THIS IS Africa

A GLOBAL PERSPECTIVE SPECIAL REPORT

Funded by

A publication from the Financial Times

AGRICULTURE

Realising Africa's potential

FINANCE

Bridging the funding gap

PERSPECTIVES

Judith Rodin, Akinwumi Adesina, Ngozi Okonjo-Iweala, Jane Karuku

INNOVATION

Finding the game-changers

THIS IS AFRICA

Published by
The Financial Times Limited
Number One Southwark Bridge
London SE1 9HL, United Kingdom
Tel: +44 (0)207 873 3000
Editorial fax: +44 (0)20 775 6421
www.thisisafricaonline.com

Editor Lanre Akinola
+44 (0)20 7775 6861
lanre.akinola@ft.com
Senior Reporter Adam Green
+44 (0)20 7775 6322
adam.green@ft.com
Reporter Eleanor Whitehead
+44 (0)20 7775 6843
eleanor.whitehead@ft.com
Sub Editor Elliot Smither
+44 (0)20 7775 6379
elliot.smither@ft.com

Publisher Simon Blackmore
+44 (0)20 7775 6332
simon.blackmore@ft.com
Associate Publisher Amina Aziz
+44 207 873 4736
amina.aziz@ft.com
Associate Publisher Charlotte Lloyd
+34 682 736 571
charlotte.lloyd@ft.com
Senior Marketing Manager
Raj Rai (Ms)
+44(0)20 7775 6340
raj.rai@ft.com
Art Director Paramjit Virdee
+44 (0)20 7775 6535
paramjit.virdee@ft.com
Head of Production Denise Macklin
+44 (0)20 7775 6557
denise.macklin@ft.com

Publishing Director Angus Cushley
+44 (0)20 7775 6354
angus.cushley@ft.com
Head of Online Publishing
Davinia Powell
+44 (0)20 7775 6449
davinia.powell@ft.com

Printer Wyndeham Group
Subscriptions +44 (0)20 7775 6340
thisisafrica@ft.com

ISSN 1759-7978
© Financial Times Business 2011.
'Financial Times' and 'FT' are registered trademarks and service marks of The Financial Times Ltd.
All rights reserved. No part of this publication or information contained within it may be commercially exploited in any way without prior permission in writing from the editor.

This report was supported by The Rockefeller Foundation. The writing of the report was carried out independently by This is Africa

CONTENTS

02 Foreword
Judith Rodin, president of The Rockefeller Foundation, on the need to bridge financing and innovation to usher in a green revolution in Africa

04 Feature
FINANCING AGRICULTURAL GROWTH
Banks, private equity funds and microfinance institutions are bringing much-needed capital to African agriculture

08 Interview
AKINWUMI ADESINA
Nigeria's agriculture minister on the country's historical failures, and a reform agenda to push Nigeria into the big league of agriculture producers

10 Infographic
Can Africa feed the world?

12 Feature
CATALYTIC INNOVATIONS
The cutting edge ideas that could help the continent on its way to an agricultural revolution

16 Feature
VALUE ADDITION
Local processing is vital as Africa's food imports rise, but not all commodities are well suited to domestic value addition

18 Interview
JANE KARUKU
The president of the Alliance for a Green Revolution in Africa on the need for funding in the research and development sector

20 Feature
COMMODITY EXCHANGES
Countries are rushing to set up commodity exchanges, but can they emulate Ethiopia's perceived successes?

24 Opinion
Ngozi Okonjo-Iweala, Nigeria's finance minister, and Richard Wilcox, interim director general of the African Risk Capacity initiative, on the role of insurance in protecting countries against climate risk

Africa's catalytic innovations

As the continent awaits its agricultural revolution, *This is Africa* looks at the cutting edge ideas which could make the difference

BY ADRIENNE KLASA AND ADAM ROBERT GREEN

While the majority of the African population is heavily reliant on agriculture, the continent has lagged behind other developing regions in progressing this essential sector. Research and development specific to the continent's varied ecosystems and crops has been chronically neglected, as has infrastructure and education to support farmers. As Harvard professor and Kenyan national Calestous Juma has argued: "Neglect of agriculture has been a defining feature of Africa's economic policy over the last four decades."

But that may be changing. Public and private sector alike are now taking a renewed interest in agriculture, and this focus is not without basis: according to the African Development Bank, when agriculture stimulates growth it is twice as effective at reducing poverty than any other sector. Scientists are making advances in seed and fertiliser technologies, but creative solutions are also needed to improve market access and coordination, as well as to mitigate the impact of climate change. But which solutions have the potential to instigate real change? Here, *This is Africa* profiles some of the potentially catalytic innovations.

Farmers playing experimental risk simulation games in Adi Ha, Ethiopia

PHOTO: ERIC HOLTHAUS/OXFAM AMERICA

Crop management

As part of the drive to improve productivity, cutting edge scientific research methods are being leveraged to improve crop performance. In one example, food manufacturing giant Mars is assisting in the quest to boost the continent's cocoa yields through genetics. Using its production base in Côte d'Ivoire, the world's leading cocoa producer, Mars publicly released the cacao tree genome that the company's agricultural research department mapped in partnership with the US Department of Agriculture and IBM in 2010, so that scientists everywhere can have access to it for their research.

"The fact that we had this fundamental tool to help us in the breeding of water- and nutrient-efficient trees is a huge breakthrough for any commodity," says Howard-Yana Shapiro, chief agricultural officer for Mars. "Our goal in the next generation is a yield of 1,500-2,000 kg per hectare, although the end target is much higher."

Mr Shapiro acknowledges the importance of improving farmers' cocoa output simply because it makes good business sense to secure Mars' supply chain well into the future – and to meet growing demands from emerging markets. "We had seen that cocoa production had stagnated at 450 kilos per hectare. You live in poverty if that is your production. If there was a similar scenario in corn, or wheat, or rice, nobody would grow it," he says. "We need another whole Côte D'Ivoire [in terms of cocoa production volume] in 2020, because you have this sleeping giant called China waking up, you have India starting to develop a taste for chocolate."

Whereas most cocoa in Africa is produced for export as a cash crop, rice is a staple in many countries. But due to low productivity and growing demand, consumption far outpaces domestic production. Imported rice accounts for roughly 40 percent of local consumption, eating up billions in scarce foreign exchange. But here too, the outlook is improving. Paddy rice production growth in sub-Saharan Africa has shot up from 3.2 percent per year before the 2000–2007 rice crisis to 8.4 percent per year since, according to research by the Africa Rice Center. While 71 percent of this improvement can be explained by yield increase, 29 percent is accounted for by the expansion of the areas under cultivation – a complete reversal of pre-crisis figures, according to Marco Wopereis, deputy director general at AfriCaRice. "This is evidence of increased use of technological innovation, such as improved varieties and better crop management in general," he says.

One management technique that has yielded notable results is the rice nucleus model pioneered by Olam Nigeria. As part of Nigeria's bid to increase its domestic production of the staple up from 65 percent of consumption, the nucleus model combines the scale and quality assurance of a central commercial farm with an outgrower programme that engages small farmers. The nucleus farm currently has 20,000 farmers in its outgrower programme, and is on track to become the largest rice farm in Africa. If projections are accurate and the model is taken to scale and replicated ten times over, self-sufficiency in rice production for the whole country could be achieved.

Confronting catastrophes

But innovations also have to take into account longer-term challenges to the sector. Any discussion of agriculture and productivity across Africa has to incorporate a conversation about the impacts of climate change. The continent is no stranger to environmental catastrophe, but as climate impacts begin to accelerate, the hottest, driest regions of the world will experience acute dangers, while the weather patterns farmers depend on will become increasingly unpredictable. A number of innovations offer possibilities for mitigating these changing conditions.

Notably, the West Africa Seed Programme (Wasp) run by the Economic Community of West African States (Ecowas) provides farmers with access to improved seeds with a particular focus on developing varieties that will be able to better tolerate the shifts in weather patterns created by climate change. Wasp also seeks to streamline west African countries' seed laws, as well as partnering with the private sector to develop seeds and pilot them on demonstration plots.

Risk mitigation and insurance tools are another piece of the puzzle. Oxfam and the World Food Programme's R4 Rural Resilience Initiative in Senegal and Ethiopia helps poor rural communities to improve their management of risk as climate shifts threaten their crops and livestock. The programme offers a package of tools geared to provide insurance, credit, savings services, and disaster risk reduction measures to those living on less than $1 a day, while building stronger commercial markets for these services. "We would not be in a position to create a microfinance or an insurance market, but we do have the capacity to strengthen it and make it more effective, more able to reach the most vulnerable farmers in the country," says Katie Naeve, a policy advisor for the initiative at Oxfam America.

R4 ensures everyone in the community has access to insurance – including those who cannot pay for it. Cash-strapped farmers who cannot afford a premium are offered a means to 'pay' by contributing to their communities through disaster risk reduction activities, such as composting, irrigation channel digging, and planting vegetable gardens. The idea is that, over time, by reducing their financial vulnerability, farmers will be able to pay for insurance premiums with cash instead

PHOTOS: GETTY

of labour. In Ethiopia, where the programme first started, about one third of farmers now pay their premiums entirely in cash, while the rest pay in a mix of cash and labour.

Solutions to food security and plant cover in the face of the changing environment need not be solely dependent on rural production, either. Cities like Kampala, the capital of Uganda, are actively encouraging the development of urban agriculture through a new series of ordinances aimed at regulating urban gardens, livestock and fish production. Similarly, according to data from Economist Intelligence Unit's 2013 report, Freetown, Sierra Leone, got the number one spot on the urban agriculture indicator, with 90 percent of vegetables consumed in the city grown there as well.

Mobilising solutions from a tech revolution

Africa's decade-old mobile revolution likewise offers tools for adapting to the changing natural environment. Africa's mobile money market was valued at over $60bn in 2012, opening up a wealth of opportunities. "People in rural areas are now using mobile money to receive payments, as start-up capital for their agricultural businesses, and even for crop insurance," says Gavin Krugel, chief customer strategy officer at mobile financial services provider Fundamo.

In this domain, the GSMA Mobile for Development programme has set up the mFarmer initiative to encourage mobile phone operators to partner with private and public sector agriculture organisations. Operators including Airtel, Tigo and Orange have all launched mAgri services in Africa, and the mFarmer initiative aims to benefit more than 2 million farmers. These services provide smallholders with up-to-date information on markets, weather patterns and pest outbreaks.

Services are also being developed that use mobile technology to detect counterfeit seed and fertiliser, and to provide easy direct payments to farmers. These will be game-changers due to their unprecedented reach, according to Fiona Smith, mAgri programme manager for GSMA Mobile. "Many countries only have one agricultural extension officer for every 4,000 farmers," she says. "These new mobile services allow farmers to access and share information via their phones at any time, by talking to an expert in a call centre, via SMS or via interactive voice response."

As commodity prices and weather patterns continue to fluctuate wildly, access to essential information is a lifeline for farmers so they can adapt to global flows – whether economic or environmental. As Jawahar Kanjilal, vice president and global head of Nokia Life, points out, agricultural information used to only be available in silos, which farmers with small land holdings may not have had access to.

Services like Nokia Life, a mobile information service tailored to emerging markets that can be accessed without a data plan, are working to change this. "There is a need for an information system that can provide farmers with significant information and education throughout the crop cycle, to produce high crop yields, as well as high quality, uniform grade produce that is usable by target consumers," says Mr Kanijilal.

Nokia is not alone in the sentiment. Mobile technologies are being developed to provide everything from crop insurance for Kenyan farmers through the Kilimo Salama scheme which uses the M-Pesa payment gateway, to helping local communities in Malawi tackle deforestation by training them to map their villages using GPS devices.

Market movements

Despite the boost to connectivity that the the proliferation of mobile phones across the continent has provided, the supply-side challenges of connecting agricultural goods with markets remains problematic in many parts of Africa – whether for global export or to sell in the nearest town centre.

Fragmentation in Africa's agricultural sector has long been an impediment to improved farm productivity and marketability, with smallholder farm plot sizes across the continent averaging 1.6 hectares and making up over 80 percent of all farms on the continent. Lack of infrastructure, storage and processing facilities, as well as high transport costs and trade barriers, can often be prohibitive.

Groups such as the Dutch Agricultural Development & Trading Company (Dadtco) are developing solutions to overcome these constraints: in this case, in the form of the Autonomous Mobile Processing Unit (Ampu), which brings a cassava processing factory to farmers' doorsteps. The Ampu, which is currently being used in Nigeria, Ghana and Mozambique, operates in a cargo container that can be moved from one area to another during harvesting, allowing cassava to be processed into a high-quality cake that keeps for at least six months – whereas fresh cassava rots within a day. Currently, all the cassava cake in Mozambique produced by Dadtco is being used to brew SAB Miller's Impala beer. There is potential for a much wider rollout of the technology, with the brewing giant interested in replicating its product in countries such as Tanzania and Zambia over the next few years.

And supplying breweries is only part of the picture. "We can produce very good starch from the cassava cake, and [cassava flour] can replace part of the imported wheat flour, which in Nigeria is gigantic," says Susan Vlakelb, Dadtco's value chain manager. "The politicians in Nigeria are very much in favour of us. That is the way forward for them, so they can be less dependent on imports." Currently, the company is in negotiations to establish a number of starch factories, in addition to the two flour factories already in operation.

Other storage-related enterprises are underway elsewhere. In Kenya, the East Africa Dairy Development (EADD) initiative plans to double the income of 110,000 farmers by improving the health of livestock, organising farmers into business collectives, and developing social insurance and credit access schemes. In order to create a collective, farmers must raise 10 percent of the $125,000 in initial capital needed to purchase a chilling station and a building. An additional 30 percent is financed by Heifer International and the Bill & Melinda Gates Foundation through an interest-free loan, and the remaining 60 percent by a commercial interest-bearing loan. Each Dairy Farmer Business Association (DFBA) has about 2,000 shareholders and operates as a collective, whereby members purchase shares and become owners of the dairy, with full members earning dividends based on their milk sales.

> "There is a need for an information system that can provide farmers with significant information and education throughout the crop cycle, to produce high crop yields, as well as high quality, uniform grade produce that is usable by target consumers"
> **Jawahar Kanjilal**

The Nyagatare Maize Innovation Platform in northern Rwanda also uses collectivisation to tackle the challenges confronting smallholders. In this remote area, credit is often so scarce that farmers would go so far as to sell their crops before harvest – below market value – in order to get cash. Now, through the platform, members have established a private company, the Nyagatare Maize Investment Group (Nyamig), which allows them to market their produce, and includes a storage facility that farmers can use to store maize as collateral for loans.

Nyamig also finds bulk buyers for farmers' crops, provides extension experts for training and generates income for members as shareholders on profits from maize sales. The initiative's success has allowed it grow rapidly: it now has 83 members, 19 of which are cooperatives with 25 to 100 members each.

Going to scale

The success and scalability of such initiatives will rely on the buy-in of governments across the continent – a factor which could slow private developments down, despite improvements. "We are going to have to deal with that, we are going to have to get more honest about analysing who wins and who loses, and then we are going to have to find ways to incentivise politicians to do the right thing," says Paul O'Brien, vice president for policy and campaigns at Oxfam. "That will sometimes mean celebrating the champions of good agricultural policy, but it will sometimes mean having the courage to hold the bad actors accountable – the guys who get rich by keeping good innovations from scaling."

Even with public support in place, each existing innovation alone will not represent a seismic shift. It is collectively and when taken to scale that ideas such as these have the cumulative potential to be transformative for a sector that remains the bedrock of livelihoods across the continent.

"Home-grown African solutions are showing how technology can be harnessed for economic growth, environmental protection and social well-being," says Jamal Saghir, the World Bank's director for sustainable development in Africa. "In isolation, these are not revolutionary. The real innovation lies in how these are integrated through... a range of skills training, social welfare and environmental initiatives to achieve a lasting impact that transitions farmers from subsistence to more profitable commercialised operations." He cites Olam's Livelihood Charter, which pledges sustainable investment in areas ranging from market access to finance, as one such example.

Whether an improved seed variety, a green initiative, a new mobile app or a creative business model, the power of a few good ideas should not be underestimated.

Judith Rodin

Bridging finance and innovation to advance a green revolution in Africa

In a speech to members of the Zimbabwean farming community in 1994, then-South African president Nelson Mandela remarked: "There are few better ways to show one's love for one's country and the well-being of one's nation than by working on the soil."

Indeed, agriculture has been a critical driver of well-being for centuries, ensuring the food security central to human health and catalysing the productivity needed for economic prosperity. As such, agriculture has been a critical part of The Rockefeller Foundation's mission to "promote the well-being" of humanity over the course of our first 100 years – from the economic development of the southern United States in the early 20th century to the seeds that sparked the Green Revolution and fed a billion people throughout Latin America and Asia.

Africa is poised for the world's next green revolution. Across the continent, there has been a renewed commitment from governments, non-governmental organisations and the private sector to move agriculture from a development challenge to a business opportunity. As a result, countries such as Nigeria are moving to once again become net exporters, rather than importers of agricultural commodities. Agriculture has become among the most powerful engines for Africa's economies, many of which have experienced rapid growth over the last decade.

Despite these developments, many smallholder farmers, who form the backbone of Africa's agriculture sector, remain trapped in poverty without access to financing and other tools to increase their productivity and profitability. In 2006, The Rockefeller Foundation partnered with our colleagues at the Gates Foundation to launch the Alliance for a Green Revolution in Africa (Agra), with the aim to ensure that millions more smallholders have access to the better seeds, healthy soils, profitable markets, storage and transport, and supporting policies needed to transform agriculture and drive sustainable economic growth.

But more must be done to break down the barriers that remain to scaling up innovation and investing in farmers on a large scale. To do so, the agricultural and financial sectors must form new linkages and better align their visions, blending those who can implement innovative approaches to boost agricultural production and supply inputs such as seeds, fertiliser, and water, and outputs including storage, processing and distribution facilities, and access to markets, with those who can finance those activities.

To help bridge these sectors, in July The Rockefeller Foundation hosted a summit in Abuja, Nigeria, titled 'Realising the Potential of Africa's Agriculture: Catalytic Innovations for Growth'. The summit, one of our centennial convenings focused on forward-looking solutions to challenges that will define our second century of strategic philanthropy, brought together agriculture and finance ministers, along with other leaders, from more than 23 African nations, in an unprecedented conversation to identify concrete ways to strengthen African agricultural markets and value chains to benefit smallholder farmers.

Over the course of the summit, participants identified a number of innovative solutions and financing models that can encourage increased lending to farmers. One such model, known as credit guarantees, was pioneered by The Rockefeller Foundation and has been taken to scale by Agra with promising results. For example, the Nigeria Incentive-Based Risk-Sharing System for Agricultural Lending (Nirsal) offers strong incentives and technical assistance to banks, building the confidence and agricultural understanding of lenders with the goal of increasing the percentage of bank lending to farmers and agricultural enterprises from 1.4 percent to 7 percent in the next 10 years. Nirsal has already helped to unlock additional investment: earlier this year, USAID and the Nigerian government each provided guarantees to increase private financing and leverage up to $100m in commercial lending.

These innovative finance models will go a long way to replicate and scale many of the agricultural innovations already happening across the continent. The Dutch Agriculture Development and Trading Company, for example, developed a technology that brings a mobile cassava processing plant to villages and enables farmers in Mozambique to process their roots into cassava cakes that can be stored for up to two years – opening new markets that were once limited because of root spoilage during transportation. In another example, The Rockefeller Foundation-supported Horn of Africa Risk Transfer for Adaptation project, an integrated risk management scheme developed by the Relief Society of Tigray and Oxfam America, helps Ethiopian farmers strengthen their food and income security through a combination of improved resource management, crop insurance, microcredit, and savings. The poorest farmers are eligible to pay for insurance with their labour through resilience-building projects in their communities.

In addition to financing, catalytic innovations for growth are also emerging, including leveraging mobile phone technology to better share and disseminate information, structuring agricultural jobs as rural entrepreneurial enterprises to attract younger workers, and addressing gender inequities that hinder the income generation of women farmers.

With greater collaboration between finance and agriculture to find, scale, and invest in catalytic innovations for growth, Africa will be closer not only to realising its agricultural potential but to achieving its economic promise – for the well-being of African farmers, for the strength of their nations, and for the prosperity of the entire continent.

Judith Rodin is president of The Rockefeller Foundation

PHOTO: GETTY

CLOCKWISE FROM LEFT: Farmers plant lettuces in Niamey, Niger

A panel discussion during The Rockefeller Foundation's centennial event in Abuja, Nigeria

Nobel Prize-winning scientist Norman Borlaug, a former director of The Rockefeller Foundation, speaking during a ceremony in Washington, DC

> "Successful value chains depend on the willingness of all chain actors to communicate, coordinate and collaborate"

Financing agricultural growth

After years of neglect, banks, private equity funds and microfinance institutions are bringing capital to African agriculture

BY ADRIENNE KLASA AND ADAM ROBERT GREEN

A worker sharpens a blade in a sugarcane field in Komatiepoort, South Africa

PHOTOS: GETTY

Africa's agriculture sector has struggled to access the financing it needs for sustained growth. In part, a perceived combination of high risk and modest returns – as well as the costs of extending traditional banking infrastructures in rural areas – has deterred many banks and financial institutions.

"There can be failures in critical infrastructure such as inadequate cold storage facilities, unexpected disruptions in commodities trading, lack of adequate feeder roads to production areas, inadequate dry storage facilities, and congested ports prohibiting the export or import of products on time," says Chomba Sindazi, director of Standard Chartered's solutions structuring team for Africa. "And there can also be delays in the supply of critical inputs such as fertilisers, seed and fuel because of difficulties in getting goods to market. This is a particular problem in landlocked countries where it can sometimes take as long as four months to get the inputs to the required areas."

Without tackling these constraints, and their knock-on effect on lending, talk of Africa's green revolution is premature. But solutions are emerging at last, as banks, NGOs, micro-lenders, governments and investment funds make inroads into the continent, bringing much-needed capital to bear.

For large banks, Africa's rural sector was long seen as a problem. Just 10 percent of Africans with only primary-level education – which is the majority of those in rural agriculture – have a bank account, rising to 55 percent for those with a post-secondary qualification. But rather than writing off this population, forward-thinking banks have sought to find new vocabularies to speak to them. Togo-based Ecobank has proven popular for its simplified language and procedures, which are more accessible to a wider range of customers than global banks.

Standard Bank, which has operations in nearly 70 countries worldwide, has also reviewed processes to suit the kinds of financial information more commonly found in the informal and small-scale sector. It has also broadened its range of services to include technical expertise for lendees. The combination of lending and advisory services is critical, helping the bank protect its portfolio, and helping customers gain credit and repayment track records.

Standard Chartered shows the same trend. Instead of looking to traditional collateral, Standard Chartered uses the value of the commodity being financed as collateral for input financing – as opposed to conventional mechanisms where collateral is secured through physical assets and balance sheets. According to Mr Chomba: "Risks associated with the cultivation of a range of soft commodities are mitigated through a customised multi-peril insurance policy, and operational issues are addressed through physical inspection and regular reporting by a team of independent specialised contract managers and insurance companies."

The arrival of major banks bodes well for the efficiency of the sector overall. "Banks are interested in investing in businesses and entrepreneurs that are going to make money and are going to pay them back – either interest or return on some form of an equity. As businesses that are profitable come into the agricultural value chains, that is going to bring in the financing that will support those businesses," says Gary Toenniessen, managing director at The Rockefeller Foundation.

PHOTO: GETTY

> "Banks are interested in investing in businesses and entrepreneurs that are going to make money and pay them back. As businesses that are profitable come into the agricultural value chains, that is going to bring the financing"
> **Gary Toenniessen**

Taking equity

Equity financing provides an interesting – and fast-growing – source of capital. According to the Emerging Markets Private Equity Association, total private equity capital raised for sub-Saharan Africa in 2012 was $1.4bn. Agribusiness is proving one of the primary draws. The Carlyle Group, one of the world's largest private equity firms, made its first Africa play late last year, as part of a consortium that included Pembani Remgro Infrastructure Fund and Standard Chartered Private Equity.

The fund invested $210m in the Export Trading Group (ETG), a Tanzanian agribusiness with interests in 29 African countries. ETG, which manages both intra-African and global supply chains and has more than 7,000 employees, says the investment will enhance its ability to connect African smallholder farmers with consumers around the world. The capital will expand the company's geographical reach while adding to the quantity and variety of products – which currently includes commodities ranging from sesame seeds and cashews, to rice and fertiliser.

Private equity can bring broader structural changes too. A part of the Carlyle consortium investment will go towards building infrastructure to allow processing to take place in east Africa. "Typically the margins in processing are much greater than they are in pure acquisition and distribution, so part of the capital will be used to put up processing facilities around the continent," says Marlon Chigwende, managing director and co-head of the sub-Saharan Africa buyout advisory team at Carlyle Africa.

Other PE funds and investment actors are also showing a strong interest in African agribusiness. Phatisa's African Agriculture Fund, which focuses on small and medium-sized enterprises, signed its first deal in 2012, backing Cameroon's West End Farms. The same year, Morgan Stanley Alternative Investment Partners and Capitalworks bought out South Africa's Rhodes Food Group.

But growing the base of PE capital available to the region will take time, according to Mr Chigwende. "FDI remains a very important component of the LP structure base in a lot of the funds, they are the majority of the capital. And so I think as an industry what we need to do is attract more non-DFI international capital to the region," he says. "I think that is a process of education. There are a lot of LPs that are increasingly looking at the region."

Micro-lending

So far so good for bigger players. There is always a scale bias in financial access, with lending models becoming less accessible as you move to smaller actors – in agriculture as well as other sectors. But the microfinance movement is playing a useful role at the base of the pyramid.

Set up in 1999, The Hunger Project's Microfinance Programme is a training, savings and credit scheme that focuses predominantly on the economic empowerment of women – a vital constituency, according to Lawson Lartego Late, director of the economic development unit at Care USA, a charity. "Agricul-

ture has been quite gender-blinded. Women were not taken into account, they were invisible in the agricultural supply chain. But more and more, people are realising that women do most of the work. More than 70 percent of the labour is done by women."

When it comes to finance, we need to apply a gender lens, says Mr Late. "When you look at how people get access to financial services, especially here in Africa, agriculture is underserved. But for people who get access, they tend to be mostly male. When it comes to property rights, many women do not have these kinds of assets."

NGOs are not the only ones interested in providing micro-loans. Olam, for example, is providing zero interest loans to farmers as part of the commitments laid out in the Singapore-based company's Livelihood Charter. According to Chris Brett, global head of corporate responsibility and sustainability at Olam, the company has provided $118.6m in micro-financing and advances for crop purchases as well as longer-term asset investments. In addition, Olam's position on the ground is an advantage, according to Mr Brett: "We can provide the cash, either through the cooperative or directly to the farmer. And because we are there, we know when it is needed and where it is going."

Local presence has also given Olam insights into the psychology of small-scale farmers. "Farmers see the value of a continued relationship rather than the short-term temptation of a one time default by selling elsewhere," he says. Still, Mr Brett concedes that defaulting may simply be a question of needing cash fast in resource-deprived areas.

Clustering into cooperatives, however, helps mitigate these risks, not only by making farmers dependent on each other and therefore less likely to default on a group, but also giving them greater negotiating strength. "[Farmers] are also less likely to go against their peers and initiate transactions elsewhere or default on a payment, particularly if the microfinance has been channelled through the co-op itself," he says.

Public-private finance partnerships are also leveraging funds to the continent's agricultural sector. Grow Africa, launched in 2011 by the African Union Commission, the New Partnership for Africa's Development (Nepad) and the World Economic Forum, is a coordinating body for public-private initiatives backing agricultural growth. According to the initiative, 2012 witnessed a historic shift in the quality and quantity of private sector engagement, with companies announcing more than $3.5bn of planned investment in agriculture across countries supported by the platform.

A business mindset

Whether it is traditional bank lending or private equity, and from major agribusiness to microfinance, one theme stands out – a change in mindset is needed, in which African agriculture is seen as a business opportunity, not a charity sector.

"What we have seen is a shift towards agricultural development as an engine of economic growth so that agriculture can provide the resources for other sectors as well – for education, for health, for overall advancement," says Mr Toenniessen at The Rockefeller Foundation. "And that requires private sector involvement to a much greater degree. If all you are trying to do is provide food relief, then that goes through governments and UN agencies. But if you really want economic growth then you need a private sector that is working across the agricultural value chain."

Wiebe Boer, chief executive officer of the Tony Elumelu Foundation, concurs. "My first engagement with agricultural development was in 2007, when I was part of a team at McKinsey working on developing the national strategy of Kenya. Agriculture was one of the six sectors we chose to focus on. Nobody else on the team wanted to touch agriculture, because they thought it was not interesting, it was not sexy. So I took on the sector."

Back then, he recalls, the assumption was that agriculture was a development sector drawing in government and donor money. Fast forward six years and all that has changed. "If you were doing an agricultural strategy now, the primary focus would be getting investors in, domestic or foreign, whether for large or small-scale agriculture, and then the government role is more unlocking, providing incentives etcetera. Completely different."

The tools to finance agriculture in Africa have expanded and multiplied in recent years. Still, despite this progress, the sector's fundamental insecurity remains an obstacle that will require more than funding mechanisms to overcome, according to Mr Sindazi of Standard Bank. "The risks in the sector are so high that it is difficult to predict which investments will fail and which ones will succeed," he says. But as focus on agricultural development in Africa continues to grow, so does the expertise and the range of risk taken on across project portfolios.

Despite his caution, Mr Sindazi concludes that concrete steps can be taken to mitigate risks to lenders and keep funds flowing to where they are needed in the sector. Such steps include "the use of innovative funding structures that hinge on: securing a solid off take before we fund; using a team of specialist contract managers to manage the farmers and crop growing; using appropriate insurance policies that help to offset most of the perils associated with farming; and rigorous due diligence. The monitoring and control provided by a team of back-office experts provides the comfort required to continue the provision of funding to the agricultural sector."

LEFT: Young cocoa plants in a research centre in Abidjan, Côte d'Ivoire
TOP RIGHT: Oranges for sale in the Libyan capital, Tripoli
BOTTOM RIGHT: Sugar cane fields in Andiorano, Madagascar

Enabling environment

Governance looms large in all this. Agricultural and finance ministries are critical to creating the enabling conditions for agribusiness to grow. In 2003, African governments pledged to spend 10 percent of national budgets on agriculture under the terms of the Comprehensive Africa Agriculture Development Programme. But for finance ministries, the challenge is one of prioritisation. With so many demands on the public purse, each ministry – be it health, education or agriculture – must pitch for funds.

Robert Sichinga, agricultural minister for Zambia, says: "Personalities and relationships between individual [ministers] are important in how the two ministers work together. But I need to convince the minister beyond my personal relationship. I need to know he will understand where I am coming from."

But Maria Kiwanuka, minister of finance for Uganda, points out that the agriculture sector not only benefits from direct funding but also from other areas of public spending which improve the public goods environment. Strictly speaking, only 3 percent of Uganda's budget goes to agriculture. But, she says, when factoring in additional funding on rural infrastructure, it is more like 12 percent.

"About 30 percent of our budget goes into infrastructure, which is energy and roads. But a lot of that is directed towards rural areas, rural roads and rural electrification which helps agriculture," says Ms Kiwanuka. "That is the reason why we are doing our feeder roads, so that inputs can go in easier, and crops and other outputs can come out easier. And by rolling electrification up-country, it means that agro-processing plants can be set up around the country and not just concentrated in the capital city and the other main towns."

With a stable policy environment and the growth of a diverse range of financial actors, Africa's agriculture sector could provide a shot in the arm for the continent's growth trajectory.

Akinwumi Adesina

Minister of Agriculture, Nigeria

"Agriculture is not a social sector. It is a business"

INTERVIEW BY ADAM ROBERT GREEN

In the 1960s, before it turned to oil, Nigeria was one of the most promising agricultural producers in the world. Between 1962 and 1968, export crops were the country's main foreign exchange earner. The country was number one globally in palm oil exports, well ahead of Malaysia and Indonesia, and exported 47 percent of all groundnuts, putting it ahead of the US and Argentina.

But its status as an agricultural powerhouse has declined, and steeply. While Nigeria once provided 18 percent of the global production of cocoa, second in the world in the 1960s, that figure is now down to 8 percent. And while the country produces 65 percent of tomatoes in west Africa, it is now the largest importer of tomato paste.

Nigeria's minister for agriculture, Akinwumi Adesina, reels off these statistics with regret as he discusses the country's deteriorating agriculture sector. "Nigeria is known for nothing else than oil, and it is so sad, because we never used to have oil – all we used to have was agriculture," he says.

Nigeria's oil has come at the detriment of the agriculture sector, he claims, "and that is why we had a rising poverty situation. We were having growth but without robust growth able to impact millions of people because it is not connecting to agriculture."

That might explain why Nigeria's economic statistics are so puzzling. While the country has been posting high growth figures, and makes it into Goldman Sachs' 'Next 11' emerging markets group, absolute poverty is rising, with almost 100 million people living on less than a $1.25 a day. The National Bureau of Statistics says 60.9 percent of Nigerians in 2010 were living in absolute poverty, up from 54.7 percent in 2004.

But it is not just oil that has hollowed out the agriculture sector, with knock-on effects on poverty rates. Restrictive trade policies also had an effect, especially in the late 1970s and early 1980s. Tariff increases, a rise in import licenses and duties, and export bans and tariffs – as well as a centralisation of marketing of agricultural produce through the formation of crop-specific commodity boards – all created a lumbering, inefficient private sector, as well as opening up many opportunities for corruption. Today, Nigeria has transitioned from being a self-sufficient country in food to being a net importer, spending $11bn on imports of rice, fish and sugar. "It just makes absolutely no sense to me at all," says Mr Adesina. "My job is to change that."

Not everything is in the minister's hands, of course. Climate change poses a threat to Nigerian agriculture - the World Bank recently predicted an up to 30 percent drop in the country's crop output due to erratic rainfall and higher temperatures. But when it comes to achievable changes, Mr Adesina seems well placed to act on what lies within reach, combining an encyclopaedic knowledge of his country's agriculture sector with a clear strategic vision.

While ministers' portfolio's are often fast-changing, giving them limited time to develop expertise in any given sector, Mr Adesina has a strong background as vice president of policy and partnerships at the Alliance for a Green Revolution in Africa (Agra), and a decade at the Rockefeller Foundation. He was appointed by UN secretary-general Ban Ki-moon as one of 17 global leaders to spearhead the Millennium Development Goals. His energy is palpable, and he looks well positioned to engineer a major turnaround in Nigerian agriculture.

The change needed, he says, requires a shift in mindset. "We were not looking at agriculture through the right lens. We were looking at agriculture as a developmental activity, like a social sector in which you manage poor people in rural areas. But agriculture is not a social sector. Agriculture is a business. Seed is a business, fertiliser is a business, storage, value added, logistics and transport - it is all about business."

He wants to change the sector's image, putting it at the forefront of national development. "Agriculture is the future of Nigeria. And agriculture that is modernised, that is productive, that is competitive. We must be a global player," he says.

Nigeria's respected finance minister, Ngozi Okonjo-Iweala, speaks positively about Mr Adesina's reforms to date – especially in cleaning up the corrupt fertiliser industry. Now, rather than directly participating in the delivery system for fertiliser, the government leaves that to the private sector and only provides the subsidy. This change has tackled 40 years of corruption, and ended it – Mr Adesina claims – in 90 days.

Ms Okonjo-Iweala says it has been easier to work with Mr Adesina than previous ministers. "It is not only about doling out subsidies which do not reach farmers," she says. "That was frustrating for me the first time [I was finance minister]. Now he came and cleaned up the fertiliser issues."

Nigeria is now seeking to add 20m metric tonnes to the domestic food supply by 2015 and to create 3.5 million jobs through agriculture. This requires more sophisticated thinking about the value addition of individual crops – cassava being but one example. "We are the largest producer of cassava in the world, at 40m metric tonnes, but I want us to become the largest processor of cassava as well," Mr Adesina claims. "We can focus on using cassava for starch, dry cassava chips for export to China, cassava flour to replace some of the wheat flour that we are importing. So we are restructuring the space for the private sector to add value to every single thing."

> "What we have shown the banks is that agriculture gives as high and competitive a rate of return as other sectors if structured properly. But for banks to lend, we had to fix the agricultural value chain"

Financial linkages

Finance is the critical catalyst to growth, and in Nigeria it has proven hard to link the two. "You find that only 2 percent of all bank lending in Nigeria goes into agriculture – a sector that is 40 percent of GDP and 70 percent of employment. The reason was because banks could not find the money trail in the agriculture sector," Mr Adesina says.

That is beginning to change, with banks starting to look again at the opportunities offered by agriculture - which in part follows the reforms implemented by Mr Adesina's administration to root out corruption and improve efficiency. Last year, his ministry developed a facility with the Central Bank of Nigeria – helped by donor assistance from the UK, German and US development agencies – called Nirsal, an agribusiness initiative that provides risk management, financing, trading, and strategic solutions.

The $50m facility, which leverages $3.5bn, reduces the risk of agricultural lending by providing credit risk guarantees and brokerage services to buyers and sellers of agricultural commodities, including structured buyer forums. It also, selectively, buys on its own account to bring stability to markets. In addition, Nirsal offers advice designed to connect suppliers with downstream buyers.

This is part of a market-smart initiative, rather than a heavy handed intervention in the sector. "With banks you cannot beg them to lend because they are taking care of their people's money, so you create the value and they see the value and lend," he says.

While banks have often had a high perceived risk of lending to agriculture, the terms can be competitive if the sector functions well. Mr Adesina worked directly with the managing directors and chief risk officers of Nigeria's banks in order to tackle what he saw as a misperception of risk, at least if the sector's flaws – including inefficiencies and corruption – could be cleaned up. "What we have shown the banks is that agriculture gives as high and competitive a rate of return as other sectors if structured properly. But for banks to lend, we had to fix the agricultural value chain. Now the banks are all exploding on agriculture in Nigeria."

The percentage of lending by banks to the sector was just 1 percent in 2010 - now it is 4 percent, with a target of 10 percent. Last year, banks embarked on lending to seed companies for the first time in Nigeria. "We did an assessment at the end of the season," recalls Mr Adesina. "The central bank governor asked the banks how much money did you lose lending to these guys last year? All the banks said zero percent. This year we expect the banks to lend $400m to seed companies alone. The reason their losses are zero is because we have changed the way we structure our agriculture sector." The best performing stocks in the Nigerian Stock Exchange are now not banks, but agricultural companies.

Crucially, it is institutional reform - rather than simply heavier public spending - which can best unleash financing in the sector. "I do not think that throwing money at anything solves problems. It is all about policy reforms, creating incentives, getting the private sector in there, getting financial markets behind agriculture. Our goal is to become an agriculturally industrialised economy. Nigeria should be like Brazil, as far as I am concerned," says Mr Adesina.

"Of course you need public financing of critical things like infrastructure, roads, and irrigation facilities – those are public goods that governments are obviously spending money on. But the greatest way is through the private sector."

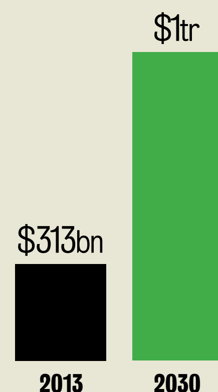
Infographic

Can Africa feed the world?

THE POTENTIAL

50 percent of the world's remaining uncultivated land is in Africa

450m hectares of this land are not forested, protected, or densely populated



The current value of food markets on the continent is estimated at $313bn

By 2030, the World Bank estimates that Africa's agriculture sector could constitute a $1trn opportunity

THE SECTOR

65%

of Africa's labour force is employed in agriculture, which accounts for 32 percent of GDP

Smallholder farmers provide up to 80 percent of food produced in sub-Saharan Africa

Percentage of cultivated land that is irrigated **6%**

Irrigation alone could increase output by up to

50%

Renewable water usage

Africa 2%

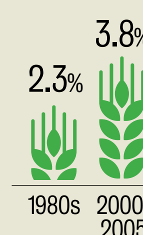
World average 5%

MOMENTUM

Private investment is up but has become a contentious issue, with frequent accusations of "land grabs" by foreign governments and firms

34m ha

Africa's share of globally tracked land deals totaling 58m ha since 2000



Agricultural GDP growth in sub-Saharan Africa has accelerated

In 2003, 53 African heads of state agreed to allocate at least 10 percent of their national budgets to investment in agriculture and livestock by July 2008. Only 7 have reached this target

Sources: World Bank, Land Matrix

PHOTO: GETTY

The value addition imperative

Local agricultural processing is vital as Africa's food imports continue to rise – but not all commodities are well suited to domestic value addition

BY ADAM ROBERT GREEN

A rising middle class and expanding population are pushing Africa's food import bill to worrying highs. While rising capital imports suggest growing productive capacity, booming consumption imports – especially for products that can be produced domestically – are a red flag, according to Jean-Louis Ekra, president of the African Export-Import Bank in Cairo. They suggest economies are failing to keep pace and running up unnecessary trade imbalances.

Africa lost its status as a net exporter of agricultural products in the early 1980s when prices for raw commodities fell and local production stagnated. Since then, agricultural imports have grown faster than agricultural exports and by 2007 reached a record high of $47bn, yielding a deficit of $22bn. The value of agricultural exports from Thailand is now greater than for the whole of the African continent below the Sahara.

Nature is partly to blame. Weather-related damage has hit rice crops in Benin, Burkina Faso, Cameroon, Niger and Madagascar. Foot and mouth disease has hurt Egypt's bovine exports, and cassava – one of Africa's major offerings to world agricultural trade – is being felled by a fast-spreading virus. Policy volatility is also at fault. Nigeria – Africa's largest rice importer – announced heightened import taxes last year, which prompted a sudden rise in purchases. And across Africa, weak infrastructure hinders markets.

But rising food imports are also a consequence of wealth and one of its tell-tale effects: a taste for protein. Poultry import growth last year was around 12 percent, driven by higher incomes in the likes Angola, Benin, Ghana, and the Democratic Republic of the Congo. "Africa is growing at a base of 5 to 6 percent a year, which translates into a growing middle class with an increase of consumption," says Mr Ekra. "In west Africa, for instance, you see an increasing taste for luxury Thai rice."

This is not only the case in the more affluent economies. In Sierra Leone, which languishes towards the bottom of the United Nations' Human Development Index, rice imports have run to about 15 percent of consumption in the last few years, and have reached as much as 45 percent in the recent past. "That means an import bill of several hundred million dollars, a truly frightening percentage of the $3.8bn GDP," says Paddy Docherty, chief executive of Phoenix Africa, a company investing in post-conflict countries.

Companies testify to the challenges of agricultural import-dependence in their continental operations. "We have 13 factories in Africa that use products like soft oils, tomatoes or starch-based compounds on a daily basis, but much of this is imported, wasting foreign exchange and increasing our carbon footprint," says Marc Engel, chief procurement officer at Unilever.

But to an optimist, import-dependence spells opportunity. Firstly, structural imbalances are a symptom of fast growth. China's annual agricultural consumption needs have now overtaken production too. For companies and investors, the import profile signals strong domestic demand which could be tapped through investment in domestic agribusiness and food retail.

Attention is turning to greater domestic processing of agricultural resources, to ensure raw products can reach finished form within African markets. Raising productivity is key to this. "In order to have a sustainable, solid rural sector you cannot have poverty. You must have prosperity," says Howard-Yana Shapiro, global director of plant science and external research for Mars. "And how will that come without productivity? So productivity is the key piece."

Mr Docherty agrees that productivity increases are needed to drive local value addition. "The vast majority of imports are of bagged rice, i.e. already milled and packaged," says Mr Docherty. "There is great potential to do this milling in situ in places like Sierra Leone, if there is the primary production in country to feed the mills. I know from experience that the tiny areas in production in Sierra Leone, and the low yields currently being achieved because of the lack of inputs such as fertiliser and lime, means that there is milling capacity which is unused."

One Beijing-funded demonstration farm in the Bo region has a decent rice mill which is shut because it lacks the raw product to justify keeping it in operation, says Mr Docherty: "Processing capacity alone is no good without sufficient volumes of local production. I do not imagine the economics would work if raw rice was imported for local processing. Processing capacity must grow alongside local production, and the two together are essential for achieving food security and more efficient markets in Africa."

It is also important to ensure local processing is technically advanced, otherwise it can consume large amounts of labour without a value payback. Cassava processing, for instance, is often low productivity – and traditional processing methods can lead to contamination of cassava crops.

Practitioners must distinguish between commodities which make sense to process locally, and those that do not. Technoserve, the NGO, has conducted analysis across several African markets and their findings challenge the view that local processing is always best. Measuring the domestic resource cost of a range of Mozambican commodities threw up a number of interesting insights. Local processing of cashew nuts was seen to be highly advantageous, while local varieties of rice (Chokwe and Zambezia varieties) were not found to be financially profitable without credit access and technical assistance. Potatoes command low prices but production costs are modest, suggesting a good market, while paprika was found to be "somewhat profitable" for farmers, although pesticide and fertiliser interventions would be needed.

Simon Winter, senior vice president for development at Technoserve, says market dynamics signal where and how to go about value addition. "Once you have identified the market and where processing needs to be, then you optimise your logistics," he says. It does not make sense, for instance, to develop cashew roasting and packaging facilities too close to the production source if the consumer market is far away, due to the damage that will be caused during transportation. "If cashew kernels are in vacuum packed 2kg bags, they are less likely to get broken and crushed than in a small foil packet," Mr Winter notes. Chocolate, on the other hand, would make more sense to process locally (currently, Europe and North America dominate this segment). While high temperatures are a struggle in west Africa, there is less risk of product damage during transportation of chocolate. "You have to understand this commodity by commodity," says Mr Winter.

There are many constraints to value addition, even where economic arguments are strong. First is a lack of resources, including refrigeration and cold storage, vehicles and skilled personnel. Then there are deficient or confusing standards, especially between countries. And there are serious health dangers to some locally-grown produce, such as aflatoxin that can be found in large quantities in maize and nuts.

Local processing means being able to identify and have the means to flush out such health dangers, for instance through aseptic processing. Important assistance here can come from government agencies. The Kenya Agriculture Research Institute, for instance, provides disease and pest management support, as does Cocobod, the cocoa sector agency in Ghana.

When exploring the market dynamics of local processing, it is also important for companies and practitioners to distinguish between producer- versus buyer-driven chains. Buyer-driven chains can be evident in agriculture, when freshness standards and protected varieties are important, when there is high product differentiation, when packaging and logistics are complicated, or when R&D and other knowledge elements in production or processing are critical. So it may well be large retailers and brand companies – from Massmart to Unilever – who could provide the impetus to local processing in Africa, saving themselves money and reducing supply chain complexity.

Jane Karuku

President of the Alliance for a Green Revolution in Africa

"Africa requires investment in scientists and in research institutions, which receive very little funding by government"

INTERVIEW BY ELEANOR WHITEHEAD

In northeastern Brazil, the dry bush of the Cerrado – a huge swathe of savannah covering 21 percent of the country – has given way to vast farmlands which have turned the nation into a world-leading agricultural producer. In under 30 years, the development of this one-time wasteland has powered Brazil's transformation from an importer of food to one of the world's biggest breadbaskets.

Across the Atlantic, in contrast, Africa's agricultural story has been one of unmet potential. Despite employing 65 percent of the continent's workforce, and accounting for more than 30 percent of GDP, the sector is struggling. Poor and degraded soils, non-existent irrigation systems, crumbling public infrastructure and insufficient access to credit are all hampering the growth of a sector that has the potential to redefine the continent's development trajectory.

Clearly, there are lessons to be learnt from the likes of Brazil, and Agra (The Alliance for a Green Revolution in Africa) has set itself the task of replicating the green revolutions of the nations of Latin America and Asia across the continent.

The organisation, which began life in 2006 through a partnership between The Rockefeller Foundation and the Bill & Melinda Gates Foundation, aims to support smallholder farmers and develop breadbasket regions in order to meet Africa's growing food security issues. That involves the creation of whole value chains – from fertiliser distribution to market access.

It is a big task, and Jane Karuku, Agra's president, favours taking a scientific approach to the problem. She wants to see research and development – an often neglected part of the agricultural story – put at the top of the agenda, both by countries and donors.

"The first and most important thing is that we have to continue building on the capacity of Africans themselves to do agricultural research," Ms Karuku argues. "That requires investment in scientists and in research institutions, which receive very little funding by government, so that we can breed more seed varieties that are high yielding and resistant to pests and diseases."

Further support must be provided throughout the value chain if those appropriate varieties are to be distributed across the continent, she says: "We have to think about the whole chain: who is going to do the work, how we are going to breed that better variety, how we are going to multiply that variety, and how we are going to distribute that variety to the farmer?"

Specifically, in order to multiply new inputs, more funding needs to be provided to local seed companies. To this end, Agra already offers grants for investments in capacity building and technology. That has yielded some results, spearheaded by successful groups like Kenya's Western Seed Company and Tanzania's Tanseed, which are producing varieties to meet their countries' specific conditions. "In 2007, we supported less than 10 seed companies, producing about 2,500 tonnes of seed across the continent. Now there are about 80 of them, and together they have aggregate production of about 55,000 tonnes of seed," Ms Karuku says.

"There is evidence that things are starting to change. The only challenge is that it is happening in pockets, and it is not wholesome – so it is a question of replicating that to get those effects across the continent"

Agro-dealers are also springing up, deepening the local private sector. "When we started, there were few viable agriculture dealers who could take those seeds from one point to another. Now we have trained about 15,000 of them. That is still very few, but it is a good step from a low base," she argues.

And the impacts of these developments are beginning to be reflected in an uptick in farm yields, Ms Karuku says. "We can see a lot of improvement, starting from adoption of high yielding seed varieties. If you think about maize, in Malawi, Kenya, Zambia, the adoption rate for hybrid seeds is almost up to 90 percent. In cassava, mostly grown in west Africa, there is a high adoption rate of seeds, and yields have increased up to 40 percent. In rice, Tanzania is seeing high productivity by using technology and better agronomic practices, and we are hearing figures of 9.6 tonnes per hectare, which is really high," she states.

But there is a lot further to travel in support of these areas. "There is a bigger role for donors in this space because some of these countries are starting at such a low base and governments are not spending a lot of money on their national institutions, like you'd find in the West," Ms Karuku believes. "There is room for donor institutions coming to give that upfront support, whether at the personnel level and to institutions, or to the private breeders and commercial seed companies, to make them more viable at a business level."

Going private

Huge challenges still remain in other areas, not least in soil health, the distribution of fertilisers, access to markets and storage facilities, the development of strong farmer organisations, and access to credit. But amid those problems, more money is flowing into African agriculture than ever before, leaving some stakeholders positive that prospects for the sector are finally changing for the better.

"At last, the noise around African agriculture is actually being reflected in rising investment," Ms Karuku says. Sitting on 60 percent of the world's uncultivated arable land, Africa is receiving the attention of investors looking to secure future supplies in the face of rising demand from a growing global population.

The G8's New Alliance for Food Security and Nutrition, which aims to lift 50 million Africans out of poverty over the next 10 years by means of private investment, has already tabled billions of dollars in commitments from international investors since its launch last year. In Nigeria alone, $8bn has been invested in the agriculture sector since 2011, with money now flowing into new crop processing zones from the likes of Cargill and Unilever. Other initiatives like the Grow Africa partnership also aim to leverage private capital for African farming.

But Ms Karuku believes there is further to travel. "We need a lot more investment and a quickened pace in terms of deliverable actions, so that it is not just talking and we are actually going to do it," she says.

Not everyone is pleased with Agra's stance on commercial investment, though. Some civil society organisations argue that the private-led approach is the wrong solution to Africa's growing hunger crisis. As with Brazil's Cerrado, or other developing agricultural economies, they fear a new era of land grabs, and argue that the smallholders who produce the majority of the continent's food could be pushed off their land to make way for big investors whose aim is to control African food supplies.

Ms Karuku refutes these concerns. "The way I see it, there is a big role for the private sector in African agriculture," she says. "First, we have a growing local private sector that is playing an important part in making farming sustainable and profitable. Second are the multinationals that come to buy produce out of Africa, and this has been happening for a long time. The tradition of companies like Nestlé and Unilever linking their supply chains to African farmers has been a long one, and is positive."

Rather than fearing private investment, more needs to be done to support governments at a policy level, she says: "The deals have to be worked out in an equitable and transparent process, but we cannot do without both local and international private sector involvement."

With these growing investment flows, coupled with increasing commitments by African governments to agriculture, Ms Karuku sees reasons to be optimistic. "There is evidence that things are starting to change. The only challenge is that it is happening in pockets, and it is not wholesome – so it is a question of replicating that to get those effects across the continent," she says. "My dream is to make sure that all of this trickles down, that the smallholder is touched by these initiatives."

Commodity exchanges take root

A handful of African countries are setting up commodity exchanges in an effort to develop agricultural markets and improve food security. Are they the key to Africa's agricultural growth?

BY ELEANOR WHITEHEAD

Coffee farming in Kabati, Kenya

PHOTO: GETTY

When Ethiopia set up its now famous commodity exchange in 2008, few foresaw the ripple effect it would generate – least of all its founders. But in five years, the Ethiopian Commodity Exchange (ECX) has convinced stakeholders that bourses can improve food security in Africa, and has catalysed global dialogue about the development of agricultural marketplaces across the continent. Other countries are now looking to set up their own exchanges.

The ECX, whose trading volumes hit $1.4bn in 2012, up from $1bn in 2011, has given farmers access to real time pricing information, improved profits and productivity, reduced market segmentation and boosted export quality, advocates say. The stabilisation of domestic supply chains is also supporting agro-processors and exporters, diminishing concerns about once rampant contract default. Ethiopian coffee exports increased to $797m in 2011/12 from $529m in 2007/8, when the exchange was established, according to the International Coffee Organisation (ICO).

First to follow in Ethiopia's footsteps has been Rwanda. Its East Africa Exchange (EAX), unveiled in January, has recently appointed a management team and will start trading agricultural and mineral commodities this summer. The EAX is being run by Africa Exchange Holdings, a company co-founded by investors including the Nigerian Heirs Holdings and New York-based Berggruen Holdings, whose aim is to develop a network of commodity exchanges across Africa.

Africa Exchange Holdings thinks that bourses can help develop agricultural markets by helping farmers sell at the right price. "We want to set up commodity exchanges across Africa because the continent is largely an agrarian economy – agriculture is the largest contributor to GDP as a whole and also the largest employer on the continent," explains Sam Nwanze, chief executive of Heirs Holdings.

"But one of the problems that we see in the agriculture value chain is that the price discovery mechanism is not efficient: farmers will grow crops and sell them at a price based on how desperate they are for cash at the time – they do not play a role in determining the price even if their product commanded a premium on the international markets," he says.

"One of the things that we think will develop the agricultural economy is if we could fix the issue of price discovery through commodity exchanges. That would also solve financing issues for the farmer, because he could take his products to a warehouse and get a receipt issued to him which becomes a financial instrument to gain capital to finance another cycle."

The group hopes to position the EAX as a regional hub. "There is already a lot of intra-regional activity going on in east Africa, and we expect the EAX to serve the region. An exchange will help to enhance and put greater transparency on a lot of the activities taking place," Mr Nwanze explains.

Nigeria is following suit. In May, the country's National Council on Privatisation approved the privatisation of the beleaguered Abuja Securities & Commodity Exchange. The Nigerian government is currently developing the national storage infrastructure to facilitate the operation of a better-functioning, private-run exchange, after more than a decade of lacklustre public performance. "We expect that the first investment in the commodity exchange will kick off this year," says the country's agriculture minister Akinwumi Adesina.

"In Nigeria, the [new] commodity exchange will allow farmers to have access to markets on a more regular basis; it will improve price discovery in the marketplace, because you know the prices of all commodities in different areas; and it will improve the transparency and efficiency of market dealings, because the farmers will know who they are selling to and there will be formal delivery contracts – so I think that the exchange will also help ensure quality of produce especially for international markets," he says.

Africa Exchange Holdings will also be involved in the running of this new bourse, according to Mr Nwanze. Like Rwanda's exchange, it has regional

ambitions: "We expect that exchange to serve west Africa," he says.

But other private investors have shown interest as well and the size of the market in Africa's second biggest economy could warrant the development of other domestic exchanges, Mr Adesina says: "We need more than one exchange in Nigeria."

Other countries are jumping on the bandwagon. In June, Kenya's cabinet approved laws to establish a futures market for commodities trading, paving the way for an exchange that the government hopes will help farmers manage price risk. Africa Exchange Holdings is eyeing that market. "We are in discussions in Kenya, Tanzania and Uganda," Mr Nwanze claims.

Competing with that group is Eleni Gabre-Madhin, founder and former CEO of the ECX, who this January launched a company to replicate her Addis Ababa successes elsewhere. "During my tenure at ECX 18 countries came to visit and expressed incredible interest in setting up exchanges. The company has been set up to help them do it," she says.

While she declines to name countries, Ms Gabre-Madhin is hoping that by 2020 her company, eleni LLC, will have built up to 10 exchanges in Africa. Unlike the private African Exchange Holdings, eleni LLC will use a public private partnership model for her exchanges.

The company has received seed capital of $5m from Morgan Stanley, the International Finance Corporation, and 8 Miles, Bob Geldof's pan-African private equity fund. It runs a two tiered investment model, meaning that those financiers will become core investors for each of the $20-$50m exchange projects the company implements, equating to a buy-in by those groups to the development of exchanges across the continent.

"We have gone from every major investment bank saying five years ago that there was nothing they could do in Africa, to everybody trying to figure out what their niche could be," says Sara Menker, founder of Gro Ventures, and a former commodities trader at Morgan Stanley. "It is a very strategic move for Morgan Stanley to try to develop those agricultural markets, because once they are developed then they are positioned as big players there."

The investor returns could be significant. Africa Exchange Holdings says it expects to generate double digit profits from its projects. And packaged as part of a broader reform agenda in more ambitious countries like Nigeria, there are high hopes for developmental success. "I have no doubt that in countries where agriculture is being taken seriously that commodity exchanges enable agricultural policies and translate into benefits for the livelihoods of millions of farmers," Ms Gabre-Madhin says.

As good as it sounds?

But the exchange approach faces criticism, and careful analysis shows that even the ECX's success may have been more tempered than its advocates suggest. With coffee prices rising, the absolute value that Ethiopian farmers are paid for their produced increased 79 percent to 115 cents/pound between 2007 and 2012. However, data from the ICO contest claims that farmers are receiving a higher proportion of the final price of their commodity in the market. In fact, farmers took home 51.6 percent of the export price of their product for the year ended September 2012, down from 57.1 percent in the year ended September 2007, before the exchange was established, the numbers reveal.

Critics argue that markets in Ethiopia are still heavily disjointed, and that smallholder farmers cannot access the exchange. The model prevents traceability and is a poor market for highly differentiated products like coffee, which risk being standardised, they say.

In London, the high-end coffee company Monmouth Coffee last year flagged up a concern with its Ethiopian offering: "As this coffee was bought and sold through the ECX, its traceability is limited... and full credit for the growing and preparation of the coffee cannot be given," it said in a promotional flyer. "We hope that at some stage in the future the Ethiopian coffee board will reconsider its current strategy and permit all coffees in Ethiopia to be traded directly."

Some countries have compelling alternatives in place. Ghana's Cocoa Board already provides price transparency and guarantees to farmers, and has succeeded in cutting middlemen out of the value chains. In Tanzania and Kenya, traders claim that coffee auctions allow for greater differentiation and traceability than bourses.

"Exchanges may make markets more efficient, but there is no differentiation, there is no sampling of the product, and the products traded are just not traceable," argues Dirk Sickmuller, managing director of Taylor Winch Ltd, one of east Africa's largest coffee brokers. "In this day and age the consumer wants to know what they are buying and where it has come from. In Kenya and Tanzania the coffees are fully traceable and we know exactly who is producing what, where and when."

Coffee traders on the floor of the Ethiopian Commodity Exchange in Addis Ababa

New exchanges may be able to implement traceability measures – the ECX is already trying – but other factors may make its scale harder to replicate in other bourses. Chief among them are Ethiopia's unique political and economic conditions, under which the state-run exchange is mandated, meaning that exporters can only procure products through the bourse. That model is unlikely to be repeated in African free markets. "Ethiopia is unique in that it has a very centralised view of the way things are run, and when you have those forces in your favour then the speed at which the exchange develops is a lot higher. When you don't have that centralised control there will have to be something else that drives its success," Ms Menker explains.

More broadly, concerns are mounting that commodity exchanges are being churned out without due consideration of enabling conditions. The failure of bourses in Zambia and Uganda show how important it is to have the right infrastructure in place from the start. Zambia's bourse halted trading in July 2011 and has postponed its reopening pending legislation to certify warehouses. Uganda's has not traded grain since a failed trade early in its history.

"A lot of these new exchanges are being entered into prematurely for many of the wrong reasons," says one Malawi-based structured trade expert, who asked not to be named. "I can't help but think that this is an idea that donors and investors are buying into, but without having done research on the need for an exchange within every given community."

"The idea of having 54 different exchanges in 54 different countries, with 54 different policies and laws, is a disaster waiting to happen because it will just create an artificial price arbitrage that can be taken advantage of by traders who have enough capital," Ms Menker argues. "What we need is for exchanges to create economies of scale and liquidity."

Questions are being raised over the value of Rwanda's new bourse. "From an agricultural perspective, Rwanda is not a big producer of much, so you have to question the rationale," the Malawi-based expert says. "The infrastructure is poor, storage structures are not up to standard, the sanctity of grain within storage leaves a lot to be desired. The political situation is also uncertain, and nobody within it wants too much transparency. I can't imagine there will be much success there."

To create the necessary scale, one answer would be to develop regional exchanges – and Rwanda and Nigeria's new bourses do mean to serve as hubs. eleni LLC, meanwhile, hopes to create regional indices for critical African produce. "If we get it right and set up exchanges across the continent we can link them up to create a solid, critical world reference price, especially for commodities where there are common interests like cotton or cocoa in west Africa, or coffee in east Africa. The world would use those to discover prices for African commodities," Ms Gabre-Madhin says. "That cannot do anything but good for Africa's production and for Africa's economies."

But creating regional exchanges will be a political as well as commercial endeavour, and poor infrastructure and political bickering are likely hamper imminent efforts.

In the meantime, countries should be paying heed to bigger market questions, the structured trade expert claims: "There are a number of issues that need to be taken into account in order to have a successful exchange: Is the market ready for it, from the farming as well as buying perspective? Is government on board and are they prepared to provide an environment that allows that exchange to function efficiently? Can you get the message across to people in rural areas? Are the banks, the government, private sector, producers, traders, processors on board? Is legislation consistent in agricultural policy, financial policy, trade policy?"

With many of those questions still unanswered across sub-Saharan countries, the new exchanges are likely to experience mixed success: "It is a proven mechanism but will work better in some countries than others, because it requires certain infrastructures to be in place – roads, warehousing, private sector participants," says Tenbite Ermias, a partner a the Boston Consulting Group.

PHOTOS: GETTY

THE ECX IN NUMBERS

$1.4bn

The trading volume of the Ethiopian Commodity Exchange in 2012

$797m

Ethiopian coffee exports in 2011/12, up from $529m in 2007/8

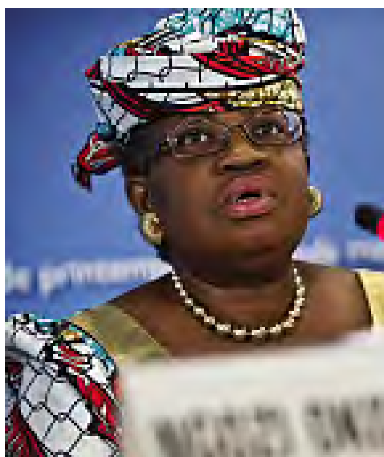
79%

The increase in the absolute value that Ethiopian coffee farmers were paid for their produce between 2007 and 2012, up to 115 cents/pound

51.6%

The proportion of the export price taken home by coffee farmers in the year ended September 2012, down from 57.1 percent in the year ended September 2007, before the ECX was established

Source: International Coffee Organisation



Ngozi Okonjo-Iweala and Richard Wilcox

Uniting Africa to face climate change

Africa accounts for less than 3 percent of global emissions, yet our continent is widely recognised to be the most vulnerable to the effects of climate change. Natural disasters, driven by climate change, threaten to undermine the hard-fought gains made over the last decade, just as Africa is beginning to realise its vast agricultural potential.

Smallholder farmers, who constitute the bulk of the sector across our continent, are especially vulnerable to changing weather and require government assistance to deal with it. As currently structured, the system for responding to natural disasters is not as timely or equitable as it should, or could be, with much of the cost borne by farmers. International assistance through the appeals system is secured on a largely ad hoc basis after disaster strikes, and we are forced to reallocate funds in national budgets from essential development activities to crisis response. Only then can relief be mobilised toward the people who need it most – and it is often too late. Lives are lost, assets are depleted, and development gains reversed – forcing more people into chronic hunger, malnutrition and destitution across the continent.

It need not be this way, and insurance may be a key element in protecting both people and our environment from the increasingly severe impact of climate change-related disasters. Nations on the continent have joined together to establish the African Union's African Risk Capacity (Arc), a mutual insurance company to trigger readily available funds for disaster response when and where we need them.

The Arc allows African governments to break out of their current cycle. By offering modern financial tools, it allows us to transfer the burden of climate risk away from the most vulnerable and least equipped to shoulder it – the farmers and pastoralists – to a risk pool that can handle it much better.

In a multi-year effort supported by the United Nations World Food Programme, the African Union has established a continental disaster risk insurance programme for drought, to be extended to other natural disasters in the years ahead. Risk pooling reduces the cost of contingent capital by almost half, translating into cost-savings for member governments on their insurance premiums.

One dollar spent on early intervention through the Arc saves three and a half dollars spent after a crisis is allowed to evolve, according to analysis by Oxford University and the International Food Policy Research Institute. Members of the Arc Agency can only join our mutual insurance company when they have demonstrated credible operational planning and response capacity through a peer review process led by the Arc's governing board.

While the Arc provides cost-effective contingency financing through risk pooling, it also brings our shared African experience and aspirations to bear on the planning, execution and monitoring of the funds' use in the event of a disaster. It is an example of the kind of pan-African solidarity that is transforming the continent's fortunes in the 21st century.

Through a nationally regulated mutual insurance company providing policies to its members, we combine this solidarity and peer-to-peer sharing of best practices with the financial credibility of a well-regulated insurer. The Arc insurance company itself will seek reinsurance coverage in the international financial markets, further crowding in the private sector to meet the risk management demands of Africa's growing economies.

With the support of Africa's key donors such as the United Kingdom, Sweden, Switzerland, Germany and other partners, our continental sovereign disaster risk pool will be ready to issue its first round of policies to qualified African states for agricultural seasons beginning in 2014.

Later this year, world leaders will gather in Warsaw for the United Nations' Climate Change Conference, and the agenda will include regional risk pools. Any effective mechanism for adapting to climate change needs to provide timely and reliable funding linked to weather events. Fundamentally this is an insurance proposition. The Arc and its Caribbean sister institution, the Caribbean Catastrophic Risk Insurance Facility (CCRIF), stand at the forefront of this effort. Africa has a technically and financially sophisticated, fair and well-governed contribution ready.

Ngozi Okonjo-Iweala is the coordinating minister for the economy and minister of finance, Nigeria. Richard Wilcox is the interim director general of the Arc Secretariat