

Unmasking the New Green Revolution in Africa: Motives, Players and Dynamics

ELENITA C. DAÑO



Church Development Service (EED)

TWN

Third World Network



African Centre for Biosafety

**Unmasking the New Green Revolution in Africa:
Motives, Players and Dynamics**

is published by
Third World Network
131 Jalan Macalister,
10400 Penang, Malaysia
and
Church Development Service (EED)
Ulrich-von-Hassell-Strasse 76,
53123 Bonn, Germany
and
African Centre for Biosafety
Suite 3, 12 Clamart Road,
Richmond, South Africa 2092

Copyright © Third World Network,
Church Development Service (EED) and
African Centre for Biosafety, 2007

Printed by Jutaprint,
2 Solok Sungai Pinang 3,
11600 Penang, Malaysia

ISBN: 978-983-2729-08-2

CONTENTS

Chapter 1. Introduction	1
Chapter 2. The Green Revolution in Asia: Serving as Inspiration for Africa	3
Chapter 3. “The Doubly Green Revolution”: Africa’s Turn	6
Chapter 4. Time for a Philanthropy Revolution	10
Chapter 5. The United Nations Family	21
Chapter 6. The International Financial Institutions	29
Chapter 7. The CGIAR’s Silver Bullet: New Rice for Africa (NERICA)	32
Chapter 8. Agricultural Companies in Africa	35
Chapter 9. NEPAD: Dancing to the Green Revolution Tune	44
Chapter 10. Other Players: Riding on the Green Revolution Dream	46
Chapter 11. Linking Arms: Dynamics Among the Players	51
Chapter 12. Moving Forward: Suggestions for Civil Society in Tackling the Green Revolution Challenge	55
Endnotes	59

CHAPTER 1

INTRODUCTION

SINCE the late 1990s, the development discourse in Africa has been dominated by the mantra on the “New Green Revolution in Africa”. The call has been trumpeted by no less than the United Nations, hailed by governments in Africa and beyond, funded by moneyed private philanthropic foundations, and supported by agricultural transnational corporations. Like its predecessor in Asia half a century ago, the New Green Revolution in Africa is collectively being pushed by a myriad of players all claiming to be committed to Africa’s development.

Unsurprisingly, the push for a New Green Revolution in Africa is being led by the same players that pioneered the original concept in Asia, with new allies adding strength to the effort. The Rockefeller Foundation leads the pack, with the full support of the African arms of the Consultative Group on International Agricultural Research (CGIAR), an institution created by the Rockefeller Foundation to provide the scientific and technical backbone for the Green Revolution in Asia. Duplicating the example set in Asia, the Rockefeller Foundation’s admission into Africa is akin to that of a “Trojan horse” paving the way for entry by transnational agrochemical, fertilizer and agricultural biotechnology companies to peddle their wares.

As in Asia, the New Green Revolution in Africa has implications that go far beyond agriculture, its key platform. The development direction of Africa, currently dependent on subsistence agriculture, will be shaped by the processes and outcomes of this so-called revolution, as had happened in Asia five decades ago where the rural economy, social relations, agrarian policies and rural development were moulded by the first Green Revolution. Despite the “new” tag added to its name, the Green Revolution prescribed for Africa basically follows the same formula used in Asia – a technology package for

agriculture involving the use of external inputs, massive agricultural infrastructure and modern seeds, but with a twist of genetically modified seeds added into the equation to respond to the environmental consequences caused by the old formula.

It is striking that none of those in the forefront of the revolution is African. No different from the colonial project in Africa, this new revolution is created and most ardently advocated by white men claiming to fight for the emancipation of Africans from the clutches of hunger and poverty.

This report provides an analysis of the key players promoting the New Green Revolution in Africa and the dynamics among them. It is hoped that by understanding the forces behind the push for this externally led development paradigm, African civil society would have a better handle on tackling the challenges ahead and on providing locally available, environmentally sustainable, socially acceptable and culturally sensitive alternatives based on equity and justice.

CHAPTER 2

THE GREEN REVOLUTION IN ASIA: SERVING AS INSPIRATION FOR AFRICA

THE experience of Asia in the original Green Revolution, which started from the 1950s and reached its plateau in the 1980s, serves as the inspiration for the promoters of the New Green Revolution in Africa. This, despite the long-running and highly contentious debate as to whether the Green Revolution indeed benefited Asia over its four decades of implementation.

Contrary to the general notion that the first Green Revolution missed Africa, or that Africa missed the Green Revolution, the drivers of the original Green Revolution actually did target Africa in the 1970s, but did not succeed. The CGIAR, the international consortium of the key driving forces behind the Green Revolution, was created by the Rockefeller and Ford Foundations in 1971. The Rockefeller-Ford duo had earlier established the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria in 1967. The West Africa Rice Development Association (WARDA), now known as the Africa Rice Center, based in Cotonou, Benin, was set up in 1970. The International Center for Agricultural Research in the Dry Areas (ICARDA) was set up in 1977, followed by the International Council for Research in Agroforestry (ICRAF) in 1978.

All of these international agricultural research centres were established as bodies of the CGIAR to promote the Green Revolution's one-size-fits-all technology package in Africa, but failed miserably. African farmers did not consume as much improved seeds, chemical pesticides and inorganic fertilizers as their counterparts in South and Southeast Asia did. While the average fertilizer application rate in South Asia almost tripled from 37 kg per hectare in 1980/81 to 109 kg per hectare in 2000/01 and more than doubled in East and Southeast Asia over the same period, the rate in Sub-Saharan Africa remained almost stagnant, increasing only slightly from 8 kg per hectare to 9 kg

per hectare after two decades.¹ The overall average fertilizer application rate for Africa only minimally rose from 20 kg per hectare to 22 kg per hectare during the decades in which the Green Revolution was in full swing in Asia. The transnational corporations involved in selling hybrid seeds, chemical pesticides and inorganic fertilizers obviously did not make much profit in Africa, mainly because African farmers were poorer, the basic infrastructure was mostly absent, and Africa's farming systems and conditions were much more diverse.

Africa's agricultural system is a mosaic of diverse farming, forestry and livestock ecosystems where any one-size-fits-all formula appears doomed to failure. The multitude of poor and hungry farmers who have scant access to food and other basic needs would present a challenge to the market-oriented approach to agriculture. The international geopolitical context of the post-Cold War era is also markedly different from that which prevailed at the time of the first Green Revolution when the Communist spectre was part of the political motivations behind most rural development and agricultural programmes of governments in Asia and Latin America. While government subsidies provided attractive incentives for Asian farmers to shift to monoculture and market-oriented production, the current international trade regime and pressures from creditors would make it impossible for Africa to follow the same pattern today. The international market is now much more restrictive to trade from poor countries that have no chance of competing with the heavily subsidized commodities of rich countries. Still, these factors have not deterred the ongoing push for a New Green Revolution in Africa.

Asia's Green Revolution: Brief Overview

The roots of the first Green Revolution can be traced to a 1943 agricultural development project in Mexico aimed at increasing the yield of beans and corn to address widespread poverty and hunger that was threatening the political stability of the country. The project was implemented by the government of Mexico but was initiated and funded by the Rockefeller Foundation under the leadership of its fourth president, Raymond B. Fosdick. Key project interventions focused on training local plant breeders and scientists on new techniques in

plant breeding and farming systems where the use of inorganic fertilizers and modern seed varieties was central.

Rockefeller's agricultural project in Mexico was so successful that it was replicated in other parts of Latin America in the late 1940s, and in India and Southeast Asia in the 1950s, where the model brought phenomenal successes in increasing crop production in wheat, corn and rice, prompting the then Director of the United States Agency for International Development (USAID) to coin the term "Green Revolution" in 1968.² A substantial body of literature considers the Green Revolution as having been an important political intervention led by the United States to arrest the spread of Communist insurgency across Latin America and Asia after World War II.

The Rockefeller Foundation considers the Green Revolution as one of the most prominent achievements in its long history of philanthropy. It sums up its unprecedented feat as "a combination of venturesome philanthropy, astute agricultural research, aggressive recruitment and training of scientists and farmers in the developing world, and determined government agricultural and water policy", but largely a "product of philanthropy, in a carefully negotiated partnership with government".³ This is basically the same institutional formula that the Rockefeller Foundation now intends to follow in Africa in promoting the New Green Revolution.

CHAPTER 3

“THE DOUBLY GREEN REVOLUTION”: AFRICA’S TURN

Gordon Conway: A White Man’s Dream for Africa

AS was the case with the Green Revolution in Asia, the vision for Africa’s development and food security on which the New Green Revolution agenda is based is not drawn by an African, nor is it based on Africa’s own experience. The template for a Green Revolution for Africa is laid out by *Gordon Conway* in his book *The Doubly Green Revolution: Food for All in the 21st Century* published in 1997. Conway is a world-renowned agricultural ecologist who has made a name as a pioneer of integrated pest management and sustainable agriculture. He had extensive experience in international development organizations and academia before he was elected as the 12th president of the Rockefeller Foundation in October 1997. He is the only non-US citizen to have been appointed as president of the Foundation, where he served until 2004. Conway has since moved to the UK’s Department for International Development (DFID) as its first scientific advisor and has been granted a knighthood. His field experiences in agricultural development were mainly in Southeast Asia, namely Borneo, Indonesia and Thailand, and India, but none in Africa.

Conway’s *Doubly Green Revolution* was published a month after he was elected as the Rockefeller Foundation’s president and five months before he assumed his post. The book provided the analytical framework for the Rockefeller Foundation’s promotion of a New Green Revolution in Africa, which also served as its banner programme during Conway’s stint. In his highly celebrated book, Conway argues that the Green Revolution has benefited the world’s poor by providing sufficient and affordable food, and thus saved the world from hunger. He notes, however, that the gains of the Green Revolution have not equitably benefited the rural poor in many countries and have failed

to reach a substantive portion of the world's poor, especially in Sub-Saharan Africa where 16 of the 18 most undernourished countries are found and which remains as the only region where per capita food production continues to worsen every year.⁴ At the same time, he acknowledges the environmental impacts of the use of chemical inputs implicit in the Green Revolution technology package, which has resulted in serious soil and water degradation. Thus, Conway concludes that the world needs a "Doubly Green Revolution" that repeats the successes of the old one through the development of high-yield agricultural techniques while at the same time being ecologically safe, sustainable and equitable. In many of his writings during his term at the Rockefeller Foundation, Conway says that this means applying modern ecology to the development of sustainable agricultural systems, greater participation by farmers in agricultural analysis, design and research, and employing modern biotechnology to help raise the yield ceiling, produce crops resistant to drought, salinity, pests and diseases, and produce new crop products of greater nutritional value.⁵

Since the Green Revolution missed Africa almost entirely, Conway posits that the continent should benefit from efforts that significantly increase its food production in a sustainable manner while taking into serious consideration Africa's peculiar conditions. While the first Green Revolution focused on cereal crops that are grown primarily on irrigated land in Asia, Africa's poorest farmers live in arid and semi-arid regions without access to water. The challenge, according to Conway, is thus to increase overall agricultural production under marginal conditions while working closely with small-scale poor farmers in designing and analyzing research, and helping them get their surplus products to the market to generate income that will eventually move them into the non-farm economy. He envisions four sub-revolutions necessary for the coming of the Green Revolution to Africa, namely: (1) new ways for agronomists to work effectively with farmers to identify obstacles and opportunities; (2) better and more integrated uses of existing resources; (3) ways for African farmers to benefit from the global market; and (4) ways to manage the continuing revolution in science and technology, including but not limited to biotechnology.⁶

In line with the lessons from the first Green Revolution, which show that agricultural development is not just a product of science and technology but of good governance, investments and infrastructure, Conway stresses that the new revolution will require partnerships between the public and private sectors.

From Green Revolution to Biotechnology Revolution: GM Crops in the New Green Revolution for Africa

A careful review of the developments in agriculture in Africa shows that the biotechnology agenda, specifically the push for genetically modified (GM) seeds and crops, actually preceded the orchestrated call for a New Green Revolution for the continent. The concept of a “new”, “greener” or “doubly” Green Revolution in Africa only came a few years into the push for the introduction of GM crops. The “New Green Revolution” motto, however, provides the conceptual framework in which GM seeds feature as an integral component of the technology package that also includes inorganic fertilizers, water management and extension services – roughly the same formula used in Asia and Latin America some half a century ago.

The promotion of GM seeds and crops is an important element of the vision for a “Doubly Green Revolution”. With the promise of addressing dependence on chemicals and adverse impacts on the environment – the major types of damage wrought by the old Green Revolution in Asia – the role of GM seeds and crops in the vision becomes crucial. As expounded in Conway’s vision, a “greener” Green Revolution means a more environmentally friendly agricultural system but with the same intensiveness as its predecessor. Less dependence on chemical inputs here does not automatically mean a shift to organic or sustainable agriculture, but more of a substitution of chemicals by GM seeds. Indeed, in some of his interviews and writings, Conway has openly criticized organic agriculture as a solution to hunger in developing countries, going so far as calling organic farming a “luxury” that poor countries can only afford after they have “put a large quantity of nitrogen into their soil with inorganic fertilizers out of bags”.⁷

At the same time, Conway acknowledges the concerns surrounding the impacts of GM crops on cross-pollination with wild relatives, beneficial insects and human health (such as allergies), and

is a strong proponent of labelling of GM products. He has also admonished biotech companies for focusing on industrial commodities rather than food crops, staunchly criticized the GM “Terminator” seed technology, and called for public-private partnerships to ensure access of public research institutions to proprietary technologies held by the private sector. Ensuring that biotechnology – largely tissue culture, marker-aided selection and genetic engineering – provides long-term benefits to farmers and consumers in Africa, according to Conway, requires a strong scientific community to help select the best and most useful biotechnology applications; policies that encourage advanced research in the laboratory and regulatory systems on the ground to ensure safety for humans and the environment; and a better understanding of biotechnology.⁸

Conway is also a strong advocate of hybrid seeds and plant variety protection as a middle path in providing incentives for the private sector to invest in seed development while farmers can continue saving and re-using commercial seeds in their fields. With his solid background as an agricultural ecologist who pioneered integrated pest management and sustainable agriculture, Conway is called “the voice of reason in the global food fight” offering middle-ground arguments in the debate over GM seeds.⁹

CHAPTER 4

TIME FOR A PHILANTHROPY REVOLUTION

Rockefeller Foundation

THE *Rockefeller Foundation* is the second largest private philanthropic organization in the US, with total assets of US\$3.4 billion as of 31 December 2005. It was established in 1913 by John D. Rockefeller, Sr. to “promote the well-being” of humanity by addressing the root causes of serious problems.¹⁰ The bulk of the Foundation’s wealth comes from the Rockefeller family’s endowment in the form of substantial shares in Standard Oil, the predecessor of today’s ExxonMobil, but its investment portfolio has diversified over the years.

As the president of the Rockefeller Foundation for six years (1998-2004), Gordon Conway had the institutional and financial muscle of one of the world’s largest philanthropic organizations behind him, with the result that the New Green Revolution in Africa finally got off the ground in 1999. The Foundation has since spent nearly \$150 million to establish a beachhead for bringing the Green Revolution to Africa, recognizing that it is the one region in the world where overall food security has been deteriorating rather than improving.¹¹

The Rockefeller Foundation aims to replicate its experience with the first Green Revolution in Latin America and Asia, basically following the same formula involving a combination of philanthropy and close collaboration with governments. It hopes that while Africa’s version of a Green Revolution may not be as immediate and sweeping as its predecessor in Asia, it could be just as profound, with consequences every bit as life-saving.¹² Since 1999, the Foundation has supported the development and release of more than 100 new crop varieties, dozens of which are already in use, including new strains

of rice called the “New Rice for Africa” (NERICA), cultivated on 300,000 acres across the continent.¹³ The Foundation estimates that, over 10 years, 400 more improved crop varieties and work in 20 African countries can contribute to eliminating hunger for 30 million people and move 15 million out of poverty.¹⁴

Following the private-philanthropy-government-partnership-guided-by-a-philanthropic-plan formula, the Rockefeller Foundation’s current efforts in Africa are focused on scientific development of more productive crops and fertilizers; cultivation of local talent in plant science, farming, agricultural policy and business; strong commitment from national governments; and public-private collaboration regarding infrastructure, water and irrigation, the environment, and building markets for the inputs and outputs of a revolutionized farm sector.¹⁵ The Foundation addresses the challenges of Africa’s climate and soil conditions by developing higher-yielding crops suitable to Africa’s various regions through a decentralized system of working closely with farmers in breeding programmes in selected regions primarily in East and Southern Africa. The Foundation is supporting some 25 crop-breeding teams working within various national agricultural research institutes, as well as training about 50 students pursuing doctoral degrees in plant breeding and another 30 to 40 completing master’s degrees, aimed at building capacities in national breeding programmes.¹⁶

In line with the “Doubly Green Revolution” vision, another significant intervention of the Rockefeller Foundation towards a New Green Revolution for Africa is the widespread promotion of inorganic fertilizers. In order to address the challenges posed by Africa’s poor infrastructure and transportation systems and which drive up the price of agricultural inputs and products, the Rockefeller Foundation relies on public-private partnerships to build market mechanisms to ensure that farmers buy these inputs. It provided financial support for the hosting of the *Africa Fertilizer Summit* in June 2006 in Abuja, Nigeria, where more than 40 national governments agreed to lift all cross-border taxes and tariffs on inorganic fertilizers. Various pledges and agreements were made by African governments for the start-up industry of “agro-dealers” – village retailers who sell seeds, fertilizer and farm tools. Participants also agreed to establish an African

fertilizer-financing mechanism within the African Development Bank. Start-up funding to the tune of \$10 million was pledged by Nigeria to finance the various efforts committed in the Summit.¹⁷ (*More details on the Africa Fertilizer Summit in Chapter 8.*)

The Rockefeller Foundation believes that a successful revolution in African agriculture would depend on the growth of stronger market systems, better infrastructure and the technology to make the various transactions efficient. Grants made by the Foundation have also funded the training of village merchants in the basics of retailing farm supplies, including how to help farmers understand and use the products, and helped them finance their businesses with loan guarantees and other credit support.¹⁸ As was the case in Asia, the Green Revolution in Africa would be built on the development of industries that support the input-dependent farming systems being promoted.

In an interview in 2001, Gordon Conway stressed that “the Rockefeller Foundation is not interested in biotechnology per se”, but only “in the sense that it may have something to do with improving food security in developing countries, and particularly in Africa”.¹⁹ Belying this claim, the Rockefeller Foundation has invested significant sums in helping developing countries put in place biosafety regulations and the facilities necessary for biosafety testing of genetically modified crops and foods. The Foundation is also responsible for the establishment of a number of initiatives in Africa focusing on biotechnology applications and facilitating the transfer of biotechnology products protected by patents, such as the ***African Agricultural Technology Foundation (AATF)***. (*More details on AATF in Chapter 10.*)

In addition to Conway, another principal architect of the Rockefeller Foundation’s initiative on a New Green Revolution in Africa is ***Gary Toenniessen***, a veteran in the organization and its current Director for Food Security. Toenniessen is the brains behind the ***Rice Biotechnology Program*** on which the Foundation has already invested a staggering amount of some US\$100 million since its inception in 1984 for its most controversial product, “Golden Rice” or “Vitamin A Rice”.²⁰ Together with Conway, Toenniessen has written a number of papers on the New Green Revolution for Africa and food

security in the 21st century.

Since Conway's term ended in 2004, the Rockefeller Foundation has undergone some streamlining and restructuring under its new president which has further reinforced the organization's focus on Africa. Its Food Security programme under Toenniessen has since become solely focused on Africa, overseeing the promotion of the New Green Revolution.

Alliance for a Green Revolution in Africa: Gates and Rockefeller Foundations

Seven years after the launch of its high-profile Green Revolution in Africa initiative, the Rockefeller Foundation won an important ally in boosting the much-needed finances into its pet project. It forged an alliance with the *Bill and Melinda Gates Foundation*, publicly announced on 12 September 2006. The marriage of two of the world's largest philanthropic foundations gave birth to the *Alliance for a Green Revolution in Africa (AGRA)*, with the Gates Foundation committing an initial amount of US\$100 million and another \$50 million from the Rockefeller Foundation. These sums are in addition to the \$150 million already spent on the project since it was initiated in 1999. The alliance is considered a breakthrough for the Gates Foundation, which has hitherto been focusing most of its philanthropy on global health and medical projects, and "working to reduce inequities and improve lives around the world", guided by its core belief that "every life has equal value".²¹

AGRA has been established as a public charity aimed at reducing hunger and poverty in Africa through agricultural development. In line with the "Doubly Green Revolution" vision espoused by Gordon Conway and supported by the Rockefeller Foundation, AGRA's primary goal is to increase the productivity and profitability of small-scale farming using technological, policy and institutional innovations that are environmentally and economically sustainable.²² A supporting organization, *Program for a Green Revolution in Africa (ProGRA)*, was also created to implement initiatives under the auspices of AGRA. ProGRA is operationally headed by *Dr. Joseph DeVries*, another veteran at the Rockefeller Foundation.

AGRA and ProGRA are managed by separate Boards of Directors comprised of top officials and trustees of the Gates and Rockefeller Foundations. AGRA's Board of Directors include:²³

- **Moise Mensah**, Former Minister for Rural Development, Benin
- **Mamphela Ramphele**, Chairperson, Circle Capital Ventures, Cape Town, South Africa
- **Strive Masiyiwa**, Chief Executive Officer, Econet Wireless International, Johannesburg, South Africa
- **Sylvia M. Matthews**, President of Global Development, Bill and Melinda Gates Foundation
- **Raj Shah**, Director for Agricultural Development, Global Development, Bill and Melinda Gates Foundation.

Gary Toenniessen, the current Director of the Rockefeller Foundation's Food Security programme, serves as AGRA President, with the Associate Director for Food Security and Africa Regional Program, **Akinwumi Adesina**, as Vice-President.

ProGRA, on the other hand, is overseen by the following Board of Directors:²⁴

- **Monty Jones**, Executive Secretary of the Forum for Agricultural Research in Africa (FARA), Accra, Ghana
- **Roy Steiner**, Senior Program Officer, Global Development, Bill and Melinda Gates Foundation
- **Nadya K. Shmavonian**, Vice-President, Foundation Initiatives, Rockefeller Foundation.

ProGRA's interim President is **Peter Matlon**, the Director of the Africa Regional Program of the Rockefeller Foundation, while its Vice-President is Joseph DeVries, the Deputy Director of the Food Security and Africa Regional Program of the Foundation.

The initial \$150 million commitment by the Gates and Rockefeller Foundations will be devoted to the implementation of ProGRA's first Program for Africa's Seed Systems (PASS) for a five-year period starting in 2006. PASS has four components aimed at providing an integrated approach to the scientific, educational, economic and policy aspects of building seed systems in Africa:²⁵

1. *Education for African Crop Improvement:* will provide training for a new generation of crop breeders and agricultural scientists.
2. *Fund for the Improvement and Adoption of African Crops:* aims to improve crop varieties and promote their distribution and adoption by smallholder farmers through the development of breeding and testing strategies; supporting national breeding programmes; supporting efficient completion of regulatory requirements; linking breeders with seed companies; brokering agreements between public breeding institutes and seed companies; and policy interventions.
3. *Seed Production for Africa Initiative:* aims to ensure that improved crop varieties are produced and distributed through private and public channels, including seed companies, public community seed systems and public extension. Activities include business management training and investment capital for growth of African seed companies; development of national seed trade associations and support of seed industry research; experimenting with ways to embed breeding within seed companies; experimenting with pricing and packaging of seeds for small-scale farmers; promoting improvements in institutional seed licensing policies; and promoting changes in national and institutional financing policies that assist seed companies to access affordable financing.
4. *Agro-Dealer Development Program:* provides training, capital and credit to establish and strengthen small agro-dealers who are a primary conduit of seeds, fertilizers and other farm inputs, including knowledge on how to use them, to smallholder farmers to increase their productivity and incomes. This component aims to develop agro-dealer associations and map agro-dealer market penetration; train and provide credit for 10,000 agro-dealers in Africa; link agro-dealers to wholesalers, seed companies and market information systems; and promote changes in national and institutional financing policies that assist agro-dealers and farmers to access affordable financing.

All four components of PASS include capacity-building particularly in crop breeding, raising awareness on the use of farming inputs, development of markets, linking public institutions with the private sector, and policy and institutional interventions. Notably, the broad brushstrokes of PASS basically follow the four-pronged approach outlined by Conway in his Green Revolution prescription for Africa, with scientists working with African farmers, use of existing resources, science and technologies, and linking farmers to markets.

White Paper for a Black Continent

The conceptual framework of the Gates-Rockefeller partnership for a Green Revolution in Africa is outlined in a “White Paper” prepared by the Rockefeller Foundation entitled “*Africa’s Turn: The New Green Revolution for the 21st Century*”, published in July 2006. The paper mainly summarizes the earlier theses put forward by Conway in his *Doubly Green Revolution* book, that Africa has to benefit from the promises of the Green Revolution in a sustainable and equitable manner through the combined use of applications of modern ecology and modern biotechnology, with the active participation of African farmers in analysis, design and research.

Even after Conway’s term as its president ended in 2004, the Rockefeller Foundation has reinforced his prescriptions for Africa: promotion of modern seeds and inorganic fertilizers as key to Africa’s agricultural development and food security. Its vision of a New Green Revolution for Africa considers the need to improve seed varieties as the most fundamental in a multi-level challenge, which requires the development of new generations of trained African agricultural scientists and the astute application of science.²⁶ The second level involves the need for better inputs and practices, including the use of fertilizers and other soil and water management techniques, through the development of a strong market for bringing new products to farmers through a network of local agro-dealers. Towards the end of the chain is the need to develop stronger off-farm systems and markets, from storage to transportation to processing and final sale. This multi-level challenge requires more complex and broad-ranging tasks which involve the fundamental transformation of Africa’s agricultural

economy and the future of its poor farmers.²⁷ The White Paper also recognizes the need for extensive investments in infrastructure and supportive national policy reforms, and puts emphasis on the need for strong and expanding partnerships coordinated within an environment of good governance.

Putting Money Where the Rhetoric Is

The \$100 million initial commitment of the Bill and Melinda Gates Foundation to AGRA is part of the proceeds of the initial US\$1.6 billion donation of finance guru Warren Buffett to the Foundation in 2006. With the unexpected expansion of the philanthropy organization's coffers, a new Bill and Melinda Gates Foundation Trust was created to manage the assets of the Foundation, which is now focused on the programmatic aspects of the work.

The contribution of the Gates Foundation to AGRA is comprised of several grants meant to fund various projects under the banner "Green Revolution in Africa" for five years, starting on 1 December 2006. AGRA will oversee the implementation of the following projects that will be implemented by ProGRA which correspond to the four components described above, with the following allocations from the Gates Foundation:²⁸

\$24,667,000 – To improve access by poor farmers to agricultural technologies in Africa

\$28,667,000 – To increase African food security by funding a network of crop breeders to improve African crop varieties

\$17,333,000 – To provide operational support grants to the Program for Africa's Seed Systems

\$16,000,000 – To increase access by smallholder farmers to improved crop varieties using a variety of production and distribution strategies

\$13,333,000 – To increase the number of African agriculturalists trained in practical methods of breeding and seed systems development.

ProGRA collaborates with national agricultural research programmes and public research institutes to implement its different programmes and activities.

Biotech Personalities in the Gates Foundation

Barely a month after the two giant philanthropic organizations put their resources together to create the well-funded AGRA, the Gates Foundation beefed up its ranks of staff by bringing on board a number of high-level professionals with highly interesting backgrounds into its Global Development Program. The AGRA initiative falls under the direct supervision of this Global Development Program, which was launched in April 2006. The Program has three key components, namely, Agricultural Development (within which AGRA falls), Financial Services for the Poor, and Global Libraries.²⁹ The Global Development Program, which awards \$200 million in grants annually, is the fastest-growing arm of the Gates Foundation.³⁰

One of the most high-profile personalities to join the Global Development Program in late 2006 was **Dr. Robert Horsch**, hired by the Gates Foundation as Senior Program Officer of the Global Development Program. Horsch had been Vice-President of Product and Technology Cooperation, and later Vice-President for International Development Partnerships, of Monsanto Corporation, one of the world's biggest biotechnology multinational companies and considered as the most aggressive in promoting genetically modified crops. Horsch worked with Monsanto for 25 years before he joined the Gates Foundation, and was part of the scientific team in the company that developed Monsanto's YieldGard, BollGard and RoundUp Ready technologies.³¹ Together with his team in Monsanto, he received the Presidential Medal of Technology in 1998 for their pioneering achievements in plant biology and agricultural biotechnology, and for global leadership in the development and commercialization of genetically modified crops to enhance agricultural productivity and sustainability.³² He was also a member of the Advisory Committee of the ***Partnership to Cut Hunger and Poverty in Africa (PCHPA)***, the Private Sector Committee of the ***CGIAR*** and the ***United Nations Millennium Project Task Force on Hunger***. (More details on the UN Millennium Project and the CGIAR

are provided in Chapters 5 and 7 respectively.) Horsch's task at the Gates Foundation is mainly to apply biotechnology towards improving crop yields in regions including Sub-Saharan Africa.³³

Another fresh recruit from the biotechnology industry is **Lutz Goedde**, a former CEO and President of Alta Genetics who was credited for the phenomenal rise of the company as the world's largest privately owned cattle genetics improvement and artificial insemination company with an estimated worth of US\$100 million.³⁴ He moved to become the Managing Director of Kincannon and Reed, the leading agribusiness, food and life sciences executive search firm, before joining the Gates Foundation in September 2006 as a Senior Program Officer focused on expanding access to domestic and international markets for small farmers in Asia, Latin America and Africa.³⁵

Yara Foundation

A new name in the philanthropic scene, but one which is considered a major player in the African Green Revolution drama, is the **Yara Foundation**, established in 2005 to mark the centennial of the world's leading supplier of mineral fertilizers, **Yara International**. The Norwegian company is the only international fertilizer producer with a significant presence in Africa for the past 25 years.³⁶

The Yara Foundation was established as an expression of the company's commitment to implementing and inspiring corporate actions in support of the UN Millennium Development Goals (MDGs) and a Green Revolution in Africa.³⁷ Among the members of the Board of the Yara Foundation is **Professor Pedro Sanchez** of Columbia University's **Earth Institute**, which is the main driver behind the **UN Millennium Project** and its spin-off **Millennium Villages**.

The Yara Foundation has been awarding the **Yara Prize for a Green Revolution in Africa** since 2005 to commend outstanding efforts to increase food production and availability, within a sustainable context, towards reducing hunger in Africa. The award, which comes with a US\$200,000 prize, went to Ethiopian President Meles Zenawi in 2005 and to two women heads of grassroots organizations, Celina Cossa, Founder and President of the General Union of Agricultural Cooperatives, Mozambique, and Fidelis Wainaina, Founder of the

Maseno Interchristian Child Self Help Group, Kenya, in 2006.³⁸ The prize is awarded with full pomp and ceremony in Oslo, Norway, usually in September.

The award given to Zenawi in 2005 sparked widespread criticism from various sectors in Ethiopia and other parts of the world where media and political critics exposed the dire food security and rural poverty situation in Ethiopia. Zenawi has been widely criticized in Ethiopia for corruption, political manipulation and acts of repression.³⁹ Critics have also questioned the basis for the award by challenging the government statistics on the food security and poverty situation in Ethiopia.

Norwatch, a civil society watchdog in Norway, revealed in January 2006 that Yara International won major fertilizer contracts in Ethiopia worth €12 million three months after the Yara Foundation bestowed the prize on Zenawi.⁴⁰ The fertilizers were sold to two government-controlled cooperatives which had earlier been reported to have forced poor farmers to buy fertilizers on credit and which were closely associated with powerful political parties that used fertilizer distribution as a tool to suppress opposition.

Soros in the Millennium Project

At about the same time as the launching of AGRA in September 2006, the billionaire financier *George Soros* donated US\$50 million to the Millennium Villages project in Africa, albeit with less fanfare than that surrounding his even richer colleagues in philanthropy. The pledge was matched by other donors, bringing US\$100 million in fresh capital for the Millennium Villages, designed as part of the UN Millennium Project.⁴¹

Of the major philanthropic organizations participating in the Green Revolution in Africa scheme, Soros' Open Society Institute is perhaps the "least involved". The Millennium Villages project is in fact considered a major deviation from the usual political development projects supported by Soros, who has no evident business interest in agriculture in Africa.⁴²

CHAPTER 5

THE UNITED NATIONS FAMILY

UN Secretary-General

THE former UN Secretary-General, Kofi Annan, called for a “uniquely African Green Revolution” in his speech at a high-level meeting on Innovative Approaches to Meeting Hunger Millennium Development Goals in Africa held in Addis Ababa in July 2004. Annan, a native of Ghana, is one of the few African leaders in the forefront, albeit belatedly, of the call for a New Green Revolution in Africa.

In his vision for a “uniquely African Green Revolution”, Annan outlined its elements as follows: (1) proven techniques in small-scale irrigation and water harvesting scaled up to provide more crop-per-drop; (2) improved seeds developed through publicly funded research focused specifically on Africa; and (3) restoration of soil health through agroforestry techniques and organic and mineral fertilizers.⁴³ Notably, he did not explicitly mention the use of inorganic fertilizers as an element of his “uniquely African Green Revolution”, which is a slight deviation from the formula of the “Doubly Green Revolution”. However, the former UN chief shares the view that Africa should “not shy away from considering the potential of biotechnology”, which he says can contribute significantly to the attainment of the MDGs and must be developed judiciously and used with adequate and transparent safety measures.⁴⁴ He said his vision of a Green Revolution for Africa should be more appropriately referred to as a “Rainbow Evolution” as it goes beyond agriculture, with infrastructure, roads, electrification, access to information technologies, social safety nets and an effective campaign against the HIV/AIDS epidemic being equally important components.

A year before the then UN Secretary-General unveiled his prescription for a “uniquely African Green Revolution”, he requested

the *InterAcademy Council (IAC)* to prepare a strategic plan for harnessing science and technology to increase agricultural productivity in Africa. The IAC is an Amsterdam-based international think-tank formed in 2000 by the world's science academies "to mobilize the best scientists and engineers worldwide to provide high quality advice to international bodies such as the United Nations and the World Bank".⁴⁵

The resulting report of the IAC, entitled "Realizing the Promise and Potential of African Agriculture – Science and Technology Strategies for Improving Agricultural Productivity and Food Security in Africa", was released in June 2004. The report was the product of the collective efforts of a distinguished panel of experts coming from different fields of science and technology. Some of them are familiar names, including *M.S. Swaminathan*, a key architect of the first Green Revolution in Asia, and Peter Matlon, the Deputy Director for Food Security of the Rockefeller Foundation whose boss is Gary Toenniessen, the brains behind the Rice Biotechnology Program. The panel also included *Per Pinstrup-Andersen*, former director of the International Food Policy and Research Institute (IFPRI) who has since moved to Cornell University, with *Louise Fresco*, then Assistant Director General of the UN Food and Agriculture Organization (FAO), as special adviser. The recommendations of the expert panel consistently called for the integration of African agriculture into the world market through intensification, albeit with cautions on ecological sustainability. Its key recommendations included the adoption of a market-led agricultural productivity strategy for Africa, adoption of an ecological approach in production, pursuing a strategy of integrated sustainable intensification, and bridging the "genetic divide".⁴⁶ The panel also prescribed replenishing soil fertility, conservation of biodiversity as a component of future biotechnology initiatives, increased investments in agricultural research and development, and strengthening of the international agricultural research centres.

The IAC sent a committee to Africa in October 2005 to follow up on the implementation of its recommendations and action plans in an attempt to integrate its prescriptions into the programmes and plans of various agencies, institutions and even non-government agencies on the continent. The committee included Peter Matlon of the Rockefeller Foundation, Monty Jones of the Forum for Agricultural

Research in Africa, more popularly known as the “Father of NERICA”, and *Wilberforce Kisamba-Mugerwa*, the Director of the International Service for National Agricultural Research (ISNAR), another member of the CGIAR.

While the prescriptions of the IAC, under contract with the office of the UN Secretary-General, do not echo exactly the Rockefeller formula for a Green Revolution in Africa, they do follow a similar logic: agricultural intensification, harnessing science and technology, improving soil fertility, access to improved seed varieties, and integrating African farmers into the market.

UN Millennium Project

While the UN itself may not have thrown its support behind the call for a Green Revolution in Africa as enthusiastically as the other lead players in the scheme, its specialized projects are well at the centre of the drama. The UN Secretary-General’s credo of a “uniquely African Green Revolution” has been sufficient inspiration for the UN Millennium Project’s Task Force on Hunger to push the Green Revolution project along. The Task Force on Hunger is one of ten high-level and high-profile thematic task forces comprising the Millennium Project, convened by *Professor Jeffrey Sachs* of Columbia University’s Earth Institute. The Millennium Project was commissioned by the UN Secretary-General in 2002 to develop a concrete action plan for the world to achieve the Millennium Development Goals and to reverse the grinding poverty, hunger and disease affecting billions of people.⁴⁷ In 2005, the Millennium Project presented its final recommendations to the Secretary-General in a synthesis volume titled *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals*, which summarized the recommendations from the various task force reports. Since Africa has the most number of people living below the survival threshold, the continent received special attention from all the task forces. The discussions and recommendations of the Task Force on Hunger were thus heavily oriented towards reducing hunger and malnutrition in Africa.

In its final report entitled “*Halving Hunger: It Can Be Done*”, the Task Force on Hunger made seven general recommendations:⁴⁸

1. Move from political commitment to action;
2. Reform policies and create an enabling environment;
3. Increase the productivity of food-insecure farmers;
4. Improve nutrition for the chronically hungry and vulnerable;
5. Reduce the vulnerability of the acutely hungry through productive safety nets;
6. Increase income and make markets work for the poor; and
7. Restore and conserve natural resources essential for food security.

While these recommendations may sound like general proposals, the details of the Task Force’s prescriptions veer towards increasing the productivity of food-insecure farmers through the use of inorganic fertilizers to improve soil health, improving access to better seeds and other planting materials, diversifying on-farm enterprises with high-value products, and establishing effective agricultural extension services. It is not at all surprising that the Task Force’s recommendations are in line with the formula for the New Green Revolution for Africa, given its composition. Robert Horsch, who was then Vice-President of Monsanto for Product and Technology Cooperation, was a member of the Task Force. So was ***Florence Wambugu***, the controversial Kenyan scientist who has outspokenly advocated genetically modified crops as the solution to Africa’s hunger problem and who is now the Chief Executive Officer of the ***Africa Harvest Biotech Foundation International***. Several members of the Task Force were directors of international agricultural research centres, international financial institutions and large development organizations such as the Rockefeller Foundation.

The task force’s co-chair, Pedro Sanchez, is the Director for Tropical Agriculture of Columbia University’s Earth Institute and later the Director of the Millennium Villages Project. Sanchez was the Executive Director of the ***World Agroforestry Center*** in Nairobi, another member of the CGIAR based in Africa, and was a recipient of the FAO’s World Food Prize in 2002. His co-chair in the Task Force was M.S. Swaminathan, a leading Indian rice scientist and one of the most prominent figures behind Asia’s Green Revolution. Swaminathan

is an outspoken proponent of rice biotechnology and his research centre in southern India conducts a number of genetic engineering experiments on drought-resistant and saline-tolerant rice varieties.

The Earth Institute team, led by Professors Sachs and Sanchez, has been peddling the “uniquely African Green Revolution” line of Kofi Annan in various speeches and engagements since 2004.

Millennium Villages. The UN Millennium Project, under the guidance of Jeffrey Sachs and his team at the Earth Institute, has given birth to a number of initiatives mostly implemented in Africa. Foremost among these spin-off projects is the Millennium Villages, designed to demonstrate how the eight Millennium Development Goals could be met in rural Africa within five years through community-led development. The implementation of the Millennium Villages initiative is coordinated by a non-profit organization called the Millennium Promise whose Board of Directors is comprised mainly of chief executive officers of corporate foundations and finance firms.

Millennium Villages projects are currently being implemented in 78 villages in 12 locales across 10 African countries which are considered as reasonably peaceful and governed by an accountable government, namely, Ethiopia, Ghana, Kenya, Malawi, Mali, Nigeria, Rwanda, Senegal, Tanzania and Uganda. The identified locales are considered as “hunger hotspots” suffering from chronic hunger, high prevalence of diseases, lack of access to medical care and severe lack of infrastructure. Each of the 12 clusters of villages is located in a distinct agro-ecological zone – arid or humid, highland or lowland, grain producing or pastoral – to reflect the range of farming, water and disease challenges facing the continent and to show how tailored strategies can overcome each one of them.⁴⁹

Millennium Villages work directly with the respective communities, non-governmental organizations and national governments to show how rural African communities can lift themselves out of poverty and achieve the MDGs if they have access to proven and powerful technologies that can enhance their farm productivity, health, education and access to markets – while operating within the budget constraints established by international agreements for official development assistance.⁵⁰ It costs \$300,000 annually for each Millennium Village to support its various components, such as health, nutrition, education, infrastructure, community development,

environment and agriculture, including overhead costs. The amount roughly corresponds to the 2005 commitments by the G-8 major industrial countries for official development assistance to Africa by 2010.

Among the key donors to the Millennium Villages initiative are George Soros and Yara International, one of the world's leading producers of inorganic fertilizers operating in Africa, as discussed earlier in this report. Yara is the first private enterprise to make a financial commitment linked to the Millennium Villages project, by supporting the Sauri Millennium Village in Kenya and Mwandama site in Malawi. Yara's financial contribution is paying for practical interventions like seed and fertilizer at subsidized prices and free lunches for all school children.⁵¹

Food and Agriculture Organization (FAO)

Just like the rest of the UN family, the FAO jumped onto the Green Revolution in Africa bandwagon while it was already moving. The FAO did in fact call for a "New Green Revolution" at the World Food Summit in November 1996, but not specifically for Africa. In the background paper entitled "Towards a New Green Revolution" prepared for the Summit, the FAO was examining the lessons from Asia's Green Revolution particularly in terms of its negative environmental consequences, and was proposing to bring those forward for a "New Green Revolution" that focuses on improved technology development, policies, research and extension.⁵² Maybe due to the unpopularity of the call during the Summit, not much more was heard from the FAO for some time on its idea for a "New Green Revolution" particularly in Africa.

It was only in 2004 that the Green Revolution in Africa began to feature prominently in the FAO conferences concerning Africa, with distinguished proponents of the original Green Revolution such as *Norman Borlaug* delivering lectures promoting the scheme and enjoining the international community to throw support behind it. The FAO also awarded the World Food Prize in 2004 to Dr. Monty Jones for his key role in the research and development of the New Rice for Africa (NERICA) during his stint in the Upland Rice Breeding Programme at the *West Africa Rice Development Association*

(*WARDA*), a member of the CGIAR. NERICA plays a central role in the Green Revolution in Africa scheme, which hails improved seed varieties as pivotal in improving the lives of poor farmers (*see Chapter 7*).

At the 2005 meeting of the FAO Committee on Food Security where the Green Revolution in Africa merited a special session, FAO members called for increased investments in research, technology and infrastructure, commitment to mobilize resources for the implementation of the *Comprehensive Africa Agriculture Development Programme (CAADP)* under the *New Partnership for Africa's Development (NEPAD)* (*see Chapter 9*), paying attention to good governance, peace, fair trade, land tenure and incentives, and livestock development.⁵³ Pointing to the dangers of replicating the Asian Green Revolution model in Africa, the FAO considered the term coined by Annan, “Rainbow Evolution”, to be more appropriate due to the more comprehensive nature of interventions that the situation in Africa requires.

Apart from technical assistance and financial support to the implementation of NEPAD’s CAADP which is mainly focused on integrated water management, fertilizer development, soil improvement and integration of crop-livestock systems, the FAO has not, however, played a central role in the push for a Green Revolution in Africa. This may be due to the fact that the United Nations in general has been quite cautious in promoting a wholesale adoption of the Green Revolution model in Africa, for political reasons and due to the vast differences in conditions and needs between Africa and Asia as well as the global situation at present. Part of the reason could be the ongoing institutional reforms in the UN system in general and the FAO in particular. The FAO has been undergoing institutional reforms since 2005. The need for the FAO to respond better to the challenges of the MDGs and the ongoing system-wide efforts on coherence and reforms at the United Nations are the official justifications for the current reform processes at the FAO. The institutional changes also coincide with the third term of Jacques Diouf as Director General. Dr. Diouf has been at the helm of the FAO since 1993, and has been re-elected twice for six-year terms in the top post by the Governing Council. Before joining the FAO, Diouf had served as Senegal’s Ambassador to the United Nations in New York,

Secretary-General of the Central Bank for West African States in Dakar, and Executive Secretary of WARDA.

The ongoing reforms at the FAO involve substantive changes in the structure of departments at its headquarters in Rome and further decentralization to ensure more efficient performance of the FAO's functions in the field, especially Africa and Central Asia. Four sub-regional offices have now been established in Africa, namely for Central Africa based in Libreville, Gabon; Eastern Africa based in Addis Ababa, Ethiopia; Southern Africa in Harare, Zimbabwe; and Western Africa in Accra, Ghana.⁵⁴ Once in full operation, the sub-regional offices are set to make the FAO's technical assistance and presence felt in the poorest areas of Africa.

International Fund for Agricultural Development (IFAD)

IFAD's contribution in the Green Revolution in Africa scheme is even less than that of the FAO. IFAD's explicit pronouncements on the scheme are limited to the role it played at the Africa Fertilizer Summit in June 2006 where it was one of the institutional sponsors. IFAD stressed the crucial role of fertilizers in increasing production and poverty alleviation of poor African farmers, but cautioned against the wholesale adoption of the Asian experience in the Green Revolution.⁵⁵ Consistent with its mandate, IFAD asserted that the African Green Revolution must be built by Africans, with the active participation of farmers' organizations.

CHAPTER 6

THE INTERNATIONAL FINANCIAL INSTITUTIONS

World Bank

THE World Bank's involvement in the Green Revolution for Africa agenda is largely limited to its role in prescribing liberalization and deregulation policies to debtor countries in the region – a role that should not, however, be underestimated for its strategic importance in laying the ground for the entry of private sector investments in African agriculture. The Bank's liberalization drive in Africa in the 1990s targeted Africa's seeds industry, which was then largely controlled and dominated by government entities and para-statal enterprises. These, the Bank's consultants declared, were inefficient and thus needed to be shut down.

The Bank created a team to lead an initiative on Sustainable Seed Systems in Sub-Saharan Africa in the early 1990s to study the prevailing seed systems in the region. African seed systems are largely informal and characterized by farmers' saving systems built on the free sharing and exchanging of seeds, and developing seeds on-farm. In keeping with the Bank's ideological line, the team fashioned their recommendations towards deregulation of the seed industry, creation of national seed trade associations, and strengthening of the role of the national and international research institutions to provide farmers with improved seeds.⁵⁶ The team's recommendations were followed by financial infusions from the Bank in the ensuing years in order to reform and restructure national seed industries, seed propagation and distribution, and even the provision of loans to farmers to bolster the national seed industry.

Five years following the team's first report, the African Seeds Trade Association (AFSTA) was born in 2000, with ample support from the American Seeds Trade Association (ASTA). The role of

their transnational corporate members has been toned down and the AFSTA is dominated by representatives of national seed companies largely from the biggest commercial markets in the region.

African Development Bank

The role of the African Development Bank (AfDB) cannot be regarded as systematically part of the Green Revolution in Africa scheme. Among its few funding ventures explicitly related to the Green Revolution in Africa is the US\$34 million loan extended to Namibia in 2005 for its “Green Scheme Project” which aims to give the agricultural sector a boost through development of irrigation facilities and infrastructure to increase agriculture’s share in the country’s GDP.⁵⁷ The project is part of Namibia’s commitment to the implementation of the Green Revolution in Africa.

Also in 2005, the AfDB launched a US\$35 million project to support the dissemination of NERICA in seven West African countries under the coordination of the African Rice Initiative (ARI) hosted by WARDA.⁵⁸

The AfDB’s role in the Green Revolution in Africa agenda became more prominent with the tasks delegated to it by the *Abuja Declaration on Fertilizer for the African Green Revolution*, which was adopted by the African Union at the Africa Fertilizer Summit in June 2006. The Declaration aimed for the establishment of an Africa Fertilizer Development Financing Mechanism and Regional Fertilizer Procurement and Distribution Facilities by 2007, with the funding burden passed on to the AfDB, to support intra-regional production of and trade in fertilizers, and promotion of fertilizers among African farmers to improve soil health. The AfDB and the African Union have yet to come up with concrete plans and guidelines on the operation of these financing mechanisms.

The AfDB also developed a “New Paradigm for Agricultural Water Development and Management in Africa: Water Infrastructure for Prosperity” which was presented at a water management conference in Tunisia in November 2006. In the paper, the AfDB aims to guide donor assistance to agriculture water development and management to invest heavily in irrigation schemes and promote and fund the implementation of a “Green Revolution led by the Water

System”.⁵⁹ It appears that the AfDB has defined its niche in the Green Revolution scheme in the area of agricultural water management and irrigation.

While the AfDB may have joined the bandwagon quite late in the day, it plays an important role in mobilizing resources to fund the most capital-heavy components of the Green Revolution, such as irrigation and other support infrastructure, including fertilizers and agrochemicals.

CHAPTER 7

THE CGIAR'S SILVER BULLET: NEW RICE FOR AFRICA (NERICA)

THE Consultative Group on International Agricultural Research, formed in 1971 by the Rockefeller and Ford Foundations specifically to lead the implementation and promotion of the Green Revolution in Asia, continues to play a role in the New Green Revolution in Africa, although one that is not as central as it was in Asia. The CGIAR was beset with a funding and credibility crisis in the 1990s for various reasons associated with the Asian Green Revolution. Hence, the rich philanthropic organizations seemed to have largely gone on their own in launching the New Green Revolution in Africa.

Nevertheless, the CGIAR has been investing heavily in Africa over the years. In 2003, it allocated 45 percent of its funds, equivalent to US\$180 million, to projects in Sub-Saharan Africa, up from 43 percent the previous year⁶⁰, with the largest amounts being allocated to WARDA, IITA, the World Agroforestry Center, the International Livestock Research Institute (ILRI) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). However, a close examination of the CGIAR's financial reports reveals that these allocations were actually spent on personnel, which consumed 46 percent of the CGIAR's funds in 2003, and supplies/services, which received an allocation of 43 percent in the same year.⁶¹

The CGIAR's silver bullet for the Green Revolution in Africa follows the same trajectory taken by Asia, this time in the form of NERICA. The improved NERICA varieties were developed in the 1990s by mostly African scientists at WARDA, a CGIAR centre which was renamed the *Africa Rice Center* in 2003, using anther culture to cross the high-yielding Asian rice with traditional African rice. The result is a new plant type that looks like African rice during its early stages of growth with the capacity to shade out weeds, but becomes more like Asian rice as it reaches maturity, thus giving higher yields

with few inputs.⁶² Scientists depended on molecular biology to speed up the breeding process and to overcome sterility, which is a key obstacle in the breeding process. Marker-aided selection was used to breed rice containing two or more genes for resistance to the same pathogen, thus increasing the durability of the resistance, and to accumulate several different genes contributing to drought tolerance.⁶³

WARDA released an initial batch of seven NERICA varieties mostly in Western Africa, where it was projected to be cultivated on more than 200,000 hectares with a production of up to 750,000 tons per year by 2006, thus saving countries nearly US\$90 million in rice imports.⁶⁴ Beyond the glossy projections, however, NERICA has yet to make a clear contribution to food security and poverty alleviation in Western Africa despite the high level of publicity that it has received so far.

With NERICA, WARDA hopes to start a rice-based Green Revolution in Africa, where rice is considered a staple, particularly in Western Africa. NERICA has been cited as one of the world's major agricultural research breakthroughs of the last 30 years and, as stated above, delivered the World Food Prize in 2004 to Dr. Monty Jones, a former senior plant breeder at WARDA who led the team that developed NERICA.⁶⁵ Dr. Jones has since become the Executive Secretary of the Forum for Agricultural Research in Africa (FARA), a consortium of various stakeholders in agricultural research and development in the continent. He was also recently named as a member of the Board of Directors of the Rockefeller and Gates Foundations' ProGRA.

While NERICA is the CGIAR's main contribution to the Green Revolution in Africa scheme, the other players have also performed major roles in making this supposed silver bullet a reality. The Rockefeller Foundation provided substantial funds for the biotechnology-aided breeding approaches used by WARDA scientists in developing NERICA. Japanese donor agencies, the Canadian International Development Agency (CIDA) and the World Bank invested heavily in the project, which involved the collaboration of CGIAR scientists with various research institutions from China to France and the US. In 2002, these players launched the African Rice Initiative (ARI) to coordinate the NERICA Consortium for Food Security in Sub-Saharan Africa. The focused mandate of ARI, which

is hosted by WARDA, is to work for the dissemination of NERICA across Africa as a contribution to food security and livelihoods for poor farmers through a community-based seeds production system.⁶⁶

CHAPTER 8

AGRICULTURAL COMPANIES IN AFRICA

Syngenta

SYNGENTA is the world's third largest seed company, with total sales of \$1.239 billion in 2004, and the second largest agrochemical firm, with total sales of \$6.030 billion in the same year.⁶⁷ The company's "humanitarian" face in semi-arid areas, such as Sub-Saharan Africa, is the *Syngenta Foundation for Sustainable Agriculture (SFSA)*, which was established in 2001 with the lofty goal of contributing to sustainable food security for small-scale farmers. The Foundation implements projects in the semi-arid regions of Brazil, India and, of course, Sub-Saharan Africa, particularly in Eritrea, Mali, Uganda and Kenya. It claims to work in partnership with local communities, national academic and research institutions, non-government organizations and international development organizations. It takes pride in "its ability to bridge the private sector and the international development community worlds through its understanding of livelihood concerns, the drivers of rural economy, its flexible and proactive approach and its unique ability to build on the business DNA that is prominently available at Syngenta AG".⁶⁸

The Syngenta Foundation is headed by its Executive Director, Andrew Bennett, who joined in 2002 after leaving his post as Director for Rural Livelihoods and Environment at the UK *Department for International Development (DFID)*. Before he left DFID, Bennett was involved in a controversy regarding the agency's multi-million-pound programme to support the creation of a new generation of GM animals, crops and drugs in developing countries.⁶⁹ As soon as he joined in 2002, the Syngenta Foundation was elected as a member of the governing body of the CGIAR, which stirred protests from civil

society organizations and resulted in the suspension of the relationship of the CGIAR's NGO Committee with the CGIAR.

The Syngenta Foundation's project strategies are focused on increasing productivity and reducing risks of crop failure through water conservation, use of drip irrigation, intercropping and sustainable land management systems; increasing the ability of crops to cope with drought and the ravages of pests and diseases by breeding varieties adapted to local environmental and social conditions and that suit local needs; identifying and developing market-based solutions to poverty elimination among smallholder farmers; linking farmers with market information; and helping to develop small and medium rural enterprises.⁷⁰ Apart from implementing projects, the Foundation also sponsors scholarships for African students, and conducts symposiums and lectures around the world geared towards its thrusts.

The Syngenta Foundation's projects in Eritrea, Mali and Kenya were actually inherited from the *Novartis Foundation for Sustainable Development*, which has since trained its attentions on the health sector to perform its "corporate social responsibility" function for *Novartis*. Novartis is a sister company of Syngenta and one of the world's top 10 pharmaceutical giants.

The Syngenta Foundation's project in Eritrea is centred on improving soil and water management and capacity-building. This is being done in collaboration with the University of Asmara, the National Agricultural Research Center, the Center for Development and Environment in Switzerland, the Swiss Agency for Development and Cooperation (SDC) and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) as partners. The project in Uganda focuses on dissemination of market and agronomic information to local farmers and is being implemented with the Uganda National Farmers Federation and a host of other national government agencies. Its Cinzana Agricultural Research Station project in Mali aims to improve the local food security situation by enhancing the productivity of pearl millet, in partnership with local farmer organizations in the Segou region, the Ministry of Agriculture, ICRISAT and the Novartis Foundation for Sustainable Development.

The most publicized of the Syngenta Foundation's projects in Africa is the Insect-Resistant Maize for Africa (IRMA). IRMA is implemented by the Syngenta Foundation in collaboration with the

Kenya Agricultural Research Institute (KARI), the International Maize and Wheat Improvement Centre (CIMMYT) and the Rockefeller Foundation.⁷¹ The project aims to develop and deliver to farmers maize varieties that are resistant to stem borer species. While the use of genetic engineering in developing corn borer-resistant maize varieties is not explicitly mentioned, IRMA's goals include the "enhancement of Kenya's biosafety review program".⁷² The project also holds annual public stakeholders' meetings and facilitates exchange of information between public researchers at CIMMYT and KARI.

While the Syngenta Foundation is conceptually an independent entity from Syngenta Corporation, the majority of its Board are officers of the mother company and the bulk of its resources are undoubtedly provided by the firm. A new member of its Board is *Dr. Eugene Terry*, the first Director General of WARDA from 1987 to 1996, former World Bank Advisor for research and extension, and currently Director of the African Agricultural Technology Foundation (AATF) and the BioSciences for East and Central Africa (BECA).⁷³

Monsanto

Monsanto, the world's biggest seed company and second biggest biotechnology corporation and considered as the most aggressive player in these industries, plays an active role in the African Green Revolution without the need for a foundation or a humanitarian face. Behind its cleverly named "*Seeds of Hope*" campaign, Monsanto has shifted its business strategy in poor countries, particularly in Sub-Saharan Africa, towards marketing to the "bottom of the pyramid" (BOP) – targeting the poorest, albeit diffused, segment of the market which could bring trillions of dollars in sales.⁷⁴

The company's main product is called the "*Combi-Pack*", labelled as *Xoshindlala* in Zulu which means "chase away hunger", which has been commercially released in South Africa since the late 1990s. The "*Combi-Pack*" is a package of hybrid maize seeds, fertilizers and herbicides intended for use in small landholdings ranging from a quarter of a hectare to five hectares in size, and comes with pictogram instructions for illiterate users.⁷⁵ The product is regarded as a good example of BOP marketing, with its small unit

packages, affordable retail prices and accessibility. The package comes with the “no-till” technology that Monsanto has been promoting across developing countries, which is dependent on the use of herbicides instead of plowing to reduce soil erosion and touted as an environmentally sustainable practice. Pilot projects on the “Combi-Pack” have been implemented in South Africa’s KwaZulu-Natal and Mpumalanga regions, and have shown positive results on both farmers’ income and food security, according to a study conducted by the *Mercatus Center* of the George Mason University in the US as part of *Enterprise Africa*, a research project that investigates, analyzes and reports on enterprise-based solutions to poverty in Africa.⁷⁶

Monsanto’s latest “Seeds of Hope” initiative should best be seen as a continuing segment of its highly controversial “*Let the Harvest Begin*” campaign launched in the summer of 1998. In a worldwide public relations campaign, Monsanto aggressively projected the benefits of the Green Revolution in Asia and its potential in Africa, in an effort to convince the European public of the benefits of GM crops.⁷⁷ The company managed to draw into its massive media campaign a number of respected African personalities, such as Nelson Mandela, to speak for a new Green Revolution in Africa. The campaign soon fizzled out after worldwide criticism over the ethical implications of using hunger in Africa as a justification to sell its GM crops to the rest of the world.

While Monsanto may have been widely unsuccessful in hiding its profit motive behind glossy and expensive media campaigns to promote GM seeds, it has been highly successful in spreading its influence in the other sectors involved in promoting the new African Green Revolution agenda. As discussed earlier, its former Vice President for International Development Partnerships, Dr. Robert Horsch, joined the growing number of high-level professionals directing the Bill and Melinda Gates Foundation in October 2006. Horsch has represented Monsanto in a number of global partnerships on agricultural development in Africa, such as the Partnership to Cut Hunger and Poverty in Africa (PCHPA) and the Clinton Global Initiative.

The company’s former Director for Research, Production and Technical Cooperation, *Dr. Gerard Barry*, moved to the *International Rice Research Institute (IRRI)* in late 2003 to head the *Golden Rice*

Network. Barry had been directly responsible for Monsanto's move in 2000 to grant royalty-free licences for the use of its patented technologies to further develop the Golden Rice.⁷⁸ His appointment as Coordinator of IRRI's Golden Rice project was widely viewed with suspicion because of his direct involvement in building up Monsanto's proprietary interest in the technology. Barry had spent most of his career at Monsanto where he earned distinguished awards for his scientific achievements mainly in rice research. He is also a member of the Design Advisory Committee of the African Agricultural Technology Foundation (AATF).

Seed Industry

According to FAO and World Bank figures, less than 10 percent of smallholder farmers in Sub-Saharan Africa use improved seed varieties in their farms, and this is largely attributed to the poor infrastructure, weak capacity in seed research and development, and inefficient seed distribution.⁷⁹ The World Bank also estimates that in 60 percent of African countries, governments and para-statal entities control the national seed industry, although the number has been steadily decreasing over the years largely because of pressures from the Bank to privatize national seed industries.

The World Bank began to devote attention to developing the national and regional seed industries in Africa in the early 1990s, through its initiative on Sustainable Seed Systems in Sub-Saharan Africa. A project report published in 1994 shows the World Bank advocating for the deregulation of the seed industry in Africa, strengthening of extension services, and linking the national agricultural research systems and the international agricultural research centres to African farmers in order to facilitate access to improved seeds, as well as improve seed quality control and registration. The World Bank encouraged the informal seed system to exist in the absence of subsidies, which the Bank regarded as inhibiting private sector involvement in the seed industry.⁸⁰ The Bank has since funded a number of national and regional projects in Africa focusing on the reform and restructuring of the seed industry, seed production and multiplication, improving seed quality control and monitoring, and improving seed delivery systems and credit access of farmers.

The World Bank's efforts in deregulating Africa's seed industry and paving the way for the entry of transnational seed companies are evident. By the late 1990s, most African countries claimed to have their own seed industry, some with well-established seed industry associations at the national level, such as in South Africa, Zambia and Kenya where para-statal entities have given way to the entry of private domestic and transnational companies. In 2000, the African Seeds Trade Association (AFSTA) was formed, with support from the American Seeds Trade Association, to serve as a lobby group for transnational seed interests in the region.⁸¹ AFSTA aims to promote the use of improved-quality seeds, facilitate the establishment of national seed trade associations in Africa, and promote the interests of the seed industry in the region.⁸² AFSTA's membership includes national seed trade associations comprised of domestic seed companies and some remaining para-statal seed entities; international and transnational seed companies; and a lone NGO, the *Sasakawa Global 2000* where Norman Borlaug serves as a director. Its Board of Directors is led by the CEOs of domestic seed companies, with representatives from the US and European seed industries.

The Rockefeller Foundation and its spin-offs are also actively doing their part in promoting private sector interest in Africa's fledgling seed industry. ProGRA's Joseph DeVries, in an official address to officials of seed companies in Uganda in early 2007, appealed to his audience to utilize the AGRA donations from the Rockefeller and Gates Foundations for training and assisting agro-dealers in order to "fight starvation and famine".⁸³ As discussed earlier, ProGRA's initial five-year Program for Africa's Seed Systems (PASS) that started in 2006 counts seed production as one of its four major components aimed at establishing national seeds trade associations, strengthening the development and distribution of seeds to public and private channels, and enhancing the capability of agro-dealers.

Despite the slow adoption of improved seeds by African smallholders and poor farmers, Sub-Saharan Africa holds lucrative promise for seed companies. Monsanto, for example, currently controls 40 percent of South Africa's market in maize seeds, through gradual acquisition of local seed companies and the continuous upgrading of its research facilities and capabilities in the country over the past few years.⁸⁴ A key channel for advancement of private seed

interests in Africa, of course, is in the area of genetically modified seeds, especially maize and cotton, which are key commodity exports of many African countries.

The biggest commercial seed market in Africa is South Africa, with annual domestic sales estimated at US\$217 million, followed by Morocco with US\$160 million annual sales, Egypt with US\$140 million, and Nigeria with US\$120 million.⁸⁵ The combined annual domestic sales of South Africa's neighbours in southern Africa, namely, Kenya, Zimbabwe and Zambia, are about 43 percent of South Africa's – which explains the concentration of private sector interest in that part of the continent. The presence of large commercial farms and the relatively widespread adoption of commercial cultivation in South Africa in particular and southern Africa in general translate into potentially lucrative markets for modern seeds sold by companies.

Fertilizer Industry

The fertilizer industry is undoubtedly one of the most active business sectors that have been mobilized in support of the call for a New Green Revolution in Africa. With the imperative to improve soil fertilizers in Sub-Saharan Africa at the top of the “Doubly Green Revolution” agenda, the fertilizer industry is eyeing handsome profits in the package.

The central players involved in the African Green Revolution scheme, led by the Rockefeller Foundation, instigated the Africa Fertilizer Summit in Abuja, Nigeria in June 2006. The Summit was hosted by the New Partnership for Africa's Development (NEPAD), and brought together 40 African governments which made commitments to promote the removal of taxes and tariffs on fertilizers, support an emerging network of agro-dealers and create a programme through the African Development Bank to finance the production and distribution of fertilizers.⁸⁶ The agenda and language of the Summit were unquestionably consistent with the New Green Revolution in Africa venture. Aside from the Rockefeller Foundation, others who pooled their resources to make the Summit happen included international financial institutions such as the World Bank and the African Development Bank; regional banks such as the United Bank for Africa and the Nigerian Fidelity Bank; and representatives from

the fertilizer industry such as the Arab Fertilizer Association (AFA), International Fertilizer Industry Association (IFA) and Notore Chemical Industries (formerly National Fertilizer Company of Nigeria or NAFCON). Also included in the long list of sponsors were bilateral donor agencies such as the UK's DFID, the Netherlands' DGIS, and USAID; and multilateral agencies like the FAO, IFAD and the UN Economic Commission for Africa (UN-ECA). Since the fertilizer industry is closely dependent on fossil fuel production, it is no surprise that Shell-Canada also contributed some resources to the Summit.⁸⁷

The Africa Fertilizer Summit in Abuja was a grand show of the who's who in the African Green Revolution plan, from the architects and the donors, down to the implementers and the proponents. Among the high-level personalities who graced the Summit and spoke on the African Green Revolution were Norman Borlaug, now with the NGO *Sasakawa Association for Africa (SAA)*, Gary Toenniessen of the Rockefeller Foundation, Florence Wambugu of the Africa Harvest Biotech Foundation International, and Prof. Jeffrey Sachs of the UN Millennium Project, along with senior officials from the CGIAR, representatives from the fertilizer industry and Presidents of several African countries.

The Summit produced the Abuja Declaration on Fertilizer for the African Green Revolution on 13 June 2006, which sums up the pivotal role played by fertilizers in the New Green Revolution. The Declaration is ominously silent on what type of fertilizer the proponents aim to promote and distribute to African farmers, but the presence of the inorganic fertilizer industry in the Summit implicitly defines the nature of the product being promoted. No organic fertilizer proponent was among the speakers, and neither was there any discussion on the impacts of inorganic fertilizers on long-term soil health as experienced by Asia and Latin America in the first Green Revolution.

By way of the Abuja Declaration, the member states of the African Union (AU) aimed for the establishment of an Africa Fertilizer Development Financing Mechanism and Regional Fertilizer Procurement and Distribution Facilities by 2007, with the support of the African Development Bank, the UN-ECA and the regional banks. The AU also committed itself to supporting intra-regional production of and trade in fertilizers by optimizing the raw materials for fertilizers

available in the continent. Beyond the development of the fertilizer industry in the region and consistent with the vision for a New Green Revolution in Africa, the AU member states also pledged to undertake specific actions to improve farmer access to quality seeds, irrigation facilities, extension services, market information, and soil nutrient testing and mapping to facilitate effective and efficient use of inorganic and organic fertilizers, while paying attention to the environment.⁸⁸

At the end of the Summit, host and the then Nigerian President Olusegun Obasanjo committed an initial US\$10 million to the funding mechanism, which is expected to benefit Nigeria's own fertilizer companies linked to its rich oil and gas industry. To much fanfare, a private fertilizer and chemical company that evolved from the old government-controlled National Fertilizer Company of Nigeria (NAFCON), Notore Chemical Industries Limited, announced the re-opening of its nitrogen fertilizer factory in the Niger Delta during the Summit. The US\$100 million facility is said to be the only urea fertilizer plant in Sub-Saharan Africa and one of the biggest in the world that will utilize flared natural gas abundant in Nigeria.⁸⁹

The Norwegian fertilizer company, Yara International, may not have been among the donors of the Summit but it is one of the most prominent members of the International Fertilizer Industry Association (IFA). Its Senior Vice-President, Arne Cartridge, was part of the Private Sector panel during the conference, along with other luminaries of the global fertilizer industry.⁹⁰

CHAPTER 9

NEPAD: DANCING TO THE GREEN REVOLUTION TUNE

WHILE the lead actors in the New Green Revolution for Africa have principally been non-Africans, the key institutions in the continent have willingly played supporting roles but mainly to lend credibility to the scheme. The New Partnership for Africa's Development (NEPAD), which was created to provide the vision and framework for Africa's renewal, is a natural partner. Agriculture, understandably, is a priority sector for NEPAD, which is geared towards increasing agricultural productivity and sustainability. The strategic action plans of NEPAD in agriculture focus on increasing the areas under sustainable land management and reliable water control systems, improving infrastructure and market access, and increasing food supply and reducing hunger.⁹¹ NEPAD recognizes that while Africa needs market access for its products in order to increase the income of farmers and earn foreign exchange for governments, it is most urgent to respond to widespread poverty and hunger.

Given that the member states of the AU's predecessor, the Organization of African Unity (OAU), had already endorsed the need for a New Green Revolution, it is understandable that such a framework should have a place in NEPAD. Specifically, that place is in the Comprehensive Africa Agriculture Development Programme (CAADP), which provides the blueprint and flagship projects for Africa's agricultural development at the national, regional and continental levels. The formulation of the CAADP is considered by the FAO as a centrepiece of its cooperation with the NEPAD Secretariat.⁹² The FAO provided indispensable assistance to NEPAD in formulating the CAADP, which was officially adopted for implementation by the AU in July 2003 through the Maputo Declaration on Agriculture and Food Security in Africa.⁹³

The CAADP is designed to stand on four legs geared towards the strategic development of Africa's agricultural sector by 2015.⁹⁴ The first component involves extending the areas under sustainable land management and reliable water control systems to enable farmers to cultivate high-yielding crops, which requires an investment of US\$37 billion. The second component, which requires the highest investment at US\$92 billion, is the improvement of rural infrastructure and trade-related capacities for market access, which also involves strengthening the capacity of African governments in trade negotiations and meeting international trade standards. The third leg is increasing food supply and reducing hunger, targeting 15 million small farms for access to improved technology and services, for which US\$7.5 billion is allocated. The last component involves additional investment for disaster preparedness and early warning capacity, which would need a US\$34.5 billion investment.

The important elements of the New Green Revolution in Africa can be gleaned from the details of the CAADP. Agricultural development using improved technologies and relying on heavy infrastructure and market-oriented agricultural production are explicitly stated in the documents, but the promotion of modern agricultural inputs is much more subtly advocated. At the 23rd regional conference of the FAO for Africa in March 2004, African governments adopted a Resolution on the Development of Fertilizer Industry in Africa in support of the CAADP. The Resolution requested assistance from the FAO and the International Fertilizer Development Center (IFDC) to conduct an assessment of all fertilizer plants in Africa, as well as provide the estimated costs of the revamp of existing plants and establishment of new plants, with the aim of making the continent self-sufficient in fertilizer production and even a net exporter of fertilizer by 2015.⁹⁵

It is ironic that while African governments are aiming for fertilizer self-sufficiency through the CAADP, there is no mention of food self-sufficiency anywhere in the document beyond the aim of increasing food supply and reducing the incidence of hunger.

CHAPTER 10

OTHER PLAYERS: RIDING ON THE GREEN REVOLUTION DREAM

THE push for a New Green Revolution for Africa is not just a collaboration between private philanthropy, governments and business. An active player in the African version which was not present in the earlier Green Revolution in Asia is the non-business/industry groups which often refer to themselves as non-government organizations. The “non-profit” and “non-government” tags can be quite deceiving, however, especially with regard to the most prominent of these groups that are pushing for the Green Revolution more specifically through the modern biotechnology path. Some of these groups were actually established by players in private philanthropy and public agricultural research centres, while others are openly supported by agricultural chemical companies. This chapter introduces three of the most prominent and most active non-government and non-industry players in the Green Revolution for Africa.

International Service for the Acquisition of Agricultural Biotechnology Applications (ISAAA)

The *International Service for the Acquisition of Agricultural Biotechnology Applications (ISAAA)* is an international network established in the early 1990s primarily to facilitate the “transfer and delivery of appropriate biotechnology applications to developing countries” and “the building of partnerships between institutions in the South and the private sector in the North, and strengthening of South-South collaboration”.⁹⁶ ISAAA focuses on the promotion of biotechnology applications in developing countries by identifying the biotechnology needs of particular countries and the crop biotechnology applications to respond to these needs, facilitating the transfer of proprietary technologies from the private sector to developing

countries, implementing biotechnology projects with near-term impacts, and working towards the creation of an enabling policy environment for its projects. It works closely with public agricultural research centres and national regulatory agencies, and facilitates public-private collaboration within and across countries. ISAAA is actively involved in promotion, awareness-raising and capacity-building on crop biotechnology among policy makers and the general public, largely through its Biotechnology Information Centers (BIC) lodged in national agricultural research centres in key countries around the world.

ISAAA's long list of donors and patrons includes an interesting mix of private philanthropic organizations, international aid agencies and agrochemical companies that figure prominently in the push for a New Green Revolution for Africa. The Rockefeller Foundation, along with USAID, Switzerland's SDC, Germany's GTZ/BMZ, Canada's International Development Research Center (IDRC), Denmark's DANIDA, Sweden's SIDA and Australia's ACIAR, are among its founding and principal donors. Also appearing on the list of contributors to ISAAA's funds are the world's biggest agrochemical and seed companies such as AgrEvo, Bayer, Cargill, Dow, DuPont, Monsanto, Nestle, Novartis, Pioneer and Syngenta, and the industry coalition CropLife International.⁹⁷ ISAAA's distinguished patrons include Norman Borlaug and M.S. Swaminathan – two of the most prominent figures behind the earlier Green Revolution in Asia and Latin America.

ISAAA has regional offices across the world, with the one in Africa called *ISAAA AfriCenter* established in 1994, even preceding the explicit promotion of a New Green Revolution for Africa by the variety of actors described in this report. Its centre in Africa is based in the regional offices of the International Potato Center (CIP) located within the campus of the International Livestock Research Institute (ILRI) – two major centres of the CGIAR with a strong presence and significant influence in Africa. It currently has three projects in Africa, namely on the introduction and farm-level evaluation of new biotechnologies for banana, fast-growing multi-purpose trees and sweet potatoes.⁹⁸ Notably, ISAAA's presence in Africa is largely limited to Kenya, South Africa, Tanzania and Uganda where these projects are implemented in partnership with the Kenya Agricultural

Research Institute (KARI), farmer cooperatives, local private companies and other collaborators.

Africa Harvest Biotech Foundation International

Another high-profile non-government, non-business organization that describes itself as a “development organization” in the forefront of the efforts to push for agricultural biotechnology as a solution to the problems of hunger and poverty in Africa is the Africa Harvest Biotech Foundation International (AHBFI, or Africa Harvest, as it is often referred to). The organization, registered in the US in 2002 as a non-profit foundation, has its head office in Nairobi and regional offices in Washington DC and Johannesburg.⁹⁹

According to its website, Africa Harvest was born at a time when the continent was trying to define its role in the global debate over agricultural genetic engineering and has since been helping to change perceptions about GM crops in Africa through information dissemination and the development of infrastructural and human capacities in the region on biotechnology, GM crop technologies and biosafety through its *Africa Biotech Outreach Strategy*.¹⁰⁰ The organization believes that conventional agricultural technologies alone cannot bring about food security in Africa and the rest of the developing world, and that biotechnology is thus a prerequisite tool.

Africa Harvest has initiated projects across the continent involving the promotion of conventional biotechnologies such as afforestation using fast-growing seeds and banana tissue culture which it implements in East Africa with financial support from the agrochemical giant DuPont. It also has projects on bio-fortification, marker-assisted selection and genetic engineering to address key agricultural problems in African staple crops such as sweet potato, cassava, sorghum, cowpea, millet and banana. Its implementation strategy adopts the Whole Value Chain approach which integrates interventions on soil fertility, agronomic practices, links to local and export markets, and micro-finance.¹⁰¹ The organization claims to have strategically aligned its interventions with the priorities identified by NEPAD, specifically the CAADP.

To those who have been following the debate on GM crops in Africa, Africa Harvest is synonymous with its Chief Executive Officer,

Dr. Florence Wambugu, a Kenyan plant pathologist who gained popularity as a leading proponent of genetic engineering as a primary tool to tackle the problems of hunger and poverty in Africa. Wambugu is a leading African voice in the global debate on GM crops and has been a very articulate believer in the power of biotechnology to boost food production. She has actively participated in various discussions on agricultural genetic engineering worldwide and has occupied prominent positions in various international platforms where these issues are tackled. She is a member of the Private Sector Committee of the CGIAR, the DuPont Biotech Advisory Panel-USA and the Board of Trustees of the International Plant Genetic Resources Institute (IPGRI), and is the Vice-chair of the African Biotechnology Stakeholders Forum (ABSF).¹⁰² She was a member of the UN Millennium Project Task Force on Hunger, as discussed earlier, and also claims to “participate in the Bill and Melinda Gates Foundation” in an unspecified capacity.

African Agricultural Technology Foundation (AATF)

Similar to ISAAA’s strategy, the African Agricultural Technology Foundation (AATF) is also involved in facilitating the transfer of proprietary technologies from the private sector to developing countries, specifically in Africa. AATF shares a niche with ISAAA in facilitating the establishment of public-private partnerships for the access and delivery of “appropriate” technologies to resource-poor smallholder farmers in Sub-Saharan Africa.¹⁰³ AATF claims that it follows a unique model which involves acquiring technologies from technology generators and providers through royalty-free licences or agreements along with associated materials and know-how; establishment of partnerships among various institutions in linking food security, poverty reduction, market development and economic growth; technology dissemination; and ensuring compliance with associated laws and regulations governing the use of specific technologies.

Unlike ISAAA, AATF claims not to be solely engaged in the transfer of new biotechnologies (specifically GM crops), but targeting a wider array of agricultural technology applications. It has identified eight problem areas as priority targets for interventions in Africa,

namely insect resistance in maize, mycotoxins in food grains, drought tolerance in cereals, nutritional enhancement in maize and rice, cowpea productivity improvement, cassava productivity, bananas and plantain productivity, and striga control in cereals.¹⁰⁴ A closer look at the description of AATF's current projects, however, would reveal that they mainly involve GM crops such as the development of herbicide-resistant maize, *Bt* banana and plantain, and Vitamin A rice.

AATF is actually a brainchild of the Rockefeller Foundation under the leadership of Gordon Conway towards the end of his term as the Foundation's president, and was launched in Washington in March 2003 with a speech by Conway outlining the role of the new organization in the New Green Revolution for Africa through facilitating the transfer of agricultural technologies from private companies to poor countries in Sub-Saharan Africa.¹⁰⁵ The Foundation was formally established in the United Kingdom and in Kenya in 2003, as a product of consultations among stakeholders in North America, Europe and Africa on how to contribute to food security and poverty reduction in Sub-Saharan Africa.¹⁰⁶ The establishment and initial operations of AATF were funded by the Rockefeller Foundation, USAID and the UK's DFID. Its first Implementing Director was Dr. Eugene Terry, who was also the first Director General of WARDA, former Advisor for Rural Development of the World Bank, and member of the Board of the World Agroforestry Center and the International Water Management Institute (IWMI).¹⁰⁷

AATF's governance structure involves a Design Advisory Committee (DAC) comprised of representatives from various stakeholders to systematize consultations in the development of the foundation's business plan, provide guidance on key operational issues and assist in the selection of a permanent Board of Directors.¹⁰⁸ Among the members of the DAC from industry are representatives of Monsanto (originally Dr. Gerard Barry, who has since moved to IRR), Aventis, Dow AgroSciences and Pioneer Hi-Bred; biotechnology companies such as Emergent Genetics, Inc. and Genetic Technologies, Ltd.; CGIAR centres ICRISAT and WARDA; seed industry representative from the Zimbabwe Seed Trade Association and SeedCo; non-government representative Dr. Florence Wambugu from the Africa Harvest Biotech Foundation International; and donors USAID, DFID and SIDA.

CHAPTER 11

LINKING ARMS: DYNAMICS AMONG THE PLAYERS

New Green Revolution in Africa: Timeline

October 1997	Rockefeller Foundation announces the election of Gordon Conway as its 12th president
November 1997	Publication of Gordon Conway's book, <i>The Doubly Green Revolution: Food for All in the 21st Century</i>
1999	Rockefeller Foundation launches its New Green Revolution for Africa initiative
March 2000	Establishment of the African Seeds Trade Association (AFSTA)
2001	Syngenta Foundation for Sustainable Agriculture is established, primarily to work in Sub-Saharan Africa
October 2005	Launch of the annual Yara Prize for a Green Revolution in Africa
June 2006	Africa Fertilizer Summit is convened
September 2006	Launch of the Gates and Rockefeller Foundations' Alliance for a Green Revolution in Africa (AGRA)

WEAVING together the roles of the players discussed in this report in order to create a big picture of the New Green Revolution in Africa is not an easy task. A glimpse at the current initiatives of the various players in Africa would give an impression of renewed interest in the region and in the welfare of its hundreds of millions of poor, mostly farmers. Donor and philanthropic interests, coupled with renewed commitments from the international community and national

governments to lift Africa out of poverty and hunger, after all should be welcomed.

However, what this investigation has revealed to be behind the ostensibly magnanimous call for a New Green Revolution in Africa needs to be examined seriously and critically by Africans. This is because the current excitement over Africa has not arisen spontaneously, but is guided by strategic thinking based on a particular development paradigm that has not been developed from within the African continent nor crafted by Africans. While there are a few African personalities to have prominently emerged in the process of implementing the New Green Revolution scheme, the lead players and the orchestrators are not from the continent, let alone from the ranks of the poor farmers in whose name the so-called revolution is being waged.

There are actually a few names that repeatedly crop up as one takes a closer look at who makes the decisions in the relevant philanthropic organizations, donor agencies, agricultural research centres and even non-government groups examined in this report. Some of the names are listed below, with a caveat, however, that this does not necessarily mean that they are the main architects behind the New Green Revolution in Africa. As in most schemes, the political architects are often not the individuals whose faces we see in the implementation but are most likely institutions whose ideologies and worldviews set the direction of the different components that define the whole.

Interlocking Directorates and Revolving Doors

Gerard Barry

- Former Director for Research, Production and Technical Cooperation, Monsanto
- Coordinator, Golden Rice Network, International Rice Research Institute (IRRI)
- Member, Design Advisory Committee, African Agricultural Technology Foundation (AATF)

Robert Horsch

- Former Vice-President for Product and Technology Cooperation, later Vice-President for International Development Partnerships, Monsanto
- Senior Program Officer, Global Development, Bill and Melinda Gates Foundation
- Member, Advisory Committee, Partnership to Cut Hunger and Poverty in Africa (PCHPA)
- Member, UN Millennium Project Task Force on Hunger

Monty Jones

- Executive Secretary, Forum for Agricultural Research in Africa (FARA)
- Member, Board of Directors, Program for a Green Revolution in Africa (ProGRA)
- “Father of NERICA”
- Former head, Upland Rice Breeding Programme, West Africa Rice Development Association (WARDA, now Africa Rice Center)

Gary Toenniessen

- Director for Food Security, Rockefeller Foundation

Pedro Sanchez

- Director for Tropical Agriculture, Earth Institute, Columbia University
- Co-Chair, UN Millennium Project Task Force on Hunger
- Director, Millennium Villages Project
- Member, Board of Directors, Yara Foundation and Yara Prize for a Green Revolution in Africa

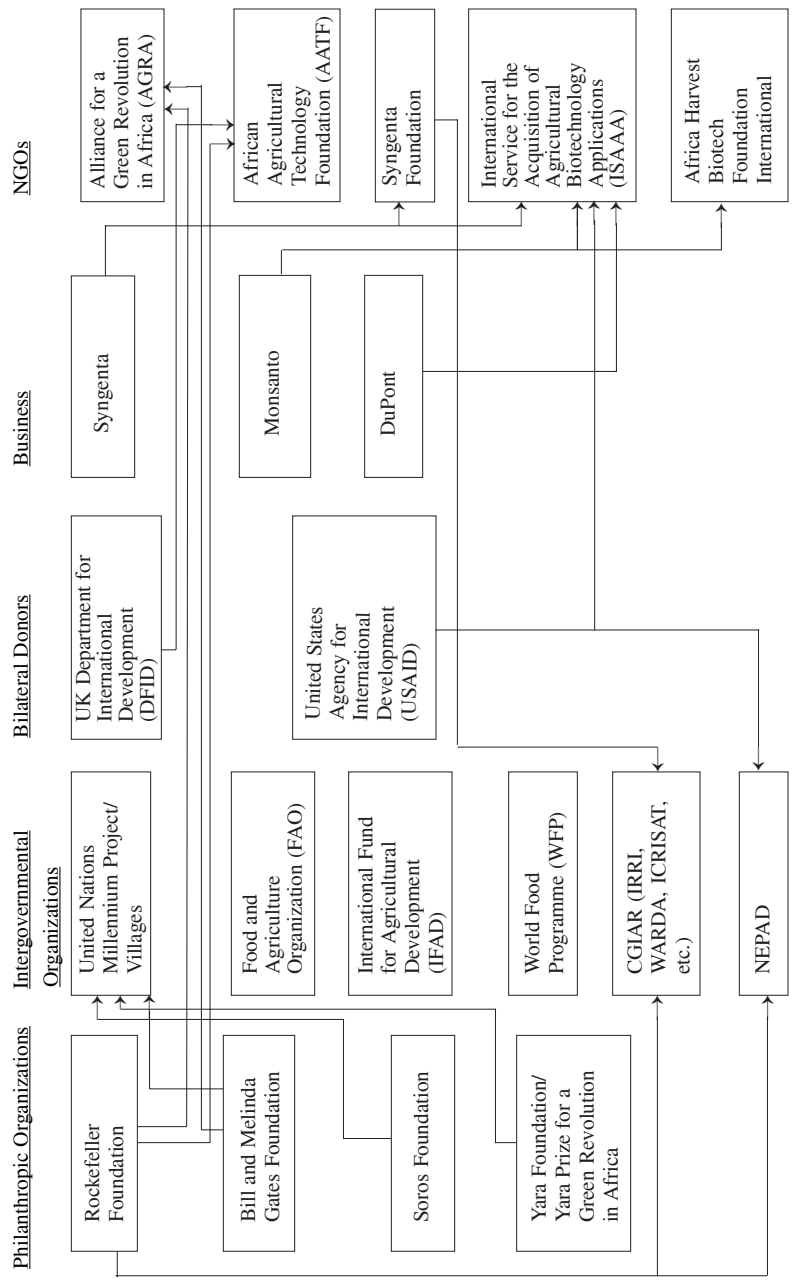
Florence Wambugu

- Chief Executive Officer, Africa Harvest Biotech Foundation International
- Member, UN Millennium Project Task Force on Hunger
- Member, Design Advisory Committee, African Agricultural Technology Foundation (AATF)

Eugene Terry

- Director, African Agricultural Technology Foundation (AATF)
- Director, BioSciences for East and Central Africa (BECA)
- Member, Board of Directors, Syngenta Foundation for Sustainable Agriculture
- Former Director General, WARDA

The Players in the New Green Revolution in Africa *The Funding Flow*



CHAPTER 12

MOVING FORWARD: SUGGESTIONS FOR CIVIL SOCIETY IN TACKLING THE GREEN REVOLUTION CHALLENGE

FAR from being an organized “conspiracy”, the New Green Revolution in Africa is more the result of a systematic convergence of interests of various actors guided by a similar worldview on Africa. Like its precursor in Asia and Latin America, the New Green Revolution in Africa is led by the “strategic philanthropy” of the Rockefeller Foundation, now combined with the financial muscle and liberal economic vision of the Bill and Melinda Gates Foundation. The financial resources made available by these major funders are attracting the interest of poor African governments, making them more amenable to the suggestions of institutions from outside Africa.

While the money of the Gates Foundation has injected momentum into the full implementation of a New Green Revolution in Africa, it is the vision and political muscle of the Rockefeller Foundation that is driving the process in many ways. While Gordon Conway provided the intellectual framework for the scheme through his call for a “Doubly Green Revolution”, it was the Rockefeller Foundation that planted the seeds of the revolution in the CGIAR, funded the establishment of the national agricultural research centres across the continent, solicited the support and buy-in from various governments across Africa as well as had a direct hand in creating initiatives, projects, partnerships and even organizations that spread and repeated the mantra of the African Green Revolution. It is the Rockefeller Foundation that is primarily responsible for the different parts that make up the whole that constitutes the New Green Revolution in Africa.

The profit motive of transnational companies like Monsanto and Syngenta fits perfectly into the conceptual mode provided by strategic philanthropy, which has now provided an ideal cover for corporate interests. The close links of the Rockefeller Foundation with the fossil

fuel industry, for example, cannot be simply detached from the active effort to enliven the fertilizer industry in Africa, but need critical examination.

The same conceptual framework for an environmentally sustainable “Doubly Green Revolution” provides a very convenient basis to justify the funding for the international agricultural research centres under the wings of the CGIAR, despite the failures of their earlier interventions in Africa and the clamour to strengthen national agricultural research capacities that could make the CGIAR irrelevant.

Underpinning the New Green Revolution and biotechnology agenda in Africa is the neo-liberal economic push to integrate Africa into the world market economy by creating markets for agricultural inputs and products, all in the name of freeing poor African farmers from the clutches of hunger and poverty. As was the case in the first Green Revolution in Asia and Latin America, strategic philanthropy, as the Rockefeller Foundation puts it, has played a pivotal role in priming government involvement and the transformation of the agricultural landscape. The tentacles of the neo-liberal economic order have now gone beyond the business sphere, creating an intricate web of dynamics and relationships between business and philanthropy, government, public research and non-government organizations.

The developments in the promotion of the African Green Revolution reflect an impressive amount of sophistication on the part of corporations in taking advantage of the intricate dynamics and relationships among the different players. Agricultural chemical and biotechnology corporations have notably downplayed their role in the push for a New Green Revolution by appearing to remain on the sidelines, even as they quietly push their agendas forward through a myriad of partnerships with public research institutions, non-government organizations and farmers’ organizations, and shift their marketing strategies to the “bottom of the pyramid”. Having learnt the lessons from the first Green Revolution in Asia, these corporations have allowed public research institutions to be at the forefront in Africa, along with their philanthropic backers. Corporations have also managed to subtly plant their most sophisticated operators in philanthropy as well as in the international agricultural research centres, in an effective way so as to directly influence decision-making and research priorities.

While the experience of Asia in the first Green Revolution is popularly considered a success in terms of increasing the yield of principal cereal crops, it is not the only option available for Africa to develop its agriculture and improve the lives of its rural poor. Beyond the logical move to learn from the lessons of Asia and Latin America in the Green Revolution, any plan for agricultural development in Africa must abide by some key principles, including the following:

A revolution defined and implemented by Africans. Any solution to Africa's problems must be defined, designed, formulated and implemented by Africans. This is an inviolable principle that the world needs to respect. Altruistic initiatives of non-Africans that bring ready-made prescriptions to Africa must be rejected. This does not, of course, rule out genuine development aid, for which there might be an urgent need in many cases. However, Africans must be allowed to decide for themselves how to mobilize their resources and capacities to work out solutions to the poverty and hunger that the continent is facing. The world must learn from history that all successful revolutions are products of the struggles of local/national players, and those imposed by outsiders are bound to fail.

Smallholders and poor farmers as central actors. Any "true" revolution must have the people as central and lead actors, not mere extras in a play scripted by outsiders. Solutions to the agricultural problems of Africa lie in the hands of African farmers, who must be empowered to mobilize and organize themselves to come up with collective solutions that address their specific needs and situations. Efforts on so-called community-based projects led by bureaucrats and scientists may be commendable especially if they are genuinely implemented, but the leadership and decision-making should be left to the communities themselves. Strategic alliances between communities, civil society organizations and public agricultural research institutions at the local and national level must be developed.

Structural change is pivotal. Strategic solutions to the problems in agriculture heavily depend on access to productive resources such as land. Africa may not have the same agrarian problems as Asia and Latin America, but access to land and water resources needs serious attention at the outset of any agricultural revolution, instead of being left to market forces.

Agriculture as a living system. Chemical-based agricultural inputs promoted as means of increasing productivity have buried farmers in debt and resulted in negative environmental consequences, as experienced by Asia in the first Green Revolution. Soil health is not just an issue of fertility, but is closely linked to plant health, biodiversity and overall farming systems. Solutions to agricultural problems should be viewed as an integrated whole, and as part of the agricultural knowledge systems of local farmers. Thus, there is no one-size-fits-all solution to agricultural problems, especially in Africa where there is much diversity of farming systems across diverse ecosystems.

Food sovereignty and self-sufficiency is key. Agricultural development projects must first and foremost address the challenges of food security at the household level, instead of being designed as market-oriented. Poor farmers should be supported in ensuring food self-sufficiency at the farm level through integrated farming and livestock production using readily available resources and based on traditional knowledge systems. Local and domestic trade in farm surplus should be given priority over the international market, and indigenous crops should be promoted.

Addressing the basic needs of the poor. Hand in hand with the priority agenda of ensuring food sovereignty and self-sufficiency at the local level, governments must address the basic needs of the poor such as education, health and decent shelter. Government resources must be channelled to providing basic social services, which should not be passed into the hands of the private sector. Good governance measures must include the capacity of governments to address the basic needs of the poor. Meeting basic needs should not wait until after the poor have increased their income from production of cash crops, but should instead be a prerequisite for the poor to become productive citizens.

Harnessing Africa's resources for Africans. Africa is rich in resources, which should be harnessed and developed to benefit the poor who constitute the majority of the population. Sustainable land, water and forest management must be promoted based on traditional knowledge systems, most of which have been under-utilized.

Endnotes

1 FAOSTAT
2 http://en.wikipedia.org/wiki/Green_Revolution
3 *ibid.*
4 Rockefeller Foundation, “Africa’s Turn: The New Green Revolution for the
21st Century”, July 2006
5 Gordon Conway, “Genetically Engineered Crops: Who Benefits”
6 *ibid.*
7 “The Voice of Reason in the Global Food Fight”, *Fortune*, Vol. 141, No. 4,
21 February 2000
8 “From the Green Revolution to the Biotechnology Revolution: Food for Poor
People in the 21st Century”, A Director’s Forum with Gordon Conway,
President, The Rockefeller Foundation, 12 March 2003
9 *ibid.*
10 Rockefeller Foundation, Annual Report 2005, “Confronting Risks, Creating
Opportunities”, p. 30
11 Remarks of Dr. Judith Rodin, President, The Rockefeller Foundation,
announcing the Alliance for a Green Revolution in Africa, 12 September
2006
12 *ibid.*
13 *ibid.*
14 *ibid.*
15 *ibid.*
16 *ibid.*
17 *ibid.*
18 *ibid.*
19 Lisa Harris, “Rockefeller Foundation president says biotech is key to easing
hunger”, *Cornell Chronicle*, 11 October 2001, [http://www.news.cornell.edu/
Chronicle/01/10.11.01/Conway_on_biotech.html](http://www.news.cornell.edu/Chronicle/01/10.11.01/Conway_on_biotech.html)
20 [http://www.danforthcenter.org/iltab/cassavanet/cbnv/speakers/
Toenniessen.html](http://www.danforthcenter.org/iltab/cassavanet/cbnv/speakers/Toenniessen.html)
21 <http://www.gatesfoundation.org>
22 http://www.africangreenrevolution.com/en/green_revolution
23 [http://www.africangreenrevolution.com/en/green_revolution/
board_directors_officers](http://www.africangreenrevolution.com/en/green_revolution/board_directors_officers)
24 *ibid.*
25 [http://www.africangreenrevolution.com/en/green_revolution/
agra_background](http://www.africangreenrevolution.com/en/green_revolution/agra_background)
26 Lisa Harris, “Rockefeller Foundation president says biotech is key to easing
hunger”, *Cornell Chronicle*, 11 October 2001, [http://www.news.cornell.edu/
Chronicle/01/10.11.01/Conway_on_biotech.html](http://www.news.cornell.edu/Chronicle/01/10.11.01/Conway_on_biotech.html)
27 *ibid.*
28 http://www.gatesfoundation.org/grants_highlights/africa.html

29 <http://www.gatesfoundation.org/GlobalDevelopment/Agriculture/>
30 <http://foundationcenter.org/pnd/news/story.jhtml?id=160100023>
31 [http://commdocs.house.gov/committees/science/hsy87547.000/
hsy87547_0.HTM](http://commdocs.house.gov/committees/science/hsy87547.000/hsy87547_0.HTM)
32 http://www.technology.gov/Medal/p_Recipients.htm
33 Kristi Heim, “Want to Work for the Gates Foundation?”, *Seattle Times*, 17
October 2006, [http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/
web/vortex/display?slug=gateshires17&date=20061017](http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=gateshires17&date=20061017)
34 <http://press.arrivenet.com/business/article.php/579878.html>
35 <http://foundationcenter.org/pnd/news/story.jhtml?id=160100023>
36 [http://www.zoominfo.com/Industries/chemical-mfg/chemicals/ammonium-
nitrate.htm](http://www.zoominfo.com/Industries/chemical-mfg/chemicals/ammonium-nitrate.htm)
37 [http://www.yara.com/en/sustaining_growth/societal_responsibility/
green_rev_africa/yara_foundation/index.html#](http://www.yara.com/en/sustaining_growth/societal_responsibility/green_rev_africa/yara_foundation/index.html#)
38 2006 Norman E. Borlaug/World Food Prize International Symposium, *The
Green Revolution Redux: Can We Replicate the Single Greatest Period of
Food Production in All Human History*, 19-20 October 2006, Des Moines,
Iowa, [http://www.worldfoodprize.org/assets/symposium/2006/transcripts/
SANCHEZ.pdf](http://www.worldfoodprize.org/assets/symposium/2006/transcripts/SANCHEZ.pdf)
39 Makeda Tsegaye, “Award to PM is Outrageous”, [http://
www.addisribune.com/Archives/2005/08/05-0805/
Award%20to%20PM%20Is%20Outrageous.htm](http://www.addisribune.com/Archives/2005/08/05-0805/Award%20to%20PM%20Is%20Outrageous.htm)
40 Norwatch, “Yara Wins Ethiopian Fertilizer Contract”, 9 January 2006, [http://
www.norwatch.no/index.php?artikkelid=1437&back](http://www.norwatch.no/index.php?artikkelid=1437&back)
41 [http://www.africangreenrevolution.com/en/green_revolution/focus_stories/
new_alliance.html](http://www.africangreenrevolution.com/en/green_revolution/focus_stories/new_alliance.html)
42 “Soros Gives \$50M to Anti-Poverty Project”, *Washington Post*, 13 September
2006, [http://www.washingtonpost.com/wp-dyn/content/article/2006/09/13/
AR2006091300283.html](http://www.washingtonpost.com/wp-dyn/content/article/2006/09/13/AR2006091300283.html)
43 “Secretary-General Calls for ‘Uniquely African Green Revolution’ in 21st
Century, to End Continent’s Plague of Hunger”, Addis Ababa Remarks, 5
July 2004
44 *ibid.*
45 <http://www.interacademycouncil.net/CMS/3239.aspx>
46 InterAcademy Council, “Realizing the Promise and Potential of African
Agriculture; Implementation of Recommendations and Action Agenda”,
Report of the Ad Hoc Follow-Up Committee, October 2005, [http://
www.interacademycouncil.net/CMS/3239.aspx](http://www.interacademycouncil.net/CMS/3239.aspx)
47 UN Millennium Project, Background, [http://www.unmillenniumproject.org/
background_files.html](http://www.unmillenniumproject.org/background_files.html)
48 P. Sanchez et al., “Halving Hunger: It Can Be Done”, Report of the UN
Millennium Project Task Force on Hunger, 2005
49 Millennium Villages, Description, [http://www.unmillenniumproject.org/
millennium_villages.html](http://www.unmillenniumproject.org/millennium_villages.html)

- 50 Millennium Villages: A New Approach to Fighting Poverty, http://www.unmillenniumproject.org/millennium_villages.html
- 51 *ibid.*
- 52 Food and Agriculture Organization, “Towards a New Green Revolution”, background paper for the World Food Summit: Food for All, 13-17 November 1996, <http://www.fao.org/DOCREP/x0262e/x0262e06.htm>
- 53 FAO Committee on Food Security, 31st Session, 24 May 2005, “Green Revolution in Africa”, http://www.fao.org/sd/dim_kn4/kn4_050701_en.htm
- 54 Food and Agriculture Organization, 131st Session of the Council, 20-25 November 2006, “Implementation of Conference Decisions and Proposals from the Director-General”, <http://www.fao.org/docrep/meeting/010/j6332e/j6332e03.htm>
- 55 International Fund for Agricultural Development (IFAD), Africa Fertilizer Summit, June 2006, http://www.africangreenrevolution.com/en/green_revolution/africas_predicament/fertilizer_summit/ifad_president_says/index.html
- 56 World Bank, “Sustainable Seed Systems in Sub-Saharan Africa”, *Findings*, African Region, Number 27, November 1994, <http://www.worldbank.org/afr/findings/english/find27.htm>
- 57 Integrated Regional Information Networks, July 2005, “Namibia: \$34m African Development Bank loan to create a ‘Green Revolution’”, <http://www.notes.reliefweb.int/w/rwb.nsf/686f45896f15dbc852567ae00530132/6c8fefa3dbfee4e8525708a0070aad2?OpenDocument>
- 58 International Rice Research Institute (IRRI), *Rice Today*, January-March 2007, “In Search of New Seeds”
- 59 Abdirahman Beileh, “The New Paradigm for Agricultural Water Development and Management in Africa: Water Infrastructure for Prosperity”, paper prepared for the International Conference “Accelerating Africa’s Development Five Years into the Twenty-First Century”, 22-24 November 2006, Tunis, Tunisia, http://www.afdb.org/pls/portal/docs/PAGE/ADB_ADMIN_PG/DOCUMENTS/AEC/THE%20NEW%20PARADIGM%20FOR%20AGRICULTURAL%20WATER%20DEVELOPMENT%20MANAGEMENT%20IN%20AFRICA.DOC
- 60 Consultative Group on International Agricultural Research (CGIAR), *Financial Report 2003*, p. 22, http://www.cgiar.org/pdf/ar2003_section7.pdf
- 61 *ibid.*, p. 23
- 62 West Africa Rice Development Association (WARDA), “NERICA: Rice for Life”, <http://www.warda.org/warda/aboutus.asp>
- 63 Gordon Conway and Gary Toenniessen, “Feeding the world in the twenty-first century”, *Nature*, Vol. 402, 2 December 1999, pp. C55-58
- 64 Guy Manners, “NERICA: New Rice Transforming Agriculture in Africa”, http://www.africasciencenews.org/_disc1/00000016.htm
- 65 Seed Quest, “NERICA top agricultural breakthrough”, January 2007, <http://www.seedquest.com/News/releases/2007/january/18233.htm>

66 African Rice Initiative (ARI), <http://www.warda.cgiar.org/ARI/consortium.asp>

67 ETC Group, “Oligopoly, Inc. 2005; Concentration in Corporate Power”, *Communique*, Issue No. 91, November/December 2005

68 “View on Future Direction”, Syngenta Foundation 2006 Annual Report, http://www.syngentafoundation.org/review_2006.htm

69 “Profiles: Andrew Bennett”, www.gmwatch.org/profiles/andrew_bennett

70 Syngenta Foundation for Sustainable Agriculture: Short Profile, http://www.syngentafoundation.org/short_profile.pdf

71 *ibid.*

72 Insect Resistant Maize Improvement, <http://www.syngentafoundation.org/projects/IRMA.html>

73 Syngenta Foundation for Sustainable Agriculture, “Dr. Eugene Terry joins the Board of the Syngenta Foundation for Sustainable Agriculture”, July 2006, http://www.syngentafoundation.org/pdf/eugene_terry_July_E_.pdf

74 African Centre for Biosafety, “Monsanto’s Seeds of Hope Campaign in South Africa, A Briefing Document”, January 2007, www.biosafetyafrica.net

75 Karol Bordreaux, Mercatus Center, George Mason University, “Seeds of Hope; Agricultural Technologies and Poverty Alleviation in Rural South Africa”, August 2006, http://www.mercatus.org/publications/pubID.2774/pub_detail.asp

76 <http://www.mercatus.org>

77 “GE – PR, Monsanto, Europe and Africa”, GenTech Archive, June 1998, <http://www.gene.ch/gentech/1998/May-Jul/msg00070.html>

78 “Profiles: Gerard Barry”, http://www.gmwatch.org/profiles_barry.html

79 World Bank, Sub-Saharan Africa Sustainable Seed System Initiative Team, <http://www.worldbank.org/afr/findings/english/find27.htm>

80 World Bank, “Sustainable Seed Systems in Sub-Saharan Africa”, *Findings*, African Region, Number 27, November 1994, <http://www.worldbank.org/afr/findings/english/find27.htm>

81 GRAIN, *Seedling*, July 2005, “Africa’s Seed Laws: Red Carpet for Corporations”

82 <http://www.afsta.org/>

83 New Vision, “\$150 million to boost food security”, 17 January 2007, Kampala, Uganda

84 Monsanto-South Africa, http://www.monsanto.co.za/en/layout/about_us/default.asp

85 FIS, cited in GRAIN, *Seedling*, July 2005, “Africa’s Seed Laws: Red Carpet for Corporations”

86 http://www.rockfound.org/about_us/history/2000_present.shtml

87 <http://www.africafertilizersummit.org/Donors/index.html>

88 http://uploads.agro-info.net/uploads/64/68/97e6c3074971f5d5aa0ee8620936c063/Abuja_Fertilizer.pdf

- ⁸⁹ “Nigerian Company Re-opens Only Urea Fertilizer Plant in Sub-Saharan Africa to Meet Summit Call for African Green Revolution”, http://www.notore.com/Press_Release.pdf
- ⁹⁰ <http://www.africafertilizersummit.org/Agenda/Final%20Technical%20Session%20Agenda.pdf>
- ⁹¹ Summary of NEPAD Action Plans
- ⁹² Food and Agriculture Organization, FAO and NEPAD, <http://www.fao.org/docrep/005/ac735e/ac735e00.htm>
- ⁹³ African Union, Declaration on Agriculture and Food Security in Africa, Maputo, 10-12 July 2003, http://www.africa-union.org/Official_documents/Decisions_Declarations/Assembly%20final/Decl%20on%20the%20Agriculture%20and%20Food%20Security%20Maputo%202003.pdf
- ⁹⁴ Food and Agriculture Organization, FAO and NEPAD, <http://www.fao.org/docrep/005/ac735e/ac735e00.htm>
- ⁹⁵ Food and Agriculture Organization (FAO), Report of the 23rd FAO Regional Conference for Africa, Johannesburg, South Africa, 1-5 March 2004, http://www.fao.org/sd/dim_kn4/kn4_050701_en.htm
- ⁹⁶ ISAAA in Brief, <http://www.isaaa.org>
- ⁹⁷ ISAAA Donor Support Groups, <http://www.isaaa.org>
- ⁹⁸ ISAAA AfriCenter, <http://www.isaaa.org>
- ⁹⁹ Africa Harvest Biotech Foundation International (AHBFI), <http://www.ahbfi.org>
- ¹⁰⁰ *ibid.*
- ¹⁰¹ *ibid.*
- ¹⁰² Africa Biotech, Florence Wambugu, <http://www.africabiotech.com/media/wambugu.html>
- ¹⁰³ African Agricultural Technology Foundation (AATF), “Who We Are”, <http://www.aatf-africa.org/who.php>
- ¹⁰⁴ African Agricultural Technology Foundation (AATF), “Projects”, <http://www.aatf-africa.org/projects.php>
- ¹⁰⁵ Justin Gillis, “To Feed Hungry Africans, Firms Plant Seeds of Science”, *Washington Post*, 11 March 2003
- ¹⁰⁶ African Agricultural Technology Foundation (AATF), “Mission”, <http://www.aatf-africa.org/mission.php>
- ¹⁰⁷ African Agricultural Technology Foundation (AATF), “Eugene Terry”, <http://www.aatf-africa.org/bmterry.php>
- ¹⁰⁸ African Agricultural Technology Foundation (AATF), “Design Advisory Committee (DAC)”, <http://www.aatf-africa.org/dac.php>

Motives, Players and Dynamics. ELENITA C. DAÃ‘O. Church Development Service (EED).Â As in Asia, the New Green Revolution in Africa has implications that go far beyond agriculture, its key platform. The development direction of Africa, currently dependent on subsistence agriculture, will be shaped by the processes and outcomes of this so-called revolution, as had happened in Asia five decades ago where the rural economy, social relations, agrarian policies and rural development were moulded by the first Green Revolution.Â This report provides an analysis of the key players promoting the New Green Revolution in Africa and the dynamics among them. Unmasking the Green Revolution in Africa: Motives, Players and Dynamics. Third World Networks (TWN), Jalan Macalister, Penang, Malaysia. 10MA.Â Input subsidies to improve smallholder maize productivity in Malawi: toward an African Green Revolution. PLoS Biology 7, 1. Available at Web site <http://ukpmc.ac.uk/articlerender.cgi> (accessed January 15, 2010). 14IFAD. 2002. Assessment of rural poverty. Eastern and Southern Africa. International Fund for Agricultural Development. p. 45. Available at Web site http://www.ifad.org/poverty/region/pf/PFeng_part1.pdf (accessed May 21, 2010).