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A New Framework for African Smallholder Agriculture: Harnessing Innovation and the Private Sector to Drive Sustainable Development

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A New Framework for African Smallholder Agriculture: Harnessing Innovation and the Private Sector to Drive Sustainable Development

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Abstract

A New Framework for African Smallholder Agriculture: Harnessing Innovation and the Private Sector to Drive Sustainable Development

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This report will outline a new framework for improved yields and increased sustainability in Sub-Saharan African smallholder agriculture. Given the failures of agricultural development aid and policy in the past, cross-sector collaboration among local farmer networks, national governments, and private corporations could represent a new model to foster sustainable agricultural production and growth, as each has had past successes but have not traditionally come together to work as a collaborative unit. This paper will examine each sector to look at best practices and then develop a framework for such collaboration. After a normative case with a positive outlook as to the potential for implementing the framework to Senegal's groundnut sector, the paper concludes that the framework can work in a variety of settings as long as one is aware of and respects local conditions.

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Chapter I: Introduction

DESCRIPTION OF THE PROBLEM

Agricultural production in Sub-Saharan Africa (SSA) has remained stagnant despite attempts over decades to increase production through aid, government programs and private initiatives. Some current development community efforts to increase production focus on a continent-wide, research-driven approach that aims to replicate Asia's agricultural production increases in the 1960s and 1970s.[1] Such approaches, however, might not be successful given inherent differences between Asia in the 1960s and SSA today.[2]

Moreover, shifting foci onto new concepts like sustainability means that there will be more factors to take into account when assessing the effectiveness of agricultural development programs.[3] Continuing population increases put intense pressure on available land and water resources, causing "expansion of fields into marginal lands, shortened fallow periods and degradation and abandonment of upland fields."[4] This land use change can make previously sustainable land and water use systems non-viable as long-term options and create the need for different systems of production.[5] In addition,

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[1] The Gates and Rockefeller Foundations have partnered to create the Alliance for a Green Revolution in Africa (AGRA) that is leveraging millions of dollars in funding to recreate the same "theory of change" seen in Asia in the 1960s and 1970s. For more see Gary Toenniessen, Akinwumi Adesina, and Joseph Devries, "Building an Alliance for a Green Revolution in Africa," *Annals of the New York Academy of Sciences* 1136 (2008): 233-242, http://wiley.interscience.com (accessed April 27, 2010).

[2] Uma Lele and Arthur A. Goldsmith, "The Development of National Agricultural Research Capacity: India's Experience with the Rockfeller Foundation and Its Significance for Africa," *Economic Development & Cultural Change* 37, no. 2 (January 1989): 309, http://search.ebscohost.com (accessed 27 April 2010).

[3] For this paper, sustainable agriculture is defined using the United States Code, and must satisfy three common tenets of sustainability, including social, environmental and economic viability. For exact language see 7 *USC* 3103. For more on the concept of sustainability see *Our Common Future* (New York: Oxford University Press, 1987), http://www.un-documents.net/wced-ocf.htm (accessed 28 April 2010).

[4] Abigail Amissah-Arthur, Bernard Mougenot and Maud Loireau, "Assessing Farmland Dynamics and Land Degradation on Sahelian Landscapes Using Remotely Sensed and Socioeconomic Data," *International Journal of Geographical Information Science* 14, no. 6 (2000): 584, http://search.ebscohost.com (accessed 27 April 2010).

[5] Ibid.

the effects of climate change have great potential to work in tandem with increasing population to make food scarcity an even greater issue than it is now.[6] Given the relative failure to address food security issues through past international aid and policy, new approaches are needed. One such approach involves using the private sector as an agent to promote sustainable land use.

The private sector has participated in agricultural development in the past, but new emphasis on sustainability means that current conditions might be more amenable to involvement that is more effective in helping smallholder farmers.[7] Despite the recent economic downturn, sustainability continues to gain traction in business, and private companies have responded.[8] Examples abound of food production companies searching for more sustainable sources for raw agricultural goods.[9] Consumer demand for socially and environmentally responsible goods can place a premium on sustainably sourced goods, and companies responding to these consumers could be drivers for more sustainable farming practices.

This report will outline a new framework for improved agricultural yields and increased sustainability in SSA. Specifically, given the failures of agricultural aid and policy in the past, cross-sector collaboration among local, ground-up farmer networks,

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[6] Martin Parry, Cynthia Rosenzweig and Matthew Livermor, "Climate Change, Global Food Supply and Risk of Hunger" *Philosophical Transactions: Biological Sciences* 360, no. 1463 (November 2005): 2125-2138, http://www.jstor.org (accessed 27 April 2010).

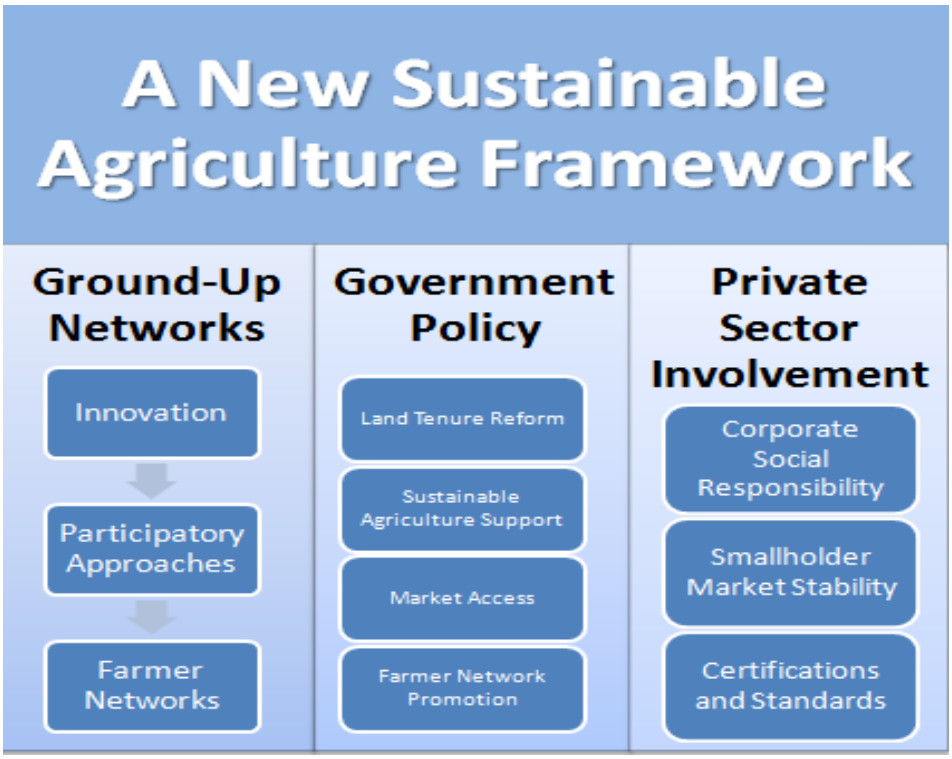
[7] Past attempts to involve the private sector include out grower schemes (in which farmers are contracted to grow crops on their own land) and large-scale commercial farms (for which farmers leave their land to work for wages). For a detailed case study of how destructive the latter can be see Maureen Mackintosh, *Gender, Class, and Rural Transition: Agribusiness and the Food Crisis in Senegal* (London, UK: Zed Books, 1989).

[8] Walmart recently unveiled a sustainability index, which has potential to revolutionize global supply chains by providing information to consumers through better labeling. See Stephanie Rosenbloom, "At Wal-Mart, Labeling to Reflect Green Intent," *The New York Times*, July 15, 2009, http://www.nytimes.com (accessed April 20, 2010).

[9] For details on the experience of the coffee industry, for example, see April Linton, "Partnering for Sustainability: Business–NGO Alliances in the Coffee Industry," *Development in Practice* 15, nos. 3 & 4 (June 2005): 600-614, http://www.informaworld.com (accessed 10 March 2010).

national government, and private corporations could represent a new model to foster sustainable agricultural production and growth, as each has had past successes but have not traditionally come together to work in an integrated way. This paper will examine each sector to look at best practices and then develop a model for agricultural development that has local networks, national governments and international corporations working together in a complementary fashion that benefits all stakeholders and could ameliorate some of SSA's most pressing agricultural production issues. The proposed framework follows (figure 1).

Figure 1: A New Framework for Sustainable Agriculture in SSA



REPORT ORGANIZATION

Chapter 2 will summarize the failure of past aid, how climate change exacerbates the problem of unsustainable farming practices and the problems with Asia's Green

Revolution. The chapter will conclude that SSA agricultural development attempts modeled on Asia's Green Revolution will not work due to extremely different circumstances.

Chapter 3 will present ground-up sustainable agriculture as one of the pillars of the new framework. It will outline innovation as a driver for sustainability and then show how participatory approaches could lead to the creation of farmer networks that use innovation and sustainable agriculture as underlying principles.

Chapter 4 will outline several important areas in which government policy could act as the second pillar for promoting the new framework. It will argue that governments should act appropriately in the areas of land ownership, agricultural sustainability, market access and farmer network promotion

Chapter 5 will present the third pillar, or corporate involvement, and the idea of Corporate Social Responsibility as an emerging force in sourcing of agricultural products. It will make the case that it is potentially profitable for corporations to enter into sustainable partnerships with farmers as long as market stability and economic incentives exist for both parties. Next, the chapter will examine the importance of labels and certifications (like fair trade) in promoting sustainable agriculture. One case study in particular, a cocoa initiative in Belize, will serve to exemplify the potential for private involvement in the agricultural development sector.

Chapter 6 will tie the framework together by introducing a normative case centered on groundnut production in Senegal. It will examine the three pillars as they relate to current conditions in the country, and make the argument that a company seeking a sustainable supply of quality groundnuts might provide Senegalese farmers with a stable income as well as incentives to focus more on soil fertility due to sustainability requirements.

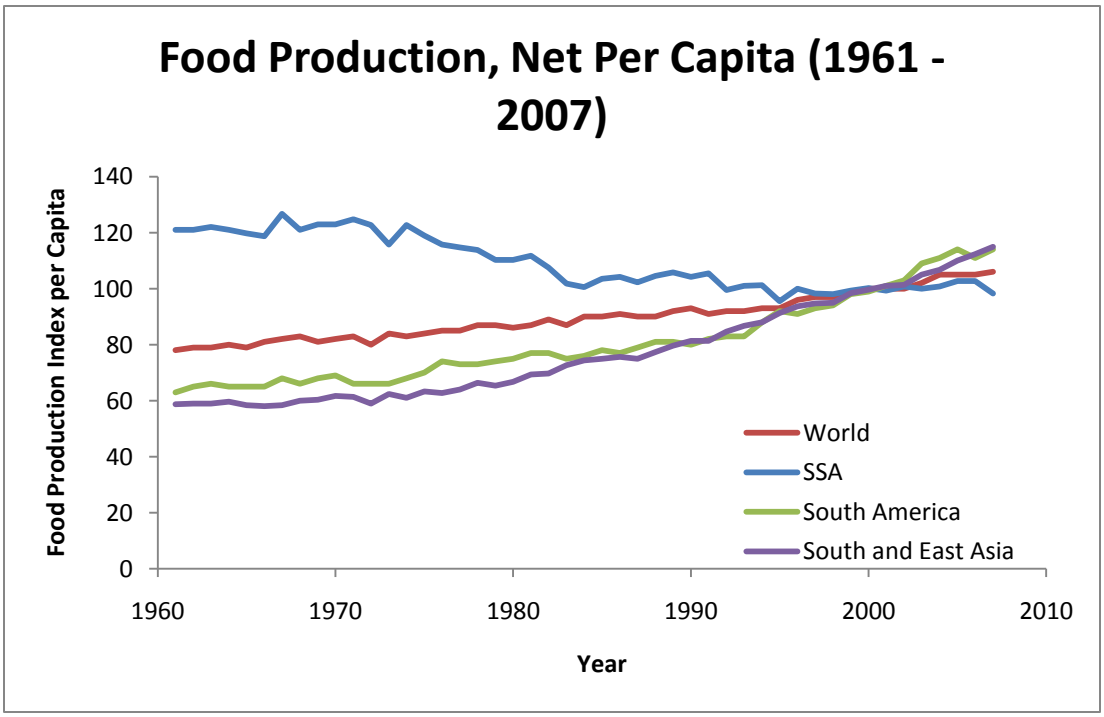
Chapter 7 will argue that cross-sector collaboration has great potential to succeed given the right conditions. The chapter will summarize the report and will finish with recommendations and areas of future research.

Chapter II: Background of the Problem

DECREASING FOOD PRODUCTION IN SUB-SAHARAN AFRICA

Food insecurity is a major problem in SSA. Since the 1970s, SSA is the only region to have decreases in both food production per capita and overall access to food.[10] The drop in productivity is a driving force behind SSA's overall poverty, because agricultural productivity is a key factor in overall economic growth, and rural productivity increases in particular contribute to a "substantial poverty reduction."[11]

Figure 2: Change in Food Production per Capita, 1961 - 2007



Source: Food and Agriculture Organization of the United Nations Statistical Database, available at http://faostat.fao.org (accessed 2 May 2010).

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[10] R. Lal, "Soils and Food Sufficiency. A Review," *Agronomy for Sustainable Development*, 29 (2009): 114, http://www.agronomy-journal.org (accessed 15 January 2010); Pedro Sanchez, "Soil Fertility and Hunger in Sub-Saharan Africa," *Science* 295 (15 March 2002): 2019, http://www.sciencemag.org (accessed 15 March 2010).

[11] Vernon Ruttan, "Productivity Growth in World Agriculture: Sources and Constraints," *Journal of Economic Perspectives* 16, no. 4 (2002): 170, http://www.jstor.org (accessed 15 April 2010).

The agricultural productivity decreases are largely due to soil degradation, leaving little room for solutions reversing the decline that do not include increased focus on soil rehabilitation.[12] Soil degradation is itself a byproduct of a "breakdown" of traditional practices and government policy towards the rural sector.[13] For example, traditional fallow systems are being crowded out as more and more people are living off the same land, pushing farmers to reduce fallow time and increase the use of more marginal lands.[14] At the same time, many SSA countries have pursued top-down strategies of attempting to control soil fertility through practices such as forced adoption of erosion control measures; even as governments have begun to take a more localized outlook, there are still problems relating to overexploitation of land and water due to poor policy and weak institutions.[15]

CLIMATE CHANGE AND ITS EFFECT ON SSA

Climate change has potential to add more complications when planning for the sustainability of SSA's agricultural future. One comprehensive survey of potential climate change impacts (Parry and others, 2005) indicates that, even with very slight increases in temperature, SSA is one of the regions that will be hardest hit in terms of food production.[16] In fact, around 65% of the people at additional risk of hunger due to climate change live in SSA.[17] There will also be water stress issues, especially if

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[12] Lal, 115.
[13] Sanchez, 2019.
[14] Amissah-Arthur et al., 584.
[15] B. Shiferaw, J. Okello, and V. Ratna Reddy, "Challenges of Adoption and Adaptation of Land and Water Management Options in Smallholder Agriculture," in *Rainfed Agriculture: Unlocking the Potential*, ed. Suhas P. Wani, Johan Rockstrom, and Theib Oweis (Wallingford, UK: CABI, 2009), 260-267, http://www.iwmi.cgiar.org (accessed April 28, 2010).
[16] Parry, Rosenzweig, and Livermor, 2133.
[17] Ibid.

governments work on expanding irrigation at the expense of drinking water.[18] This would create direct competition between drinking water and crop production; the Sahel region, with its long dry season and already variable rainfall, would be most at risk.[19] Those countries that are experiencing water shortages already are likely to see greater water scarcity because of climate change, compounding existing challenges to agriculture.[20]

INTERNATIONAL AID AND A "GREEN REVOLUTION" FOR SSA

In the 1960s and 1970s, a combination of factors allowed agriculture in South Asia to expand rapidly in terms of productivity and overall capacity. Some in the international development community still feel that SSA needs to replicate the Asian model, at least to some extent, to break the downward cycle of soil fertility and reverse food production losses. For example, major figures have publicly called for an African "Green Revolution" based on (1) "water management programmes and irrigation projects," (2) seed research by "African agricultural scientists," and (3) "affordable fertilizer."[21] Given the widespread perceived success of the Asian experience, it is natural that some in the international aid community desire a similar revolution to occur in SSA. However, an overview of actual outcomes might temper any perceived successes.

Outcomes of the South Asian Experience

An analysis using Ester Boserup's theory of agricultural growth would posit that, since agricultural intensification is demand-driven, the Asian Green Revolution was

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[18] Roger Calow and Alan MacDonald, *What Will Climate Change Mean for Groundwater Supply in Africa?* Background Note, 4, http://www.odi.org.uk (accessed May 2, 2010).
[19] Ibid, 3-5.
[20] David Grey and Claudia W. Sadoff, "Sink or Swim? Water Security for Growth and Development," *Water Policy* 9, no. 6 (2007): 551-552, http://www.iwaponline.com (accessed January 15, 2010).
[21] Kofi Annan, "Comment: A Green Revolution for Sub-Saharan Africa," *New Scientist*, May 10, 2008, 20, http://search.ebscohost.com (accessed August 08, 2009).

inevitable due to increasing population pressures in South Asia.[22] Indeed, a recent analysis of outcomes in Bangladesh supports this theory, as population growth seems to have a direct and causal effect on agricultural intensification.[23]

Boserup's theory focuses on the causes of agricultural intensification, but the model only allows for externalities associated with increased production up to a point, generally accounting for these externalities as diminishing returns.[24] To understand the Asian Green Revolution, one should assess any resulting environmental and social externalities in the context of long-term effects on agricultural productivity.

One recent regional analysis of the green revolution in India found that the majority of evidence points to agricultural growth as a direct means of poverty reduction.[25] However, the same study found that, among Indian states, the ones most successful at reducing poverty through agricultural production increase were also the ones that had a high proportion of ecological conditions favorable for agriculture (i.e. potential for inexpensive irrigation development or reliable rainfall); those that did not contain these conditions have not been nearly as successful.[26]

Evidence increasingly points to the Green Revolution as more of a rural development program that eschewed traditional agriculture in favor of a chemical-based agriculture that relied on new technologies, with farmers requiring continuous training

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[22] For the theory in full see Ester Boserup, *The Conditions of Agricultural Growth: the Economics of Agrarian Change under Population Pressure* (New Brunswick, NJ: Aldine Transaction, 2005).
[23] Mohammad Alauddin and John Quiggin, "Agricultural Intensification, Irrigation and the Environment in South Asia: Issues and Policy Options," *Ecological Economics* 65 (2008): 114, http://www.sciencedirect.com (accessed January 15, 2010).
[24] Boserup, 36-41.
[25] Richard Palmer-Jones and Kunal Sen, "What Has Luck Got to Do with It? A Regional Analysis of Poverty and Agricultural Growth in India," *Journal of Development Studies* 40, no. 1 (October 2003): 25, http://www.informaworld.com (accessed August 10, 2009).
[26] Ibid.

and imported equipment, leading to a state of non-sustainability, rural social upheaval and loss of cultural identity.[27]

There have also been dangerous environmental externalities associated with the green revolution. In Bangladesh, for example, recent research supported the theory that increased irrigation resulting from the adoption of high-yield seed varieties directly led to arsenic poisoning, as increased water pumping for crops altered groundwater flows, thereby contaminating drinking water wells.[28] In general, Bangladesh has also experienced a decline in land quality due to reliance on chemical fertilizer and a lowering of the water table due to increased irrigation.[29] The very factors that the Green Revolution espouses as necessary have led to major challenges to sustainability, making the model problematic as an ideal one for SSA.

SSA Compared to South Asia

While in theory, it might be possible to pursue a similar large-scale agricultural program in SSA with more attention paid to environmental and social outcomes, in reality there are more differences than similarities between SSA and South Asia. Starting conditions for both regions in the 1960s were similar in terms of production. When compared to SSA's agricultural development and output from 1960 to 2000, Asian farmers increased their production drastically; yet, during the 1960s, labor productivity in the two continents was similar.[30] Despite some similarities in GDP and other economic

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[27] Farida Akhter, "Rural Development in the Era of Globalisation: Fragmented Realities," in *Globalising Rural Development: Competing Paradigms and Emerging Realities*, ed. M. C. Behera (New Delhi: Sage, 2006), 95-6.

[28] Rebecca B. Neumann et al., "Anthropogenic Influences on Groundwater Arsenic Concentrations in Bangladesh," *Nature Geoscience* (November 15, 2009): 1-7, http://www.nature.com/naturegeoscience (accessed January 15, 2010).

[29] Alauddin and Quiggin, 118.

[30] Massoud Karshenas, "Agriculture and Economic Development in Sub-Saharan Africa and Asia,"*Cambridge Journal of Economics* 25 (2001): 316, http://www.oxfordjournals.org (accessed August 10, 2009).

and social indicators, the literature increasingly points to key institutional constraints in SSA that were not present in South Asia in the 1960s, and which would make a replication of the Green Revolution difficult.[31] The following table outlines some key differences between Asia and Africa with respect to potential success of a Green Revolution.

Table 1: Comparing South Asian and SSA Factors for a Green Revolution

Conditional Factors	South Asia in 1960s	Sub-Saharan Africa Today
Geography of Land Use	Intensive farming; land as constraint to growth	Less densely populated; higher ratio of land to labor
Dominating Crops	Wheat, rice	Change depending on research priority, include: rice, millet, cassava and maize
Water Sources	Primarily groundwater	Primarily rainfall
Chief Initiator of Program	National governments	Outside foundations and institutions
Political Situation	Region dominated by one large, more stable nation (India)	50+ nations at varying levels of political stability
Program Goals	Singular focus: yield increases	Multiple foci, including: sustainable resource management; respect for local, cultural and gender considerations

Sources: Spielman; Lele and Goldsmith; Karshenas.

In general, geographical and political conditions in SSA are more diverse than they were in South Asia, making for a much more complex and difficult set of research

[31] There is a small but significant body of literature that argues against a comprehensive SSA "Green Revolution" and offers varying solutions that center on a bottom-up approach. For example, see Miguel A. Altieri, "Agroecology: The Science of Natural Resource Management for Poor Farmers in Marginal Environments," *Agriculture, Ecosystems and Environment* 1971 (2002), http://www.elsevier.com (accessed January 15, 2010).

problems that are harder to coordinate.[32] Today's research also has to take into account a much more broad set of goals, including "sustainable management of natural resources, specific needs of diverse and localized agroclimates, differences in farming systems and farm household behavior, and gender dimensions of rural production and consumption."[33] These factors vary greatly between different locations, but are much more diverse in SSA's case and as such might be unreasonable to address holistically with centralized research efforts.

Despite existing constraints, there are cases of agricultural production in SSA increasing due to top-down efforts, thus providing the basis for development workers continuing to call for a systematic and large-scale Green Revolution. One example of a production increase occurred in Malawi, where the government's reinstatement of fertilizer subsidies in 2005 led to countrywide food security in the years directly following implementation.[34] An analysis of Malawian smallholder farmers by economists found that farmers implementing integrated soil fertility management (ISFM) practices[35]actually had better crop yields and marginal returns on investment than those using only mineral fertilizers.[36] However, ISFM is more complicated to introduce on a wider scale than is a fertilizer subsidy. Governments looking for short-term political gains by providing subsidies are thus exacerbating the very problem (i.e. land

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[32] Lele and Goldsmith, 307.

[33] David J. Spielman, "Pro-poor Agricultural Biotechnology: Can the International Research System Deliver the Goods?" *Food Policy* 32 (2007): 196, http://www.sciencedirect.com (accessed January 15, 2010).

[34] G. Denning, P. Kabambe, P. Sanchez, A. Malik, R. Flor, et al., "Input Subsidies To Improve Smallholder Maize Productivity In Malawi: Toward An African Green Revolution." *PLoS Biology* 7, no. 1 (2009): 5, http://www.plosbiology.org (accessed 15 April 2010).

[35] "ISFM refers to an "integrative use of inherent soil nutrient stocks, locally available soil amendments, and mineral fertilizers to increase the yield of the land while maintaining or enhancing soil fertility." Johannes Sauer and Hardwick Tchale, "The Economics of Soil Fertility Management in Malawi,"*Review of Agricultural Economics* 31, no. 3 (2009): 536, http://wiley.interscience.com (accessed January 15, 2010).

[36] Sauer and Tchale, 548-552.

degradation) that has helped cause food insecurity in the first place, despite the evidence that more sustainable land use might be more cost effective in the long run. Even proponents of Malawi's program, like those working for Jeffrey Sach's Millennium Development Villages Project, see fertilizer subsidies as short-term and unsustainable compared to other methods of increasing yields, yet continue to call it a success.[37]

Given the problems that SSA faces with respect to soil infertility and the challenges posed by climate change and by persistent focus on a Green Revolution, a new framework for sustainable agricultural development that takes into account other factors could result in improved agricultural sustainability in SSA.

[37] Denning and others, 8.

Chapter III: Ground-Up Development

For many of the poorest rural farmers in SSA, land degradation is swiftly becoming yet another grave barrier to escaping poverty. Faced with increasing populations, diminishing returns and government incentives, there is immense pressure for farmers to take all they can from soils, and contemporary farmers have ignored the sustainable land-use patterns practiced for generations by their predecessors.[38] As a result, the land in much of SSA is degraded, making soil conservation the key issue in any attempt to break "agrarian stagnation," or a decline of agricultural productivity, a problem that has defied large-scale efforts to solve it.[39]

The international development community has attempted for decades to address the consequences of unsustainable land use. Due to the qualified success of the Green Revolution in Asia, certain development efforts by prominent foundations have centered on similar projects aimed at every stage of agricultural production, from supplying inputs (e.g. fertilizer in Malawi) to extending technical advice to searching for markets for products. This type of top-down intervention is what anthropologist James Ferguson has observed as being assumptive about local conditions being the same everywhere and about people even wanting to farm in the first place.[40]

A different approach to consider in achieving sustainability, based on more localized conditions, is to encourage innovation and the use of local, experience-based

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[38] For an in-depth study of one abandoned system, see the description of how the Serer land-use system was systematically demolished by first colonization and then government policy in Dennis Charles. Galvan, *The State Must Be Our Master of Fire: How Peasants Craft Sustainable Development in Senegal* (Berkeley: University of California Press, 2004).

[39] Lal, 114-5.

[40] James Ferguson, *The Anti-Politics Machine: "Development," Depoliticization, and Bureaucratic Power in Lesotho* (Cambridge: Cambridge University Press, 1990), 234-59.

knowledge in agricultural development.[41] Case studies abound of farmers successfully taking control of their own situation by using locally appropriate, time-tested methods to increase sustainable food production and share innovative techniques with others. This approach ensures voluntary participation, and farmers can tailor it to meet local ecological, economic, political and cultural conditions. These innovations by nature tend to be small-scale and localized. However, by harnessing innovation and building the social capital that gives rise to better information sharing, farmers can begin to overcome inherent risk-averse behavior and form the basis for developing locally appropriate, sustainable, ground-up agricultural practices in SSA.

INNOVATION AND INDIGENOUS KNOWLEDGE IN SSA

For the purposes of this report, innovation is the introduction, adoption or creation of something new, and contains elements of either new science, accumulated experience or a mixture of the two.[42] Indigenous, locally developed innovative practices exist for restoring and rehabilitating marginal lands and in the process can greatly increase crop production. When techniques are easy to follow, have low risk and meet the pressing needs of the people who employ them, local innovation can rapidly spread throughout large areas.[43] When techniques are not as obvious, and serve more of a risk to implement (e.g. different methods of growing crops vital to a farmer's livelihood) farmers are much more hesitant to try new ways of doing.[44] Horizontal learning, whereby farmers learn

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[41] For a series of case studies highlighting this approach, see Chris Reij and Ann Waters-Bayer, eds., *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development* (London: Earthscan Publications, 2002).
[42] Bin Wu, *Sustainable Development in Rural China: Farmer Innovation and Self-organisation in Marginal Areas* (London: RoutledgeCurzon, 2003), 15.
[43] Chris Reij and Ann Waters-Bayer, "Entering Research and Development in Land Husbandry through Farmer Innovation," ed. Chris Reij and Ann Waters-Bayer, in *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development* (London: Earthscan Publications, 2002), 13.
[44] Ibid, 14-7.

from other farmers, is one way of addressing risk, as when farmers see other farmers practicing certain methods they are more likely to try them. Farmers using traditional knowledge in new ways or merely reintroducing it to an area are practicing innovative techniques of knowing and doing.

Farmers are often instrumental in the spread of innovation. In Burkina Faso's Yatenga and Zondoma provinces, for example, a land-use revolution has been taking place since the early 1980s that promotes local innovations such as digging holes to increase moisture content and concentrate organic matter as the key drivers of land rehabilitation. Scientists estimate the number of rehabilitated hectares in the tens of thousands. One farmer, Yacouba Sawadogo, turned a piece of barren land into a 12-hectare forest and became self-sufficient in food by implementing the innovations.[45] Local innovators such as Sawadogo began the trend, and his actions, along with those of a few other innovators who formed farmer groups, have increased the spread exponentially. By harnessing innovation as a tool to increase social capital, these groups of farmers have helped formalize knowledge transfer and horizontal learning in the region.[46]

Challenges to Promoting Innovation as a Development Tool

Innovation is a constant process, but sometimes the techniques are so basic or implicit in a farmer's way of doing that he or she does not realize that it is an innovation, and is not prepared to know how to describe or share the technique.[47] A study done in the

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[45] Hamado Sawadogo et al., "Pits for Trees: How Farmers in Semi-arid Burkina Faso Increase and Diversify Plant Biomass," ed. Chris Reij and Ann Waters-Bayer, in *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development* (London: Earthscan Publications, 2002), 37-41.
[46] Aly Ouedraogo and Hamado Sawadogo, "Three Models of Extension by Farmer Innovators in Burkina Faso," ed. Chris Reij and Ann Waters-Bayer, in *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development* (London: Earthscan Publications, 2002), 215.
[47] Brent M. Simpson, *The Roots of Change: Human Behaviour and Agricultural Evolution in Mali* (London: Intermediate Technology, 1999), 61.

Niger River Valley of Mali finds that farmers might adjust planting densities or grow different groups of crops without defining actions explicitly as innovations in group sharing sessions.[48] A development worker might therefore draw the conclusion that the local population does not experiment at all based on differing definitions of innovation. Further hampering the promotion of innovation is the development culture that exists within many governments and NGOs. For example, there are persistent communication problems that stem from government extension agents' "conventional training and vision of development through the transfer of modern 'improved' technologies" that gives agents a false "sense of superiority."[49]

Development institutions are slow to recognize innovation and the indigenous knowledge that has developed in an area over time. It is clear that very little has been done to stimulate greater collection or exchange of local knowledge and innovation, and opportunities probably have been lost for systematic review of some local innovations.[50] In part, this is due to the oral and rural nature of traditional knowledge, making it a relatively unknown possibility within development culture as a way forward.[51] Thus, some development agents do not realize the possibility of learning from farmers, causing development culture itself to resist the factors that might allow ground-up innovation to spread, at least through traditional aid institutions. Despite unwillingness to engage with innovation, it is widely accepted that SSA is a region in which many innovations occur, but remain mostly unknown.[52]

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[48] Ibid.
[49] Reij and Waters-Bayer. "Entering Research and Development," 8.
[50] Simpson, 110.
[51] Ruth Oniang'o, Joseph Allotey, and Serah J. Malaba, "Contribution of Indigenous Knowledge and Practices in Food Technology to the Attainment of Food Security in Africa," *Journal of Food Science* 69, no. 3 (March 23, 2004): 91, http://www.interscience.wiley.com (accessed April 15, 2010).
[52] Hilary Nwokeabia, *Linking Agricultural Innovations to Knowledge Sharing in Africa,* World Bank Indigenous Knowledge Note, http://www.worldbank.org (accessed January 15, 2010).

Farmers might also be averse to innovation adoption due to risk, but proper use of indigenous knowledge and traditional farming can help in both reducing risk and increasing output if farmers see and understand such systems.[53] One way of increasing farmer willingness to innovate through communication and collaboration is to increase social capital through various methods of empowering rural communities. Participatory Rural Appraisal is the collective name for such methods.

PARTICIPATORY RURAL APPRAISAL

Robert Chambers, a prominent development scholar, defines participatory approaches to development as "sets of approaches, methods, behaviours, and relationships for finding out about local context and life."[54] Arguably, the most well known set is Participatory Rural Appraisal (PRA),[55] and consists of tangible methods for increasing awareness, behavior and attitudes, and knowledge sharing; the three components serve to encourage the building of local social capital for development of people, who in turn become empowered to improve their situation in life.[56] When used correctly, PRA has the potential to make a significant impact on both the local community and in the development workers themselves.

PRA can also help inform the adoption of innovations. As one environmental scholar, Jules Pretty, notes:

> Sustainable agriculture systems also become more productive when human capital increases, particularly in the form of farmers' capacity to innovate and manage actively their farm systems for sustainable outcomes. Sustainable agriculture is not a concretely defined set of technologies, nor is it a simple model or package to be widely applied or fixed with time. It is more a process for social learning. Lack

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[53] Altieri, 1-5.
[54] Robert Chambers, *Revolutions in Development Inquiry* (London: Earthscan, 2008), 86.
[55] For ease of understanding, this paper will use the term PRA to refer in general to participatory approaches to development.
[56] Chambers, 86-7.

of information and management skills is a major barrier to the adoption of sustainable agriculture.[57]

PRA methods, in theory, could be the key to help local populations and development institutions increase capacity to address innovation in the context of sustainable agricultural adoption. One methodology for institutionalizing farmer innovation, for example, involves key PRA approaches such as horizontal learning, institutional respect and capacity for innovation, and evaluation of innovations and of approaches that work very well in the context of sustainable farming.[58] In fact, some organizations are already playing a role in the spread of innovation, and are building local capacity to identify and increase use of future innovations as well.

Some NGOs and development institutions have been successful in using PRA to improve agricultural sustainability. Approaches vary but, in all cases, the objectives have been local capacity building along with increased agricultural output. For example, communities in Ethiopia used an approach in which people reflected on previous endeavors and identified existing assets, including innovations such as communal irrigation projects that supplied water to many fields or new crop production.[59] Community response to the increased social awareness was to become closer and to work together more often; for example, community members shared and began expanding composting and terracing activities.[60] Significantly, the process led to a holistic re-

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[57] Jules Pretty, "Can Sustainable Agriculture Feed Africa? New Evidence on Progress, Processes and Impacts," *Environment, Development and Sustainability* 1, nos. 3-4 (September 1999): 271, http://www.springerlink.com (accessed February 20, 2010).
[58] Reij and Waters-Bayer, 3-22.
[59] Gordon Cunningham, "Stimulating Asset Based and Community Driven Development: Lessons from Five Communities in Ethiopia," ed. Alison Mathie and Gordon Cunningham, in *From Clients to Citizens: Communities Changing the Course of Their Own Development* (Warwickshire: Practical Action, 2008), 265.
[60] Ibid.

examining of many people's daily lives, with some giving up drinking alcohol or saving more money because of the increased social development.[61]

In rural Kenya, Uganda and Tanzania, a similar project used PRA methods to identify innovative farmers and build networks for sharing and capacity building. The approach focused on finding small-scale innovators as well as better-known ones. The entire project focused on the idea that bringing innovative farmers together from time to time would prompt idea sharing and stimulate experimentation.[62] This approach to sharing innovation was in itself an innovation with respect to normal practices of many farmers in the area, who might not have the capacity to travel and meet in groups regularly. The approach also shows a capacity for the development institution to learn and adapt to specific and unforeseen conditions.

Despite these success stories, and while the development community has identified PRA as a potential tool for success, it, like any other tool, can be misused. One PRA practitioner, Andrew Shepherd, notes, "fieldworkers trained briefly in PRA may use the techniques ritualistically, without having the skill or the organizational flexibility to carry through a thorough analysis."[63] In other words, development workers might misuse PRA or rush through the methodology without giving appropriate time to development of the process. The focus on PRA, then, must be well-trained development agents who can serve as facilitators without implementing a top-down agenda, and thus continuing traditional development practice that ignores local conditions.

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[61] Ibid, 266.

[62] Will Critchley, Patrick Lameck, Alex Lwakuba, Charles Mburu, and Dan Miiro, "Stimulating Creativity among East African Farmers: From Isolated Individuals to Interactive Groups," ed. Chris Reij and Ann Waters-Bayer, in *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development* (London: Earthscan Publications, 2002), 179-83.

[63] Andrew Shepherd, *Sustainable Rural Development* (New York: St. Martin's Press, 1998), 201-2.

FARMER NETWORKS

Farmer networks are institutions made up of many potentially disparate actors in which outside participants can encourage knowledge sharing and development through local, more trusted, channels. In these cases, "information is exchanged through networks, which may be quite complicated and extensive... more formalized networking of farmer groups has potential in a situation where farmer groups are otherwise fragmented and narrowly based."[64] In rural China, strategies to increase innovation-sharing farmer networks have been successful, resulting in a great increase in land productivity.[65] Because they are comprised of farmers who are aware of local conditions, farmer networks have the potential to help efficiently spread innovation.

In the case studies above, and in the case of China, local governments or NGOs were instrumental in stimulating the spread of information sharing and experimentation. Another approach is to enshrine formally the participatory process in the creation of farmer networks. Such a network would build on local innovations to disseminate knowledge and create opportunities for increased agricultural production. Farmer networks have great potential in the development process due to their local-level capacity for building institutions across many different areas.[66] To waste their existing capacity would be to squander valuable, on-the-ground resources for agricultural development.

Other Examples of Farmer Networks

Nayakrishi Andalon Network for Sustainable Agriculture

In Bangladesh, farmers who were tired of chemical-intensive agriculture began to develop a set of operating principles (Nayakrishi), including no pesticide use and careful

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[64] Cunningham, 266.
[65] Wu, 155-163.
[66] Shepherd, 196.

attention to soil health. The farmers share information through formal farmer networks and extension agents from a local NGO.[67] The success of the initiative lies with its voluntary and steady growth, and its focus on locally developed alternatives to what scientists and aid organizations are promoting.[68]

National Smallholder Farmers' Association of Malawi

The National Smallholder Farmer's Association of Malawi (NASFAM) is a case of farmers acting on their own to develop a farmer network, and highlights another case of the merits of starting from the ground up. Malawi smallholder efficiency, collectivity and market access are all good for growth, but lack of private market development has hurt the agriculture industry, especially with respect to groundnuts.[69] Malawian farmers established a farmer network to ease some constraints facing rural farmers, including enabling the sale of groundnuts without traveling long distances to reach the market and facilitating information sharing.[70]

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), a non-profit research center with stations around the world and NASFAM collaborated to reduce toxins in groundnuts and thus secure fair trade certification.[71] Although not a private firm, ICRISAT has provided the technical expertise to act as an International broker for NASFAM to gain better terms for future trade partnerships. By acting as a

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[67] F. Mazhar, "Nayakrishi Andolon: an Initiative of the Bangladesh Peasants for Better Living," in *Using Diversity: Enhancing and Maintaining Genetic Resources On-farm*, ed. Louise Sperling and Michael Loevinsohn (Ottawa: International Development Research Centre, 1997), http://www.idrc.ca (accessed May 2, 2010).
[68] Ibid.
[69] Sauer and Tchale, 101-119.
[70] Isaac Minde et al., *ICRISAT/ Constraints, Challenges, and Opportunities in Groundnut Production and Marketing in Malawi.* report, 13, http://www.icrisat.org (accessed March 15, 2010).
[71] Moses Siambi, Juan Estrada, and Richard Jones, "Overcoming Market Challenges for Smallholder Farmers: The Case of Groundnuts in Malawi," in *Africa Can Feed Itself*, ed. Aksel Nærstad (Oslo: Development Fund, 2007), http://www.ifoam.org (accessed March 15, 2010).

large network, NASFAM was able to gain the advantage it needed to make groundnut exports more competitive on the international market, something it might not have been able to accomplish without collective action.

As the group gains prominence, it will have to work for government policies that provide a more enabling market for groundnut trade.[72] Since exports create the demand and drive production for groundnuts, it is vital that the government do more to stabilize the market for smallholder farmers.[73] NASFAM can provide the leverage needed to accomplish this goal for its members.

OVERCOMING CHALLENGES TO INFORMATION SHARING AND SCALABILITY

Why do rural farmers sometimes need outside help in order to form networks and build social capacity to increase information sharing? Many innovators might face opposition in the form of theft and vandalism. A successful farmer might also find his or her hard work destroyed due to jealousy.[74]

The World Bank goes a step further and identifies the reticence to innovation sharing as stemming from an "indifference-trap." In this situation:

> A lack of a sharing network is the central factor contributing to asymmetric information among active agents, and hobbling secular economic and social development in indigenous agricultural activities relates to poor local knowledge sharing networks…In the presence of these uncertainties, the indigenous innovators adopt an indifference attitude, mostly leading to indirect restriction of the innovation, among the innovators and producers. The result is a deficit in the (incremental) technological progress.[75]

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[72] Isaac Minde et al., 53.
[73] Ibid, 9.
[74] Flemming Nielsen, "Why Do Farmers Innovate and Why Don't They Innovate More? Insights from a Study in East Africa," in *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development*, ed. Chris Reij and Ann Waters-Bayer (London: Earthscan Publications, 2002), 98-101.
[75] Hilary Nwokeabia, *Linking Agricultural Innovations to Knowledge Sharing in Africa*.

According to the World Bank note, any innovations that arise will not spread, as innovators have no cultural or institutional capability (or desire) to share. Conversely, farmers will not seek out new ideas because they are not aware that they exist, leading to a stalemate. This situation would be ripe for PRA methods as a way to build social capacity, empower farmers and set up institutional knowledge for innovation sharing. However, one must take care to make the process truly participatory, for as farmers are forced to take up new methods, "then they may only adopt for a limited period. But if the process is participatory and enhances farmers' capacity to learn about their farm and its resources, then it appears that the foundation for redesign and continuous innovation is laid."[76]

If this indifference-trap does indeed exist, then the focus of development institutions should be building local capacity rather than building up one area and counting on its ideas to spread. It would take concerted effort, using PRA in each locality, to fight indifference and create conditions to facilitate the spread of ideas. The case study from Burkina Faso shows that implementation can happen if a few farmers with experience and drive work to instigate widespread change. Farmer networks can help institutionalize innovation and participatory approaches to knowledge sharing, and they provide a stronger position from which to work with outside entities such as governments and corporations.

[76] Pretty, 271.

Chapter IV: Country Policy

APPROPRIATE POLICY INTERVENTIONS

This report identifies four specific areas in which governments can intervene to promote sustainable, innovative smallholder farming. The areas include: 1) reforming land rights; 2) providing appropriate sustainable farming practices; 3) improving market access; and, 4) promoting farmer networks and institutions that facilitate the types of support (i.e. technical, legal, market) that smallholder farmers need to be able to pursue new strategies of sustainable farming.

Reforming Land Use Rights

Traditional land ownership systems in SSA, characterized by communal, uncertain tenure have recently been identified by a prominent economist, Hernando de Soto, as being "the" reason for third world poverty.[77] While not all might accept this argument, it is evident that some sort of land reform might be necessary due to the varied nature of land use problems in SSA. These problems are widely varied based on region and history, but in general stem from historical land use policy or from population concentration or commercialization.[78] In Malawi, for example, the traditional system of communal land tenure has not responded well to increased populations, resulting in: (1) a decreasing capacity of existing land in the form of soil infertility, and (2) decreases in previously uncultivated land.[79] The "usufruct," or informal property rights system based

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[77] Hernando De Soto, *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else* (New York: Basic Books, 2000), 20-35.
[78] Ambreena S. Manji, *The Politics of Land Reform in Africa: from Communal Tenure to Free Markets* (London: Zed, 2006), 39-42.
[79] Fidelis Edge Kanyongolo, "Law, Land and Sustainable Development in Malawi," in *Land and Sustainable Development in Africa*, ed. Kojo Sebastian Amanor and Sam Moyo (London: Zed, 2008), 92-93.

on current land use, also can make it difficult or undesirable for smallholder farmers to invest time and money in land; the same applies to farmers who rent land. [80]

Land rights reform is a controversial subject, and over the last few decades, scholars and economists have argued for and against increased liberalization as a way to make land tenure more secure. Those in favor argue that reforming land rights will give smallholder farmers more incentive to invest in land.[81] These arguments center on a main tenant of land reform that seeks to liberalize land tenure to enable individual, rather than communal, ownership.[82] Those against liberalization feel that it could benefit some people while excluding many others to the point of exacerbating existing inequalities (or creating new ones).[83] Beginning in the 1990s, many SSA countries undertook land tenure reform.[84] However, the reform has focused on land liberalization as a component of economic reform, leaving many disadvantaged behind, especially women, who stand to suffer disproportionately from liberalized land tenure laws due to inadequate attention to their specific societal standing.[85]

Several cases highlight the difficulty in providing beneficial and equitable land tenure for rural farmers. In Malawi, the government formulated a national land policy in 2002, which explicitly stated that social welfare could not "compromise the expectation of the market or ignore the realities of resource constraints."[86] The law is likely to hurt efforts to increase social and environmental justice concerns, and is unsustainable in its

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[80] Shiferaw, Okello, and Reddy, 269.
[81] De Soto.
[82] Manji, 45-6.
[83] Sara Berry, "Building for the Future? Investment, Land Reform and the Contingencies of Ownership in Contemporary Ghana," *World Development* 37, no. 8 (2009): 1370, http://www.elsevier.com (accessed January 15, 2010).
[84] Manji, 43.
[85] Manji, 99-118.
[86] Kanyongolo, 93.

reliance on donor goodwill with respect to funding.[87] In West Africa, land competition is intense and many communities are not egalitarian, local control over land can be as exclusive as state control, adding even more complications to any liberalization scheme that aims to put land in the hands of local chiefs or other leaders.[88] In both cases, there is a danger that, without appropriate, explicit state intervention to protect and uphold the historically disadvantaged's rights, incentives will still not exist for many to want to substantially invest in land when long-term benefits are not certain. Exacerbating conditions in West Africa, governments encouraged in-migration through right of cultivation, which has caused conflicts with the original inhabitants as land has become scarcer, revealing that the strengthening of land tenure by governments can have important implications in terms of investment and productivity of land.[89]

Past government land tenure reform has failed in two ways. The first is that there has been little attention to implementation of laws; recent enactment of new laws reveals the need for increased focus on actual implementation and governance to ensure equality and fairness.[90] In addition, the lack of support for women has shown a need to strengthen the legal standing of women, especially in regards to women as part of a family, although challenges in the form of corruption and illiteracy could hinder proper implementation of such laws.[91] While land reform, if properly handled, is important in addressing some of

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[87] Ibid, 94-5.
[88] Berry, 1370.
[89] Klaus Deininger and Daniel Ayalew Ali, "Do Overlapping Land Rights Reduce Agricultural Investment? Evidence from Uganda,"*American Journal of Agricultural Economics* 90, no. 4 (November 2008): 869-881, http://www.oxfordjournals.org (accessed March 10, 2010).
[90] Manji, 123-4.
[91] Ibid, 130.

the poverty and inequality issues in rural areas, governments must also support rural networks and appropriate government investment to be successful.[92]

Government Support for Smallholder Sustainability

Governments are influential in the types of policies they promote concerning sustainable farming strategies. Lack of support for the types of sustainable strategies that help conserve scarce resources like soil and groundwater can prevent the adoption of these strategies.[93]

Assuming a link between innovation and sustainability, one experienced practitioner highlights the need to lobby to promote farmer innovation and the need for more top-down support for innovation as a policy tool.[94] This presents a "chicken-egg" dilemma, as only by top-down support can farmer innovation gain foothold as a dominant extension strategy, and only by bottom-up awareness raising can governments realize the power of innovation sharing. Nevertheless, from case studies of government support for innovation sharing, it is clear that governments can be extremely helpful in promoting and highlighting innovation networks as a means of combating soil degradation.[95] In Tunisia, after advocacy by innovation researchers, an important former government official became interested in farmer innovation and worked to promote it on a national level, leading to increased awareness in the government, the press and the development community.[96]

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[92] Edward Lahiff, Saturnino Borras, Jr, and Cristobal Kay, "Market-led Agrarian Reform: Policies, Performance and Prospects," *Third World Quarterly* 28, no. 8 (2007): 1433, http://www.informaworld.com (accessed February 25, 2010)..

[93] Shiferaw, Okello, and Reddy, 267.

[94] Reij and Waters-Bayer, "Entering Research and Development in Land Husbandry through Farmer Innovation," 18-20.

[95] Ibid.

[96] Noureddine Nasr, "Impact of the Farmer Innovation Approach on the Attitudes of Stakeholders in Agricultural Development in Tunisia," in *Farmer Innovation in Africa: A Source of Inspiration for*

Conversely, the wrong types of support can actually lead to increased land degradation and water depletion. One such type of support is to provide certain agricultural inputs, such as fertilizer, or investment subsidies, for instance to promote irrigation. These types of agricultural policies can have significant effects on efforts to conserve and improve soil sustainability and water use because they distort prices, cause temporary shifts in cultivation practices and can even cause farmers to cultivate inappropriate types of crops because it is now economically feasible to do so with the subsidies.[97]

Government Support for Market Access

Governments also have a role to play in market support for smallholder farmers. The government can help farmers through "increased market development and promoting efficient market institutional innovations that provide more effective market information systems."[98] governments can also help farmers "develop and enforce contractual arrangements, increase market power, manage prices and market risks, facilitate access to credit and other financial and business services, develop inputs markets and extension advice for accessing new technologies and information."[99]

International markets can be extremely important to smallholder farmers, who often have no local market for products, especially specialized cash crops designed for export:

> Linking farmers to better markets for their produce and inputs like fertilizer and credit generally makes a positive contribution in raising the returns to land and

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Agricultural Development, ed. Chris Reij and Ann Waters-Bayer (London: Earthscan Publications, 2002), 329-330.

[97] Shiferaw, Okello, and Reddy, 269.

[98] P. C. Sanginga et al., "Enabling Rural Innovation in Africa: An Approach for Integrating Farmer Participatory Research and Market Orientation for Building the Assets of Rural Poor," *Uganda Journal of Agricultural Sciences* 9 (2004): 954, http://www.clayuca.org (accessed May 02, 2010).

[99] Ibid.

> labour in agriculture. When complemented with proper policies and institutional mechanisms to induce the process of farmer innovation and adoption of conservation practices, market access can be a useful driving force towards sustainable intensification of smallholder agriculture in both rainfed and irrigated areas.[100]

In light of earlier arguments as to the importance of farmer networks, national governments should utilize the potential capacity of such networks to link large groups of farmers to export markets.

Promoting Farmer Organizations

As discussed above, farmer networks can be effective as on-the-ground institutions for sustainable development, and governments should use policy to help farmer organizations help smallholder farmers. For instance, good, strong policy can protect farmer organizations from bad or corrupt leadership by having adequate legal protections in place.[101] While direct government support of a farmer organization might be suspect, governments can help organizations more generally with issues relating to market access and trade.[102]

Good government policy can also recognize and promote innovation networks. In Ethiopia's Tigray province, local development agent awareness of innovation has encouraged more farmers to share and promote innovation, strengthening the overall farmer network in the area.[103] General collective action can also be important to the overall adoption of innovations for conservation and management of resources like soil because it helps by addressing market failures and constraints smallholder farmers have

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[100] Shiferaw, Okello, and Reddy, 272.

[101] Ephraim Chirwa et al., *Overseas Development Institute Natural Resource Perspectives/ Walking Tightropes: Supporting Farmer Organisations for Market Access,* publication, 5-6, http://www.odi.org.uk/ (accessed May 03, 2010).

[102] Ibid.

[103] Fetien Abay et al., "Facilitating Farmer-to-Farmer Communication about Innovation in Tigray," in *Farmer Innovation in Africa: a Source of Inspiration for Agricultural Development*, ed. Chris Reij and Ann Waters-Bayer (London: Earthscan Publications, 2002), 196-7.

on information gathering.[104] In the context of farmer networks, these could and do act as a sort of collective that can help farmers share and conserve, so governments could use farmer organizations as a way to solve collective action problems.

Many countries have elements of a sustainable agriculture policy, but almost all lack a comprehensive one.[105] Without a nurturing policy environment, smallholder farmers will have no incentives to change from what could be damaging, myopic farming practices to more long-term outlooks.

[104] Shiferaw, Okello, and Reddy, 270.
[105] Pretty, 272.

Chapter V: Corporate Responsibility and Reasons for Action

Even with an enabling policy environment, it might be difficult for a smallholder farmer or farmer network to gain access to export markets. While globalization has strengthened the position of large companies, it has not helped smallholder farmers, who find themselves excluded from fair returns on labor and in a weak bargaining position vis-à-vis global companies.[106] The World Bank notes:

> A great deal of emphasis has been placed, rightly, on strengthening smallholders' participation in markets and on developing high-value export markets for smallholders. Several gaps remain in market development, however. Many interventions are relatively short-term, with an emphasis on quick results, without necessarily addressing the root causes of market failures. Root problems have to do with access to trade finance, human capacity in agribusiness and market promotion, logistics and supply chain management, and quality control.[107]

While farmer networks can respond to financial and capacity problems in a limited way, a socially responsible corporation using internationally recognized certifications can enhance these capabilities and address the remaining market failure problems. Corporations can act as the enabler concerning logistics and supply chain management and can use certifications as a type of quality control. While corporations can act as enablers, what are the incentives for a corporation to get involved in smallholder agriculture? The answer may lie in the exercise of Corporate Social Responsibility, which through responsible agricultural sourcing can have profound impacts on farmer empowerment and soil fertility management.

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[106] Pauline Tiffen, "A Chocolate Coated Case for Alternative International Business Models,"*Development in Practice* 12, nos. 3 & 4 (August 2002): 394, http://www.informaworld.com (accessed May 3, 2010).
[107] *World Bank/ Agricultural Investment Sourcebook,* publication, Module 7.5, http://www.worldbank.org (accessed May 3, 2010).

CORPORATE SOCIAL RESPONSIBILITY: A GROWING TREND

Corporate Social Responsibility (CSR) is of growing importance in the food industry. Recent growth of (and emphasis on) fair trade highlights the importance that some corporations are starting to assign the practice of responsible supply in their business models.[108]

Increasingly, market trends are pressing companies to act responsible and "do the right thing," but they do not succeed everywhere they operate all of the time.[109] However, recent surveys, including a Business for Social Responsibility poll involving 274 corporate executives, continue to point towards an increase in awareness and adoption of CSR trends.[110] Even in developing countries, CSR is gaining a foothold. In Malawi, CSR is becoming a "real business tool that can be used to build a sustainable and viable economic base for the country," and many agricultural companies have begun comprehensive CSR programs.[111]

MARKET STABILITY AND ISSUES

Because a multinational corporation could potentially provide a stable market for smallholder farmers, thus aligning mutual goals of profit and sustainability, the possibilities are great for partnerships among smallholder farmer networks and socially responsible corporations. However, like any partnership, there are appropriate steps to take to avoid failure. Creating an atmosphere of mutual respect, communication and

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[108] Michael J. Maloni and Michael E. Brown, "Corporate Social Responsibility in the Supply Chain: An Application in the Food Industry," *Journal of Business Ethics* 68 (2006): 41-42, http://www.springerlink.com (accessed March 15, 2010)..

[109] Susan A. Aaronson, "'Minding Our Business': What the United States Government has done and can do to Ensure that U.S. Multinationals Act Responsibly in Foreign Markets," *Journal of Business Ethics* 59 (2005): 177, http://www.springerlink.com (accessed March 15, 2010).

[110] *Business for Social Responsibility/ State of Sustainable Business Poll 2009,* report, http://www.bsr.org (accessed March 15, 2010).

[111] Daisy Kambalame and Sean de Cleene, "Partnership Building as an Approach to Addressing Corporate Social Responsibility in the Agriculture Sector in Malawi," *Development Southern Africa* 23, no. 2 (June 2006): 282, http://www.informaworld.com (accessed January 18, 2010).

equity among the partners is vital, as is clearly articulating the nature of the relationship and the roles of each player.[112]

There are risks to corporate involvement. For example, one must be wary of neoliberal out-grower schemes in which corporations use smallholder production as a means of production and tout sustainability, while in reality carrying out policies of "expropriation and accumulation" (i.e. treating smallholder farmers unfairly in the name of profits).[113] A corporation that does not give incentives such as guaranteed prices and long-term contracts would not be providing smallholder farmers with the means to be able to invest in the long-term outlook of fields.[114] By using a third party to act as a certifier, one can ensure that the interests of all stakeholders align. One prominent standard is fair trade.

FAIR TRADE AND CERTIFICATION LABELS AS FACILITATOR

Fair trade, acting as a substitute for traditional development aid, links smallholder farmers in developing countries directly with premium markets created by socially and ecologically conscious consumers in developed countries.[115] By offering a set of standards and certifications that help protect farmers from market instability and unfair prices or wages, fair trade has created an international market for sustainably produced products and has shown that farmers can thrive and find solutions to sustainability issues if given the incentives (i.e. market access) to do so.[116] Fair trade coffee in Nicaragua, for

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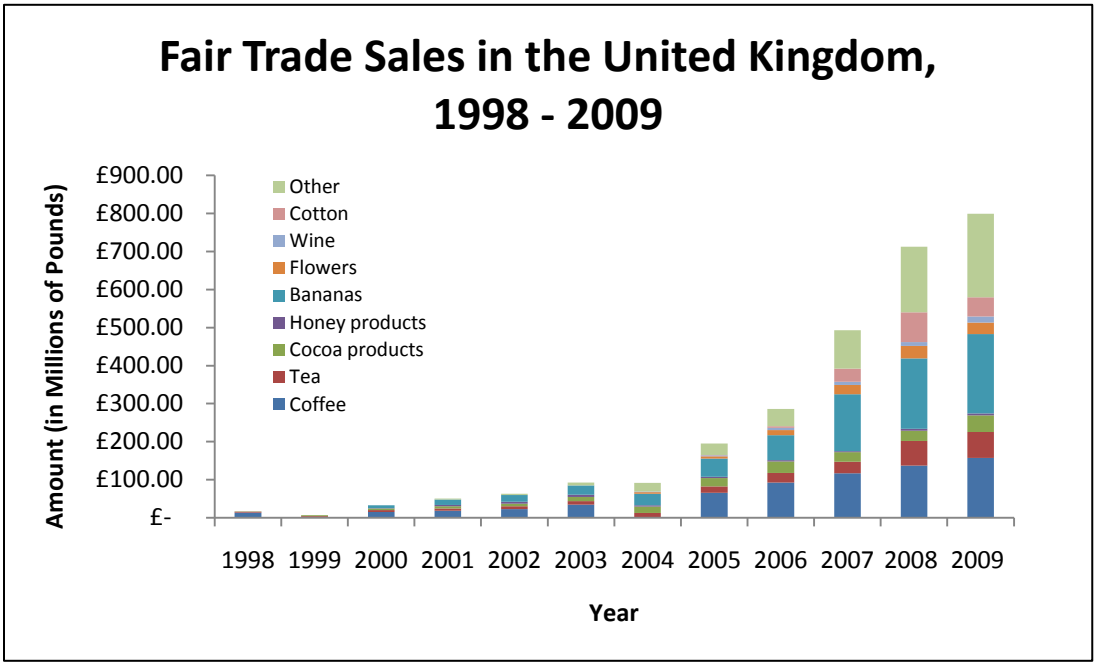
[112] Ibid, 286-7.
[113] Kojo S. Amanor, "Sustainable Development, Corporate Accumulation and Community Expropriation: Land and Natural Resources in West Africa," in *Land and Sustainable Development in Africa*, eds. Kojo Sebastian Amanor and Sam Moyo (London: Zed, 2008), 134-58.
[114] Michael Emch, "The Human Ecology of Mayan Cacao Farming in Belize," *Human Ecology* 31, no. 1 (March 2003): 128-9, http://www.springerlink.com (accessed May 2, 2010).
[115] Karla Utting-Chamorro, "Does Fair Trade Make a Difference? The Case of Small Coffee Producers in Nicaragua," *Development in Practice* 15, no. 3 & 4 (June 2005): 585, http://www.informaworld.com (accessed March 15, 2010).
[116] Ibid.

example, has provided real benefits to the farmers it affects: it has brought more stable prices to an extremely volatile commodity market, has provided a better living income and greatly increased female participation in growing and selling coffee.[117]

Figure 3: Fair Trade Sales in the United Kingdom by Sector, 1998 - 2009



Source: The Fairtrade Foundation. http://www.fairtrade.org.uk (accessed May 03, 2010).

Although it might seem counterintuitive for a company to want to embrace fair trade and other CSR concerns, to ignore public opinion and set oneself up for bad press might present a far greater risk.[118] Because of bad publicity stemming from a lack of fair trade practices, Starbucks Coffee began selling fair trade coffee and has a preferred buyer program that rewards responsible suppliers.[119] Indeed, fair trade can act as an enabler to link farmer associations with corporations, and as the following case study explains, it

[117] Ibid, 596-7.
[118] Maloni and Brown, 45.
[119] Ibid, 41-42.

can bring fairness to the relationship, especially when government involvement is lacking.

BELIZE AND GREEN AND BLACK'S: A MODEL PARTNERSHIP

The case of cocoa growing among the Toledo Mayan people in Belize is illustrative of both best and worst practices when it comes to private partnerships for sustainable agricultural growth. Belize is a small country, but its history of private cocoa partnerships is long and diverse, making the country ideal to test the viability of CSR. Belize was not always a cocoa producing nation, and before corporate presence, most cocoa grew in traditional gardens for domestic consumption. However, several factors, including institutional, legal and economic factors, led to cocoa expansion in Belize.[120]

Initially, increased population in Belize put increased pressure on land during the 1970s and 1980s, and caused farmers to either decrease fallow periods or move to new areas.[121] As farmers searched for new ways to increase revenue, USAID and Hershey Foods co-sponsored a project to work with smallholder farmers to increase technical capacity for cocoa production and provide a stable market for cocoa exports. The project greatly expanded cocoa production in Belize, and it also realized early successes in terms of returns to farmers and returns to Hershey (see figure 3).[122] In 1985, a group of farmers formed a farmers association, Toledo Cocoa Grower's Association, whose main goal was to establish cocoa plantations in order to gain legal rights to land that had been previously unfarmed.[123]

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[120] Emch, 128.
[121] Emch, 119-20.
[122] Robert Gaarder and Carolyn McCommon, "Hershey Foods, Cocoa, and Belize: A Collaborative Model for Third World Development," *Public Administration and Development* 10 (1990): 356-8, http://www.interscience.wiley.com (accessed February 08, 2010).
[123] Emch, 124.

Hershey guaranteed a market for all quality cocoa produced and provided technical assistance in the identification of techniques appropriate for small-scale, low-input farmers. Hershey also provided the facilities at its Hummingbird farm and processing plant for further training of both fanners and government extension agents.[124] However, the government of Belize did not give adequate support to smallholder farmers who found market access and technical grassroots support lacking or nonexistent.[125] In addition, Hershey did not have the capacity or expertise to work with farmers in a broad context.[126] For example, thousands of pounds of cacao rotted on trees in the 1980s because Hershey set prices to make it unprofitable to harvest, clean and ship the cacao to the processing plant.[127] Finally, in 1992, Hershey stopped buying cocoa beans due to low international prices, causing a major drop in production.[128] Cocoa exports stagnated in Belize as a result (see figure 3).

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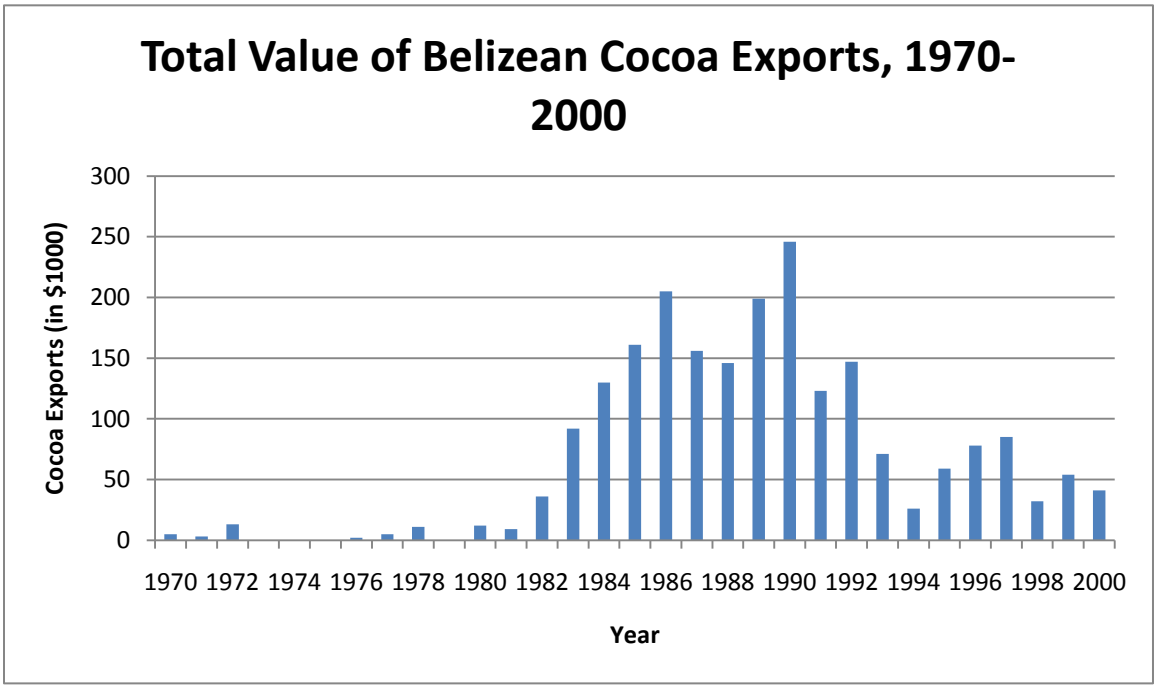
[124] Gaarder, 346.
[125] Ibid, 347-9.
[126] Ibid, 349.
[127] Michael K. Steinberg, "The Globalization of a Ceremonial Tree: The Case of Cacao (Theobroma Cacao) among the Mopan Maya," *Economic Botany* 56, no. 1 (2002): 64, http://www.springerlink.com (accessed February 08, 2010).
[128] Emch, 129.

Figure 4: Total Value of Belizean Cocoa Exports, 1970 - 2000



Source: FAOSTAT. http://faostat.fao.org (accessed May 03, 2010).

In 1993, a small organic chocolate company located in Britain, Green and Blacks, contracted with the TCGA to be the exclusive buyer of organically grown cocoa. The negotiated price was set at over double the world price, and included a 5-year rolling contract.[129] This caused the market to be much more stable and provided more incentive for farmers to commit to cocoa production, especially given the fact that Hershey left so abruptly just a few years before.

Another key difference in the new arrangement versus the one with Hershey in the 1980s was that Hershey had nothing to lose by leaving the market, whereas Green and Blacks was focused on fair labor and trade practices and had fair trade certification, so leaving abruptly would cause them to lose their corporate identity and fair trade

[129] Emch, 128.

endorsements.[130] However, Green and Blacks was also not able to buy as much cocoa up front, and worked exclusively with the TCGA to ensure adherence to organic and fair trade practices.

There are some problems associated with the newer arrangement. For one, the TCGA is a very small growers association, although it is growing. In addition, confusing land rights have caused problems and inequalities for farmers looking to increase production.[131] Ambiguous land tenure and lack of government support has caused some farmers to farm less than could.[132] While government disinterest with the newer arrangement was in stark contrast to the enthusiasm shown for the Hershey partnership, fair trade standards and certifications have filled the void.[133] Without fair trade, there would be no way to ensure compliance with organic standards and fair labor practices.

A hurricane in 2001 greatly diminished the supply of cocoa, but the partnership survived, and has expanded to include over 1000 farmers, in part thanks to a grant by the British government and continued assistance from Green and Blacks in the form of tree plantings and technical assistance.[134] These developments give rise to the hope that Green and Blacks will continue to grow its partnership with TCGA, ensuring a sustainable and locally appropriate method of supplying thousands of smallholder farmers with steady income.

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[130] Emch, 129.
[131] Steinberg, 63; Emch, 129.
[132] Steinberg, 63.
[133] Ibid, 64.
[134] The Fairtrade Foundation, Toledo Cacao Growers' Association, http://www.fairtrade.org.uk (accessed May 03, 2010).

Chapter VI: The Potential for a Groundnut Partnership in Senegal

INTRODUCTION TO NORMATIVE CASE

While each of the previous three elements that constitute a new framework for agricultural development have had individual successes, they have never worked in the integrated way that this report proposes. This chapter will examine the possibility for implementing the framework in a developing country, Senegal, which has had little agricultural growth in the recent past. The case of groundnuts as a normative case works well because Senegal is typical example of a SSA nation that has experienced shifting agricultural policies with varied results since gaining independence.[135]

Groundnuts have formed the backbone of Senegal's economy in the past and still are a large source of revenue for a majority of farmers, with most of the crop used for producing peanut oil.[136] However, because of government agricultural policies that emphasized production rather than sustainable agriculture development, agriculture has spread across much of Senegal, including into marginal lands, and the topsoil has become impoverished, leading to environmental degradation.[137] Perversely, gradually increasing prices of groundnuts in the last 40 years, coupled with decreasing food crop prices, has caused a shift in cultivation to groundnuts at the expense of local food crops to the point that most of Senegal's cereals have to be imported.[138] Therefore, if there is a way forward

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[135] Carlos Oya, "From State Dirigisme to Liberalisation in Senegal: Four Decades of Agricultural Policy Shifts and Continuities," *European Journal of Development Research* 18, no. 2 (June 2006): 204, http://www.informaworld.com (accessed August 10, 2009); Cheikh Mbow et al., "The History of Environmental Change and Adaptation in Eastern Saloum, Senegal—Driving Forces and Perceptions," *Global and Planetary Change* 64 (2008): 211, http://www.sciencedirect.com (accessed April 28, 2010).
[136] Oya, 204.
[137] Mbow et al., 212.
[138] Ibid, 217.

to make groundnut production more sustainable and create a strong, stable market, the majority of Senegalese farmers could stand to benefit.

HISTORICAL AND ENVIRONMENTAL CONTEXT

Over 70% of rural agricultural households farm groundnuts; the majority of the households that do are in the Peanut Basin, a central area of Senegal encompassing at least five regions of the country and representing around 20% of total land area.[139] The Peanut Basin is the most productive agricultural area in the country and a description of its environmental characteristics is as follows: the landscape is a woody bush savannah with few trees; annual rainfall varies from between 200mm to 600mm; and, the rains (and therefore the growing season) fall between May and October.[140] Since Senegal's independence from France in 1960, food production per capita has decreased two-fold while the population has tripled (see figure 4).[141] The decrease in relative production is due to land degradation, which affects the entire country but especially the Peanut Basin.[142]

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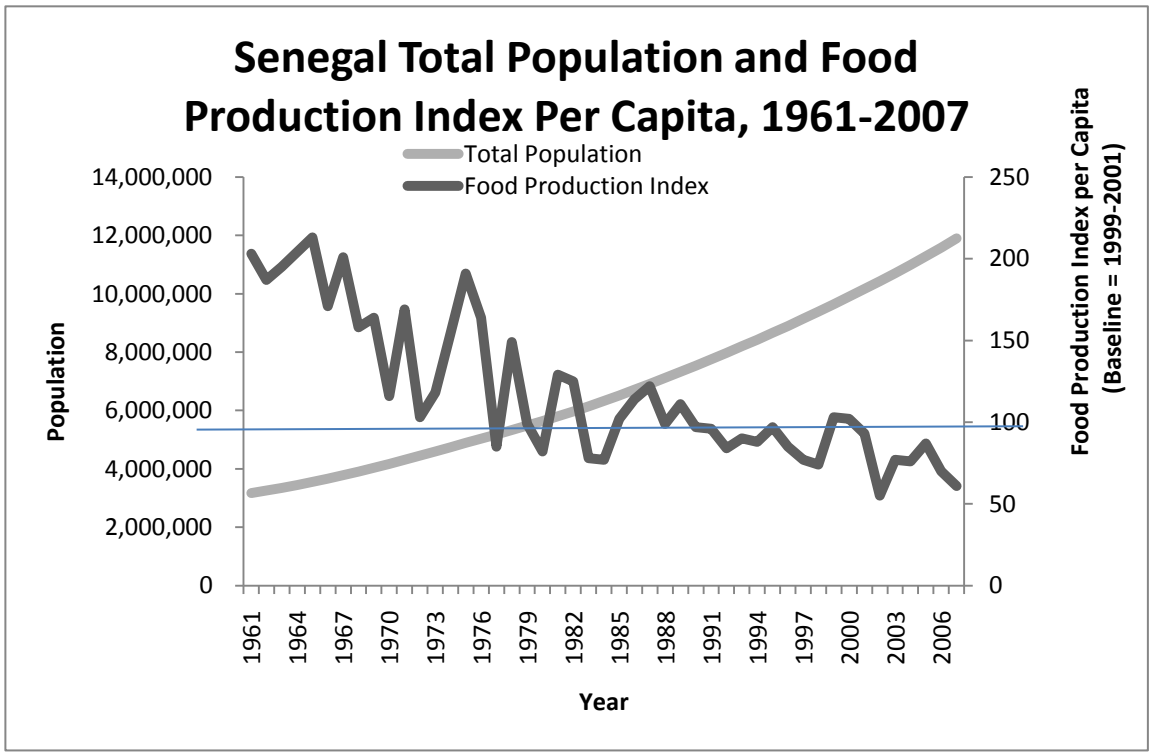
[139] Dorothée Boccanfuso, Luc Savard, and François J. Cabral, "Une Analyse d'Impacts de la Libéralisation de la Filière Arachide au Sénégal: Un Modèle d'Equilibre Général Calculable Multi-Ménages," *Perspective Afrique* 1, no. 1 (May 2005): 33, http://www.perspaf.org (accessed May 03, 2010).

[140] Christian Tottrup and Michael S. Rasmussen, "Mapping Long-Term Changes in Savannah Crop Productivity in Senegal through Trend Analysis of Time Series of Remote Sensing Data," *Agriculture, Ecosystems and Environment* 103 (2004): 546, http://www.sciencedirect.com (accessed March 15, 2010).

[141] The index compares the amount of food produced in a year to the average from 1999 – 2001. For example, in 2005 the Food Production Index was 87, meaning that approximately 13% less food was produced than in the average of the years 1999-2001.

[142] *World Bank/ Senegal Country Environmental Analysis,* report no. 48804-SN, 19, http://www.worldbank.org (accessed May 03, 2010).

Figure 4: Population Growth and Food Production in Senegal, 1961 - 2007



Sources: FAOSTAT, http://faostat.fao.org/ (accessed May 04, 2010); World Bank WDI Database, http://data.worldbank.org (accessed May 03, 2010).

A "spiral of forest and soil degradation" has occurred, where poor yields due to the breakdown of the traditional fallow system has led to increased cultivation of marginal soils and impacts future yields by further degrading vegetative resources and increasing soil erosion and water retention capacity.[143] In addition, long-term rainfall patterns have shifted in the region, which might have prompted an expansion into previously uncultivated areas to compensate.[144] The traditional system of land use employs significant fallowing to replenish land fertility, so saturation of people and

[143] G. Gray Tappan et al., "Use of Argon, Corona, and Landsat Imagery to Assess 30 Years of Land Resource Changes in West-Central Senegal," *Photogrammetric Engineering & Remote Sensing* 66, no. 6 (June 2000): 733, http://www.asprs.org (accessed April 15, 2010).
[144] Tottrup and Rasmussen, 557.

increase in crop production increases degradation.[145] The specific consequences of land degradation include less revenue from farming, increase in poverty that forestalls investment in equipment, urban migration and growing competition for scarce land resources between agriculture, herding and construction.[146] Senegal currently produces one-half of its food requirements per year, and must import 350,000 tons of rice and 10,000 tons of wheat to meet demand.[147] Within that context, it is evident that Senegal has not been successful recently in addressing food security issues, and might therefore benefit from a new approach. The next three subsections will look at the status and potential for Senegal to apply the components of the framework outlined in the previous three chapters in an integrated way in order to achieve agricultural sustainability.

EXISTENCE OF GROUND-UP SUSTAINABLE AGRICULTURE

Innovation

Senegalese farmers have a culture and tradition of using innovation to address soil fertility issues and decreasing rainfall. For example, increased use of organic matter in fields highlights the perseverance and adaptability of Senegalese farmers to conditions of decreasing soil fertility.[148] The Rondale Institute, which has worked in Senegal since 1987, found that, by working with farmers, it was able to identify agricultural constraints and then co-develop best practices, implement sustainable farming practices that restored soil fertility in the Peanut Basin.[149] Their work shows that, even in degraded and

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[145] Ibid, 558.
[146] *World Bank/ Senegal Country Environmental Analysis*, 19.
[147] Ibid, 14.
[148] Nathan C. McClintock and Amadou M. Diop, "Soil Fertility Management and Compost Use in Senegal's Peanut Basin," *International Journal of Agricultural Sustainability* 3, no. 2 (2005): 89, http://geography.berkeley.edu (accessed April 15, 2010).
[149] Amadou M. Diop, "Sustainable Agriculture: New Paradigms and Old Practices? Increased Production with Management of Organic Inputs in Senegal," *Environment, Development and Sustainability* 1, nos. 3 & 4 (September 1999): 289-91, http://www.springerlink.com (accessed April 28, 2010).

overworked soils, locally derived innovations have the potential to bring lost land back into cultivation, and to improve yields on cultivated land.

Farmer Networks

The tradition of farmer networks for promoting sustainable innovation is less certain, however. The colonial powers used farmer networks as a means of consolidating political power in rural areas by increasing economic reliance on groundnuts.[150] Even after independence in the mid 1960s, various initiatives to help rural peasants with training and marketing such as the National Office of Commercialization and Development Assistance (ONCAD) failed due to corruption and mismanagement.[151] However, in recent decades organizations have emerged that have served as more of an intermediary between farmers and the state.[152] While these organizations have managed to grow in size and importance, they still have problems improving conditions for farmers in part due to the instability of the Senegalese economy and its focus on groundnuts.[153]

Despite the historical tradition of exploited or ineffective farmer networks, there are emerging examples of farmer networks that are using local innovations and building social capital to increase sustainability and market power. One network, Yakaar Niani Wulli, formed in 1997 in eastern Senegal with 100 farmers, and has grown to encompass more than 80 villages and almost 2000 farmers; the organization focuses on organically

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[150] Mouhamadou Sy, "Factors Inhibiting the Participation of Peasant Organisations in the Democratisation Process in Senegal," in *Peasant Organisations and the Democratisation Process in Africa*, ed. Mahmoud Ben Romdhane and Sam Moyo (Dakar, Senegal: Council for the Development of Social Science Research in Africa, 2002), 132.
[151] Ibid, 133.
[152] Gudrun Lachenmann, "Civil Society and Peasant Movements in Africa: The Case of the Peasant Movement in Senegal," *European Journal of Development Research* 5, no. 2 (December 1993): 81-2, http://www.informaworld.com (accessed April 28, 2010).
[153] Ibid, 83.

produced agricultural products that respect local values and the environment.[154] In addition to giving farmers a source of information and marketing, the organization serves as a way for farmers to tap into beneficial partnerships with such organizations as Enda Third World and the United States Agency for International Development. Both organizations are pursuing large-scale projects with Yakaar Niani Wulli and are helping the organization tap into external and Fair Trade markets.[155] Yakaar Niani Wulli shows that a focus on local innovation and sustainability can work.

PAST GOVERNMENT POLICY

Beginning in the 1980s, the Senegalese government embarked on agricultural reforms that liberalized certain state-controlled crop markets and focused more on irrigated crops rather than rain-fed crops like groundnuts.[156] Recent government policy has pushed for land reform, ostensibly to allow more large-scale commercial farming to take place.[157] This development seems to ignore a land reform that includes social justice and welfare concerns in favor of economic development.

The Senegalese government has consistently pursued a policy characterized by lack of investment and technical support in the rural agricultural sector.[158] Support that the government has given to groundnut farming in the recent past has focused on chemicals and pesticides, which had serious health consequences for certain farmers whom the government did not inform well regarding the danger.[159] Instead of supporting

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[154] For details on the organization and its history, see Fédération Yakaar Niani Wulli, http://www.yaniwulli.org (accessed May 04, 2010).
[155] The minutiae of the two partnerships can be found in Yakaar Niani Wulli's 2008-2009 Growing Season Plan, available online.
[156] Oya, 214-5.
[157] Oya, 220-1.
[158] *World Bank/ Senegal Country Environmental Analysis*, 19.
[159] Maria Eugenia Gomes do Espirito Santo et al., "Investigation of deaths in an area of groundnut plantations in Casamance, South of Senegal after exposure to Carbofuran, Thiram and Benomyl," *Journal*

long-term sustainable agricultural outlooks, the government has given little besides potentially harmful support to smallholder farmers.

The lack of support has led to farmers adopting a variety of adaptive coping mechanisms in response to environmental degradation.[160] A recent study of farming in the south of Senegal indicates that increased local control over resources such as land and forests could help drive more sustainable intensification of agriculture.[161] More government support for rural farmers, especially sustainable agriculture, could go a long way in helping to address some of the problems faced in terms of land degradation.

PRIVATE SECTOR INVOLVEMENT IN THE GROUNDNUT SECTOR

Since colonial times, Senegal has been a player in world groundnut production. Today Senegal is the second largest exporter in terms of value of peanut oil, but demand for this product is decreasing due to readily available substitutes such as palm oil.[162] The oil produced in Senegal is done under the auspices of a state company called the Société Nationale de Commercialisation des Oléagineux du Sénégal (SONACOS). Formed in 1975 to wrest foreign control of the peanut oil market from foreigners, the company had a monopoly on the sector in Senegal since 1978.[163]

In the early 2000s, falling prices and mismanagement led to the beginning of liberalization and privatization of groundnut production; the first piece to dissolve was

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of Exposure Analysis and Environmental Epidemiology 12 (2002): 381-90, http://www.proquest.com (accessed March 15, 2010).

[160] Mbow et al., 217-8.

[161] E. C. Wood, G. G. Tappan, and A. Hadj, "Understanding the Drivers of Agricultural Land Use Change in South-Central Senegal," *Journal of Arid Environments* 59, no. 3 (November 2004), http://www.sciencedirect.com (accessed April 15, 2010).

[162] Dorothée Boccanfuso and Luc Savard, "Groundnut Sector Liberalization in Senegal: A Multi-household CGE Analysis," *Oxford Development Studies* 36, no. 2 (June 2008): 162, http://www.informaworld.com (accessed April 28, 2010).

[163] Boccanfuso, Savard, and Cabral, "Une Analyse d'Impacts de la Libéralisation de la Filière Arachide au Sénégal: Un Modèle d'Equilibre Général Calculable Multi-Ménages," 34.

the state-run collection arm of SONACOS, the dissolution of which increased uncertainty among producers who faced uncertain markets.[164] SONACOS is now in competition with private enterprises for seed.[165]

The confectionary (or edible) groundnut sector is increasing in size and status, which could represent a new way for farmers to gain international market share. For example, in 1990, NOVASEN, a new company focused on the edible groundnut subsector, emerged after the sector's privatization.[166] By the end of the decade the company was working with 32,000 producers and had a total output of 60,000 tons per year, of which most is destined for export.[167] However, after a high of 10,000 tons exported in the mid-1990s, only 1000 tons was actually fit for export by the end of that decade due to toxic contamination by a common peanut fungus and small kernel size.[168]

NOVASEN has largely failed to meet expectations for several reasons, including: pricing for edible groundnuts is the same as for those destined to become oil, giving farmers no incentive to grow better seed; and, the company has not renewed seed capital, instead skimming the best grains for use as seed crop in the coming year.[169] Compared to a company like Green and Blacks, which offers higher prices than those on the international market, it is clear that NOVASEN is not providing enough incentive for farmers to want to put in extra work to produce a quality product. Data that is more recent shows that NOVASEN is exporting smaller and smaller amounts of edible groundnuts,

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164 Boccanfuso and Savard, "Groundnut Sector Liberalization in Senegal: A Multi-household CGE Analysis," 162.
165 Boccanfuso, Savard, and Cabral, "Une Analyse d'Impacts de la Libéralisation de la Filière Arachide au Sénégal: Un Modèle d'Equilibre Général Calculable Multi-Ménages," 34.
166 *World Bank/ Senegal Country Environmental Analysis*, 5.
167 Ibid.
168 Ibid 10.
169 Ibid, 10-11.

mostly due to failure to comply with international standards, while at the same time the international market for such products is increasing.[170]

Due to the failure of existing private companies (and public companies before that) to provide farmers with stable markets and other assistance one might expect from buyers, there is an opportunity for new private sector investment in the country, especially with regards to confectionary groundnuts. A company that was willing to offer guaranteed higher prices over a term of a few years in exchange for more sustainably produced nuts would incentivize farmers to invest in more long-term, sustainable field management practices themselves.

ASSESSMENT OF FRAMEWORK IN SENEGAL

This chapter dealt with each of the three pillars of the framework for sustainable agriculture as they relate to Senegal's situation. Although Senegal's agricultural development path since independence has shown decreasing returns to scale, the framework might apply itself with success to the groundnut sector.

Senegalese farmers have shown themselves to be innovators in the past, and work by development institutions such as Rondale shows that it is possible to restore fertility in the Peanut Basin. A more rigorous comparison of the soil fertility in the Peanut Basin with that in Burkina Faso associated with the zai hole case study might be even more telling, as the two might be comparable and thus analogous in terms of possible sustainable solutions. Although farmer networks in Senegal have had a politically charged past, the example of Yakaar Niani Wulli shows that a participatory-style network based on sustainability can develop and thrive.

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[170] Ahmadou A. Mbaye, *World Bank/ Sanitary and Phytosanitary Requirements and Developing-Country Agro-Food Exports An Assessment of the Senegalese Groundnut Subsector,* Agriculture and Rural Development Discussion Paper, http://www.worldbank.org (accessed April 28, 2010).

The Senegalese government has not provided a nurturing environment for sustainable agriculture to thrive. Land tenure ignores equality issues, and the government has not invested well in the rural sector to develop sustainable production. Liberalization has muddled smallholder market access for groundnut exports, and the government has a history of creating farmer networks instead of nurturing ground-up networks.

Even though liberalization has caused confusion for groundnut producers, it provides an opportunity for the private sector. The current largest edible groundnut exporter, NOVASEN, has shown itself to be ineffective in increasing capacity and meeting export standards. A corporation that could offer a premium to farmers for edible groundnuts would be able to provide incentives for smallholder farmers to meet standards that are more rigorous; those standards could uses fair trade as a model, while farmers would innovate as a means of reaching the standards. In response to the new perceived demand, it is possible to envision farmer networks springing up that would facilitate the information sharing that would lead to the development of best practices in groundnut production. Finally, since the government would benefit from an increase in edible groundnut exports, it would have incentives to nurture the partnership through better policy and regulations.

The smallholder farmers are there in Senegal, but the incentives for sustainable agriculture are not. A multinational corporation might find that, with a little work, Senegal could prove a great source of sustainably produced groundnuts.

Chapter VII: Conclusion and Recommendations

The international development sector is, at times, mercurial in its focus. Over the decades since the African independence movements there have been a number of solutions put forth as to how best to increase food production and decrease poverty. The objective of this paper was not to suggest that any particular one solution could fix issues of food scarcity and rural poverty in SSA. Instead, this paper set forth to determine if there was potential for combining existing, successful practices that on their own merits have worked in some way to improve the lives of poor smallholder farmers and integrate them into a new framework, comprised of three main pillars, to advance smallholder agricultural development in SSA.

This suggested framework does not exist in a way that addresses all three pillars. Certainly, there are examples of farmer networks collaborating with corporations, but this paper argues that adding government support in key areas and focusing on local solutions to meet certification requirements such as fair trade would enable the model to cover a potentially much wider range of areas, farmers and crops.

Chapter 2 introduced the problem of widespread soil degradation and diminishing crop returns. It highlighted Climate Change as exacerbating the problem, and presented a new "Green Revolution" focused on improved seed and irrigation as was done in Asia as a misguided goal. Chapter 3 presented ground-up sustainable agriculture as one of the pillars of the new framework, outlining innovation, participatory approaches and farmer networks as drivers for sustainability.

Chapter 4 outlined the second pillar, government policy. It highlighted four areas in which government policy could promote the new framework, including land ownership, agricultural sustainability, market access and farmer network promotion.

Chapter 5 presented the third and final pillar, corporate involvement. It argued that corporations have incentives to sustainably source goods due to demand for increased CSR, and discussed market stability and fair trade as necessary pieces of any partnership.

Chapter 6 provided a normative application of the proposed framework, with the target being groundnuts in Senegal. After an analysis of each of the three pillars as they relate to conditions in the country, the chapter concluded that conditions in Senegal were right for a partnership to form in the edible groundnut sector.

In order for the framework to work in a place like Senegal, this paper will outline several recommendations for further development of the idea. Firstly, the culture that exists within the international development community needs to undergo a shift in several areas. Despite evidence from numerous micro case studies, development institutions continue to focus on top-down solutions that never seem to get to the root of any local problem. Although there is less control in letting farmers create their own solutions to problems, the evidence provided above shows that NGOs and government extension agencies can still be instrumental in pushing farmers towards institutionalizing innovation and participatory approaches.

Secondly, developing country governments should adopt a more long-term outlook for development. While this recommendation is difficult, especially when considering states that might be fragile democracies relying on high levels of patronage, it is essential. Without giving farmers more equality, support for sustainable land use activities and market incentives, governments are dooming themselves to a cycle of relying on handouts from the West to fill the gap left by food insecurity.

Thirdly, corporations should enter the CSR field early, or they might find themselves working twice as hard just to remain on the same level. Examples like

Walmart show that consumers respond positively to responsible actions, and if a major food company were to commit totally to fair trade goods, it would most likely benefit.

Lastly, international trade issues mean that some agricultural goods do not have equal access to markets in Europe or the U.S. Instead of imposing tariffs on certain goods, open markets would allow corporations to want to pursue more partnerships with developing countries. Although this last idea is not explicitly in the report, additional research would most likely show that the amount that agricultural tariffs cost developing countries is a significant proportion of the food aid that they receive.

Before the framework is further developed or used, additional research can help to determine if it is a viable model for sustainable agricultural development. As several cases have shown above, when given the chance farmers are extremely creative in addressing seemingly insurmountable problems. However, not all innovations are scalable, and it might take time and perhaps even social or cultural reorganization needed to figure out ways to develop sustainable methods of growing groundnuts in Senegal, for example.

Additionally, CSR and fair-trade are growing trends but are in a nascent stage. While the growth in fair trade in certain areas is impressive, it is still an extremely small share of most markets in relative terms. Consumer willingness to pay premiums for sustainably grown foods might not last, especially if global economic conditions worsen. The longer CSR remains an issue for consumers, the more entrenched it will become in corporate philosophy and culture, and the more potential there will be for the private sector to play a role in sustainable agricultural development.

Finally, there could be a danger in emphasizing cash crop production. Giving farmers a premium on a crop such as groundnuts might cause farmers to switch from food crops to export crops in order to make more money. More research is needed to

examine smallholder sustainable cash crop farming versus food crop farming, and if there is any spillover effect in terms of soil fertility and productivity as a result of better techniques and knowledge.

Despite the need to explore the important questions raised above, the new framework outlined in the previous chapters could provide necessary incentives to instigate shifts to sustainable agriculture. Farmers trapped by economic conditions and lacking markets might find that having a premium market, contingent on sustainably produced crops, might give enough incentives to begin taking steps to improving soil fertility using locally derived methods that look more long term at agricultural production. Corporations are taking note of the gradual increase in consumer awareness and preference for sustainable goods and adjusting business practices accordingly. If the international development community seizes the opportunity to use socially responsible business as a potential tool for profit, the framework could show how to make sure that all stakeholder interests align.

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