be genetically able to feed global populations due to biological limitations. This is why promoting the use of local breeds in developing countries is important to food security.⁴⁹²

POLICY CONSIDERATIONS:

Promoting Production and Infrastructure in Partnering Countries

Green Revolution Methods

Encouraging Green Revolution production methods has been said to increase agriculture yields and therefore better satisfy demand for animal products. However, Green Revolution methods are not proven to be beneficial for industrial farming in the long term and use dangerous methods involving chemicals with pesticides and antibiotics that destroy soil sustainably and endanger the health of livestock workers.⁴⁹³ Genetically modified and chemically treated agriculture may cause health issues for global consumers that become dependent on these products for their livelihood. Therefore, Green Revolution methods may not be the best to pursue when producing for middle class consumers.

Increase Agriculture Demand

Increasing demand for non-animal agriculture products, and consequently decreasing meat consumption within in the U.S., may help even global livestock demand and consumption. The majority of global meat production and consumption takes place in developed countries, like the U.S. The U.S. middle class has become accustomed to consuming meat with most meals, a habit rarely visible in developing countries.⁴⁹⁴ A campaign for increased non-animal, agriculture consumption in the U.S. would not necessarily decrease the amount of animal products produced

or consumed by the U.S., but instead steady the rate at which animal product production and consumption is increased. Accompanying this type of campaign with USDA governmental support could increase crop yields for national and small-scale agriculture by making technology more available economically to private sector companies. This could enable the use of agriculture food production to compensate for the decreased meat consumption. Steadying the U.S. animal production and consumption rates could assist in hindering further environmental degradation and lessening the prevalence of diseases associated with livestock production, such as Salmonella, E-coli and Avian Flu. These diseases can be controlled with urban zoning and strict health regulations.⁴⁹⁵

The highly industrialized production of the U.S. is made of large corporations exemplifying global production standards that adhere to WHO policies.⁴⁹⁶ These production methods could also be promoted to and adopted by developing nations. Industrialized methods of animal production decrease the availability of market share for small farmers whose methods are generally less environmentally taxing. By limiting the quantity of livestock purchased by large corporations at a particular time, the U.S. could better monitor the available supply of meat and push for better, more sustainable practices by large industrialized companies, hopefully shifting away from Green Revolution methods. Additionally, be able to provide more governmental support for smallholder, private farming. However, this could also increase meat prices due to decreased animal product supplies. Therefore increasing U.S. agriculture production and promotion would be necessary to supplement this decrease of products. Additionally, smallholder farmers of developing countries would be better able to compete with the supply and production of large industrialized producers if they are partnered with importing markets.

Increasing U.S. Livestock Demand Globally

Meat consumption has nutritional benefits worth conveying to growing middle class consumers. These benefits include high amounts of protein, iron and vitamin B12.⁴⁹⁷ When consumed in moderation, these can compliment a healthy diet. Most U.S. consumers are aware of benefits such as these due to media of current U.S. campaigns for USDA beef consumption. Shifting a media campaign such as those to a global audience can illustrate to global middle classes that beef, especially U.S. produced beef, can become a healthy staple in all diets. For regions with growing populations, but with decreasing availability of arable land, promoting the nutritional benefits of animal products to governments and regional markets can encourage demand for imported U.S. livestock. The issue of limited arable land availability is increasingly appearing in countries such as China, India and smaller East Asian countries such as Cambodia and Nepal. Cambodia and Nepal are involved with Feed the Future programs.⁴⁹⁸

Smallholder farming efforts have been shown to feed some regional populations more efficient than large-scale efforts due to cultural preference. These regional farms understand cultural preference limitations and often focus on producing local breeds of livestock.⁴⁹⁹ Pushing to include smallholders into global trade markets by decreasing economic restrictions, along with close governmental monitoring, can better provide for countries with unique cultural preferences in food consumption. Furthermore, there is potential for U.S. private sector farming companies to take portions of public sector production as a way to increase overall global animal product production. Investing in and encouraging these private farms can create more jobs and national revenue for the U.S.⁵⁰⁰ Keeping private sector partnerships and governmental regulations transparent is necessary to continue meeting the U.S. and WHO production standards and maintain a high reputation in global markets.

POLICY RECOMMENDATIONS

- Increase global demands for U.S. livestock by creating trade relationships with countries experiencing fast population growth in middle classes, especially those highlighted in the Feed the Future initiatives.⁵⁰¹
- Promote local livestock breeding that is more geographically available and sustainable for those middle classes of developing countries. Especially Feed the Future program countries and countries within countries Western and Southern Africa that could greatly benefit from this. This ensures future food security by preserving ecosystem diversity and creating self-reliance within livestock producing developing countries.
- Encourage the use of U.S. food production technology in Feed the Future countries' as they are building production infrastructure. By providing easier economic and physical access to technology, these countries will be more inclined to work with the U.S. for future technological advances. Additionally, they would be able to adhere the U.S. and WHO production standards better with proper technology.
- Educate the same Feed the Future countries on disease control methods and environmentally friendly production methods as emphasized by WHO policies in addition to proper trading techniques in a global market.
- Invest in and closely monitor private sector U.S. farming to support increased food production. Ensure these farms are adhering to U.S. and WHO standards. Use increased animal product supplies to supplement the farming efforts of Feed the Future countries by providing economic access to importing animal products but in a way that will not inhibit their efforts and only add to needed supply. This means encouraging development growth emphasized in Feed the Future programs plans, but still leaving potential room for U.S. products to enter markets while not depressing local market prices.

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Ch.12 Nutrition and Health: U.S. Contributions to Fighting Global Malnutrition

Robert Vrooman

Abstract

Malnutrition is a critical problem for food security in all parts of the globe, but particularly in developing countries. A lack of proper nutrition during the early stages of life can greatly hinder physical and mental development. Foreign aid is required to make a meaningful impact to fight malnutrition. USAID has programs that fund nutrition aid, such as Feed the Future, but the overall level of importance given to the problem is lower than necessary. Nutrition interventions are among the most cost-effective possible for creating sustainable development. Increasing foreign aid contributions to nutritional programs will have a tremendous impact on alleviating poverty, hunger, and health problems within developing countries. Current contributions must continue to take the form of programs that are coordinated with developing countries' governments to ensure that the infrastructure and resources are available to guarantee that program's success. Additionally, specific interventions should continue to involve heavy community cooperation while expanding efforts to increase vitamin fortification programs that can reach a high percentage of a country's population.

Policy Recommendations

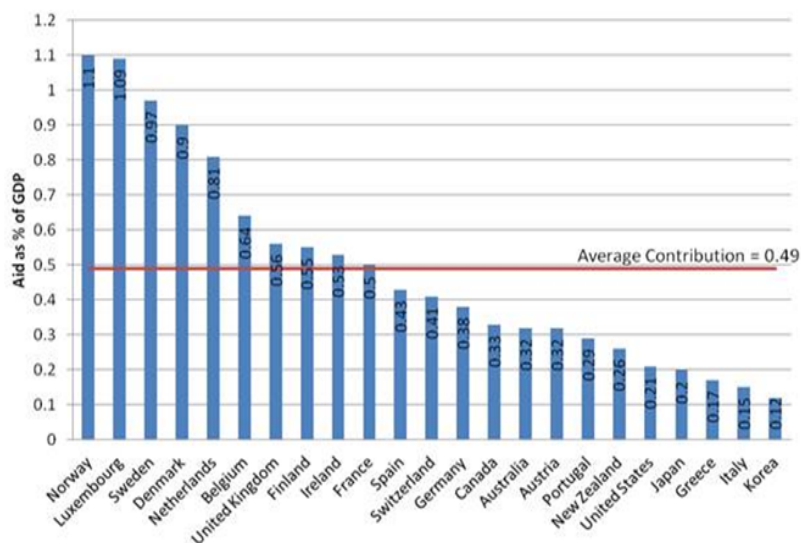
- Continue the Feed the Future program with an emphasis on increasing nutrition by working closely with the recipient country's government through the planning and implementation processes.
- Approve the FY2013 budget for Feed the Future without any reductions in funding for nutrition-related interventions.
- Promote the use of mass fortification programs within country-specific multi-year strategy plans to maximize the reach and cost-effectiveness of current nutrition programs.
- Increase cooperation with non-profit organizations such as the Bill and Melinda Gates foundation to expand coverage of USAID nutrition initiatives to a larger number of countries, particularly those with the lowest nutrition wellness indicators.
- Include nutritional components to USAID initiatives aimed at increasing any aspect of health or economic development.

ISSUE

The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”.⁵⁰² A large percentage of the developing world is without access to nutritious food, meaning that people, and most importantly children, lack vitamins and minerals essential to proper growth. This results in increased risks of mortality as well as susceptibility to poverty and hunger due to a lack of complete mental and physical development later in life. While the percentage of malnourished children has decreased over the past several decades, the overall number worldwide has remained close to constant.⁵⁰³ Foreign aid directed at increasing nutritional health generally suffers from problems such as lack of not only oversight, but also accountability and certainty that aid is reaching the areas where it is most urgently needed. While the United States contributes more money for foreign aid than any other country, it only ranked 17th in 2011 in contributions as a percentage of its total GDP.⁵⁰⁴ USAID programs have addressed nutrition as a target for development assistance but it is still viewed as a relatively minor concern. The creation

and expansion of the Feed the Future program has put a focus on nutrition on food security but more work will be needed to make substantial progress in decreasing malnutrition rates across the globe.

Figure 12.1: Net Aid as a Percentage of GDP, 2010



Source: OECD Query Wizard for International Development Statistics (<http://stats.oecd.org/qwids>)

BACKGROUND

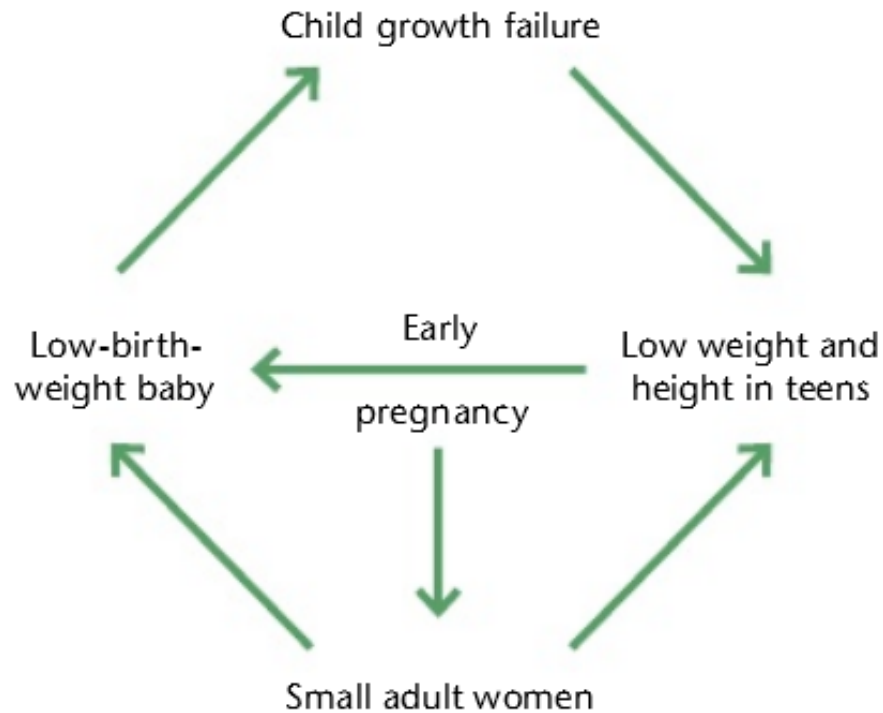
In order to evaluate possible solutions to global malnutrition, one must first understand the root causes. While hunger and a general lack of food lead directly to malnutrition, they are not the only contributing factors. Proper nutrition implies the acquisition of not only sufficient calories, but also a variety of nutrients derived from the essential food groups and rich in necessary vitamins and minerals. In order for a person to be properly nourished they must be able to acquire the necessary foods to make up a balanced diet. Thus, the most common limiting factor preventing proper nutrition is poverty.⁵⁰⁵ If a person is unable to afford enough food to keep their family from going hungry, it is unlikely that their priority will be to purchase high quality of food over high quantity. Malnutrition is not automatically a result of poverty though. Even if sufficient funds are available, either a lack of basic knowledge about what constitutes a nutritious diet or a lack of infrastructure that prevents nutritious foods from being readily available can lead to low nutrition levels. These occurrences are most often found in the developing world where malnutrition represents a major hindrance to a person's ability to live a complete and healthy life.

In developing nations, 200 million children under the age of 5, or 39 percent, do not reach their developmental potential due to poor nutrition.⁵⁰⁶ Additionally, child malnutrition contributes to 3.5 million deaths each year and is responsible for 11 percent of the total global disease burden.⁵⁰⁷ Malnutrition often results in a weakening of the body, which makes people more susceptible to acquiring infectious diseases. This has been shown in the transmission of HIV/AIDS where a weakening of genital mucosal integrity and overall compromised integrity due to malnutrition increases rates of contraction after exposure to the virus.⁵⁰⁸ A reduction of

the levels of malnutrition can have a tremendous impact on improving key economic and health indicators within a given country or region.

Malnutrition and Physical Development

During the first 5 years of life the most important structural components and organs in the human body begin to form; a lack of proper nutrition during the early stages of life has long-term consequences for a child's development. Stunted growth is the most prevalent symptom of malnutrition. A child is generally viewed as having stunted growth when its height is at least two standard deviations less than the average child would at the same age.⁵⁰⁹ When a child is stunted, it limits their physical capabilities and can make it more difficult to perform physical labor as a part of their profession. Since stunting most frequently occurs in developing countries where professions often involve a physical component, such as agricultural work, this can result in lower levels of economic productivity in these regions. Another impact of stunting comes from the consequences of women attempting to give birth with smaller bodies. Mothers at a low weight and height for their age can lead to increased risk in pregnancy resulting in trouble for both the mother and child⁵¹⁰. This includes giving birth to babies who are also undersized that when combined with malnutrition problems can create a cycle that is difficult to break.

Figure 12.2: Intergenerational cycle of growth failure

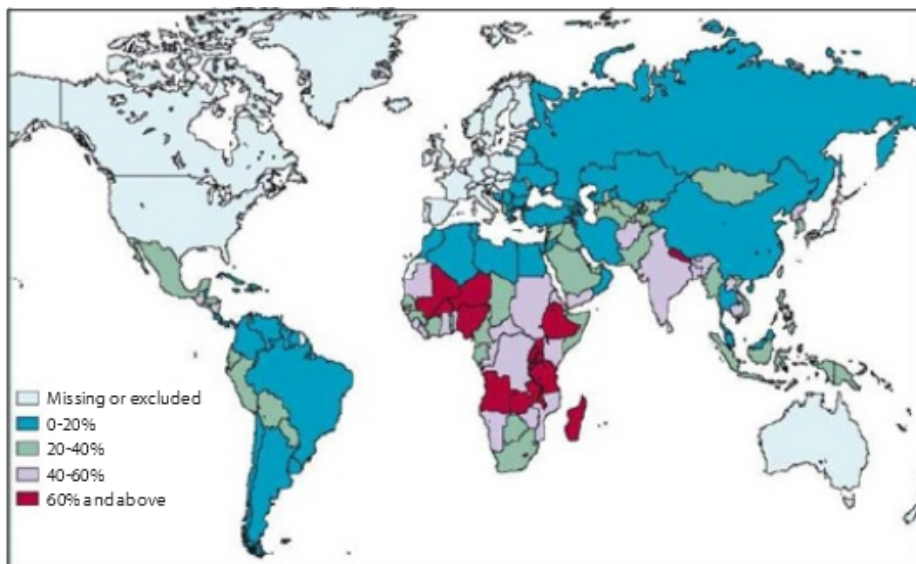
Source: 6th Report on the World Nutrition Situation: <http://www.thousanddays.org>

The second major physical indicator of malnutrition is wasting. A child is classified as experiencing wasting when they are at least two standard deviations below the average weight for children of their height. Children classified as wasted face a much higher risk of dying than those who are not.⁵¹¹ Unlike stunting, wasting typically has more pressing short-term effects rather than those that can only be seen once a child is fully grown. Wasting is very closely related to poverty and hunger because low weight can be a result of a lack of food as well as a result of eating foods that do not provide adequate nutritional content.

The effect that malnutrition has on the development of the brain is even more important than the visible physical consequences. This is because a lack of nutrients can cause certain pathways within the brain to fail to develop and make performing certain tasks more difficult. A longitudinal study conducted in Guatemala shows that increased nutrition at an early age results

in higher income, higher educational success, and increased economic growth for the community.⁵¹² In nearly every indicator of life success, individuals who have received better nutrition in the early years of life performed better. The implications of these findings are that improving nutrition does much more than simply save lives for those with extremely poor health. Giving children the mental and physical capabilities to succeed in school can both raise an individual's earning potential, and increase innovation. Over the course of several years this can help to alleviate poverty and make a community more likely to continue providing adequate nutrition to subsequent generations of children. Even in cases where people live outside of the extreme margins of society, better nutrition has a tremendous impact in raising their quality of life. The World Bank estimates that malnutrition impacts lifetime earning potential and reduces gross domestic product by up to 3 percent annually.⁵¹³ Therefore, improving nutrition is one of the most cost-effective means of reducing poverty and increasing economic development.

Figure 12.3: Estimated percentage of children under age 5 failing to meet their developmental potential



Source: Granthal, McGregor et al (2007); <http://www.thousanddays.org/resource-slug/nutrition-and-brain-development-in-early-life/>

Common Nutrition-Aid Interventions

There are three main approaches generally taken to directly increase nutrition in developing countries: provide supplements to address specific or multiple deficiencies, diversify diets to increase the quantity and variety of food sources, and fortify commonly used products or foods (such as salt, sugar, formula, or flour). Along with biofortification and community-based nutrition promotion, these five approaches make up half of the top-10 most cost-effective development solutions by the 2008 Copenhagen Consensus.⁵¹⁴ The type of policy that is going to be most effective in a given country or region depends greatly upon the resources available as well as the culture found within that region. Programs that rely upon the large-scale distributions of foods with higher nutrition levels will only be effective in countries with sufficient infrastructure to carry out the project. Those which seek to improve nutrition through practices such as increasing exclusive breastfeeding will only succeed if they take into account established norms based upon social and economic realities that influence current practices. Perhaps the biggest key for a nutrition intervention to succeed is to achieve sustainability. A study conducted in four East African countries showed that while direct nutritional aid interventions made large gains from 1992-2006 in many nutrition indicators, those numbers often relapsed once the programs that were being specifically targeted left or ran out of funding.⁵¹⁵ Short-term improvements are ultimately a failure if they do not result in improved health or economic development over the long-term

Creating a culture of sustainability is essential to establishing long-term success. This can be achieved in a number of ways. One example is that used by the organization the Global Alliance for Improved Nutrition (GAIN). GAIN produced packets of essential vitamins and nutrients called Sprinkles, which when poured into any type of liquid food product once a week

supplies a person with their basic nutritional requirements.⁵¹⁶ Rather than simply provide the packets for free, GAIN gave the products to unemployed female elders in Kenya who sold them at an affordable price (2 or 3 cents for a week's worth of the product) to the rest of the community. This method created markets within the community that followed typical supply and demand rules in addition to creating employment opportunities with new sources of income for the community. Also, by employing respected women within the community it increased the chances that the product would be used since information regarding Sprinkles comes directly from a trusted source. The program has documented reduced rates of anemia in children that consistently consumed Sprinkles over the course of its operation. It has also been recently implemented in Bangladesh with the hopes to reach 7 million children over the next 3 years⁵¹⁷.

One of the easiest means of making a tremendous impact through community intervention is to improve knowledge about healthy breastfeeding practices. The WHO recommends that a child be exclusively breastfed until reaching the age of 6 months.⁵¹⁸ A child can receive all of the necessary nutrients for healthy physical and mental development from breast milk as long as the mother is not suffering from malnutrition. This presents a problem in areas where malnutrition is also highly present within mothers but it can be easier for a woman to afford proper nutrients for just herself than to also purchase formula for her child. Exclusive breastfeeding is often neglected in developing countries where mothers are required to work either in the agricultural or domestic sector and do not have the time or resources to take proper care of their child. Other educational campaigns involve informing people what constitutes a healthy and nutritious diet. This type of education is most effective at the local level where knowledge of traditional foods can help inform what foods are both available (in supply and in

price) and nutritious. People can then make informed decisions about how to spend limited resources to maximize the benefits to improving their nutrition.

Community education necessitates a very hands-on approach which requires extensive contact with rural areas that may normally be very hard to reach. Large-scale programs that require less regular contact with rural communities can also be an effective way to make meaningful impacts. A 2008 report determined that just two versions of micro-nutrient intervention out of eight common methods studied have shown effective implementation with a large-scale impact.⁵¹⁹ The first is pre-school vitamin A supplementation during which children 6-59 months receive supplements twice annually. Evidence from three of the countries featured shows a significant correlation between children receiving heavy dose vitamin A treatment and reduced child mortality. Monitoring on regular intervals with extremely high doses, even if those intervals are farther apart, guarantees some level of coverage over a prolonged period of time as opposed to higher nutrient acquisition with large gaps in between. The second method featured is mass fortification such as salt iodization, vitamin A-fortified sugar, and folic acid fortified wheat flour. U.S led wide-scale fortification programs through Feed the Future are currently only in operation in two countries: Haiti and Uganda.⁵²⁰ The benefits of mass fortification lie in its ability to reach large portions of a population without having to interact with every person that is being helped. While this requires more work to begin the program, the end amount of work can be much less than supplying supplements on an individual level as long as an adequate supply chain infrastructure exists.

U.S-Led Nutrition Interventions

Improving nutrition is currently one of seven components of USAID's global health intervention strategies. The other six components are environmental health, health systems,

HIV/AIDS, infectious diseases, maternal & child health, and family planning.⁵²¹ The importance of this topic is most prominently manifested through global improvement of nutrition's status as one of two primary objectives of the United States' Feed the Future campaign. As noted in chapter 2, Feed the Future pledged \$3.5 billion in 2009 to be spent on agricultural development over three years across 20 developing countries.⁵²² In order for a country to receive support through Feed the Future, that country is required to work with the U.S to create a country plan that involves that country's government's participation.

Currently, investments in nutrition represent only 10-20 percent of Feed the Future's total contributions, although that number is slated to increase in 2013 pending budget approval.⁵²³ This number is low when considering that nutrition-related indicators compose half of the total markers for judging success and progress of Feed the Future programs. One reason for this is that targeting the specific nutritional problems that are affecting a region requires extensive testing and monitoring before any type of intervention can be implemented. Nonetheless, this demonstrates that Feed the Future does not value malnutrition as high of a priority as agricultural development.

Of the 20 countries receiving assistance through Feed the Future, three of them have not completed a multi-year strategy plan and subsequently have no information available on what contributions will be made to improve nutrition. Additionally, one country, Kenya, plans to improve nutrition through agricultural development and does not have a direct nutrition focus. While the type of nutrition-aid varies by country, most investments are related to increasing knowledge in rural communities about improving nutrition. This can take the form of providing information about which local foods are rich in vital nutrients, how often those foods need to be eaten to make a substantial impact, or about nutrition-related practices such as the prevalence

and frequency of breastfeeding. At least some amount of funding goes towards this type of project in all of the remaining 16 countries. Another important aspect of community education present in many U.S programs is the treatment of malnutrition related diseases. While tending to the root causes of malnutrition is the most effective long-term strategy for combating the problem, it fails to significantly aid those who have already gone through a nutrient deprived childhood and are in poor health because of it. Treating conditions such as anemia or chronic pain due to stunting can give short-term relief while the brunt of the intervention has time to help future generations. Short-term medical aid should be used as a means to supplement long-term sustainable development wherever possible to ensure good health to everyone rather than just the youngest and future generations.

POLICY CONSIDERATIONS

The United States is one of 189 member states of the United Nations who pledged to support the Millennium Development Goals (MDGs) in 2000. Several of these goals relate directly or indirectly to nutrition such as MDG 1 which seeks to “halve between 1990 and 2015 the proportion of people who suffer from hunger”.⁵²⁴ The number of people suffering from malnutrition has stagnated since 2002 so that this phase of MDG 1 is not on track to be met. As can be seen in figure 12.4, undernutrition also plays a part in every other MDG and should therefore be viewed as a very reasonable approach to contributing towards meeting the achievements.

Figure 12.4: Impact of Undernutrition Interventions on Millennium Development Goals

MDG 1: "eradicate extreme poverty and hunger"	Reducing "prevalence of underweight children under five years of age" is an agreed target for MDG 1. Reducing undernutrition increases economic growth.
MDG 2: "achieve universal primary education"	Reducing undernutrition increases cognitive development and contributes to learning and school completion rates.
MDG 3: "promote gender equality"	Promoting better nutrition practices contributes to empowering women and to reducing discrimination against girls in family feeding practices.
MDG 4: "reduce child mortality"	Enormous impact, explained in text, of lower undernutrition on child mortality.
MDG 5: "improve maternal health"	Improved maternal nutrition and reduced maternal mortality through programmes of behaviour change and iron and folic acid supplementation.
MDG 6: "combat HIV/AIDS, malaria and other diseases"	Reduces maternal and child mortality caused by the interaction of undernutrition with HIV/AIDS and other infectious diseases.
MDG 7: "ensure environment sustainability"	Better nutritional practices mean more effective use of available food and so better adaptation to environmental stress (Target 7A), increased health impact from improved access to water and sanitation (Target 7C), and improvement in lives of slum dwellers (Target 7D).
MDG 8: "global partnership for development"	Addressing hunger and malnutrition around the world is a key element of, and argument for, the global partnership for development. This applies particularly for the least developed countries (Target 8B), where levels of undernutrition are highest.

Source: Scaling Up Nutrition: Building a Global Advocacy Agenda

The United States already has a seemingly functional program in place for combating malnutrition through foreign aid in Feed the Future. A complete evaluation of Feed the Future's effectiveness up to now cannot be made until the complete report on its progress is released later in 2012. As noted in chapter 2, only two countries have reached phase 2 status in which they are eligible for increased investment. Pinpointing the exact successes or failures of Feed the Future's nutrition interventions is impossible at this point in time. Even if certain programs were not at expected levels of production, it could simply indicate that there is a lag between implementation and the observation of results. This means that any decisions determining the continued status of nutrition as a part of Feed the Future must focus on the philosophies of the program until further

results are made available. The most attractive feature of Feed the Future that suggests its efficacy is its implementation of country-led multi-year strategy plans to dictate intervention approaches. The purpose of this system is to prevent problems of corruption and a lack of accountability. Past aid programs have had problems when aid workers have instituted programs either without the consent of or at least without the complete cooperation of the government of that country. A multi-year strategy that works closely with a country's government guarantees the use of any helpful resources that country might have available.

This philosophy can also present problems though. Oftentimes, countries have major problems with nutrition or food security because their governments are not able to provide adequate public services for their populations. This can be seen with the recent famine in Somalia where the lack of any type of governmental infrastructure made the jobs of aid workers incredibly difficult.⁵²⁵ These difficulties stem from either having to provide public services that would normally be the responsibility of the local government or having to provide security to ensure the protection of aid workers. Creating a country plan for countries that are bordering on or qualify as failed states is not a feasible option. Too many resources must be expended on overhead costs to guarantee the success of a program such that the money would be more efficiently spent in other locations. Any aid given to these countries through Feed the Future would have to be adopted under a new model that limits the host country's involvement with the program.

Feed the Future began with a \$3.5 billion budget and a large portion of that money has yet to be spent. The current administration has said that all of the initial money will be spent in FY2012 on currently ongoing projects.⁵²⁶ This means that the possibilities exist to expand, cut back, or keep constant the funding and operational reach of Feed the Future. This opportunity is

even more realistic as the fiscal year (FY) 2013 budget for Feed the Future is under review and will be decided when the official government budget is approved by congress. The U.S is primarily involved through funding of community-led projects and to help collect data at regular intervals to determine those programs' effectiveness. An expansion of services to distribute aid could greatly decrease malnutrition, as 90 percent of stunted children reside in just 36 countries while Feed the Future reaches only 20 of them.⁵²⁷ Sponsoring aid to a significantly greater number of afflicted countries would also mean working with governments that either do not have the capacity to carry out multi-year strategy plans or working with governments not in support of U.S policies. Also, any higher level of involvement or greater number of countries reached would require increased funding. It is unlikely in the current financial climate that any additional public funds would be used to support these programs. The proposed FY2013 budget calls for a 2 percent increase in funding for Feed the Future. This represents a \$26 million increase up to \$1.2 billion.⁵²⁸ Thus, any significant increase in nutrition-aid support in the future would require either a re-allocation of existing funds by reducing agricultural development support or through securing additional partnership with private NGOs.

Ensuring the success of U.S nutrition investments moving forward requires an understanding of what types of past investments have had success relative to their costs. The United States does not have the funding necessary to completely eliminate malnutrition and so the focus must be placed on making the largest impact with the resources currently available. As previously cited, one type of investment that has shown enormous promise and can be implemented on a large scale is mass fortification. One problem with fortification programs is that they must be designed to target the needs of a specific region. The exact vitamin or mineral provided and the type of crop that it is produced in will vary greatly depending on the country.

Wheat flour infused with folic acid is not an effective way to improve nutrition in some areas where flour is not commonly used. Every country though has some type of commonly used product that is capable of being fortified with micro-nutrients. An essential part of creating a country investment plan should be to assess what crops or food products are commonly used as well as what nutrient deficiencies are most common to decide between iodized salt and vitamin-A infused sugar. The second major problem with fortification is that it requires an infrastructure capable of distributing the enriched product throughout the region. The vast majority of countries working with the U.S currently are still in phase 1 which means that their infrastructure is still being developed. While this makes immediate implementation more difficult, it presents an opportunity to influence country investment plans to account for the development of an infrastructure capable of mass fortification programs.

Additionally, funding a program that raises the quality of life within a country can increase good will towards the United States among that population as well as with other nations that might appreciate U.S charitable contributions. Helping to reduce poverty and improve health can limit negative consequences such as war and civil unrest which can have a direct effect on the U.S economy. Bettering health through fighting malnutrition will “help developing countries reach their potential for democratic governance, an educated workforce, and a healthy economy—all of which yield benefits for [the United States] as well”.⁵²⁹ Using this tactic as a political strategy, though, requires a certainty that the program in question is effective in reaching its targeted goals. This is why it is important that part of Feed the Future’s guidelines are to carry out consistent monitoring surveys to assess results and to adjust performance based upon those results.⁵³⁰ Political situations also work in the other direction as well. Despite great

need in countries such as North Korea or Sudan, the political climate there makes working with their governments to help a high risk population complete unfeasible.

USAID has official partnerships with five organizations with regards to improving nutrition, two of which are associated with the UN (WHO and UNICEF). The other three are GAIN, the Micronutrient Initiative, and Sight and Life.⁵³¹ There are numerous other NGOs that have a focus on improving nutrition in developing countries. Partnerships already exist with leading non-profits such as the Bill and Melinda Gates foundation that contribute to fighting malnutrition and yet they are not considered an official partner of the nutrition branch of USAID. Taking a lead and engaging these organizations to create partnerships would allow both for expanded coverage of current US services and the creation of new projects in other countries. Increased coordination with nutrition-related NGOs already performing aid work in the same country can have a number of benefits. Without proper communication, different organizations can work towards the same goals but remain unaware of successes or failures that others may have had or cause two programs to overlap in coverage and make proper evaluation of the actual impact of a singular program impossible to calculate.

As seen by its relation in some regard to all of the MDGs, nutrition can be attributed as a factor to several other categories such as economic development or infectious disease prevention. The same level of impact could also be seen by lowering Feed the Future's contributions to improving nutrition while increasing contributions from other U.S led nutrition-related programs. Other sectors of USAID that would be helped through the reduction of worldwide malnutrition include: infectious diseases, maternal & child health, higher education/workforce, agricultural markets & trade, business enabling environment, enterprise development, and economic growth. Any of these sectors could use nutrition interventions as a tool to accomplish their own goals in a

manner that could lower the cost substantially if used to replace more expensive programs. The cost-effectiveness and wide impact that is made through nutrition intervention programs makes it an essential part of USAID policy.

POLICY RECOMMENDATIONS

- Continue the Feed the Future program with an emphasis on increasing nutrition by working closely with the recipient country's government through the planning and implementation processes.
- Approve the FY2013 budget for Feed the Future without any reductions in funding for nutrition-related interventions.
- Promote the use of mass fortification programs within country-specific multi-year strategy plans to maximize the reach and cost-effectiveness of current nutrition programs.
- Increase cooperation with non-profit organizations such as the Bill and Melinda Gates foundation to expand coverage of USAID nutrition initiatives to a larger number of countries, particularly those with the lowest nutrition wellness indicators.
- Include nutritional components to USAID initiatives aimed at increasing any aspect of health or economic development.

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⁵⁰³ *Millenium Development Goals Report 2010* (United Nations, 2010), <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20-.pdf>.

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⁵⁰⁵ World Hunger Education Service, “2012 World Hunger and Poverty Facts and Statistics”, n.d., http://www.worldhunger.org/articles/Learn/world%20hunger%20facts%202002.htm#What_are_the_causes_of_hunger.

⁵⁰⁶ John Hoddinott, “The Consequences of Early Childhood Growth Failure over the Life Course” (n.d.), <http://www.ifpri.org/sites/default/files/publications/ifpridp01073.pdf>.

⁵⁰⁷ *Scaling Up Nutrition: Building a Global Advocacy Agenda*, 2011, <http://thousanddays.org/wp-content/uploads/2011/08/Nutrition-advocacy-joint-summary-report-Final-1.pdf>.

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Ch.13 Property Rights: Land Grabbing and International Human Rights

Lea Lönnberg-Hickling

Abstract

The ever-increasing demand and competition for land and natural resources has made land-grabbing commonplace. Countless forcible evictions and human rights violations are just two of the burdens felt by the world's most vulnerable, the rural poor. Large-scale Agribusiness is predominantly responsible for most land grabs which convert smallholder farms into vast cash-crop and biofuel plantations focused on exportation. The regions most vulnerable to land grabbing are also areas of high food insecurity. Property rights would promote and protect small-scale agricultural development, and have been recognized as a main goal of USAID's Feed the Future initiative. Furthermore, protecting the human rights of the world's most marginalized groups, such as women and indigenous people, is also an effective preventative action that would empower food insecure populations that are faced with pressures stemming from this increasing competition for land.

Policy Recommendations

- Partner with non-profits, like Landesa, that promote human rights and indigenous peoples' customary and collective rights to land.
- Create a body of human rights lawyers that will advocate for the strengthening of The Declaration of the Rights of Indigenous Peoples.
- Promote corporate accountability during the process of developing free trade agreements so as to promote transparency in future land negotiations and transactions.
- Allocate more federal funding to research directed at developing small scale farming methods.

ISSUE

President Obama's Feed the Future initiative has pledged 3.5 million dollars to investing in nutrition and agriculture in developing countries as modes of battling food insecurity, malnutrition and global conflict that stems from these structural inequalities.⁵³² Feed the Future emphasizes the importance of striving to improve the methods and productivity of smallholder farmers. Property rights are essential to the development of smallholder farmers. Currently, land grabbing is one of the largest threats to codifying and protecting secure property rights in developing countries that suffer from food insecurity. A general lack of property rights in developing countries is also directly linked to food security. Feed the Future aims to address the causes of world hunger in order to reach sustained agricultural growth. Property rights may be used to solidify the relationship between farmers and their land, allowing for long-term agricultural investments that will lead to sustained growth.

BACKGROUND

Property rights and Food Insecurity

The world's millions of rural poor rely on access to land as the basis of generating income in order to survive. South Asia contains 40 percent of the world's poorest class; research has shown that poverty in this region is strongly associated with a lack of access to land and informal, inadequate rights to land. Owning land is an asset that the rural poor can use to their advantage in times of extreme economic insecurity; land can be leased or mortgaged and used as a tool for bargaining power.⁵³³ Without property rights farmers tend to invest in short term cash crops that do not contribute to a profitable livelihood. Farmers without land rights fear that they will not be able to reap the benefits that come from long-term investments in land. Property

rights, therefore, eliminate uncertainty that leads to rash, short-term decision-making. Because farmers are not comfortable with making larger farm investments in tools and commodities that would lead to a more economically sufficient future, countless farmers are urbanizing in order to seek jobs. Property rights are necessary because the security and legitimacy that comes along with rights transforms the nature of the cost of investment. Effective property rights helps farmers assert more control over their financial and labor investments.

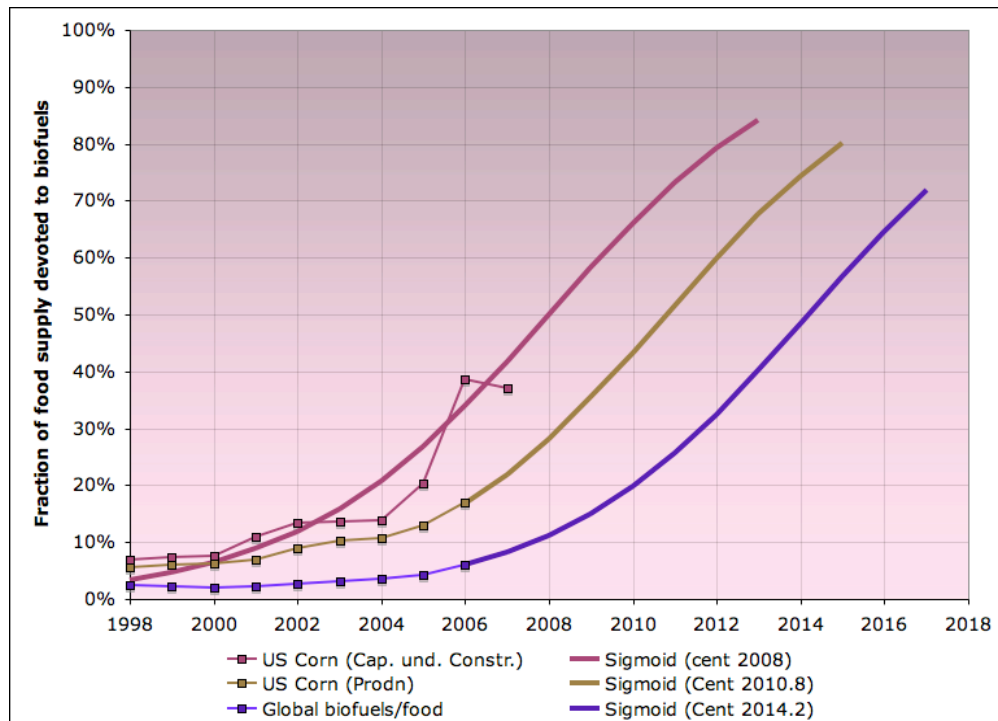
Food insecurity lies at the heart of poverty. Over 800 million farmers in China alone survive off of approximately \$1.30 a day. Property rights have innumerable contagion effects that act to reduce poverty and food insecurity. Land rights lead to improved livelihoods and living conditions and strongly effect child nutrition and access to credit and financial services, education, shelter and economic opportunities. Property rights foster familial, social and regional stability.⁵³⁴

Land Grabbing

Land Grabbing is a term that refers to countries whose governments selling or leasing land to foreign governments or private companies striving to secure natural resources and land for agricultural production. Growing demand for food, fuel and natural resources has led to increased competition for land. Land grabbing is not a new phenomenon, but it has increased much since the 1990s especially after the food price crisis of 2007 and 2008. From 2000-2010, roughly 203 million hectares (which is eight times the size of the UK) of land grabbing transactions were reported. From this total, 134 million hectares are located in Africa and 29 million hectares in Asia. The Global Commercial Pressures on Land Research Project reports that 78 percent of land grabs are agricultural based; around 58 percent of the land is used for biofuel production and 20 percent of the land is used

for the production of food, extraction of minerals, forest conservation, tourism and industry.⁵³⁵ Land grabbing has become popularized especially during the current global economic recession because natural resources are viewed as safe investments, as they are the primary input to manufacturing industries as well as the food and fuel industries.

Figure 13.1: Percentage of food supply devoted to biofuels



Source: Energy Bulletin. <http://www.energybulletin.net/node/38965>.

There are many negative societal, environmental and economic effects of land grabbing. Land grabbing creates disenfranchisement. It often results in the forced relocation of citizens who lack political voice. More severe human rights violations have also been associated with these forced relocations. State or corporate-funded, armed perpetrators have taken action against people who try to resist land grabbing. Land grabbing also causes severe loss in biodiversity because of conversion to cropland, which threatens the existence and survival of indigenous and domestic seeds and breeds. Agribusinesses' methods

are based on monocropping, which means only one breed of one crop is planted in massive areas of land. Monocultures contribute to a loss of biodiversity, which leads to deforestation, the depletion of natural resources, including water sources, overgrazing and the loss of soil fertility.⁵³⁶ Thirdly, land grabbing promotes agribusiness at the expense of smallholder farmers' economic development. Finally, selling and leasing off land makes it difficult for developing countries to improve domestic conditions. A loss of natural resources means there is a smaller chance of generating economic opportunities, improving living standards, including peoples' access to food.

Africa has been affected the most by land grabbing because most African governments do not enforce formal land rights. Specifically, Ethiopia, Kenya, Tanzania and West Africa are the most popular areas of investment.⁵³⁷ From 2005-2006, 2.5 billion hectares were sold or leased in Africa.⁵³⁸

Figure 13.2: Land grabbing in Africa

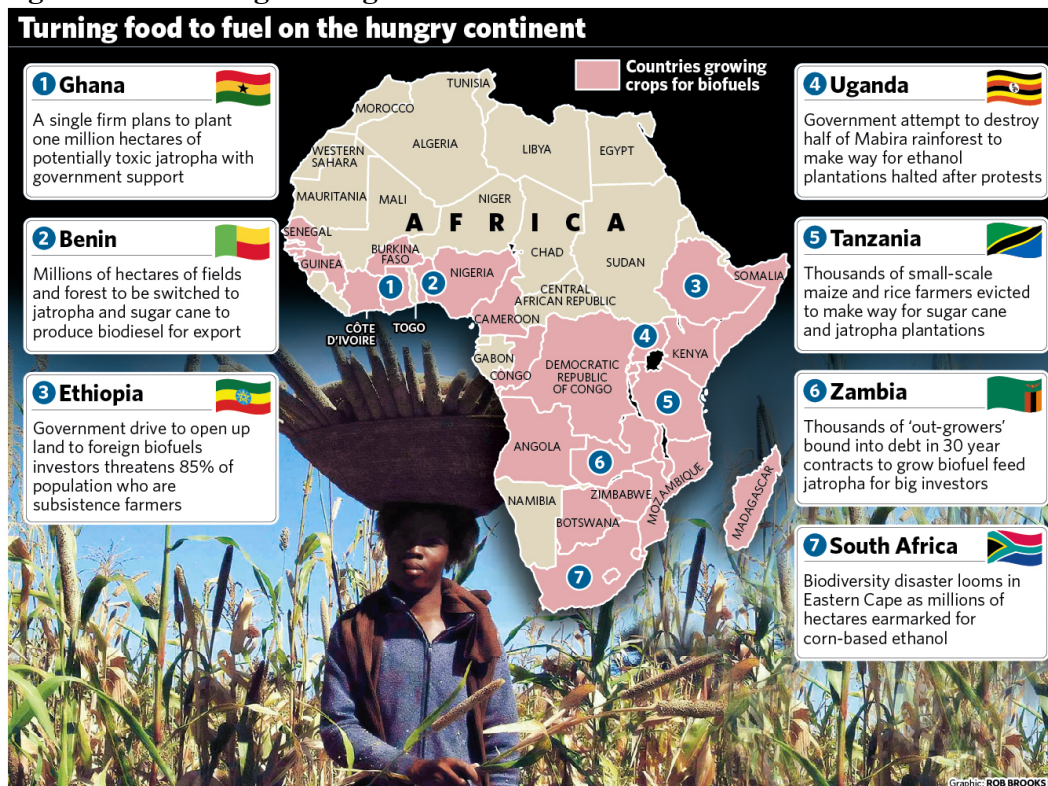
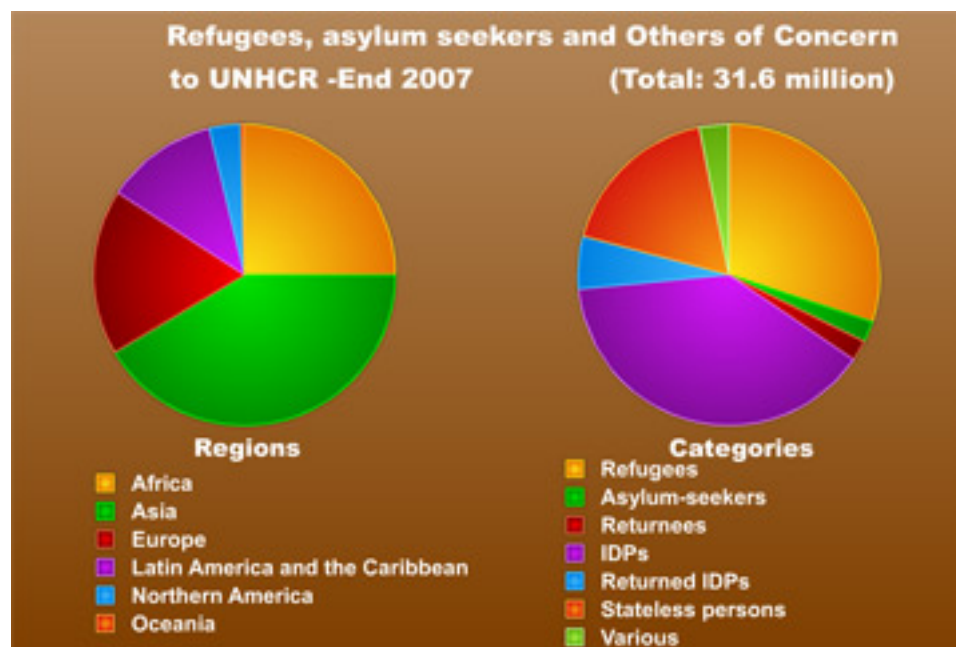


Fig. 13.2 Source: Sodere: Ethiopian Social Network, News, Drama, Music and Sport. Network“The Economist: When Others are Grabbing Your Land.” <http://sodere.com/profiles/blogs/the-economist-when-others-are>. 11 May 2011.

Displacement

The Universal Declaration of Human Rights states that everyone has the right to own property collectively and privately, and that no one shall be deprived of his or her property.⁵³⁹ The World Bank estimated that in the year 2000 alone, 10 million people were displaced in China, India and Cambodia. Displacement forces victims to settle in areas that are vulnerable to food insecurity and the ill effects of climate change, like tropical storms and flooding.⁵⁴⁰ Displacement that results from land grabbing contributes to and perpetuates famine; Ethiopia is the most current and extreme example of this. In the region of Gambella, 70,000 people have been removed from their land to make way for land grabs. Coincidentally, Ethiopia receives the most amount of aid funding from the U.S., amounting to \$1 billion per year since 2007. The U.S. ambassador to Ethiopia argues that the people will ultimately benefit from the pending agribusiness investments. The forced relocations, however, are further perpetuating the extreme famine in Ethiopia.⁵⁴¹ If the U.S. passively stands by and does not attempt to influence the nature of these land transactions, the U.S. government is giving aid money in vain.

Not only are forced relocations a major human rights issue, they also dissolve business and social networks that contribute to rural populations' access to markets. This is important because access to markets and market information are effective methods of creating economic opportunity while deterring poverty and food insecurity.

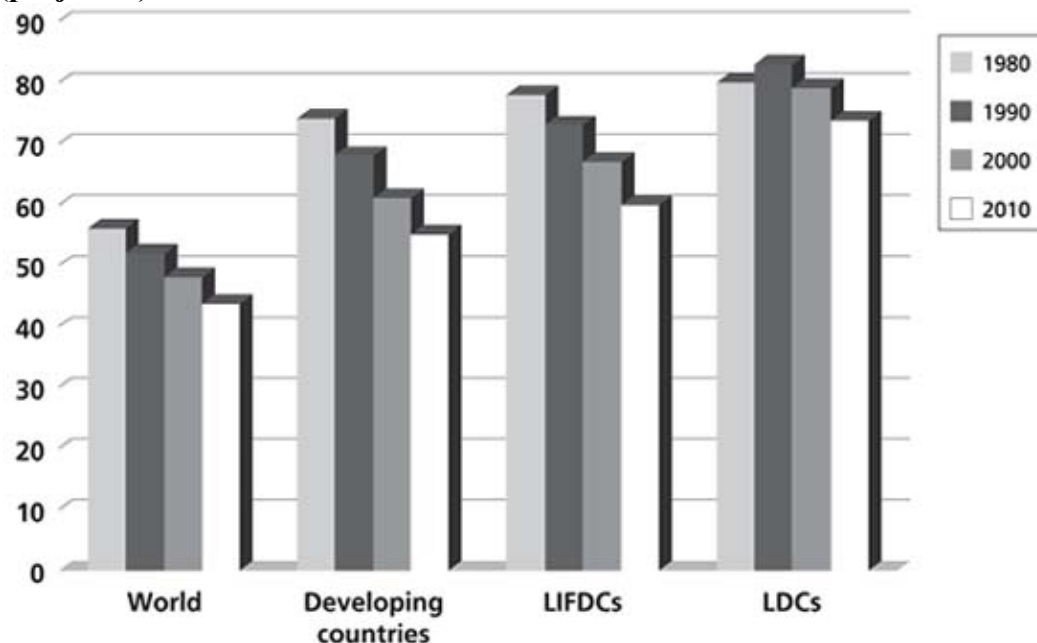
Figure 13.3: Global displacement

Source: UNHCR: The UN Refugee Agency. <http://www.unhcr.hr/eng/index.php/unhcr-profile/>.

Women and Property Rights

Women are one of the most marginalized groups in terms of inadequate property rights. In 1995, the UN signed the Platform for Action, a declaration that was meant to broaden women's political rights in the international arena. A section of the draft states: "Women's poverty is directly related to the absence of economic opportunities and autonomy, lack of access to economic resources, including credit, land ownership and inheritance, lack of access to education and support services and their minimal participation in the decision-making process."⁵⁴²

Figure 13.4: Percentage of economically active women working in agriculture, 1980-2010 (projected)

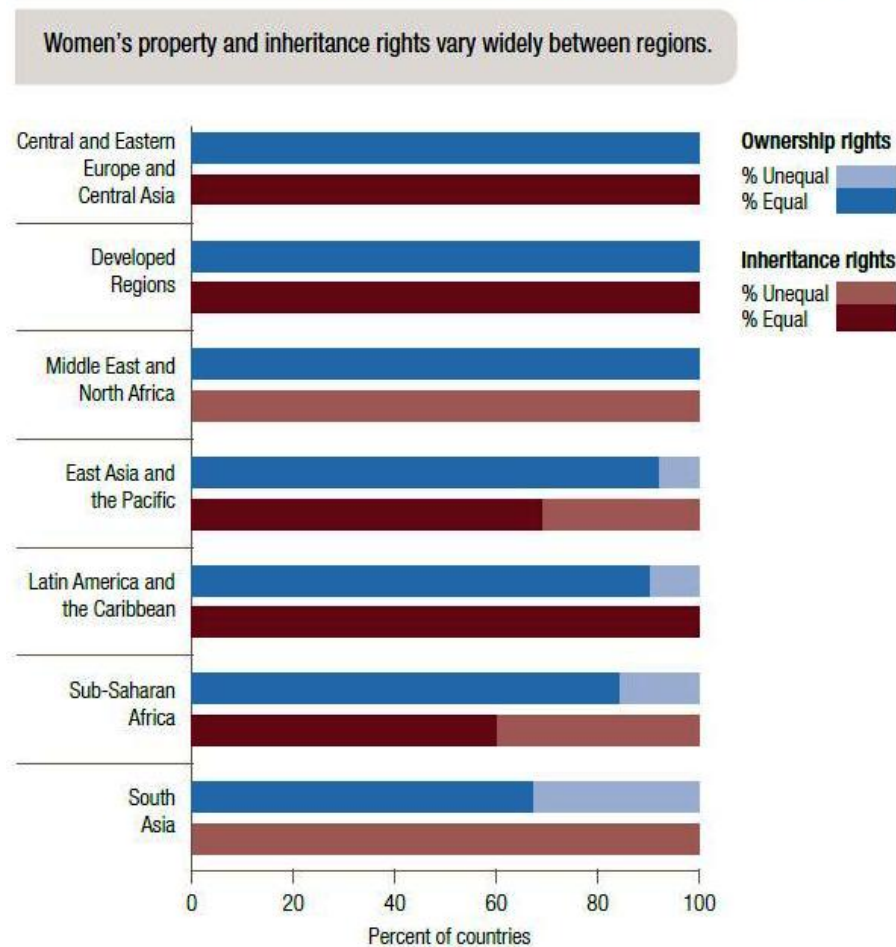


Source: FAO: Women's Contribution to Agriculture. <http://www.fao.org/docrep/009/a0493e/a0493e03.htm>. LIFDCs defined by the FAO as Low-Income Food Deficit Countries. LDCs are Least Developed Countries.

Women own only 2 percent of land worldwide, yet contribute to 60-80 percent of the world's total agricultural production. Women are often disadvantaged from cultural constraints that prevent access to technologies, financial services and information that improve agricultural development.⁵⁴³ In certain cases, religious traditions and customs weaken women's social standing and access to resources. The Platform for Action is the United Nations Fourth World Conference on Women, which took place in Beijing in 1995. The conference's agenda was to discuss and attempt to progress the global status of women as economic and societal participants and redress equal gender rights as a way of advancing the potential for opportunities in women's lives.⁵⁴⁴ The Platform for Action urged the need to capitalize on the productive potential of women as a method of poverty deterrence. The declaration attempted to outline stronger, gender-equal inheritance laws that would give

women around the world more economic and social security. This would, in turn, empower women, as more developmental opportunities would be available to them. During the drafting of the Platform for Action, Middle Eastern countries strongly opposed equal rights for inheritance laws because the Koran values the economic potential of men more than women. In the context of Islamic culture, Middle Eastern countries at the convention viewed equal rights as retrogressive. Because of this, this section of the declaration was written in a very ambiguous manner that would allow for varying interpretations by the signing countries.⁵⁴⁵

Figure 13.5: Women’s right to property ownership and inheritance by region



Source: UN Women calculated regional averages using women’s right to ownership and inheritance data from World Bank 2010f.

Note: Based on a World Bank review of codified laws and regulations in 124 countries. Ownership and inheritance rights refer to both moveable and immovable property. Customary practices are not taken into account.

Source: **Statistics on Discrimination of Women.** <http://filipsagnoli.wordpress.com/stats-on-human-rights/statistics-on-discrimination/statistics-on-discrimination-of-women/>.

Indigenous Peoples and Property Rights

Pastoralists and indigenous people make up the world’s most marginalized groups of people and suffer the most from food insecurity and human rights abuses like forcible relocations. There are a total of 350 million indigenous people in the world. Indigenous people make up 5 percent of the world’s population and 15 percent of the world’s poorest class. There are also 200 million pastoral households that use 25 percent of the

world's land.⁵⁴⁶ The cultural differences between pastoralists and the dominant, Western culture create structural barriers that challenge pastoralists' livelihoods. Neoliberal laws are the world's current hegemonic legal system. This perspective on property rights tends to favor private property laws as opposed to collective property rights. Indigenous peoples' cultural relationship with land, however, is highly collective in nature. Humanitarian non-profit organizations like Landesa provide the perfect anecdote, working with legislators to create laws that complement tradition and lifestyle to create policies that have the ability of transforming the living standards of communities.⁵⁴⁷ Property rights that accommodate culture would be a progressive step towards ending the cycle of marginalization that results in indigenous people's disproportionately high levels of poverty and food insecurity.

POLICY CONSIDERATIONS

Although the U.S. has not previously taken any significant steps to reinforce indigenous rights or property rights in developing countries, it would be in our country's best interest to begin now. Countries that receive aid funding from the U.S. that are experiencing land grabbing should be considered high priorities on the national political agenda. Influencing the domestic affairs of countries whose people are faced with displacement would transform the U.S.'s aid strategy into a more sustainable and effective resource allocation policy. Securing the property rights of marginalized people in developing countries makes societies more productive and equipped to increase production in the wake of the rapidly growing population.

The US and USAID should advocate for stronger property rights in developing countries. Property rights incentivize smallholder farmers' long-term commitment to

agricultural development.⁵⁴⁸ Without the fear of forced displacement, smallholder farmers will be more inclined to invest in technology that will help their farms succeed at producing higher yields per area. Eliminating this uncertainty allows smallholder farmers to focus less on basic life requirements and move towards developing stronger social networks. Without the burden of insecure property rights, farmers will also be able to allocate more time and resources towards accessing market information and creating economic opportunities that will contribute to the creation of more business opportunities and subsequently, a stronger agricultural sector. Property rights, therefore, are a key component to creating a sustainable food security policy. These rights should be gender conscious and culturally sensitive in order to balance out power asymmetries that perpetuate marginalization of certain groups of people.

The UN Draft of the Declaration of the Rights of Indigenous Peoples outlines key rights that the UN believes should be recognized by the international community. The UN adopted the draft in 2007; however, it is not legally binding, which means the UN cannot create any international laws that are laid out in the draft.⁵⁴⁹ In the context of food insecurity, it would be advisable for the U.S. to take a step towards advocating for more political power to be placed in this draft as a strategy to set up internationally accepted standards of rights for historically marginalized indigenous groups of people. The Department of State could create a group of human rights lawyers with the assigned task of lobbying and advocating for the strengthening of this draft and work towards developing stronger general international human rights laws. This group would also draw more public awareness to the importance of human rights and its direct connection to global poverty and food insecurity. Stronger human rights laws would deter future mass displacements of people in food

insecure areas, as governments and corporations would have the disincentive of carrying out business negotiations that would catalyze human rights abuses. Public awareness is also essential to social and political change. This can be done through press releases and marketing campaigns that highlight the inhumane consequences of land grabbing and the effects of a lack of strong property rights in developing countries. Mobilizing the public through education would, in turn, raise the rank of land grabbing on the political agenda. Furthermore, this will pressure governments and companies to carry out transparent land transactions, which is crucial to preventing future human rights abuses that are associated with land grabbing. Accountability is fundamental to securing and codifying binding international human rights laws.

The IAASTD (International Assessment of Agricultural Knowledge, Scientific and Technology for Development) is a global consultative group created by the World Bank at the World Summit on Sustainable Development in 2002. The IAASTD is comprised of members from public and private institutions around the world that gather information on world poverty, hunger and civil issues, advocating for transparency and inclusiveness. Research findings carried out by the IAASTD argue the need for governments and NGOs to support small-scale farming and local knowledge as methods of improving food security and agricultural development. The report represents a compilation of research on agricultural development. The group has concluded that small-scale farms are more economically sustainable than industrial agriculture. Although the U.S. did not sign this report, research groups compiled by an array of specialists like this one should be used as resources by the State Department when examining effective food security policies.⁵⁵⁰ Reviewing knowledge acquired through extensive and credible researches like this will strengthen the U.S.'s policy and approach to food security. Effective policies are necessary for the

longevity of U.S. foreign policy, as they are cost effective and lead to more secure domestic affairs in countries receiving U.S. aid.

U.S. food security policy would benefit from fostering strong relationships with non-profits that focus on indigenous peoples rights. Empowering the world's indigenous population is an effective step towards alleviating food insecurity. The unalienable right to food and land are fundamental international human rights laws that need to be reemphasized by key players like the US. Supporting indigenous peoples' rights is strategic in the context of food insecurity because marginalized groups of people have the least amount of political power and economic opportunity, making it nearly impossible for them to advocate for changes in policy that affect their access to resources and basic necessities of life, like food.

POLICY RECOMMENDATIONS

- Partner with non-profits, like Landesa, that promote human rights and indigenous peoples customary and collective rights to land.
- Create a body of human rights lawyers that will advocate for the strengthening of The Declaration of the Rights of Indigenous Peoples.
- Promote corporate accountability during the process of developing free trade agreements so as to promote transparency in future land negotiations and transactions.
- Allocate more federal funding to research directed at developing small scale farming methods.

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- ⁵³³ Ruth Meizen-Dick. "Property Rights for Poverty Reduction?" United Nations Department of Economic and Social Affairs. http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0CEsQFjAD&url=http%3A%2F%2Fwww.un.org%2Fesa%2Fdesa%2Fpapers%2F2009%2Fwp91_2009.pdf&ei=Q8ILT_nILYmqiQLh98TbDO&usq=AFOjCNH-Pi1oQMDadf0D8PmAjPk0pqqBbw&sig2=OFKUakep1AAkSUsJHRU5Xw. (New York, December 2009).
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Ch.14 Gender Politics of Food Security: Women as Key Actors in Agriculture

Caitlin Osegueda

Abstract

Despite making up a large proportion of the agricultural work force in developing countries, women are not recognized for their importance in the assurance of food security. Overall, women do not have the necessary access to technology, land ownership, credit or education that would enable them to greatly increase farm yields. Evidence shows, however, that when women have the same access to productive resources as men, their individual productivity and output increases, which inevitably leads to more food for their families, communities and countries. This chapter will explore the ways in which women are marginalized in agriculture and how their empowerment is essential to the attainment of sustainable food security.

Policy Recommendations

- Facilitate an evolution of the international community's understanding of women's roles in agriculture and their status as economic agents by partnering with research institutions and hosting conferences that focus on female empowerment in agriculture.
- Prioritize gender in all stages of food policy, from research to enactment.
- Analyze gender impacts of existing programs and policies, in addition to strengthening feedback and accountability mechanisms that allow for an increased understanding of women's roles in agriculture.
- Strengthen women's land rights through close partnerships with governments in the developing world.
- Maximize the aid female farmers receive by increasing the percentage of aid that is dedicated to women in agriculture within the budget for official development assistance focused on both gender equality and food security.
- Utilize Feed the Future as a platform in order to combine microfinance strategies with agricultural extension services and self-help groups that will facilitate long-term financial stability for female farmers.

ISSUE

Women are central to food security. Despite making up a substantial proportion of the agricultural work force in developing countries, women are largely unrecognized for their importance to the attainment of food security. Disparities between men and women's access to crucial technology, land ownership, credit, and education contribute to lowered crop yields for female farmers. Evidence shows that when women have the same access to these productive resources as men, they increase the total agricultural output of their country.⁵⁵¹ Estimates show that the "yield gap" between men and women farmers is approximately 20-30 percent. However, these same studies imply that when women farmers are given equal access to productive resources as their male counterparts, their production would subsequently increase 20-30 percent to match that of the male farmers, leading national outputs to rise to the "level proportionate to

What is empowerment?

Naila Kabeer, a leading development and gender scholar, defines empowerment as "the expansion in people's ability to make strategic life choices in a context previously denied to them."⁵⁵³

the amount of land controlled by women."⁵⁵² In this sense,

women's productivity is essential to food security as well as to increased nutrition and reduced poverty worldwide.

Agricultural policies aimed at empowering women would fundamentally alter the gender inequity that is still widespread in many countries today. Additionally, it

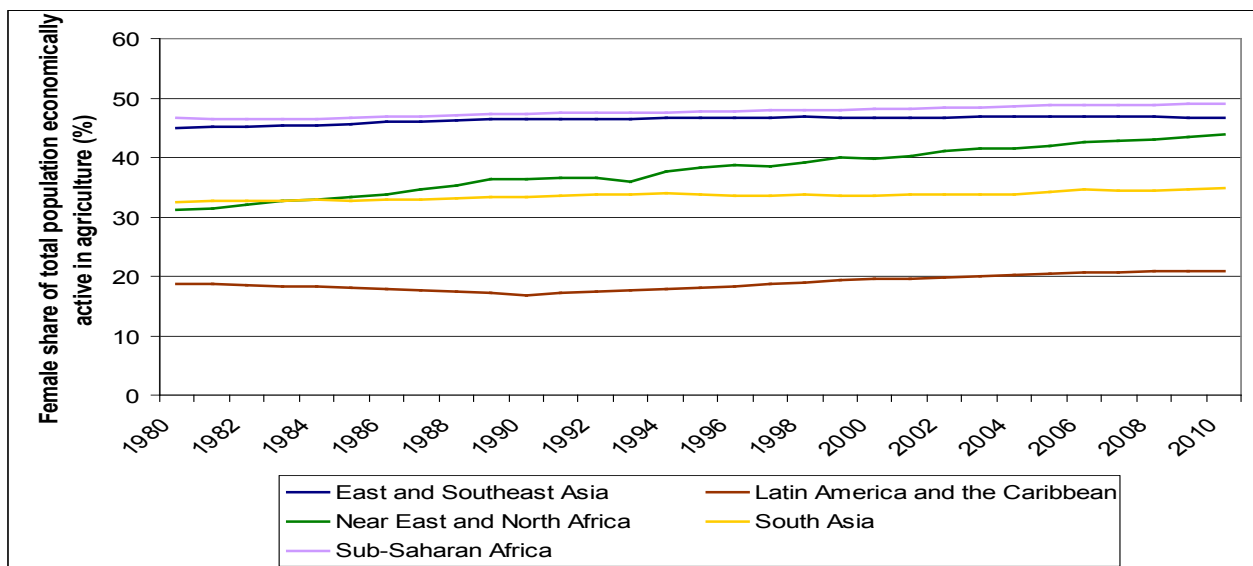
directly relates to four Millennium Development Goals (MDGs): End Poverty and Hunger, Gender Equality, Child Health and Maternal Health.⁵⁵⁴ It is essential that the international community regard both the role of women and gender equality as vital to sustainable food security as well as agricultural and economic development.⁵⁵⁵ In order to empower women in this central role, women and gender analysis must be integrated into all foreign aid policy and investments from "conceptualization to implementation."⁵⁵⁶

BACKGROUND

Context

Women and agriculture are strongly linked: women are essential to attaining global, sustainable food security and agriculture is crucial to women’s advancement and wellbeing. While estimates vary according to region and source, a recent Agricultural Development Economics (ESA) publication stated that women make up 42.2 percent of the agricultural labor force in developing countries.⁵⁵⁷ In addition, the same publication showed evidence that “while women are not the majority of those reported working in agriculture, the agricultural sector is important for women”: 79 percent of economically active women in developing countries cite agriculture as their primary economic activity.⁵⁵⁸ They are involved in every aspect of the supply chain, including producing, selling and purchasing food, preparing food for their families and working in agribusinesses.⁵⁵⁹ Figure 14.1 shows the percentage of women in agriculture in different world regions.

Figure 14.1



Source: SOFA Team and Cheryl Doss. “The Role of Women in Agriculture.” ESA Working Paper No. 11-02. (Rome: Food and Agriculture Organization of the United Nations, March 2011): p. 4

The international community has begun to place more emphasis on women in agriculture. The Gates Foundation put “women at the center” of its agricultural development work with the creation of a gender-impact strategy;⁵⁶⁰ the International Food Policy Research Institute (IFPRI) emphasizes research on gender in order to provide effective information on food security,⁵⁶¹ and the yearly “The State of Food and Agriculture” report by the Food and Agriculture Organization (FAO) focused on “Women in Agriculture” in 2011. It is also a focus area in Feed the Future’s approach.⁵⁶² However, Feed the Future (FtF) seems to lack firm direction in advancing gender equality in agriculture. FtF Zambia is the only country with a national strategy that explicitly includes a goal to “maximize the positive impact on female farmers and ensure equitable benefits for men and women.”⁵⁶³ While recognizing women’s importance to food security is an important step to increasing women’s ability to be productive agricultural workers and to decreasing their subordinate place in society, more specific gender-focused measures need to be considered.

What does gender mean?

While “sex” refers to an individual’s innate biological characteristics, “gender” is shaped by societal norms that denote what it means to be a man or a woman. Gender roles are influenced by ideological, religious, ethnic, economic and cultural factors. Gender norms vary between regions and cultures, but often subject women to discrimination and limitation. “Sex is biology. Gender is sociology. Sex is fixed. Gender roles change.”⁵⁶⁴

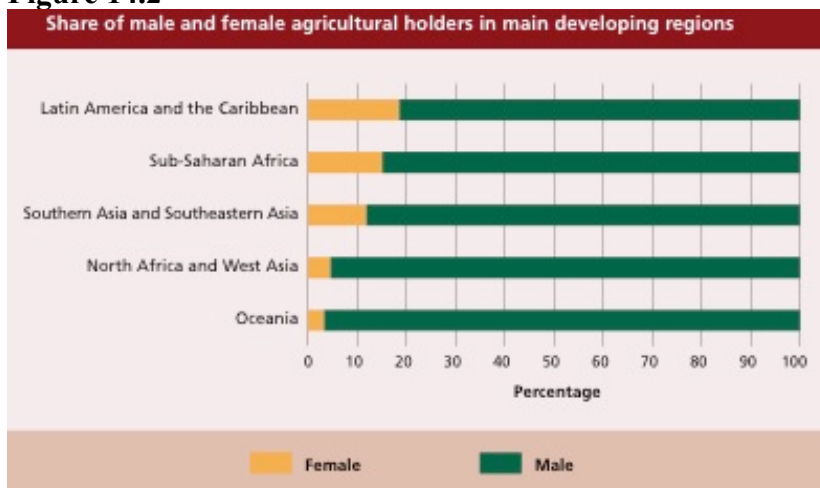
The acknowledgement of women’s role in agriculture and integrating gender into food policy is still relatively new in the international aid community. However, many NGOs, governments and private organizations are taking large strides to include women in their comprehensive approaches towards food security. For example, the African Women in Agricultural Research and Development (AWARD) program, supported by Consultative Group on International Agricultural Research (CGIAR), the Gates Foundation and Feed the Future, provides two-year fellowships to African women to research and develop innovative

technologies that will help feed the hungry in Africa.⁵⁶⁵ The “agriculture-nutrition linked, gender-informed approach” used by the Agriculture-Nutrition Advantage project achieved great success in lowering levels of hunger and malnutrition in Ghana, Kenya, Mozambique, Nigeria and Uganda.⁵⁶⁶ The Self Employed Women’s Association (SEWA) in India combines self-help groups and microfinance to financially empower women, giving them access to credit, savings accounts, training and even insurance. SEWA utilizes “village resource centers” to help women farmers’ self-help groups “to identify the potential benefits of new technologies, evaluate their appropriateness and participate in technology development processes.”⁵⁶⁷ One of SEWA’s self-help groups, the Sabarkantha Women Farmer’s Cooperative, greatly increased its members’ productivity through facilitating the recovery of 3,000 hectares of ravine land in 73 villages; participating women’s incomes subsequently tripled.⁵⁶⁸ The International Fund for Agricultural Development (IFAD)-supported Lowlands Agricultural Development Program (LADEP) in The Gambia used innovative strategies to involve 24,684 farmers, of which 22,216 were women, “in the development process of national socioeconomic issues” and “empowered [them] to make their own decisions on matters pertaining to their development.”⁵⁶⁹ Through land reclamation projects, LADEP helped these women to gain access to “permanent ownership of land” for rice production and, subsequently, production on their plots increased from 30-100 percent.⁵⁷⁰ From 1991-1997, CGIAR implemented a two-part gender program, Gender Analysis and Gender Staffing, which focused on gender equity in agricultural research. Its findings included the necessity to “[have] a gender-responsive monitoring and evaluation system in place” and the importance of a “priority setting based on identification of men’s and women’s needs, priorities, preferences, and opportunities.”⁵⁷¹

Unequal Access

Women are largely unable to produce equal levels of crop yields as men due to the disproportionate availability of productive resources and inputs, such as land, fertilizer, seeds, tools, machinery, credit, and extension services. Various publications show that this inaccessibility can be attributed primarily to gender-specific cultural norms that recognize men, rather than women, as primary actors in the agricultural sector. In regards to property rights, significantly fewer women hold land certificates for the land on which they farm, meaning they have less control over the land they use to farm.⁵⁷² Land that women do control is also likely to be of inferior quality to the land that men control.⁵⁷³ Landowners are often measured as

Figure 14.2



Source: FAO, *The State of Food and Agriculture: Women in Agriculture*. (Rome: Food and Agriculture Organization of the United Nations, 2011): p. 25

“agricultural holders,” which is defined as “the person or group of persons who exercise management control over an agricultural holding. The holding may be owned, rented or allocated from common property resources.”⁵⁷⁴

Figure 14.2 compares the shares of male and female agricultural holders in different major world regions. Additionally, even where women do control land, they are often unable to use it in the way they wish. For example, many women cannot use their land for commercial purposes, which impedes their ability to develop into powerful economic agents.⁵⁷⁵ According to Rekha Mehra at the

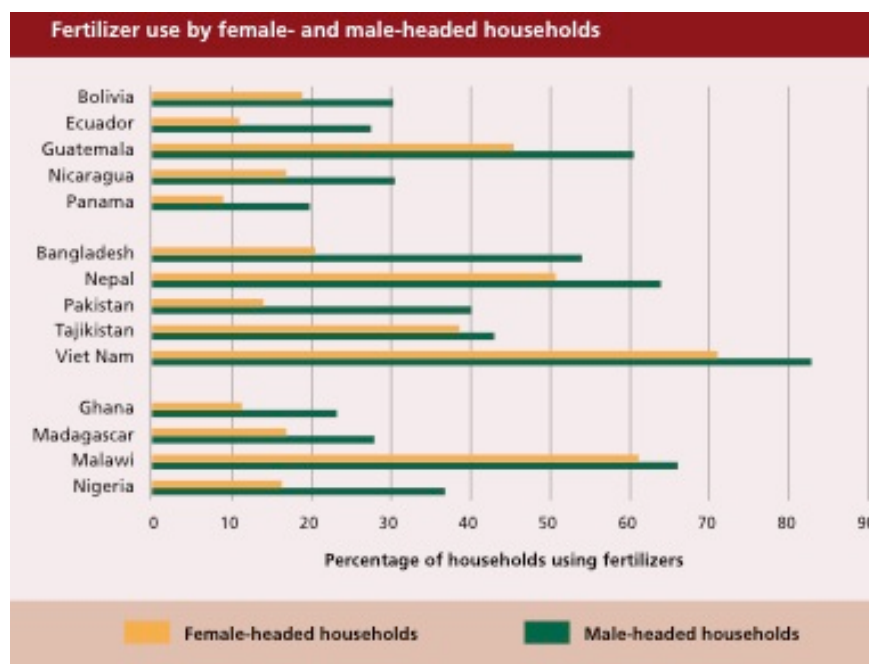
International Center for Research on Women (ICRW), “strengthening women’s access to, and control over, land is an important means of raising their status and influence within households and communities” as it increases women farmers’ productivity and crop yields and may even better women’s positions in society.⁵⁷⁶ Owning land also provides women with collateral, thus giving them a better chance to obtain credit.⁵⁷⁷ There are wide variations in women’s land ownership, but comprehensively, women hold substantially less of the land titles than men in the developing world. In North Africa and West Asia, for example, women represent less than 5 percent of landholders.⁵⁷⁸

Improving women’s ownership of land is crucial to increasing their agricultural productivity and crop yields as well as fundamentally encouraging gender equality. Often, inheritance laws act as a hindrance to female property rights.⁵⁷⁹ In many societies, men traditionally inherit land from their fathers, further cementing the patriarchal norms that disallow women from owning land. In addition, “women [often] obtain rights to land through men – generally their husbands or sons ... and their rights tend to be restricted.”⁵⁸⁰ The issue of property rights is especially complex because even in places where women are now legally able to own land, sociocultural factors often supersede the laws and women are not permitted by their community from controlling the land that they own.⁵⁸¹ In addition, women often “lack the legal know-how or enforcement mechanisms to ensure that these rights are maintained.”⁵⁸² Logically, a woman who owns her land has more control over it as well as its quality; she will not only be able to produce higher yields, but evidence shows that her family and community will also benefit, especially in terms of children’s health and education.⁵⁸³

Women also have less access than men to productive agricultural resources. They “are less likely to use modern inputs such as improved seeds, fertilizers, pest control measures and

mechanical tools [than men].⁵⁸⁴ In 79 percent of studies that monitored use by farmers of available productive resources, men were on average found to have greater access to resources.⁵⁸⁵ This difference in available inputs is directly caused by

Figure 14.3



Source: FAO, *The State of Food and Agriculture: Women in Agriculture*. (Rome: Food and Agriculture Organization of the United Nations, 2011): p. 35

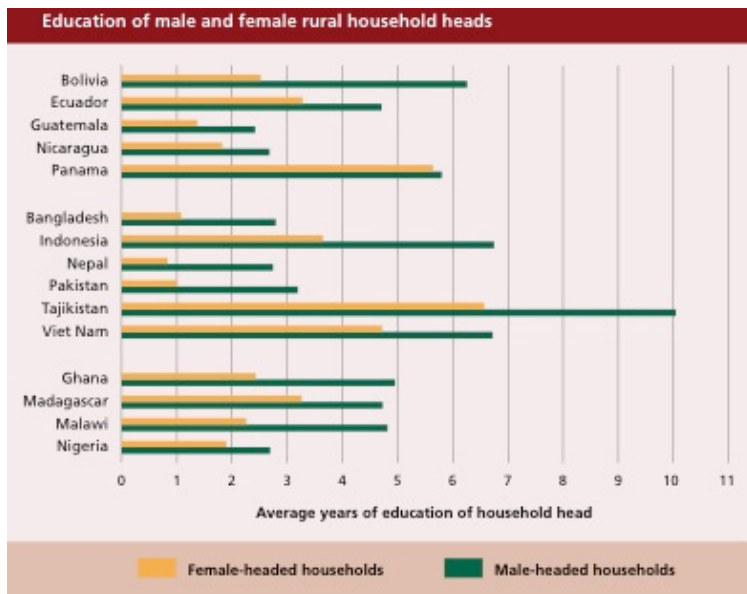
existing social norms that disadvantage women for various reasons, including women's inability to purchase inputs because of a lack of credit or an inability to access markets as well as a lack of knowledge about the productive inputs available to them. The disparity in technology use can clearly be seen in The Gambia: Gambian women do not own ploughs and less than 1 percent owned a weeder, seeder or multipurpose cultivation implement (as compared to 8, 12, 27 and 18 percent, respectively, of men).⁵⁸⁶ Women also have less access to improved seeds and fertilizers due to their inability to pay for expensive products and also their lack of knowledge about their availability and benefits. The consequences are made clear in the FAO's "The State of Food and Agriculture: Women in Agriculture" report, which cites studies in Burkina Faso and Ethiopia that found that women produced crop yields that averaged 20 to 40 percent less than men; the studies wholly attributed this difference to women's limited access to inputs and services.⁵⁸⁷

Strengthening women's access to fertilizer in Burkina Faso, for example, could in turn increase crop yields by 10 to 20 percent for individual women farmers.⁵⁸⁸

Agricultural extension services are also a crucial aspect of women farmers' success, as they "remain the key source of information on new technologies for farmers in most developing countries."⁵⁸⁹ Of the polled Ethiopian female farmers that have utilized extension services, 92 percent were satisfied with the advice they received.⁵⁹⁰ However, a 1988-89 FAO survey, cited in 2010 by the FAO as the most extensive study on agricultural extension services, shows that only 5 percent of all extension resources were targeted at women farmers and only 15 percent of agricultural extension workers were female.⁵⁹¹ Generally, women have more difficulty attending meetings due to extra household work, including the necessary childcare responsibilities, cooking, and obtaining water. Meeting times are also often incompatible with women's schedules. Gender norms may even prohibit women from interacting with men outside of their families and thus making attendance impossible.⁵⁹² The FAO cites the following additional problems with extension programs: the misconception that women do not farm, the false impression that information and progress will "trickle down" from men to women, and, additionally, that women with lower levels of education may be illiterate and thus unable to read materials that would provide them with valuable information. Moreover, the World Bank and IFPRI published a report in 2010 that found strong cultural perceptions within communities in developing countries that "women don't farm."⁵⁹³ Increasing female participation in agriculture extension services may be a key strategy in increasing women's farming productivity. Studies from Burkina Faso and Ethiopia found that women lacked access to agricultural extension services and needed to interact specifically with female extension workers to attain higher yields.⁵⁹⁴

Education is also essential to women's success on the farm.⁵⁹⁵ It is pivotal to increasing women's involvement and success within agricultural extension services and as a route to

Figure 14.4



Source: FAO, *The State of Food and Agriculture*, p. 28

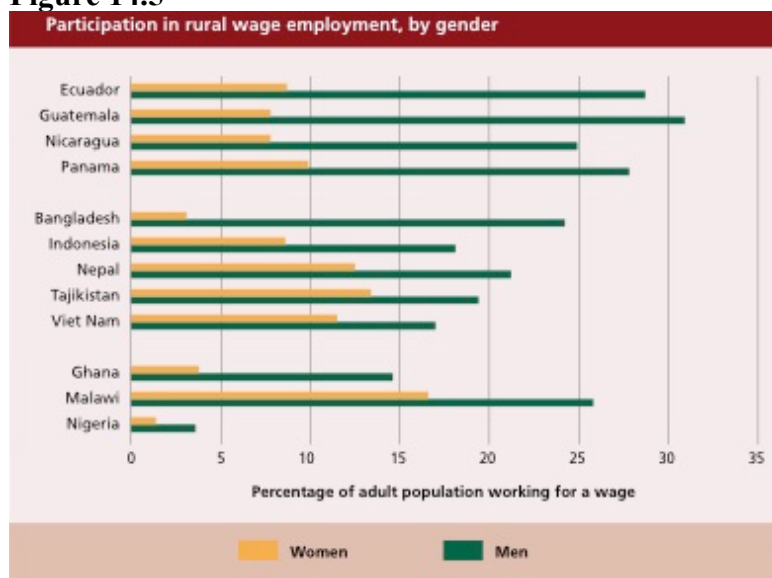
society as a whole. It has direct consequences on agricultural output as well: studies suggest that if all Kenyan women attended primary school, national agricultural output could increase by 25 percent.⁵⁹⁶

Because women in developing countries are apt to have less education and less work experience, they are more likely to be turned down for wage-earning jobs in the agricultural sector or be paid less once employed. Evidence also shows that women are generally paid less for the same jobs as men, despite having similar amounts of education and experience.⁵⁹⁷ They are more likely to hold part-time, seasonal and low-wage positions than men, even when their experience or education exceeds that of their male counterparts.⁵⁹⁸ Each of these issues reinforces women's marginalized place in society and further hinders them from reaching their

increased accumulation of human capital. The disparity in education level among men and women relates to women's marginalization in society. The longer a woman stays in school, the more human capital she obtains; the attainment of human capital is crucial to gender equality in both the agricultural sector and in

potential as important actors in food security. Women who stay in school longer have a better chance of rising above gender norms that suppress their ability to thrive in the agricultural sector. Therefore increasing girls' education is key in the development of informed, empowered

Figure 14.5



Source: FAO, *The State of Food and Agriculture*, p. 18

populations of women who can contribute to the attainment of food security.

Lack of access to capital and financial services also hinders women farmers' productivity as they often lack the means to purchase necessary inputs such as seeds, fertilizer, technology and land. Financial services made available through microfinance institutions (MFIs) include savings, credit and insurance, all of which greatly advance a woman's ability to enhance her crop yields and contribute to food security. Women are often unable to obtain savings accounts or utilize credit to take out a loan because of gender discrimination and even legal barriers. Institutional discrimination is also an obstacle: "[some] private and public lending institutions often either ration women out of the market or grant women loans that are smaller than those granted to men."⁵⁹⁹ The FAO cites studies from Nigeria and Uganda to demonstrate the disparity between men and women in access to credit. In Nigeria, 14 percent of men use credit, but only 5 percent of women do. In Uganda, women only receive 1 percent of credit available to rural workers. Ugandan women who wish to improve productivity cite lack of access to credit as of

their biggest obstacle.⁶⁰⁰ Another example shows that despite the widespread institutionalization of MFIs that specifically target women, women still find themselves marginalized in the financial sector. In Bangladesh, MFIs working in rural areas only distributed 5 percent of their loans to women in 1980, and in 1990, the percentage changed less than 1 percent.⁶⁰¹ Microfinance has been a popular method used to empower women by NGOs and government agencies and has many positive possibilities to improve women's access to credit. With credit comes capital, and with capital women are able to purchase the resources they need to increase crop yields.

In conclusion, extensive research has shown that when women have access to and are able to effectively utilize productive inputs and services – which includes everything from fertilizer to tools to agricultural extension services – they produce the same level of yields as men.⁶⁰² This evidence clearly shows the need to strive for the leveling of the playing field, allowing women to take advantage of the resources that will help them produce more food for themselves as well as their families, communities and countries.

Research and Gender Analysis

The ICRW, one of many research institutions that focus on women's role in food security, has researched women's roles in agriculture for over 30 years and now promotes integrating gender analysis into each aspect of food policy. Their studies show that “improving women farmers' access to appropriate resources, technologies, markets and property rights help enable them to increase agricultural productivity and ultimately improve household nutrition.”⁶⁰³ It is essential to continue this research, especially within FtF, in order to understand how new programs and policies impact women in the agricultural labor force as well as how to continually improve women's welfare and access to crucial productive resources. Research should also focus

on the diverse roles of women in agriculture in different cultures as well as in individual parts of the agricultural production process.⁶⁰⁴

Women, the Pillars of Food Security and the MDGs

Female farmers are key contributors to each of the three pillars of food security: food availability, food access and food utilization. The FAO has estimated that if women had the same access to productive resources as men, they could increase their crop yields by about 20 to 30 percent.⁶⁰⁵ This would in turn raise total agricultural output in developing countries by 2.5 to 4 percent, thus reducing the number of hungry people in the world by 12 to 17 percent, or as many as 150 million people.⁶⁰⁶ By simply ensuring that women have the same access to *existing* resources as men, food would become increasingly available to hungry people in the developing world. Additionally, empowered women farmers, who are often involved in subsistence farming, would provide their families with easy access to food, as they would be growing it themselves.⁶⁰⁷ Women are traditionally the key distributors of food in families, meaning that they are key facilitators of increased nutrition and correct utilization of food. Studies show that, in contrast with men, women tend to spend additional money on their families, buying both more food and more nutritious (and often more expensive) food for their families as well as spending it on their children's education and health.⁶⁰⁸

Clearly, empowering women farmers has ramifications that extend outside of food security. The FAO's Women in Agriculture report "clearly confirms that the [MDGs] on gender equality (MDG 3) and poverty and food security (MDG 1) are mutually reinforcing."⁶⁰⁹ It is also suggested that creating gender equality in agriculture will lead to increased health in families, meaning that child health (MDG 4) and maternal health (MDG 5) would also be positively affected through women's continuing role as a central actor to food security.

Gender Inequality as the Root Problem

In order to create truly sustainable food security in which women are empowered members of the agricultural labor force, gender equality must be achieved. Many of the causes of women farmers' unproductivity can be attributed to existing laws and cultural norms that institutionalize gender inequity. For example, if a woman takes out a microloan, the microloan will give her the necessary capital to purchase land or resources in order to increase

Example from Bangladesh

In 1988, Fatima started borrowing small loans from the Grameen bank, an MFI, to start her own business. However, her husband executed all tasks outside the home and made all of the decisions in the business. After her husband's death, she began managing the business and continued to take out loans from the Bank for five years. Then, in 1988, she gave control of the business – including decision-making responsibilities – to her sons. While Fatima's lifestyle greatly improved, she was not empowered in this process.⁶¹⁰

productivity. However, without the fundamental altering of norms that enforce a woman's subordinate rank in society, she may never get to use that money in the way she intended. Her husband may take control of the capital, or land ownership laws may disallow her from purchasing land. In either case, the loan is ineffective without true gender equality.

Despite spending comparable hours working outside the home to men, women are also burdened with household responsibilities, thus causing their agriculture productivity to suffer. This "time burden" is also ingrained into societal and cultural gender norms. Figure 14.6 gives an example of the activities Indonesian women farmers complete daily.

Figure 14.6



Source: FAO, "Women, agriculture, and food security." (Rome: Food and Agriculture Organization of the United Nations, n.d.). <http://www.fao.org/worldfoodsummit/english/fsheets/women.pdf>

Women in Uganda, for example, blame household responsibilities such as cooking, cleaning, child rearing and obtaining water, as obstacles to expanding agricultural production for the market.⁶¹¹ Social norms also hinder women from extending into different, and possibly more income-intensive, sectors of the agricultural supply chain. Similarly, a woman with severe constraints on her time may opt for part-time or seasonal work that often pays less than full-time work.⁶¹² This further cements the position of women in low-paying, low-responsibility positions.

POLICY CONSIDERATIONS

There are various options that the U.S. can pursue in order to encompass all of the complexities in the obstacles women face in agriculture. The U.S. can invest in gender-specific research; expand microfinance to give larger sums to more women farmers; establish fertilizer voucher and fertilizer for work programs; encourage reformation of formal and informal land ownership laws; or work to create multi-faceted programs that combine education, microcredit and community support.

One option for the U.S. is to increase the scale of research on the dynamics between women farmers and food security. Research is essential to further integrating women into food policy, because only with accurate and current data can these policies be profoundly successful for women farmers. Presenting research organizations that have a focus on women, such as the ICRW or the IFPRI, with grants to expand research on the gender responsiveness of existing and future agricultural policies is essential to understanding women's complex and evolving role in food security. Alternately, as a part of its individual country plans, Feed the Future could implement gender-specific research programs to further the United States' understanding of

women's diverse roles in agriculture in different world regions. FtF could partner with the ICRW, IFPRI or other research institutions and publish yearly reports on the status of women farmers in each of the focus countries. Giving female farmers a larger emphasis within these country plans would greatly advance the U.S.'s ability to effectively assist them.

Another option is to support the expansion of MFIs and programs to help women gain immediate access to capital. The loans would therefore empower women farmers as capital holders within their communities and families. By targeting rural women specifically, microfinance can greatly improve women's ability to purchase inputs and thus produce higher crop yields. As women borrow from the MFIs, they could be simultaneously involved in self-help cooperatives in order to help them utilize the money properly and stay on time with payments.⁶¹³ While microfinance seems to be a practical short-term option, it is not a viable long-term solution to increasing women's agricultural productivity in the context of continued gender inequity. In Bangladesh, men ended up using the money from 50 percent of loans taken out by women; additionally, a 1996 study found that women only maintained control of their loan in 37 percent of the cases studied.⁶¹⁴

The U.S. can also seek to implement programs that give women direct access to seeds or fertilizer, or support organic farming, which would reduce women's dependence on buying fertilizer. Two options include seed and fertilizer voucher programs and fertilizer-for-work programs that specifically target women. These programs would give women access to both seeds and fertilizer at a subsidized cost, thus helping the low-income female farmers without disrupting local markets.⁶¹⁵ Microfinance also creates an avenue for women to obtain fertilizer and seeds by providing them with the needed capital to make their purchases. For these programs to be effective, improved seed varieties with higher nutritional content and higher yield potential

would need to be made readily available to women. Again, such programs would be more practical in the short-run, as they do little to institutionally change women's roles in their societies. Providing seed or fertilizer vouchers or funding fertilizer-for-work programs, then, should not be the primary method the U.S. employs to assist female farmers, as it does not ensure long-term success.

As a primary obstacle to productivity and thus food security, increasing women's ability to own and control land should also be a goal for U.S. foreign policy. This objective could be

Figure 14.7



Source: United Nations Environment Program. "Sudan Environmental Database." Accessed February 22, 2012. http://postconflict.unep.ch/sudanreport/sudan_website/index.php.

integrated in to FtF's country plans, or it could be delegated to NGOs that are working on the ground in target countries. Either way, relations between the U.S. government and those of target countries should focus on eliminating discrimination in property rights and strengthening women's ownership of the land they farm. Doing so would give

female farmers more control over their land and its quality, and inevitably will lead to increased crop yields and production.

More sustainable solutions would combine microfinance with self-help groups and agricultural extension programs. By working through FtF's gender integration strategies, the U.S. could directly engage communities and create such groups in the focus countries. This

approach would provide women with the education and community support they need to gain and retain control over necessary assets. Education is a key step to improving women's agricultural productivity. Women must understand markets, their rights to land and capital, and methods to maximize yields through new productive technologies in order to help achieve food security. This education will be best achieved through the expansion and further incorporation of women into agricultural extension service programs. The U.S. should encourage agricultural extension services to increase their number of women employees and to take strides to directly connect the women service workers with women farmers. These programs need to be developed with women in mind: for example, meetings have to be held at hours when women are free and childcare should be made available. Targeting women as the recipients of crucial information would increase their ability to make use of productive resources and therefore truly empower them to make sustainable change in their own lives.

Education alone will not allow women to transcend their marginalization: again, existing gender biases in societal norms and policy will continue to deter women's advancement. Therefore, an effective policy would incorporate microcredit, to give women direct access to capital, with education programs to improve women's knowledge about markets and resources, as well as self-help groups that would provide women with a supportive community. These three features would create a program that would be the most likely to help women become empowered agents that can directly assist in the attainment of food security.

In order to create sustainable food security programs that recognize women as central actors in agriculture, global gender equity needs to be a principal goal, albeit a long-term one, for the international community. The U.S. should encourage this new understanding of women and promote both foreign and domestic policies that view women as strong economic agents and able

farmers. This would require the elimination of institutionalized gender discrimination, the creation of gender-informed policies and an emphasis on giving women equal access to resources and human capital. Furthermore, when achieved, the U.S. would see many benefits from gender equality.

Empowering women in the agricultural sector would in turn empower them in the household and improve their authority over capital (income and savings) and land, ultimately resulting in increased gender equality. As women are made more equal in society, maternal health improves, children become healthier and more educated, and families begin to escape poverty and hunger. Therefore, supporting women farmers directly affects the Gender Equality MDG as well as four other MDGs. MDG 1C would especially be affected: women's increased crop yields would enhance food security and decrease hunger by feeding an additional 12-17 percent of the undernourished population.⁶¹⁶ Helping to achieve these five MDGs would reflect positively on the U.S.'s leadership. Additionally, supporting women farmers will create improvements that extend into the future by “put[ting] more resources in [their] hands” and “strengthen[ing] their voice[s] within the household.”⁶¹⁷ Women with more authority in the home have more power to raise educated, healthy children, meaning that the positive effects of gender equality will inevitably lead to stronger nations, more involved members of society and more active participants in budding democracies and markets. Therefore, the increased wellbeing and productivity of women farmers has broader socio-economic benefits for women, their families, and their nations, and inevitably will lead to inter-generational improvement, as well as positively impacting food security.

POLICY RECOMMENDATIONS

- Facilitate an evolution of the international community's understanding of women's roles in agriculture and their status as economic agents by partnering with research institutions and hosting conferences that focus on female empowerment in agriculture.
- Prioritize gender in all stages of food policy, from research to enactment.
- Analyze gender impacts of existing programs and policies, in addition to strengthening feedback and accountability mechanisms that allow for an increased understanding of women's roles in agriculture.
- Strengthen women's land rights through close partnerships with governments in the developing world.
- Maximize the aid female farmers receive by increasing the percentage of aid that is dedicated to women in agriculture within the budget for official development assistance focused on gender equality and food security.
- Utilize Feed the Future as a platform in order to combine microfinance strategies with agricultural extension services and self-help groups that will facilitate long-term financial stability for female farmers.

⁵⁵¹ FAO, *The State of Food and Agriculture: Women in Agriculture*. (Rome: Food and Agriculture Organization of the United Nations, 2011).

⁵⁵² FAO, *The State of Food and Agriculture*, p. 42

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VI. ENVIRONMENT AND ENERGY



Ch.15 Environmental Challenges in Addressing Food Security

Talia Alongi and Dominique DeVaux

Abstract

To attain food security for the growing population, the world's production systems must sustainably intensify by minimizing their environmental impact and increasing yields. Environmental degradation and climate change pose threats to the success and stability of food security in the upcoming years and both are affected directly or indirectly by human activity. The food system is unique in the sense that it not only contributes to environmental issues, but it also has the capacity to mitigate them. The decreasing availability of viable land, soil, and water are challenges that can be met with the sustainable intensification of agriculture. To resolve environmental challenges to food security, producers need access to research, technology, techniques, and capital through an informational platform that is globally accessible and equitable. Climate change poses a threat to all economic activities, especially food production. Therefore, the U.S. would benefit from implementing a carbon tax that reduces GHG emissions.

Policy Recommendations

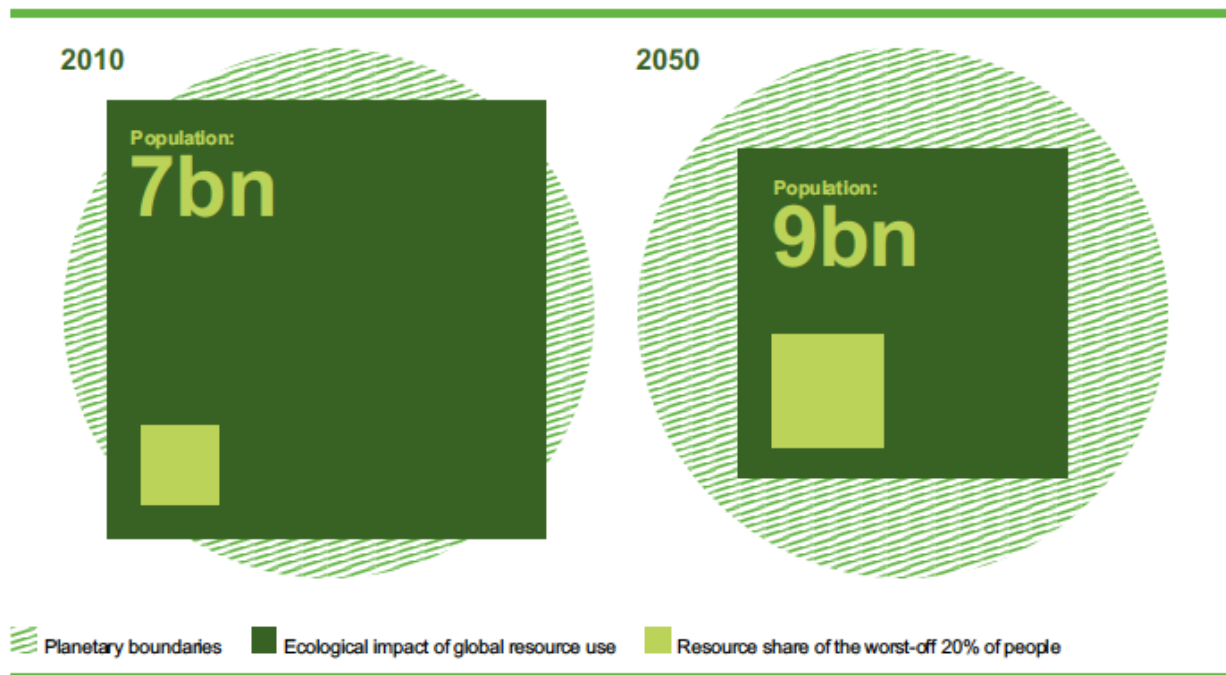
- Create an information platform in which governments, research facilities, corporations, and local farmers can share technology, research, and management techniques.
- Establish a program that emphasizes the importance of natural resource management to food producers and the public through partnerships, technology, research, and training, creating a wider culture of sustainability.
- Promote the preservation and restoration of land on a global scale, ensuring the security of biodiversity, carbon sequestration, and other ecosystem services.
- Develop an international treaty for the management of water. Conditions of the treaty will vary by nation dependent on regional capabilities. The U.S. will establish the treaty and lead by example by complying with the conditions, which will include strict monitoring of irrigation, monitoring of wastewater disposal, and corporate responsibility.
- Improve climate observation networks to more efficiently disseminate information regarding predictions and climate models as an early-warning system for food producers to decrease vulnerability to climate change.
- Pursue the implementation of a carbon tax of \$25 per ton of CO₂ emissions that increases incrementally through 2050 on the 500 domestic companies with greatest emissions.

ISSUE

Agricultural systems must increase yields by 70 percent in order to sustain the projected 2050 world population of nine billion but environmental degradation and climate change threaten crop yields. Environmental degradation results from natural processes, intensive agriculture, and unsustainable resource use. Growing populations, expanding economies, and climate change are putting natural resources, particularly water, under increasing pressure. Effective land management minimizes the impact of agriculture, allowing for sustainable intensification. The effects of climate change will become manifest with temperature increases, changes in precipitation patterns, and natural disasters of higher frequency and intensity; all of which will challenge efforts to increase food production. To maintain food security the agricultural sector needs to adapt to environmental changes while minimizing its environmental impact. Agricultural research aimed at reducing GHG emissions, increasing carbon sequestration, and increasing resilience to environmental changes in the United States and in developing countries is critical.

BACKGROUND

In the past century, the acceleration of human activity and the extension and intensification of agricultural systems have put more pressure on the environment than all of preceding history. Agriculture today has to respond to an increasing global population, dietary changes, land productivity, and changes in the environment. By principle, agricultural activities require the manipulation of the natural landscape into a production system created by and for humans. As a result, environmental issues occur in the form of environmental degradation, land use changes, and climate change. More than half of the Earth's land is intensively used for

Figure 15.1: The challenge of increasing equity within ecological limits

Source: Oxfam, “Growing a Better Future: Food Justice in a Resource Restrained World,” (Boston: Oxfam International, 2011), <http://www.oxfam.org/sites/www.oxfam.org/files/cr-growing-better-future-170611-en.pdf>: 13

agriculture in some way. As a result, one third of the soil has been affected by degradation from human activity.⁶¹⁸ Agriculture has long accounted for the greater part of human water use and currently claims some 70 percent of world water withdrawals. Domestic, municipal and industrial uses account for the remaining 30 percent. Agriculture may claim more than 90 percent of water in arid developing countries and less than 30 percent in temperate industrial countries. Coupling sustainability measures with intensification processes has the potential to support food security in the twenty-first century.⁶¹⁹

Over the last 50 years there has been monumental growth in agricultural production, increasing the gross world food production from 1.84 billion tons in 1961 to 4.38 billion tons in 2007.⁶²⁰ Land used for cultivation expanded 11 percent in this period; large portions of yield increases were due to intensification and increased inputs and were not solely the result of land

use changes.⁶²¹ In the developing world, land use changes and land mismanagement are major threats to agricultural sustainability. In developed countries, high-input, large-scale agriculture is a significant contributor to environmental damage. The global food production systems, including the full scale of agricultural operations, have considerable impacts on the environment.

Environmental Degradation

Overestimates of the capacity of the environment to restore itself under extreme human pressure in various situations have led to further exploitation and misuse. Unreasonable demands on natural capital have resulted in land degradation in about 2,000 million ha of land worldwide, affecting 38 percent of the world's cropland.⁶²² Land degradation is the reduction in economic and biological productivity from soil erosion by wind and water, deterioration of soil properties, and long-term loss of natural vegetation.⁶²³ Ecological changes result from both smallholders and large-scale industrial farms. Smallholder farms are more prominent in the developing world, where lack of access to technology and increasing population pressures are increasing the scale of environmental degradation and land use changes. At the other end of the production scale, industrial farms use large amounts of polluting chemical inputs and monocultures that threaten biodiversity.⁶²⁴ Locating a moderate point on the wide scope of land management practices and input-use is critical to mitigating the environmental impact of agriculture.

Given the interconnected nature of the 21st century's global economy, accelerated stress on the global water supply will affect food systems around the world. A significant share of environmental issues pertain to water, which is a major determinant of food and human security. The lack of balance between supply and demand of water will become more apparent as time goes on if water continues to be managed as it is today. Within the next 15-20 years, the declining water security situation will potentially trigger a global food crisis, with shortfalls of

up to 30 percent in cereal crop production.⁶²⁵ It is also projected that by 2030 there will be a 40 percent global shortfall between the forecasted demand and available supply of water. Such a shortfall will translate to higher food prices, which will disproportionately affect the poor.⁶²⁶ Each year, 1.5 million people die because of lack of clean water and sanitation.⁶²⁷ Environmental degradation will be discussed in terms of four major challenges: soil degradation, desertification, fresh water issues, and fisheries.

Soil Degradation

Soil is a non-renewable resource composed of organic materials, minerals, humus, carbon dioxide, and living organisms that is formed at a rate of one inch per 250-1,200 years.⁶²⁸ Soil quality is determined by its total productive properties including fertility, drainage, water-holding capacity, ease of cultivation, freedom from contaminants, and biological attributes.⁶²⁹ The soil nutrients that are most critical to crop production are nitrogen, phosphorus, and potassium.⁶³⁰ Studies have shown a direct correlation between soil nitrogen levels and biomass accumulation, proving that nutrient retention is key to productivity.⁶³¹ Improved land management practices can help maintain soil quality and prevent the reduced yields that result from soil degradation.

Wind and water erosion both detract from soil quality, but human activity also has a notable impact. Water erosion is one of the most common forms of soil degradation and is especially prevalent in agricultural systems that are mismanaged on steep land. Wind erosion is another cause of soil degradation that also contributes to desertification. It is particularly severe in systems where soil is left bare of protective vegetation, which can result from land use changes, overgrazing, and overstocking.⁶³² In addition to these natural processes, intensive human use has further degraded the world's soils. Using soil for agricultural production,

regardless of the scale or intensity, has an affect on its quality. Nutrient depletion occurs naturally through plant absorption but accelerates through the misuse of fertilizers and irrigation systems.⁶³³ Agriculture leeches key nutrients from the soil through plant removal (harvesting) and often fails to replenish them. When replenishment does occur, it can be done chemically or organically. Chemical fertilizers are efficient in the short-term but are expensive and can have negative long-term environmental impacts. Organic fertilizer (such as manure, crop residues, etc.), cover crops, and trees are natural tools producers use to replenish soil nutrients.

The application of commercial or organic fertilizers acts to replace lost soil nutrients, but without effective usage and other measures this can result in low nutrient use efficiency and poor nutrient retention. Average fertilizer uptake efficiency is around 30-50 percent, leaving significant room for improvement in the efficiency of commercial inputs.⁶³⁴ Commercial fertilizer use is characteristic in high-production crop systems because it increases yield productivity with minimum labor input. It is becoming more prominent in the developing world as farmers gain the economic capacity to purchase such inputs. The use of organic fertilizers (animal manure, crop residues) is more efficient in terms of nutrient efficiency, erosion protection, and microbial content; it is also more financially viable.⁶³⁵

Soil degradation occurs in most production systems but the degree to which this takes place is determined by land management strategies and regional climate. Current conditions of production, degradation, inequality, and access vary regionally; therefore policies should consider the diversity of problems presented. Systems with adequate rainfall or irrigation that use commercial fertilizer form the base of global food security but have negative environmental externalities such as soil compaction and nitrogen pollution.⁶³⁶ Smallholder farmers have an important role in food security in the developing world, yet suffer from challenges due to lack of

access to various forms of capital; this impedes their ability to sustainably manage their land.⁶³⁷

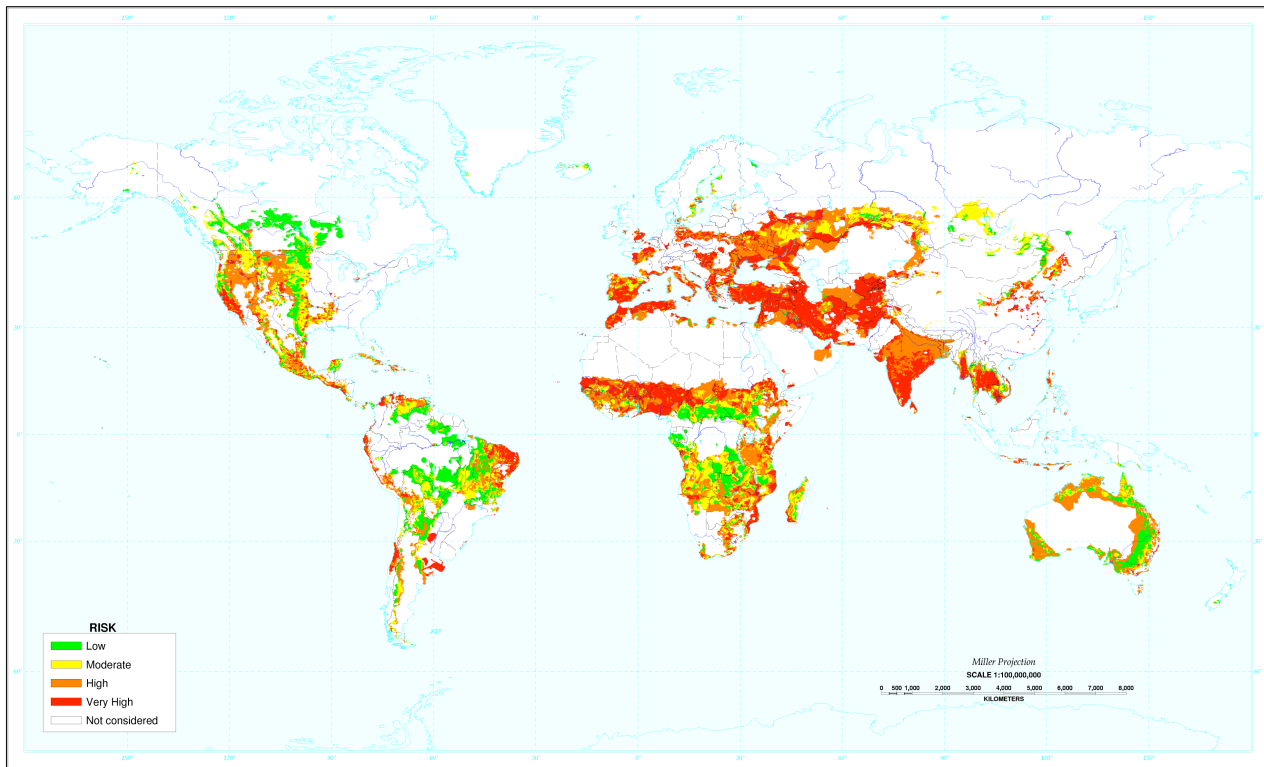
All scales of food production are critical to food security but rely too heavily on ecosystem services that cannot sustain such pressure. When nutrient loss is not addressed, it results in soil degradation and reduced productive capacity. This contributes to malnutrition, increased susceptibility to disease, and economic instability for the people supported by the depleted soil. Given the high percentage of people in the developing world that rely on agriculture for their livelihood, solutions to environmental degradation need to consider vulnerability, not just sustainability.

Issues in soil degradation can be reduced to a few key drivers: overuse, inefficient fertilizer use, and poor soil management. Improved land management strategies are key to improving and maintaining soil quality. Intercropping is another simple practice that has a long and successful history of sustainability. Zero-till systems that do not disturb the soil can be used to increase yields, reduce GHG emissions, reduce weeds, increase beneficial insects, increase water-use efficiency, and decrease soil erosion.⁶³⁸ To increase fertilizer efficiency and decrease its environmental impact, producers can use “precision application of low rates of fertilizer” and apply crop residues, specifically legumes.⁶³⁹ Trees and cover crops, such as the mucuna in Africa, can be used to boost soil fertility, increase yields, and reduce wind and water erosion.⁶⁴⁰ Techniques and technologies for soil conservation are available but require adaptation, knowledge, and capital for accurate execution.

Desertification

The UNCDD defines desertification as “land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities” but this section extends the definition to include temperate areas as well.⁶⁴¹ Desertification is an

Figure 15.2: Risk of Human-Induced Desertification



Source: USDA-NRCS, Soil Survey, (Washington D.C.: World Soil Resources) 1999, <http://soils.usda.gov/use/worldsoils/mapindex/dsrtrisk.html>

environmental problem that stems from two causes: directly from human activities in agriculture and land use and indirectly from the effects of climate change. Unsustainable human activities that lead to desertification include overcultivation, overgrazing, deforestation, and poor land management practices, especially when it comes to irrigation.⁶⁴² Existing trends of desertification will be exacerbated by changes in precipitation patterns and increased evapotranspiration that result from climate change.⁶⁴³ Desertification eliminates land from the production cycle, working counterproductively against efforts to minimize land use change and maximize intensification.

Desertification occurs on all continents except Antarctica and affects the food security and economic stability of millions, disproportionately affecting the poor. The estimates of the extent of desertification vary from 20-70 percent of all drylands, but even the most conservative

estimates pose a serious environmental challenge.⁶⁴⁴ Desertification results in lowered economic productivity, population displacement, and famine. Projections for the extent of desertification show that Sub-Saharan Africa, the Middle East, the Mediterranean and South Asia will suffer the most (Figure 15.2). Poverty and unsustainable land use are major drivers of desertification; the problem is social as well as environmental.⁶⁴⁵ Populations at risk can adopt proactive ecosystem management techniques to mitigate the effects of desertification. The protection of vegetative cover and integrated land and water management can be adopted to avoid the worst effects of desertification. Diversifying production and controlling erosion are other techniques that can help reduce the negative environmental effects of agriculture. On a global scale, building awareness and a base of knowledge supported by a policy framework, funding, and collaboration will ensure reduced environmental damage.⁶⁴⁶ Well-integrated, long-term plans supported by national and international interests can help ensure food security in the face of desertification.

Fresh Water Issues

Fresh water scarcity threatens fundamental aspects of human security: food production, the health of the aquatic environment, and social and political stability. Agriculture is the major user of fresh water, claiming more than two-thirds of the water from the earth's rivers, lakes and aquifers.⁶⁴⁷ As populations expand and economies grow, water becomes an increasingly scarce and valuable resource. Competition among agriculture, industry, and cities for limited water supplies is already constraining development efforts in many countries.

Although water is becoming increasingly scarce, the use of water in too many areas is still highly inefficient. In some places, as much as 60 percent of the water diverted or pumped for irrigation does not reach the crop due to leaky systems.⁶⁴⁸ Cities distribute water through similarly inadequate systems to underpaying or non-paying customers. Some losses are

inevitable, but others are recoverable and reusable. Industries, cities, and agriculture allow water to become polluted. Although some pollution is part of the very process of using the water, large amounts of water are lost to unrecoverable contamination.

Non-contaminated, sanitized (potable) water is vital for human health. Consumption of dirty drinking water leads to diarrhea, cholera, typhoid, and several parasitic infections, among other health problems. Each year, more than 2.2 million people living in developing countries die from preventable diseases associated with lack of access to safe drinking water, inadequate sanitation, and poor hygiene.⁶⁴⁹ In China, 43.2 percent of state-monitored rivers were classified as grade 4 or worse in 2010 because of pollution, meaning their water was unsuitable for human contact, according to data from China's Ministry of Environmental Protection.⁶⁵⁰ Furthermore, over one third of fish species native to the Yellow River are now extinct because of damming or pollution, Chinese officials announced in 2007.⁶⁵¹

Figure 15.3: Pollution of Water in China⁶⁵²

Source: Tai Lake, "Pollution in China: Raising a Stink" *The Economist*, August 5, 2010, <http://www.economist.com/node/16744110>.



AFP

The need for potable water is essential right now but it will be very challenging to meet the needs of the growing population and economic development in the developing world. Data has shown that as we get richer, we get thirstier. Between 1990 and 2000, the world's population grew by a factor of four, but fresh water withdrawals grew by a factor of nine.⁶⁵³ With the rise of middle classes in developing countries, this means that there will be many people becoming richer that will desire resource-intensive products such as animal meat protein and more general water use. Farmers will need to use much more water in order to increase their production by a projected 70-100 percent in the next twenty years. Farming animal protein is also highly water intensive and meat will be demanded more than ever before (see Chapter 11). Consequently, this meat increase will lead to a projected increase of 42 percent in grain demand for feed, and it takes one liter of water to grow one calorie of grain.⁶⁵⁴ It is clear that increased food production and changing consumption trends will put an enormous amount of pressure on the world's fresh water supply; significant changes in agriculture water use and management are of utmost importance.

There are debates about private sector management, participation, pricing, and the right to water. Many NGOs and people affected by water insecurity oppose the involvement of the private sector in water services because it is argued that water is a fundamental human right and is not a commodity that can be bought and sold for profit. This view is in line with the United Nations Committee on Economic, Social, and Cultural Rights that states that access to adequate amounts of clean water for personal and domestic use is a fundamental human right.⁶⁵⁵ Supporters of private sector water services argue that water is managed and maintained better under their supervision because of increased efficiency and resource maximization. Private and public sector partnerships are proven effective in providing water services to a wider network of

customers. A World Bank report lists examples of successful public-private partnerships in developing countries such as Colombia, Ecuador, Brazil, Argentina, Eastern Manila in the Philippines, Morocco, Cote d'Ivoire, and Senegal.⁶⁵⁶ Government oversight is important for overseeing the quality and ownership of the resource; by combining with the private sector, there will be positive benefits to consumers.

Both politics and academia realize that there exists a link between economic development and protection of natural ecosystems, and that water should be recognized as an economic good. Planning water use and development involving the public is important because of this link. Many countries have since initiated a process of review and reform of water-resources policy: a statement of principles emerged from the ICWE and served as the foundation for the water chapter of the global action plan developed at the 1992 UNCED conference in Rio de Janeiro, Brazil. In 1993, the World Bank published a water-resources policy paper that established a framework for water management.⁶⁵⁷ In 2005, the United Nations created an International Decade for Action called 'Water for Life' (2005-2015) that aims to get men, women, and organizations to collaborate on creating projects to ensure sanitized water in order to meet the Water Millennium Development Goals.⁶⁵⁸

Aquaculture

In 2008, aquaculture contributed about 46 percent of the fishery output for human consumption. In many coastal areas of the world, residents depend on fish protein to meet their dietary needs. The fishery sector plays a key role in food security, not only for subsistence and small-scale fishers who rely directly on fishery for food, incomes, and services, but also for consumers who profit from an excellent source of affordable high-quality animal protein. A portion of 150 g of fish provides about 50–60 percent of the daily protein requirements for an

adult. Fish is also a source of essential micronutrients, including various vitamins and minerals. With a few exceptions for selected species, fish is usually low in saturated fats, carbohydrates and cholesterol. The share of fish to animal protein intake, after consistent growth up to 1984, declined from 13.3 percent in 1984 to 12.0 percent in 2007, while consumption of other animal proteins continued to increase.

Developed countries have become increasingly dependent on fish imports to satisfy their demand. This demand creates an incentive for the U.S. to use research and development in order to create efficient and sustainable practices for maintaining fisheries. This knowledge can be used domestically and then the information can be shared with regions that rely heavily on fish protein. It is also important to consider women in policy considerations because women play a vital role in fisheries and aquaculture, particularly in post-harvest activities. They represent almost half the people in developing countries who work in small-scale fisheries and this figure jumps to over 50 percent for inland fisheries (see Chapter 14).⁶⁵⁹

Overuse and biosecurity of fisheries are essential issues that cannot be overlooked. When operated in an inadequate manner, species movement for farming can be one of the many sources of biological threats to the well-being of farmed aquatic animals as well as to humans and ecosystems. As aquaculture intensifies and diversifies, the biological hazards and risks to farmed animals, people, and ecosystems also increase in number and diversity, with potentially serious consequences. Some of these hazards include infectious diseases, animal pests, public health concerns on residues and resistance of antimicrobial agents, zoonosis, invasive alien species, and biosecurity risks posed by climate change.

Aquatic ecosystems are some of the most threatened and fragile ecosystems on Earth for a variety of reasons. The increasing demand for water, damming of rivers throughout the world,

dumping and accumulation of various pollutants, poorly managed fisheries, and invasive species are all causes of aquatic endangerment. Many fish species are endangered in both fresh water and marine habitats. The American Fisheries Society identified 700 species of fresh water of fresh water fish in North America that are at risk of endangerment, amounting to 39 percent of all such fish on the continent.⁶⁶⁰ In North American marine waters, at least 82 fish species are endangered. Across the globe, 1,851 species of fish—21 percent of all fish species evaluated—were deemed at risk of extinction by the IUCN in 2010.⁶⁶¹ Not only do these causes threaten the natural environment of our planet but these causes also affect global food security, by lessening the opportunity for healthy and sustainable animal protein.

The World Bank, WorldFish Center and FAO are major players in the implementation of policies regarding fisheries. They have collectively developed policies to create a global reassessment of employment and production of small-scale fisheries, and a critical review of data-gathering methods used for small-scale fisheries. The U.S. government is encouraged to create policy regarding the environmental protection of fish, especially in fishery management. Policy would aim to prevent endangerment of fish and sustain a healthy source of protein for those at risk of malnutrition for generations to come, both domestically and abroad. The U.S. department most capable of enacting this policy is the U.S. National Oceanic and Atmospheric Administration.

Climate Change

Climate change and rapidly increasing food demand present major challenges for the global food system. Unabated climate change has the potential to irreversibly damage the natural resource base that both agriculture and the human population depend on. Agriculture must reduce its negative effect on the environment and adapt to the existing environmental changes

while simultaneously increasing yields in the upcoming decades. Unlike other economic sectors that will be affected by climate change, the agricultural sector has the capacity to diminish it. The temperature effects of climate change are threatening, and extreme weather events and changes in precipitation patterns will pose an even greater challenge. The global, long-term scope of this problem presents decision makers with a complex problem that stems from the wide regional variations in both contributions and effects. The threats of climate change will occur in erratic and unpredictable patterns, making adaptation difficult and resilience necessary.⁶⁶² Severe weather could be extremely detrimental to agriculture some years and have little impact in others; even the most accurate models cannot predict it. Various models exist for predicting the path of climate change with differentiation in population projection, economic growth rate, and the degree of impact from anthropogenic GHG; all models show threats to the success and stability of agriculture and food security.

Causes

Climate change is caused by human activities that emit GHG, which have increased drastically over the last 200 years with population and economic growth. The main GHG are carbon dioxide (which experienced an 80 percent spike in emissions from 1970 to 2004), nitrous oxide, and methane; the latter two are 25 and 298 times more potent, respectively, in terms of their effect on climate change and are both prominent emissions from the agricultural sector. Increases in carbon dioxide emissions are largely due to fossil fuel use and land use changes; atmospheric methane concentration increases are most likely to due to agriculture and fossil fuel use; and nitrous oxide concentration increases are primarily attributed to agriculture.⁶⁶³ Agriculture itself accounts for 14 percent of GHG emissions globally; land use changes, which are an effect of population and economic pressures, account for another 18 percent of GHG

emissions.⁶⁶⁴ About 80 percent of all GHG emissions from the global food system are from developing countries.⁶⁶⁵

GHG emissions from agriculture are created through four main processes: enteric fermentation in livestock, biomass burning, rice production, and manure management. Enteric fermentation is the process that occurs when the digestive systems of livestock break down feed, producing methane. Biomass burning is the easiest way for producers to dispose of crop wastes and byproducts. Rice paddy cultivation systems produce methane and nitrous oxide. Manure outputs from livestock systems and inputs in agricultural systems naturally release GHG. Chemical fertilizers also produce GHG when used ineffectively. In addition to these basic processes of food cultivation, land use change and poor land management reduce carbon sequestration and increase GHG emissions.⁶⁶⁶

The GHG emissions that result from land use changes demand the utmost attention given the dramatic production increase the food system must undergo to meet demand by 2050. The three main causes of land use changes are (1) the expansion of agriculture in Africa and Asia, (2) economic development programs involving resettlement, agriculture, and infrastructure in Latin America and Asia, and (3) logging.⁶⁶⁷ Therefore, population pressure and the desire for economic growth are the two core factors which lead to land use changes. Natural land cover provides various ecosystem services such as soil protection, absorption, biodiversity, and CO₂ sequestration. All of these services are lost when land is converted into other uses. The negative impacts of land use changes in terms of GHG emissions and loss of biodiversity imply that agricultural yield increases should take the form of intensification, not extension. The 2008 Farm Bill reduced the maximum amount of land in the Conservation Reserve Program from 39.2

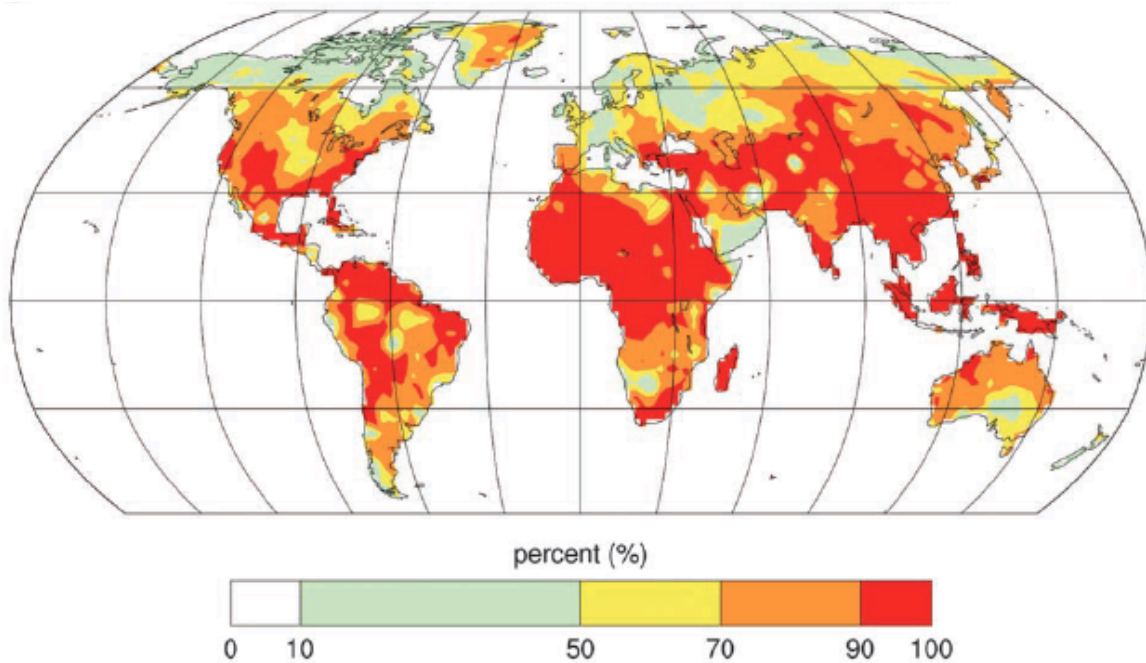
million acres to 32 million acres.⁶⁶⁸ The United States is a world leader in conservation efforts and such reductions are counterproductive to its goals.

Effects

Climate change models vary in their predictions, but all models show that agricultural productivity will be affected. While some regions of the world may experience increases in productivity due to the effects of climate change, by 2050 the global aggregate of negative impacts is expected to outweigh the benefits. An increase in global average temperature, increased drought frequency, changing precipitation patterns, an increase in the frequency and severity of extreme weather events, and increased pressure from weeds, pest, and disease will impact food security in the 21st century. The negative consequences will bear differently on different regions; most likely the developing world will be disproportionately affected.⁶⁶⁹ The global food production system will have to adapt to the negative environmental consequences of human activity.

Rising temperatures and changing precipitation patterns directly affect crop yields and indirectly affect the natural resource base for all agriculture. Water supply and soil quality, two of the most fundamental aspects of agricultural production, will be negatively affected by climate change. There are some predicted benefits of climate change, but they are regionally limited and short-term. The higher levels of carbon dioxide associated with climate change could result in increased growth and yield rates, as well as a longer growing season in mid- to high-latitude regions when combined with moderate temperature increases. However, there is a 90 percent chance that growing season temperatures in the tropics and subtropics will exceed extreme season temperatures by the end of the 21st century; this is also the region where many people are poor and rely on local agriculture for their livelihood.⁶⁷⁰ Temperature increases will affect water

Figure 15.4: Likelihood that summers in 2080-2100 will be warmer than warmest on record



Source: David S. Battisti and Rosamund L. Naylor, "Historical Warnings of Future Food Insecurity with Unprecedented Seasonal Heat," *Science* 323 (January 2009): 240-244

availability by diminishing major glaciers and increasing the rate of salinization in water supplies. Another effect tied to rising temperatures is increased heat and drought stress, which will pose a threat to rainfed agriculture worldwide.⁶⁷¹ Of all the challenges posed by climate change, temperature change itself will be relatively easy to adapt to given the benefits to some regions and the existence of heat-resilient crops. Sub-Saharan Africa is the region most vulnerable to temperature increases because widespread poverty and the limits on its adaptive capabilities.⁶⁷² Temperature changes will also indirectly affect agriculture through rising sea levels.

The geographic areas that will be most affected by rising sea level include: islands (i.e. the Maldives) that have limited land resources and where residents do not have much hinterland to fall back on in case of land loss; low lying coastal areas (i.e. the location of many major cities

that are centers of populations); and deltas. Deltas are specifically problematic because of their low elevation; tidal effects can be felt for several tens of km, and in some cases hundreds, inland. This land/sea interaction results in very complex agricultural systems, where irrigation and rain-fed agriculture may be practiced in alternate seasons, with attention to the salinity of irrigation water and to the washing out of salts by rains before planting crops. Due to their very high productivity (generally fertile soils, water availability, multiple cropping, especially in tropical areas) deltas are often a key food source for the whole region, meaning a disaster in a delta would have profound effects on a whole country's food supply. Any major disturbance in a delta would result in economic and possibly political shock waves well beyond the delta proper. Deltas are also very difficult to protect from rising sea levels.

Major disasters or changes in deltas and small islands could have repercussions over large areas. Given the populations potentially involved, this is more likely to seriously affect the major deltas, such as the Ganges-Brahmaputra, Mekong and Nile. In both the cases of deltas and small islands, a likely scenario could be massive outmigration when disasters due to sea level rise reach levels considered to be unacceptable. At such thresholds maximum damage and loss of life could be expected. There are also indirect factors of rising sea levels including: erosion patterns and damage to coastal infrastructure, salinization of wells, sub-optimal functioning of the sewerage systems of coastal cities with resulting health impacts, loss of coastal ecosystems and loss of biotic resources.

One effect that no system can fully prepare for is the increased frequency and intensity of extreme weather events. Floods, droughts, heat waves, cyclones, and other extreme weather events are expected to increase across all regions with significant implications for food security. The past decade has seen a notable increase in such events and the consequences for food

production.⁶⁷³ The European heat wave of 2003, the Russian heat wave of 2010, the floods in Pakistan in 2010, and the East African drought of 2011 were all tragic examples of what an increase in the severity and frequency of natural disasters will mean for food security. Humanitarian crises, famines, and restricted trade have and will result from changes in climate.

The projected effects of climate change are expected to facilitate increased weed, pest, and disease issues for agriculture. Existing pests will increase in population and range and new pests will be introduced to agricultural systems that are not prepared. Pest metabolism increases with temperature; therefore in mid-latitude regions where temperature effects are not detrimental, pest consumption of crops will increase. Milder winters will also result in higher pest concentration in places where pests usually migrate away from the cold and longer seasons where pests are most active.⁶⁷⁴ Weed competition and underground weed growth could lead to increased crop losses and require more intensive land management practices. The use of integrated pest management systems would help reduce these effects. To reduce vulnerability to crop diseases, farmers could use multiple cropping instead of monocultures so their entire production system is not susceptible to the same diseases. The techniques and knowledge exist to deal with weeds, pests, and diseases; the key is implementing them in areas where producers lack access and are most vulnerable to their effects.

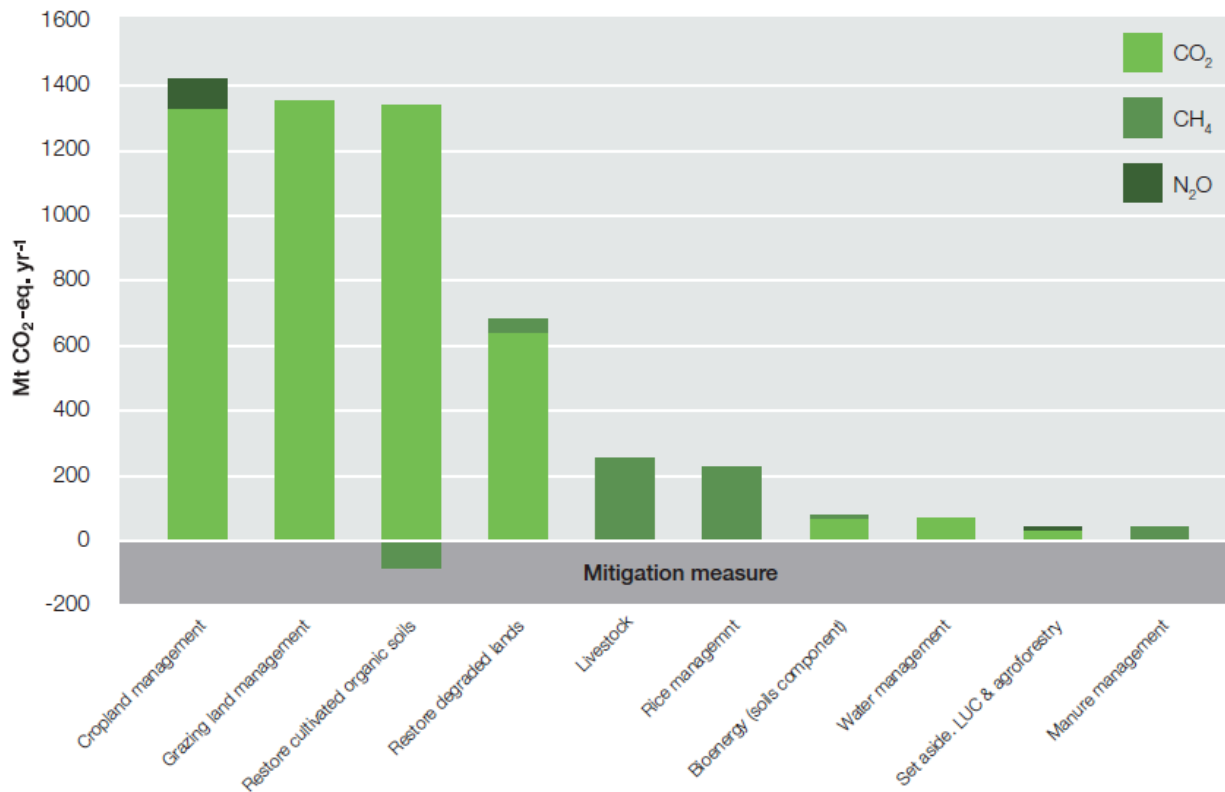
The success of yields and stability of prices will likely be negatively affected by climate change. How climate change affects a yield will depend on the latitude, the type of water supply, and the crop produced in an agricultural system. The yields of most important food, feed, and fiber crops decline drastically above 30 degrees Celsius.⁶⁷⁵ Irrigated wheat production in developing countries is the most at risk, projected to decline 20.8 percent in the most optimistic scenario and 34.3 percent in the most pessimistic scenario. Developing countries fare worse than

developed countries in all scenarios for all crops in terms of average production changes.⁶⁷⁶ Price stability will be vulnerable to supply shocks induced by the effects of climate change, especially extreme weather events. This will be especially detrimental to the developing world, where many countries depend on the agricultural sector for labor and GDP.⁶⁷⁷

Adaptation and Mitigation

Climate change will have major impacts on food production in the long term, but adaptation and mitigation measures can prepare systems and reduce the negative impact. Adaptation measures aim to increase the resilience and preparedness of food systems while decreasing vulnerability. Agricultural research and infrastructure investments (reservoirs, irrigation systems) will help make production systems more resilient to changes in precipitation

Figure 15.5: Global technical mitigation potential by 2030 of each agricultural management practice showing the impacts of each practice on each GHG



Global technical mitigation potential by 2030 of each agricultural management practice showing the impacts of each practice on each GHG (taken from IPCC, 2007); 1000 Mt = 1 Pg. Source: Drawn from data in Smith *et al.*, 2007.

and temperature patterns and extreme weather events. Changing the type of crop, the timing of irrigation and crop rotations, and the application of nutrients are small changes that can be made using existing technology, and can be accomplished on a community or national level.⁶⁷⁸ In addition to preventative measures, food producers must also have increased access to climate information. Early-warning systems can inform farmers of upcoming changes in temperature and precipitation patterns and even natural disasters, reducing the vulnerability of food security to climate change.

Mitigation efforts capitalize on the capacity of agriculture to reduce its contributions to climate change and increase the sequestration of CO₂. Changes in land use and agricultural practices can increase the absorption of carbon when approached from a mitigation strategy standpoint (see Figure 15.5). Improved farming efficiency and minimal land use changes will reduce GHG emissions. Pursuing alternative energy sources would be effective in reducing emissions from energy use in the agricultural sector. These measures would not only be effective in mitigating the worst effects of climate change, but they can also be profitable for farmers.⁶⁷⁹ Increasing carbon sinks in agriculture and land-use through effective land management is another strategy the agricultural sector can use to counteract the worst effects of climate change. Mitigation can also take the form of global climate change agreements that aim to reduce GHG emissions.

The Kyoto Protocol and the most recent climate talks in Durban show that global climate change agreements are not producing the necessary results. A report by the Centre for Non-Traditional Security Studies accurately depicts the challenges of these agreements:

“Climatic changes are of course indifferent to the deliberations of humankind and, in a final assessment of Durban, it must be noted that scientifically developed emissions targets are again taking a back seat to political expedience. This may be lamented but it should come as little surprise. Finding compromise on climate change mitigation, an

issue that strikes at the foundations of how economies function, will always be arduous, and the rapidly changing socioeconomic circumstances found in countries throughout the world only magnifies these challenges.”⁶⁸⁰

U.S. efforts to develop an alternative to the Kyoto Protocol have been largely unsuccessful. As the protocol nears the end of its first commitment phase at the end of 2012, an alternative solution that requires action by all countries with considerations for variance along the development spectrum should be developed. The current concentration of GHG poses a threat to global agriculture, and if emissions continue in their current trend food security will suffer unknown consequences. Agricultural practices can adapt to and mitigate the effects of climate change, but governments worldwide must support efforts to reduce GHG emissions.

Case Study: Climate Change in China

A national example of the risk of climate change is China. Three quarters of Chinese citizens cited environmental problems such as climate change as a major threat to China’s security, according to a study by the Lowy Institute for International Policy and the MacArthur Foundation, 67 percent cited water and food shortages as a result of climate change.⁶⁸¹ Half of China’s land is arid or semi-arid, making it vulnerable to drying out in the early stages of climate change. Because of this fact, by 2030, China’s agricultural output could be reduced by 5 – 10 percent, which would be a disaster in a country that has 20 percent of the world’s population and 7 percent of its arable land.⁶⁸²

In March 2011, the Communist Party of China’s (CPC) Central Committee ratified China’s 12th Five-Year Plan. The principles of the Plan are to focus on inclusive growth, rebalancing the economy, bettering social inequality, and protecting the environment. The country has acknowledged the environment’s link to economic development and food security. Rapid industrialization, reliance on coal as the primary energy source, a large manufacturing industry, and relaxed environmental protection and enforcement has created horrific environmental problems in the country that directly affect agriculture and water. Within the next five years, China seeks to lower its emissions, move towards cleaner energy, regulate

water in rivers, improve farmlands with high drought and flood resistance standards, supervise fisheries, and promote overall clean-up of rural environments. China has talked of implementing a carbon tax by 2013, which is significant considering their reliance on fossil fuels and their current emissions outputs are greater than the any other nation in the world. An excerpt from the Plan shows the initiative that China is taking to improve their environmental situation:

“We will manage and clean up pesticides, fertilizers and plastic sheeting and other non-point source pollution; and comprehensively promote the prevention and control of pollution by livestock and poultry breeding. We will strengthen the protection of drinking water sources in rural areas; and step up our efforts in comprehensive treatment of rural river channels and water pollution. We will strengthen the surveillance, prevention, treatment and management of soil pollution. We will implement rural sanitation projects; expedite the implementation of concentrated waste treatment in rural areas; and carry out comprehensive and integrated clean-up processes in rural areas. We will strictly forbid urban and industrial pollution spreading to the countryside.” [1]

The 12th Five-Year Plan in China is a proactive and positive approach to mitigating the effects of climate change and ensuring food and water security in a country that is larger than the U.S. in both size and population. The Plan offers other nations a model to emulate in order to solve the underlying issues in agriculture: emissions, soil and water degradation, and pollution.

POLICY CONSIDERATIONS

Environmental Degradation

Today’s food production system cannot meet growing food demands with minimal environmental impact. Agricultural production should aim for policies of global sustainable intensification that are efficient and long-term. The natural resource base that includes land, soils, and water is being degraded under current agricultural practices. To counteract this degradation, agricultural policies should address the environment as a pillar of production and

long-term food security. The technologies and practices exist for sustainable intensification, but are only available to farmers who have access to the necessary knowledge and forms of capital. For the longevity of U.S. agriculture and the security of people worldwide, both the public and private sector should aim for the sustainable intensification of agriculture.

Environmental degradation is a direct result of land mismanagement and overuse, so policy should target those issues. For land management plans to be most effective they must be catered to biophysical and socio-cultural differences and the specific issues at play in each region. Feed the Future country plans include measures for sustainability, but those only affect the selected countries. Developing a comprehensive plan of sustainable intensification practices to implement in the developing world, where yield gaps are greatest, is instrumental in achieving long-term food security. This plan would aggregate land management plans, pest management systems, effective irrigation techniques, and soil management techniques into one large information base that both smallholder farmers and industrial farmers can access. In order to ensure accurate use, each plan would include information on which geographic and crop systems it is best suited to. Pillar I of CAADP is a good model for land and water management plans that is currently being implemented in Sub-Saharan Africa. Other regions would benefit from a more global, integrated plan that can be broken down regionally. Many farmers need assistance to make their cropping systems and land management more sustainable given resource constraints, and this proposed plan addresses those needs.

In addition to land management and cropping systems, today's food producers need greater access to agricultural technology and research, especially in the developing world. Existing technologies and research are focused on the major cash crops of the developed world, while the key crops of the tropics and the developing world are largely under-researched. The

solution to this issue is a global platform for the sharing of agricultural technology and research that focuses on the major crops of the most food-insecure regions. Biotechnology has the capacity to help agriculture reduce its water demand and its impact on soil and increase its yields; it just has to be developed and implemented. The Specialty Crop Research Initiative of the National Institute of Food and Agriculture is an example of such a plan, although it does not particularly focus on the most necessary crops. Research and development must shift its focus from high-input industrial crops to a more equitable distribution of research that includes the food staples of the developing world. There is less financial incentive for research to pursue these crops, but they are the key to closing the yield gap and increasing global food security. Biotechnology offers ample solutions for yield increases, pest control, and even nutritional content (see Chapter 7). Research should focus on environmental resilience and renewal that can be adopted on a wide scale but within the limits of producer capabilities.

The resources that most small-scale producers in the developing world have access to are limited, so increasing their capabilities would help increase and stabilize production in a sustainable manner. Investment in the dissemination and implementation of partnerships, technology, research, and training would empower food producers to achieve the goals of sustainable intensification. These measures can promote the importance of natural resource resilience, protection, and renewal through awareness. Such efforts would be positively reinforced through education programs that develop more understanding and support from the public. Sustainability efforts require a conscious effort and information sharing, and governments, corporations, and communities alike must support this process.

Land use changes are a contributor to both environmental degradation and climate change that can be minimized through strong conservation efforts. As the global demand for food

increases rapidly over the upcoming decades, food production must use intensification, not extension, to increase food supply. The conservation of remaining forests and natural environments is key to long-term food security because of the ecosystem services they contribute. Agricultural extension usually occurs on less productive land and oftentimes is not worth the heavy inputs it would require and the environmental damages it causes. The U.S. has been relatively successful in conserving natural environments, and this success can be translated to other countries. However, in order to maintain status as a leader in conservation efforts, the United States would benefit from increasing maximum land under the CRP to 40 million acres in the 2012 Farm Bill. From there the U.S. can support other nations to create effective and substantial conservation programs that minimize land use changes and maximize conservation.

Policy reforms regarding fresh water management align directly with U.S. interests in agriculture and food security. The future costs of depletion and contamination of fresh water translates to an incentive for the U.S. to take interest in preventing these things from further happening. It is of U.S. interest to attain food and water security in the developing world for the sake of economic and social stability. Without economic and social stability in the developing world, it is highly likely that food riots, price strikes, and mass migrations will occur in the cases of water shortages or rising sea levels. The social and environmental costs of ignoring water sanitation and sustainability in the developing world are also of U.S. interest because these high costs result in U.S. foreign aid, but sanitation issues can be prevented with action now. By 2030, China alone, will have exploited all of the country's available water supplies, according to official Chinese government projections.⁶⁸³

The U.S. has many avenues it can take in creating policies to protect fresh water from overuse and contamination. A potential option could be a more strictly enforced responsibility of

industrial farm corporations regarding their water management. This option would make the use of water more efficient and less likely to become polluted. However, corporate responsibility would not have an impact on small-scale farmers, who dominate agricultural production in the developing world. It is necessary for policies to include both small- and large-scale agriculture industries.

An effective policy option would be for the U.S. to use its current research and development in water use, management, and irrigation, and share the latest technology on an information platform that would be accessible to farmers in both the developed and developing world. Currently, this research is mostly funded by corporations for their own use. The research and development techniques already exist but because sharing this information for free is not profitable, it is limiting food security in the developing world. Sharing this information will make the difference between life and death for numerous people around the globe, so it is recommended that the U.S. create an information platform accessible to all people. This will likely create better food security and result in less U.S. foreign aid for food. The information platform for water management would include information on irrigation best practices, proper disposal of contaminated water, how to recycle water in agriculture, and chart regional precipitation trends over the last decade. This information will allow more organized and efficient use of water in agriculture.

The information platform being discussed could further extend to and include aquaculture management. Both agriculture and aquaculture are impacted by the way that humans manage them. Research and development in the U.S. is highly advanced in both types of food production systems. However, the developing world lacks access to this information because of intellectual property rights and the lack of capital and resources. An information platform with aquaculture

research and technology would include statistics on regional water trends, aquatic species at risk of endangerment, and best practices for maintaining fisheries to prevent pollution and overuse. This information platform will allow better micromanagement of aquaculture abroad and improve food security for regions that rely on fish protein, resulting in less need for U.S. foreign aid when aquaculture systems are operated sustainably.

Climate Change

Preparing the global food system to mitigate and adapt to climate change is key to attaining food security. Fluctuations in the production and pricing of agricultural commodities create major social and economic problems, especially in the developing world. Considering the U.S. is a major agricultural producer, preparing for the negative effects of climate change would be socially and economically beneficial. For the sake of both domestic food supply and food exports, increasing the resilience of agriculture is vital to U.S. interests. If Russia's 2010 heat wave had occurred in the same scale over Chicago, U.S. grain supplies would have suffered a 160 million ton loss, reducing the world's grain carryover stock to an all-time low of 52 days.⁶⁸⁴ Addressing climate change will benefit more than just the agricultural sector, as the outcomes will negatively affect other economic sectors and infrastructure. *The Stern Review on the Economics of Climate Change* produced the convincing case that the cost of taking action to avoid the worst effects of climate change would average about 1 percent of global GDP, but the overall costs and risks of climate change will cost 5-20 percent of global GDP each year, from now on.⁶⁸⁵ Understanding the environmental challenges ahead is critical to developing comprehensive policies that pursue agricultural, social, and economic progress.

Agricultural techniques and technologies can help food producers adjust to the effects of climate change through both adaptation and mitigation measures. These tools exist and are

currently being further researched, but they are largely unavailable to food producers in the developing world. The previously mentioned information platform for environmentally sound tools can be expanded to include adaptation and mitigation measures as well. There is ample potential for carbon sequestration in the developing world, and utilizing this capacity is in the interests of all countries to reduce the worst effects of climate change. Resource sharing expands the implementation of existing and developing technology and maximizes its utility.

Addressing climate change requires efforts from all sectors of the economy, not just agriculture. Climate change is a global problem in terms of both its causes and its effects. The United States avoided the Kyoto Protocol, but failed to establish a sufficient alternative plan for the reduction of GHG emissions. As other countries such as Australia have succeeded at creating domestic emissions reduction plans, the United States has insisted on further research and market-based incentives and avoided measures to substantively tackle emissions control. A carbon tax of \$25 per ton of CO₂ on the 500 U.S. companies with the highest annual emissions would help avoid the worst effects of climate change using the polluter pays principle. Its aim is to balance the marginal social costs and benefits of carbon emissions, internalizing the problem. The main targets of the tax would be companies in the industrial, manufacturing, and energy sectors. Price-based solutions, like the carbon tax, offer flexibility because they can be annually adjusted to meet emissions reduction goals, but avoid the price volatility issues of quantity-based solutions, like the cap-and-trade system. The size of the tax could increase through the year 2050 to decrease emissions-heavy economic practices and shift the economy towards more environmentally sustainable practices. Revenues from the tax would be given to the government and could be used to incentivize research in green technologies and buffer the poor from any

spillover tax burden. The price effects of the carbon tax would create more public awareness of what inputs, goods, and services and provide signals and incentives for greener practices.

In addition to the domestic benefits, the U.S. has a substantial influence on what the rest of the world does, and such an action would encourage similar measures in other countries. Ideally, the United States would lead the creation of an international carbon tax system with globally harmonized price that can be adopted by other countries, creating an alternative to the Kyoto Protocol, whose first commitment period is set to end in at the close of 2012. It is acknowledged that not all countries would be willing to enter into such a plan based on their perception of the dangers, income level, political structure, environmental attitude, and country size. Some countries stand to benefit from the short-term effects of climate change, while others have already experienced notable detriments to food security. In terms of fiscal capacities, countries could agree to fully participate once they reach a certain per capita income and receive support from other countries before then to encourage early action. In order to create a successful international plan, it should contain measures for differential but substantive participation. Such leeway is missing from other international agreements and would help make this policy more internationally accepted and successful.

Another policy option for carbon dioxide emissions reduction is a cap-and-trade system, like that of the Kyoto model. This quantity-based control is goal-oriented at lowering emissions to a certain point within the given time frame. Cap-and-trade systems create markets in which permits for carbon dioxide emissions can be traded between companies based on their need for permits. Companies who emit less carbon dioxide than they have permits for can sell permits to companies who overshoot emissions targets, rewarding the more environmentally responsible company. The international community has very little experience with cap-and-trade systems;

the Kyoto Protocol is the best example, but it has largely failed to meet emissions reduction goals. The United States cap-and-trade program for sulfur dioxide is fairly successful but would not translate well to the global scale necessary for the carbon dioxide program. The inelastic demand and supply of permits has been proven to result in price volatility in the market price of carbon under quantity-based approaches.⁶⁸⁶ This volatility is economically inefficient and does not provide adequate and consistent information on the incentives for new technologies. Quantity limits are also challenging to translate across economies with different rates of growth, especially considering the rate of technological and scientific growth is largely unknown. The complicated intricacies of quantitative systems also leave more room for corruption, especially in dictatorships and weak states. Cap-and-trade systems fail to provide revenue to governments that could be used for other adaptation and mitigation measures. The economy and environment would experience less benefits from a cap-and-trade system than from a carbon tax on carbon dioxide emissions.

It is possible to synthesize the two approaches to get the best and avoid the negative implications of both systems. Tax systems are not trusted by some environmentalists because they fail to provide explicit limitations on emissions, which could be fixed with a hybrid system. Kyoto signatories could buffer their quantitative system with a carbon tax, reducing price volatility and corruption incentives. If the carbon tax system does not gain popular support, such hybrid options could be pursued. The cap-and-trade system of the Kyoto Protocol can be seen as a step in the right direction and can be critically analyzed to create more efficient international climate change agreements; its positive effects on public awareness of climate change issues should not be ignored.

Implementing any carbon control measure would require a full public commitment to spending more money now in order to save money later. Carbon control measures put an estimated economic burden of about 1 percent of global GDP on the world if implemented, but are a cheaper alternative than waiting for the worst effects of climate change; the estimated cost of damage to infrastructure and the stability of the global economy is \$23 trillion.⁶⁸⁷ Plans like the Kyoto Protocol are costly and unlikely have a substantial impact, but overzealous programs could be ripe with faults and cost more than they are worth. There lies a certain degree of uncertainty in climate change predictions given the complexity of the system at hand, but this minor uncertainty should not result in further inaction. According to William Nordhaus, “all economic studies find a case for imposing immediate restraints on greenhouse gas emissions, but the difficult questions are how much and how fast.”⁶⁸⁸ Overcoming these questions is necessary and requires urgent action, cooperation, and the realization that although the solutions may be imperfect, they are better than inaction.

POLICY RECOMMENDATIONS

- Create an information platform in which governments, research facilities, corporations, and local farmers can share technology, research, and management techniques.
- Establish a program that emphasizes the importance of natural resource management to food producers and the public through partnerships, technology, research, and training, creating a wider culture of sustainability.
- Promote the preservation and restoration of land on a global scale, ensuring the security of biodiversity, carbon sequestration, and other ecosystem services.
- Develop an international treaty for the management of water. Conditions of the treaty will vary by nation dependent on regional capabilities. The U.S. will establish the treaty and lead by example by complying with the conditions, which will include strict monitoring of irrigation, monitoring of wastewater disposal, and corporate responsibility.

- Improve climate observation networks to more efficiently disseminate information regarding predictions and climate models as an early-warning system for food producers to decrease vulnerability to climate change.
- Pursue the implementation of a carbon tax of \$25 per ton of CO₂ emissions that increases incrementally through 2050 on the 500 domestic companies with greatest emissions.

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Ch.16 Biofuels & Food Security: The Global Impact of a Domestic Industry

Heather Campbell

Abstract

At one time, the biofuel industry represented a possible panacea of both mitigating the United States' dependency on fossil fuels, primarily drawn from foreign sources, and addressing issues of climate change by reducing GHG emissions. However, the benefits of creating biofuel are only existent when production is sustainable; a goal that has not yet been reached within the U.S.. The biofuel currently produced and within the U.S. is inefficient with energy inputs greater than outputs. While this experiment in alternative fuel continues to blunder forward, supported by costly U.S. legislation, the subsequent warping of agricultural market prices has a far-reaching affect on global food security.

Policy Recommendations

Short term

- Strengthen a trade partnership with Brazil through an elimination or reduction of current import tariffs.
- Utilize the current U.S. ethanol processing infrastructure to process Brazilian ethanol for current biofuel requirements instead of domestically producing ethanol for biofuels.

Long term

- Eliminate legislative backing of the U.S. biofuel industry, which is wavering in spite of intensive government funding.
- Utilize current renewable energy funding for research and development in cellulosic, second generation biofuels. Commercialization of this industry would bolster the U.S. economy, establish the U.S. as an industry leader, foster fuel independence, and have a negligible affect on food security.

ISSUE

Process and Definitions

Biofuel can be defined as “renewable energy sources produce from natural (bio-based) materials, which can be used as a substitute for petroleum fuels”.⁶⁸⁹ The most common types of biofuel are ethanol from corn, wheat, or sugar beet, and biodiesel from oil seeds.⁶⁹⁰ Ethanol can be produced from cellulosic biomass, such as woody plants, agricultural and forestry residues, and municipal and industrial solid waste streams.⁶⁹¹ However, cellulosic biomass has not been brought into commercial production yet.

Biodiesel is its own type of biofuel, produced primarily from oil seeds. Biodiesel is a synthetic, diesel like fuel that can be produced from vegetable oils, animal fats, or waste cooking oil.⁶⁹² There is currently research and development in the expansion of vegetable oil use for biodiesel production.⁶⁹³ Biodiesel can be used directly as fuel with engine modifications, or blended with petroleum diesel.⁶⁹⁴

The commonly stated advantages of biofuel encompass the following: biofuels are available from biomass sources, which are thought to be plentiful, they reduce carbon emissions, they have an “environmentally friendly potential”, and that they are biodegradable.⁶⁹⁵

Biofuels & Food Security

Statistics on the impact of biofuel on food prices range from the 3 percent reported by the U.S. government to 75 percent noted in an unpublished study from a senior World Bank economist.⁶⁹⁶ Regardless of ranging statistics, the impact of the biofuel industry on food security is undeniable. Three specific facets of biofuel impact food security: competing uses of land, competing uses of water, and resultant food prices.

Issues of Efficiency

The current U.S. Renewable Fuel Standard mandates the utilization of 36 billion gallons of plant-based fuels for transportation by 2022.⁶⁹⁷ While the recent removal of the \$6 billion annual subsidy for ethanol-corn production is a step in the correct legislative direction, tariffs on imported ethanol from Brazil and costly infrastructural support for the “distribution, storage, and transport of agrofuels” prop up the faulty domestic U.S. biofuel industry.⁶⁹⁸ Agrofuel, or biofuel, production currently takes up about 80 percent of U.S. government support for renewable energy, placing solar and wind technologies on the back burner.⁶⁹⁹ In the current economy, there is only finite funding for projects such as renewable energy; biofuels require a large portion of this government spending.

Although not entirely independent of food security, the timeliest issue of biofuels is their inefficacy. Researchers at Cornell and UC Berkeley have recently established conclusive results that deem biofuel production from corn, soybeans, sunflowers, switch grass, and wood cellulose as requiring more fossil fuel energy than it is able to produce.⁷⁰⁰ Based on the original assessments of corn-based ethanol, ethanol from corn should produce a net energy return of 25-70 percent percent; in practice, results fall flat of these idealistic figures.⁷⁰¹ Moreover, regardless of efficiency or sustainability (two requirements necessary to differentiate alternative fuels from fossil fuels), biofuels do not provide a viable solution to current petroleum consumption. A 2008 OXFAM report determined that the global supply of carbohydrate crops, including starches and sugars, could replace “at most 40 percent of petroleum consumptions”, and that the world’s oilseeds are able to replace less than 10 percent of current diesel fuel usage.⁷⁰²

The process of converting land to use for biofuel is inherently costly to the environment. It is estimated that for grasslands in the U.S. Midwest to be brought into corn production, it

would take 93 years of efficient bioethanol production to equalize the consequences of land conversion.⁷⁰³ With corn ethanol production being discredited in terms of efficiency, even this projected figure may be too optimistic. Moreover, land conversion is not the only thing necessary to implement a wide-scale biofuel industry: large infrastructure projects are also required. As stated in the Energy and Independence Security Act of 2007, the “nations use of some renewable biofuels, such as ethanol, will require economically viable infrastructure for fuel delivery”.⁷⁰⁴

Price Volatility

Within the United States, production of ethanol from corn both diverted food from human consumption and incentivized farmers to shift their land towards corn production at the expense of other staple crops, in expectation of impending demand.⁷⁰⁵ This behavior links food prices not only to speculation in the commodity grains market, but also to the price of oil and domestic investment in biofuels.⁷⁰⁶ For example, in response to a large and brief increase in the relative price of corn, US farmers increased corn-cropping areas by 19 percent in 2007, at the expense of soybean cropping lands.⁷⁰⁷ Due to speculation of a subsequent soy supply reduction, market expectations for the price of soybeans soared.⁷⁰⁸ The British charity, Action Aid, provided a staggering prediction that current biofuel targets may potentially increase food prices 76 percent by 2020, increasing the population suffering from hunger by 600 million.⁷⁰⁹ Although within the United States this does not present a dire issue, within developing countries where a large portion of income is dedicated to food, the results of food price volatility are devastating in terms of food security. Thus, the U.S. biofuels industry has a far-reaching impact, outside of U.S. borders and outside of the energy industry.

Biofuels & Food Security Abroad

The biofuel industry presents a burgeoning international issue, in addition to its massive domestic presence. Developing countries continue to jump on the biofuel bandwagon, notably including Brazil, China, India, South Africa, and the Phillipines. Biofuels remain high on each of these governments' lists as alternatives for fuels.⁷¹⁰ China recently slowed the growth of their industry in the face of food price spikes in 2007 and 2008, with the recognition that completing their stated goal of 20-39 million tons of biofuel annually by 2020 would jeopardize both human and animal nutrition.⁷¹¹ However, biofuel blending requirements remain in 31 countries as of 2011.⁷¹² In developing countries that have current issues with food security, an expanding biofuel industry will infringe on already lacking agricultural production.

Biomass production's competition with food crops is inevitable; rising food prices are an obvious consequence. In a recent study, it was noticed that, based on a survey of U.S. farmers, doubling the profitability of biomass would result in the use of 3-4 million ha of cropland, 1/5th of what is required to reach production goals.⁷¹³ This result indicates two important ideas: 1) that the U.S. contribution to biofuel will need to continue to be large scale, for the long term, in order to incentivize farmers to contribute to reaching current goals 2) the resulting competition for land use will consequently raise food prices. Additionally, it is difficult to justify the increasing production of biofuel in the face of a hungry world. One SUV tank of bioethanol fuel uses enough corn to feed one person for one year; how can this industry continue to expand and fit total fuel demands with these types of requirements?⁷¹⁴

BACKGROUND

Biofuel in the United States

The United States invests the majority of its funding for alternative energy in the biofuel industry, established with the Renewable Fuel Standard (RFS), a subsection of the Energy Policy Act of 2005. The Energy Independence and Security Act of 2007 (EISA) expanded the RFS program.⁷¹⁵ EISA states succinctly that, “The United States faces growing imperatives to develop diverse, sustainable, domestic energy resources and mitigate climate impacts from the use of fossil fuels; biofuel is currently the most viable replacement for liquid transportation fuel for the near term and can help achieve national goals for clean, secure, sustainable energy”.⁷¹⁶

EISA mandates that 36 billion gallons of renewable fuels be produced by 2022, 16 billion gallons from cellulosic feed stocks.⁷¹⁷ 12.95 billion gallons were required for 2010 production, with 6.5 billion origination from cellulosic ethanol.⁷¹⁸ Biodiesel requirements were lowered because of lack of feedstock availability.⁷¹⁹ EISA contains a requirement for the reduction of GHG, stating that biofuels must reduce GHG emissions in comparison the petroleum by the following percentages: corn grain ethanol by 20 percent, advanced biofuel by 50 percent, biodiesel by 50 percent, and cellulosic biofuel by 60 percent.

Domestic Energy Consumption

60 percent of greenhouse emissions are from the burning of fossil fuels, while the remaining 40 percent comes from deforestation and agriculture.⁷²⁰ 9.1 billion metric tons of carbon dioxide production can be attributed to human activity.⁷²¹ Juxtapose this with the 5 billion metric tons that plants, oceans, and soils are able to remove annually; carbon emissions are obviously outgrowing the Earth’s capacity to deal with them.⁷²²

Within the United States, transportation accounted for 29 percent of total energy consumption

in 2009, with 346 million gallons of gasoline utilized each day.⁷²³⁷²⁴ As of 2008, 150 petroleum refineries exist within the United States, and 201 ethanol facilities.⁷²⁵ In 2009, an estimated 7.8 percent of fuel for gasoline engine cars was provided by ethanol.⁷²⁶ Obviously, the ethanol industry, while heavily supported by U.S. legislation, does not remotely compete with gasoline consumption, at least within the United States.

Current Ethanol Consumption and Production

In 2010, 201 ethanol facilities ran in the United States, with a production capacity of 13.5 billion gallons of ethanol.⁷²⁷ In 2009, the United States was the top world producer of fuel ethanol, followed by Brazil, and then the European Union.⁷²⁸ Production of ethanol has growth within the United States from 175 million gallons of ethanol per year to 10.75 billion gallons in 2009.⁷²⁹ 99 percent of ethanol produced within the United States is utilized for “E10”, which blends 10 percent ethanol and 90 percent gasoline.⁷³⁰ “Flex Fuel Vehicles” can use “E85” fuel, which is 85 percent ethanol and 15 percent gasoline.⁷³¹ Out of roughly 250 million vehicles in use, 8 – 8.5 million were Flex Fuel Vehicles in the U.S. in 2009.⁷³² In 2009-2010, 1/3 of the U.S. corn crop was diverted to ethanol production, incentivized by both federal subsidized and rising oil prices.⁷³³ This fact provides an interesting contrast to the low numbers of Ethanol blends and Flex Fuel cars currently in use in the U.S.

Future Estimates of Biofuel Production

The USDA estimates that 27 million acres of cropland are required to produce the RFS mandated biofuels, which makes up roughly 6.5 percent of reported agricultural cropland in the United States.⁷³⁴ For ethanol to remain competitive, oil prices must remain above \$60-70 per barrel. As of today, February 5, 2012, the price of a barrel of oil is \$97.84.⁷³⁵

Brazil Rising

The key features of Brazil's awakening are widely recognized: expanded exports, oil discoveries, financial stability, low inflation, growing foreign and domestic investment, booming consumer demand, social assistance focused on the neediest, and democratic political cohesion. Brazil's diverse economy is now founded on strong sectors in mining, agriculture, and, more recently, biofuels -- all of which have benefited from a combination of technological advancements and strong incentives for private investment. – Juan de Onis, 2008.⁷³⁶

Today, Brazil is South America's largest and fastest growing economy. Brazil is currently the 8th largest economy in the world with a GDP growth rate of 2.8 percent, down from a 7.5 percent in 2010. Compare to the US, the 6th largest economy in the world with a growth rate of 1.5 percent, down from 3.0 percent in 2010.⁷³⁷

Beginning in the 1970's, Brazil is considered a pioneer in the biofuel industry, becoming the world's largest exporter of ethanol and largely restructuring its economy. Together, the US and Brazil produce 70 percent of the world's Ethanol. Realizing the need to establish a relationship with Brazil, in 2007 President George W. Bush announced a partnership with Brazil in an effort to encourage Central, Caribbean, and South American countries to invest in the production and consumption of biofuels as an alternative to oil.⁷³⁸

US Diplomacy

The US is also using the partnership with Brazil to decrease the influence of oil-rich Venezuela in the region. Venezuela, a country at political odds with the US, has used its oil reserves to generate regional alliances and with them, its anti-American influence. The partnership with Brazil will help to boost US image and relations in the region. Seeing as how demand for biofuels has exceeded US supply and continues to grow, the two countries are not competitors for the amount of exported biofuels.⁷³⁹

Up to yesterday, we considered the U.S. corn growers our enemies, and they have considered us their enemies. But we aren't enemies- we are allies; independent of the tariff issue that has divided us. - Eduardo Pereira de Carvalho, President of Brazil's sugarcane growers union⁷⁴⁰

Because Brazil's sugar cane biofuel production is more efficient than production in the US and possess a similar tropical environment, it is more appealing for other tropical climate countries to partner with. Instead of viewing Brazil strictly as competition, it will be wise for the US to create a partnership in biofuel and information sharing, so as to gain the political benefits of Brazil's certain leadership in the industry for years to come.

This is the first effort to jump-start a Western Hemisphere ethanol market, involving both trade and local development, which would reduce the pressure of high oil prices on the balance of payments of countries in the region... It also represents the fact that Brazil is moving to the fore as an energy leader, along with Venezuela, in the region. -Dan Yergin of Cambridge Energy Research Associate⁷⁴¹

Analysts have referred to the partnership as the beginning of a cartel comparable to OPEC. The comparison is debatable, however, as the US and particularly Brazil strives not to control the market, but to encourage production and expand market options in order to create a viable and tradable commodity.⁷⁴²

As the world's ethanol consumption increases, the primary challenge will not be to compete for markets, but rather to expand ethanol production quickly enough to meet surging demand. Everyone has a lot to gain. - Luiz Incio Lula da Silva, President of Brazil⁷⁴³

Imported Ethanol Tariff in the US

The US, has limited the expansion of the market and the strength of its newfound partnership with Brazil with a 0.54 per gallon tariff imposed on imported ethanol. The tariff was established in the 1980's and has since become outdated in practicality.

In CBI countries however, are now exempt from the 0.54 per gallon tariff imposed on ethanol since 1980. The tariff exemption has allowed for market access to the US for ethanol producing

countries in the Caribbean Basin. The CBI beneficiary countries are Antigua and Barbuda, Aruba, the Bahamas, Barbados, Belize, the British Virgin Islands, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Panama, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago. The tariff exemption has not yet extended to Brazil or other South American Countries.⁷⁴⁴

POLICY CONSIDERATIONS

Several options exist for United States policy on the biofuel industry.

In terms of alternative energy policy, increased research and development might be focused in more promising areas. For example, oil-producing microalgae has been shown to be more efficient than current ethanol based biofuel.⁷⁴⁵

If the U.S. continues to pursue its current biofuel practices with the use of ethanol, it has two viable options. One is to explore cellulosic biofuel, which is necessary in large quantities to meet current production goals.⁷⁴⁶ Cellulosic biofuel is “second generation” biofuel and is able to use the waste from agricultural processes to produce fuel. Additionally, it would reduce GHG emissions from biomass burning (see Chapter 3). Currently, cellulosic biofuel is unproven at a commercial scale, and recent credit shortages have prevented its expansion.⁷⁴⁷ However, in order for the biofuel industry to be sustainable, it is necessary that a commercial cellulosic biofuel industry be established.

The second option currently in consideration for the U.S. is building a pipeline to distribute biofuels more efficiently. The proposition for this pipeline was a piece of the EISA of 2007. In order for the pipeline to be economically viable, it needs to transport about 4.1 billion gallons of ethanol annually, which exceeds the current projected demand.⁷⁴⁸ This demand could

be achieved by mandating ethanol blends over 10 percent or by furthering financially supportive legislation.⁷⁴⁹ The pipeline would reduce the “congestion” of rail, truck, and barge biofuel transportation, and further the reduction of greenhouse gas emissions, in comparison with current transport counterparts.⁷⁵⁰

The recommended course of action for U.S. policy on biofuel is three fold.

Firstly, in the short term, it is within the United States’ interest to partner with Brazil in terms of foreign trade. This partnership, for the acceleration of mitigating alternative fuel technologies, should incorporate an elimination of tariffs on imported ethanol from Brazil. The BRICS countries are gaining on the US and the rest of the G8 not only in GDP growth, but in agricultural and technological sectors as well. It is time for the US to solidify lasting country-country partnerships with these rising economies, particularly in context of food security. Brazil and their growing biofuel industry, and their political and economic leadership throughout South America pose many benefits to the US in the case of a secure partnership. Expanding on the US-Brazil partnership initiated by George W. Bush in 2007 will not only help to increase efficient production and market integration of biofuels throughout the Americas as a whole, but will also help the US to become more involved in the South American region which lies geographically near yet largely politically separated at this time.⁷⁵¹ Increasing supply abroad and opening access to US markets for suppliers will decrease the price of biofuels in the Americas while assisting in the development of Caribbean and south American economies. Brazil’s climate is ideal for the growth of sugarcane for ethanol purposes, and is the only country to create a viable, sustainable, and efficient biofuel industry. Creating infrastructure within the United States to process, blend, and disperse Brazilian ethanol would strengthen the proposed partnership with Brazil, create trade bonds, and create industry in the United States that would require increased

employment and potentially bolster the economy. Furthermore, in the interest of finding a viable alternative to fossil fuels, utilizing Brazilian sugarcane provides the most promising option in the short term. In order to expand production and market availability for biofuel as a tradable commodity, and increase its presence in South and Central Americas the US should consider furthering its partnership with Brazil with an extension of the 0.54 tariff exception to this region of the world.

Secondly, legislature that currently props up the United States' corn based ethanol industry is a waste of taxpayer dollars, especially in a challenging economic climate. This public-private partnership is leading nowhere. Rather than supporting an industry that has been unable to find footing, despite excessive governmental support, ethanol should be imported and processed from its more efficient, less expensive Brazilian source. If corn-based ethanol is not environmentally efficient, does not provide a viable alternative to fuel, and is not commercially viable, it should not be part of alternative energy legislation.

Thirdly, the funding that currently supports corn-based ethanol could go towards research and development in cellulosic, second-generation biofuels, which can be made from agricultural wastes and thus have a minimal impact on food security and agricultural production, and other promising energy technologies, such as wind and solar powers. Cellulosic, second generation biofuels have been experientially promising, but have yet to transition to commercial viability. Thus, developing countries continue to pursue current, first generation biofuel technologies because the industrial processes are already established. If the United States is truly committed to a sustainable, commercially viable alternative fuel source, cellulosic biofuels contain more potential than current corn-ethanol processes because they utilize agricultural wastes, which are theoretically cost free, both in terms of money and in terms of environmental impact. Moreover,

if this technology could translate into developing countries biofuel industries, it would mitigate a large portion of land and water use issues currently influencing food security. Domestically, the commercial use of second generation, cellulosic biofuels would detract from the current association between biofuel production and food prices, leading to less volatility and hence, improved food security.

POLICY RECOMMENDATIONS

Short term

- Strengthen a trade partnership with Brazil through an elimination or reduction of current import tariffs.
- Instead of domestic ethanol production for biofuels, utilize the current U.S. ethanol processing infrastructure to process Brazilian ethanol for current biofuel requirements.

Long term

- Eliminate legislative backing of the U.S. biofuel industry, which is wavering in spite of intense U.S. support.
- Use renewable energy funding for research and development in cellulosic, second generation biofuels. Commercialization of this industry would bolster the U.S. economy, establish the U.S. as an industry leader, foster fuel independence, and have a negligible affect on food security.

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