YOUNG PEOPLE
Energising African agriculture

INTERVIEW
Reeta Roy outlines the importance of supporting Africa's youth

COCOA
A profitable business for Madagascan farmers

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SPORE

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New generation cooperatives

A MORE AGRIBUSINESS APPROACH

A global perspective on agribusiness and sustainable agriculture

Evidence and Dialogue for Better Outcomes in Agriculture and Food Security

The Malabo Montpellier Panel is a group of international agricultural experts who guide policy choices that accelerate progress towards food and nutrition security in Africa. The Panel is hosted by the West and Central Africa Office of the International Food Policy Research Institute, the University of Bonn, and Imperial College London.

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Co-Chair
International Food Policy Research Institute

Professor Joachim von Braun
Co-Chair
The Center for Development Research (ZEF), University of Bonn

Dr Adebisi Araba
International Centre for Tropical Agriculture

Tom Arnold
Institute for International and European Affairs

Professor Noble Banadda
Makerere University

Dr Patrick Caron
United Nations
High-Level Panel of Experts on Food Security

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Professor Gebisa Ejeta
Purdue University

Dr Karim El Aynaoui
OCP Policy Center

Professor Lisa Sennerby Forsse
Royal Swedish Academy of Agriculture and Forestry

Professor Sheryl Hendriks
University of Pretoria

Professor Muhammadou Kah
ADA University Baku

Dr Agnes Kalibata
The Alliance for a Green Revolution in Africa

Dr Wanjiru Kamau-Rutenberg
African Women in Agricultural Research and Development

Nachilala Nkombo
ONE Campaign

Ishmael Sunga
Southern African Confederation of Agricultural Unions

H.E. Tumusiime Rhoda Peace
Former African Union Commissioner

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EDITORIAL

Creating more youth entrepreneurs in agriculture

Michael Hailu, director – CTA

Transforming agriculture to a more productive, profitable and sustainable business depends, to a large degree, on attracting talented young people into the sector, drawing on their energy and innovations. With 70% of Africa's young population living in rural areas and more than 50% of the ACP population below 30 years old, getting more young people engaged across the agricultural value chain is key in addressing the continent's socio-economic challenges. Supporting and promoting youth entrepreneurship in agriculture is therefore a central part of CTA's efforts.

With 10–12 million young people entering the labour market annually in Africa, youth unemployment is a major challenge that could be addressed through agriculture. Indeed, agriculture is increasingly seen as offering a bright future for young people in ACP countries and as a way to stimulate growth in the rural economy. In this edition of *Spore*, President and CEO of The MasterCard Foundation, Reeta Roy, outlines the importance of supporting Africa's youth to transform the continent's agricultural sector in the *Spore Interview.*

Agribusiness and entrepreneurship are two critical areas which have a strong potential to increase employment opportunities for youth and to reduce rural-urban migration. The *Dossier Analysis* and *Field Reports* highlight new generation cooperatives, which are more agribusiness oriented and more attractive to entrepreneurial young people.

Similarly, ICTs help modernise agriculture, make value chains more efficient, provide new employment opportunities, and attract more young people to the sector. In particular, young farmers who apply ICT tools and skills to their farming businesses generally have higher yields, incomes and social status. Facilitating access to ICTs and improving rural broadband connectivity are key in attracting young entrepreneurs to agriculture. Efforts in this field must go hand in hand with increased capacity building in ICT use, tailored towards agribusiness development. CTA is supporting several initiatives to identify and nurture young ICT innovators and start-ups across ACP countries, so that they can develop viable services to benefit the agri-food sector.

I was pleased to attend the Young Africa Works Summit in February 2017 in Kigali, Rwanda and see the enthusiasm and energy of the young entrepreneurs who attended the conference. CTA has supported many of these entrepreneurs and helped them to turn their ideas into successful businesses. We are pleased to highlight some of these successful initiatives in this issue of *Spore*.

Cover picture: © Joerg Boethling/Alamy Stock Photo

YOUNG PEOPLE

Energising African agriculture

Africa is home to the world's youngest population with 226 million people aged 15 to 24. This young workforce has the potential to drive innovation and transformation in agriculture, yet 72% of young Africans are living on less than €1.85 per day.

Olivia Frost and Pius Sawa

Each year, 11 million young Africans enter the job market, but many fail to join the workforce. The continent is facing a double employment crisis: a lack of jobs for youth, and an increasing number of young people in need of work. However, as the largest sector of employment in Africa, agriculture promises opportunities for job growth and economic prosperity.

"The agricultural sector is set to create 8 million stable jobs by 2020 and up to 14 million if the sector is accelerated," explains Ann Miles, director of programs, financial inclusion and youth livelihoods at the MasterCard Foundation, which hosted the second Young Africa Works Summit in Kigali, Rwanda, on 16–17 February 2017. "We believe agriculture has to feature prominently in development plans for the continent if we hope to achieve a prosperous future for young Africans."

At the Summit, young people shared their success stories of how they are boosting employment, food security and value addition, as well as tackling climate change.

Unlocking agri-finance

One of the biggest challenges facing youths is access to finance; young entrepreneurs need further resources to scale up projects and increase farmer outreach. Brian Bosire, founder of Ujuzikilimo, an innovative technology which provides small-scale farmers with precise agricultural information, says, "Young people lack collateral. I am hoping to see banks come up with better models to finance youth activities so they can support their own agribusinesses."

Despite agriculture employing 65% of Africa's population and providing 32% of GDP, less than 1% of bank lending goes to the sector. Without access to credit, young people remain unable to purchase quality inputs (improved fertiliser and seed) and make investments to expand production and increase yields. However, FarmDrive is one company helping young farmers to access credit by using farmer information – along with satellite data, weather data and market figures – to create credit scores and loan recommendations for financial institutions. Cofounder Rita Kimani says, "Our model is to help financial institutions carry out a risk assessment and assess farmers' ability and willingness to pay back their loans, and to ensure that the products banks are giving these farmers is something that actually works for them." More than 3,000 farmers in Kenya are currently engaged with FarmDrive, which facilitated loans of about €125,000 in 2016.

Transformation through technology

Digitally savvy youth are primed to integrate technology into farming practices and modernise agriculture. In Kenya, 90% of youth have embraced mobile phones in their farming. Young people working at Kenya's innovative iHub, a space for creating and sharing ideas in the technology community, are driving technological development, using ICTs. Two key innovations which were incubated by iHub include M-Farm – which provides up-to-date market prices to farmers (via app or SMS), and connects them to buyers – and iCow, which provides livestock farmers with

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Agricultural production is central to young people's livelihoods

tailored information including cattle prices and veterinary care.

UjuziKilimo also uses interactive SMS messaging to connect farmers with one another, as well as sensors to capture soil and farm data to send farmers real-time advice on crop breeds, fertiliser requirements, pest control, markets and other farm management tools. This entrepreneurial company only employs young people, "Nobody is over 30. My belief is that young people bring in diverse skills and a lot of fresh ideas," emphasises Bosire.

To support youth ICT innovations and entrepreneurship in agriculture, CTA initiated the AgriHack Talent Programme in 2013. The programme has involved more than 600 young innovators and entrepreneurs, supporting the creation of ICT products and start-ups, such as FarmDrive. A new component of the programme is Pitch AgriHack! – a training bootcamp followed by a pitching competition and the opportunity to win grants and investments to upscale services offered. In 2016, 152 start-ups took part in the Pitch AgriHack! pilot, including UjuziKilimo.

"We have seen an increase in the number of young people who are actively participating in value addition businesses and the majority are women (more than 70%)."

Accessing vital information

Farmerline, a social enterprise which develops web platforms and mobile applications for the dissemination and collection of agricultural data, is a young and growing team of entrepreneurs based in Ghana. The company sends SMS and voice messages on weather forecasts, market prices, new farming techniques, agrochemical applications and finance to farmers and fishermen, in their local languages.
Alloysius Attah and Emmanuel Owusu Addai, two graduates of the Kwame Nkrumah University of Science and Technology, established Farmerline after receiving a US$600 (€560) prize in 2012 from the Mobile Web Ghana Apps Competition, organised by World Wide Web Foundation. At the Young Africa Works Summit Attah outlined that, "the company's vision is to bring empowering information to farmers in Ghana's most unconnected corners." Since its launch in 2013, Farmerline has benefited from the support of CTA initiatives, such as Apps4Ag and Top 20 Innovations, helping it to reach over 200,000 small-scale African farmers.

Breaking down barriers

One of the greatest challenges limiting the success of young female agripreneurs is unequal access to key assets, such as land, finance and information services, states the Overseas ›

› Development Institute in their recent analysis of the gendered barriers affecting young people's livelihoods. However, Alesia Ofori Dedaa, a MasterCard Foundation Graduate Scholar, is optimistic that as countries work towards achieving the Sustainable Development Goals gendered barriers for young entrepreneurs will be broken down. She notes that, "We have seen an increase in the number of young people who are actively participating in value addition businesses and the majority are women (more than 70%)." Dedaa adds that this progress has no doubt been aided by the fact that, "Most financial institutions are now facing pressure to ensure gender parity in giving business loans."

"Transforming agriculture in Africa means empowering women and the youth," emphasises Pilirani Khoza, founder of the Bunda Female Students Organisation (BUFESO), which supports disadvantaged university students at Lilongwe University of Agriculture and Natural Resources in Malawi. Concerned with the lack of women participating in higher education, Khoza created BUFESO to empower young women to pursue studies in science and agriculture by helping to fund their tuition and other fees. Khoza has also initiated a Graduate Farmer Climate Change Programme where women farmers are assigned to university graduates for a month and trained to use climate-smart technologies.

"Environmentally-friendly and carbon-reducing farming methods should be disseminated to the next generation so they can become agents of change in their environments and improve their livelihoods."

"Young people are increasingly aware of the challenges and opportunities that the necessary transition to low carbon growth entails, and many are joining the national and global dialogue on solutions, getting involved and taking action," explains Sithembile Ndema Mwamakamba, climate smart agriculture programmes manager at the Food, Agriculture and Natural Resources Policy Analysis Network. "Young people are running educational programmes, conserving our nature, promoting renewable energy, adopting environmentally friendly practices and implementing adaptation and mitigation projects."

Mwamakamba believes the creativity of young people is invaluable in the search for innovative solutions to climate change. In Ghana, for example, youths have developed multi-award-winning bicycle frames made from bamboo instead of steel, which reduces carbon dioxide emissions by up to 70% and helps restore local forests. In addition, the Bamboo Bike Academy, located in the Bamboo Bike Initiative's factory, holds courses on bike manufacturing and mechanics to empower youths and women to set-up their own small-scale businesses.

"Eager and energetic youth are at the centre of designing measures to mitigate climate change work," explains Janet Maro, founder of Sustainable Agriculture Tanzania (SAT). "Environmentally-friendly and carbon-reducing farming methods should be disseminated to the next generation so they can become agents of change in their environments and improve their livelihoods." SAT is a farmer training network which has empowered almost 1,000 young people since 2011 and is currently working with 33 youth groups across the country. The groups receive training in ecological agriculture and/or poultry keeping, as well as food processing and value addition, and business and entrepreneurship skills. "These off-farm activities are highly lucrative for young people," Maro confirms.

Digitally savvy youth are primed to integrate technology into farming practices

Engaging the private sector

The private sector is also key to engaging youth in agriculture. Dr Eleni Gabre-Madhin, CEO and founder of Ethiopia's first youth agribusiness incubator and seed investing platform, blueMoon, states that 90% of jobs in Africa are created by the private sector. As part of its 4-month incubator programme, blueMoon links innovative agribusiness start-ups to top executives and heads of industry in Ethiopia's private sector. "We need to encourage youth to think big and to aspire to creating scalable businesses that can absorb the millions of youth entering the job market each year into employment," emphasises Gabre-Madhin.

In Uganda, KadAfrica, a passion fruit processing company, is using fruit farming to help young girls, aged 14-20 who have dropped out of school, become economic drivers in their communities. The company buys 100% of the fruit produced by the girls at market price and then sells it on to the private sector; they have 20 regular local buyers and two exporting companies based in the capital, Kampala. Over 1,600 girls have so far participated in the 6-month programme which includes hands on training, access to land, quality seeds, agro-inputs and technical support, and entrepreneurship and management skills, among other benefits. Growing passion fruit, the girls earn on average €66 a month. "After the programme, they can go back to school, open their own businesses, or do passion fruit farming. The training helps the girls manage their savings and invest," says Eric Kaduru, KadAfrica founder and CEO.

Policy in practice

A wide range of policies specifically designed to support young people have been introduced by African policymakers during the last decade. In 2006, the first African blueprint for effective national youth policies was implemented by African Union (AU) Member States. The 'African Youth Charter', which recognises that young people are partners, assets and a prerequisite for sustainable development, has been signed by 42 Member States and ratified by 38. As well as launching a 'decade of youth and development', and approving a 10 year road map for implementation of the Charter in 2008, there has also been an ongoing policy dialogue; in 2011 the AU Summit's theme was 'Accelerating Youth'. "The adoption, and entry into force of the African Youth Charter is a significant milestone, as African countries are committing to implementing comprehensive, cross-sectoral youth policies, with the active involvement of young people," explains Mwamakamba.

With regional bodies also increasingly focusing on youth policies, most African countries are making efforts to involve young people in political and decision-making processes. The promotion of youth participation in modern agriculture is a priority for Ghana's National Youth Policy. One of the policy's key programmes is the Youth in Agriculture Program (YIAP) which is providing young people with tractors, seed, fertilisers, agrochemicals, harvesters and marketing services on interest-free credit. Youth participating in YIAP are also given training and basic equipment to enable them to venture into food processing, value addition and sales. YIAP has created employment in the agricultural sector for more than 150,000 young people since it was launched in 2009.

However, Francis Arinaitwe, a Parish Youth Chairperson in Mayuge district, Uganda, and a volunteer with Restless Development, argues that the gap between young people and policymakers still needs to be bridged to allow youths to fully participate in policy formation. "It is high time policymakers stopped thinking about us as beneficiaries," stated Arinaitwe at the 2017 Young Africa Works Summit. "Think about us as participants in the thinking, design and implementation of policies." Mwamakamba concurs that, "Existing agricultural policy incentive strategies need to be adjusted so they work for youth development and engagement in agriculture, not against it. African countries need policy instruments aimed at changing perceptions of youth engagement in agriculture, to sensitise and institutionalise the concept, such as through higher education training."

In order to grow, the agriculture sector must make use of modern tools, technologies and practices to help promote youth entrepreneurship. And whilst the Young Africa Works Summit helped to demonstrate that this is beginning to happen in interesting and innovative ways, much more still needs to be done if youth are to fulfil their potential in productive and sustainable agri-food systems. ■

Tackling youth unemployment

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Grace Wanere was the primary runner-up in CTA's first Youth in Agriculture Blog Competition, which aims to raise awareness of youth and improve their capacity for agricultural and rural development in ACP countries. "Due to popular demand, we started offering farmer-to-farmer training to people who wanted to hear more about the agribusiness enterprises described on the blog," Wanere explains. The Youth Agro-Environmental Initiative, which Wanere founded, has gone on to develop eBooks on various enterprises and in 2013 they were awarded a Google Innovation Award for their efforts in the agricultural sector.

Wanere's vision is to see traditional subsistence agriculture transformed into agribusinesses. Her community-based organisation mainly targets young unemployed Kenyans. "The future of our economy is in the hands of young people," Wanere explains. "Without young people's energy, innovation and passion, the agricultural industry is doomed." The Initiative has already reached over 1,000 young people between the ages of 18 and 35, most of which have taken part in the farmer-to-farmer training on agribusiness.

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Processing cassava peels into livestock feed could create approximately 100,000 jobs in Nigeria

ADDING VALUE

Cashing in on cassava

A cassava processing technology is turning peels into nutrient rich animal feed products and creating new markets in Nigeria's livestock industry.

Sophie Reeve

A technology to turn fresh cassava peels into high quality animal feed products has been developed in Nigeria. Scientists have been able to reduce the drying time of abundant, low cost peels from 3 to 1 days, and in some cases to just 6 hours. The resulting dry cake is loosened, sun dried and divided into various grades for animals such as ruminants and poultry. The International Livestock Research Institute (ILRI) technology will enable around 50 million t of peels that are currently being wasted each year to become a tradable livestock feed commodity, and could create approximately 100,000 jobs.

750

women and staff will be trained in cassava peel processing by Niji foods

In Nigeria, nearly 3 million households (85% women) produce 50 million t of cassava annually and, each year, about 14 million t of its by-products, including peels and under-sized tubers, are thrown away. Drying and grading cassava peels provides a readily available and sustainable source of animal feed and could provide an innovative way to boost women's incomes in West Africa.

Market demand for cassava peel feeds has been improved in Nigeria through multiple feeding trials which demonstrated the nutritive quality of the products. As a result, Niji Foods, a cassava processing firm who participated in the trials, is setting up three cassava peel processing units. In partnership with ILRI, Niji foods will train up to 750 women and staff involved in cassava peel mash processing and business management, providing long-term employment. The organisation will also be handing over partial ownership to at least three women's groups. ILRI programme manager, Dr Acho Okike says, "This product which is currently a waste will cost, weight for weight, half the price of maize. This means economic relief for the feed industry." Okike continues

that the new process "could also release about 2 million t of maize for human consumption that would otherwise have been used for animal feed, contributing significantly to food security efforts in the country."

In Cameroon, a regional forum for Central African countries has been established to facilitate dialogue exchange on how to add value to cassava farming. The biennial forum organised by CTA and Plateforme Sous-Régionale des Organisations Paysannes d'Afrique Centrale, a sub-regional platform of farmer organisations in Central Africa, aims at bringing together relevant individuals and institutions in the cassava value chain to discuss challenges and opportunities in cassava farming. Vincent Fautrel, Senior Programme Coordinator for Agricultural Value Chains at CTA says, "Cassava has been associated with the rural poor for a long time, yet it has the potential to transform economies." Fautrel urges the region to increase investments in the crop because it has helped boost agricultural production in Ghana and Nigeria.

"This produce which is currently a waste will cost, weight for weight, half the price of maize."

Results of 563 agronomy trails across Nigeria and Tanzania, carried out by the African Cassava Agronomy Initiative (ACAI), aim to resolve issues around fertiliser recommendation, best planting practices and intercropping to ensure year-round cultivation of the crop. Researchers are working towards developing decision support tools, including nutrition management and scheduled planting to increase the productivity of cassava and improve the livelihoods of resource-poor farmers. The ACAI project aims to make recommendations that could be widely adopted on a large scale across the continent. ■

For CTA resources on cassava visit: https://tinyurl.com/lwx95mm

AGRISCIENCE

Lab cultured potato seeds

Jamaica is investing in *in vitro* propagation of Irish potato seeds in an effort to reduce imports and increase local farming production.

Stephanie Lynch

In vitro propagation of 1st generation Irish potato seeds, using tissue culture, is to begin at three newly-equipped laboratories in Jamaica. The Jamaica Social Investment Fund (JSIF) has confirmed that they have the capacity to produce 4.8 million Irish potato micro tubers a year, in laboratories located at the Scientific Research Council, the Bodles Research Station and the Northern Caribbean University.

The JSIF is implementing this project, as part of a government-funded (€130,000) National Irish Potato Development Programme, to reduce dependency on potato seed imports. Ninety percent of Irish potato seeds in Jamaica are currently imported, they are often 5th or 6th generation seeds which carry diseases and produce poor yields. *In vitro* propagation is one of the most reliable ways to avoid spreading diseases, which have the potential to affect over 2,000 Jamaican potato farmers.

The 1st generation seeds produced in the laboratories will be sold to local farmers and exported to Europe, helping to improve production rates, increase Jamaica's self-sufficiency, create new jobs and boost foreign exchange earnings. The cost of producing micro tubers locally is approximately €1.32 million, whereas imported micro tubers cost €2 milllion. The programme plans to supply enough seeds to satisfy 100% of local demands for Irish potatoes by 2020. ■

In vitro propagation of potato crops

WATER HYACINTH

An environmental opportunity

Benin is harnessing one of the world's most invasive plant species as a viable resource.

Claude Biao

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Green Keeper Africa water hyacinth harvesters in Sô-Ava, Benin

Known as *togblé* (the land is ruined) in Benin's Fon language, the water hyacinth (*Eichhornia crassipes*) is a highly invasive aquatic plant. But it has also become a viable resource for people living in Sô-Ava, 35 km north of Benin's capital, Cotonou. This remarkable turnaround began when engineer David Gnonlonfoun joined forces with Fohla Mouftaou, a paediatrician, to set up a company – Green Keeper Africa – to harvest and process the plant. The men were inspired by the Mexican firm, Tema, which uses water hyacinth to clean up oil spills and dams. Water hyacinth fibre is an effective absorbent; it also has a high nitrate content, making it an excellent bio-fertiliser and rabbit feed. Green Keeper Africa uses the plant to make different products for all three functions, but predominantly focuses on producing an absorbent cleaner for oil spills.

An eco-friendly and socially responsible firm

Green Keeper Africa sources its raw materials from around 400 harvesters (two thirds of whom are women) in Sô-Ava, Ganvie and the surrounding area. "We've trained women to harvest and dry water hyacinths," explains Exhaussé Hounsa-Totin, Green Keeper Africa's head of supply chain. "They deliver the dried plants to us and, after running some quality checks, we pay them by volume." One of the company's goals is to contribute to better living conditions for local women. Initially, Green Keeper Africa paid 100 CFA francs (€0.15) per 10 kg bag. However, now that the company has become profitable that figure has increased to 400 francs (€0.60). The company hopes that a better buying price will increase the harvesters' commitment to ensuring that the hyacinth they collect and dry adheres to high quality standards.

500 t
of water hyacinth are being processed by Green Keeper Africa each month

For many women, collecting and drying water hyacinths has become their main source of income, as opposed to fishing or trading other commodities such as salt and pepper, which do not offer the same guarantee of a stable selling price. "Harvesting and drying these plants is hard work," explains Rosaline Adanhoun, head of Sô-Ava's water hyacinth harvesters. "But I earn enough money from it to make ends meet and put my children through school. And because these plants tend to block waterways and make it harder to fish, the company is also helping to clean up the local environment."

Gnonlonfoun and Mouftaou's firm is now an established part of the local community. After just 3 years, Green Keeper Africa is processing 500 t of water hyacinths a month, producing 200 t of plant fibre. Most of this output goes to the petroleum industry, where the fibre is used for clean-up operations, while the remainder is used in bio-fertiliser and rabbit feed products. A year after they set up the company, Gnonlonfoun and Mouftaou secured a major industrial cleaning contract with a local subsidiary of the Swiss firm Oryx. They now have a further two companies which regularly use Green Keeper Africa's oil cleaning services. The company's longer-term ambition is to tap into the vast Nigerian oil market to the east, working in tandem with partners such as Solidarités Entreprise Nord-Sud, a cooperative investment fund in Dassa-Zoumé that provides training and financial assistance to small and medium sized enterprises that promote sustainable development in the agricultural and energy sectors. ■

CLIMATE-SMART AGRICULTURE

Bamboo greenhouses rise in popularity

Bamboo is being used as a sustainable alternative for building affordable greenhouses in Nigeria, and demand is rising.

Oluyinka Alawode

Bamboo greenhouses are being used by Nigerian farmers to protect crops from unpredictable weather conditions. Since 2015, GCity Farm Venture Nigeria Ltd – a private Nigerian firm – has hired Kenyan expertise to help install over 80 bamboo greenhouses in different states. The greenhouses are used to grow different varieties of peppers, tomatoes and leafy vegetables by established farmers and entrepreneurs, who have identified the cheap greenhouses as an opportunity to earn a more stable income from farming.

GCity has confirmed that it plans to continue expanding bamboo greenhouse installations to meet rising demands. "The bamboos are sourced in Nigeria and no doubt there is growing awareness of the need to plant more," states Njeru Barnabas, a GCity Farm Venture executive.

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Growing tomatoes in a bamboo greenhouse enables farmers to protect them from unpredictable rainfall

In Kenya and Tanzania, bamboo is in high demand as a building material for desks and luxury flooring, for example. However, commercial usage of bamboo is not yet widespread in Nigeria, making it relatively cheap to use for greenhouses. Constructing a 0.05 ha bamboo greenhouse costs N820,000 (€2,466), almost half the cost of a similar size metal greenhouse at N1.5m (€4,511).

Bamboo can also be recycled; after 4–10 years, at the end of its lifespan as a greenhouse, farmers can compost it to improve soil structure and reduce soil surface erosion. Additionally, unlike wood and metal, bamboo is not prone to warping under changing atmospheric conditions. Sourcing the bamboo from local farmers, close to where the greenhouses are installed, reduces transportation costs and the carbon footprint.

With a changing and unpredictable climate affecting many farms, greenhouses enable farmers to protect crops from periods of excessive or delayed rainfall; drip irrigation is installed inside the bamboo greenhouses to provide a steady water supply. Control of diseases and pests is also much easier, including for tomato leaf miner (*Tuta absoluta*), which resulted in severe shortages in tomato yields across many states in Nigeria during 2016.

Tomato greenhouse farms have an average annual yield of 200 t/ha of tomatoes compared to 7–30 t/ha in open fields. Considering the increased income from these higher and more reliable yields (during periods of seasonal scarcity tomato prices can go up by 800%), low cost bamboo greenhouses are proving a strong return on investment. ■

Water

G20 preservation plan

IN THE G20 Agricultural Ministers' Action Plan 2017, the G20 group has pledged to protect global water supplies. The plan outlines that G20 countries will encourage public and private investment in the conservation, protection and sustainable use of water, particularly through investments in water management and irrigation systems. However, the core strategy is to integrate sustainable and managed water use into agricultural policies, to promote resourceful farming practices and avoid wasting water; for instance the preservation of buffer strips along lake banks. The G20 has designed this Action Plan to relieve the increasing strain placed on global water supplies by growing populations and climate change

For more information visit: ***https://tinyurl.com/ld9tgup***

Land

Reporting on rights

A WEBSITE focused on land and property rights around the world has been launched by the Thomson Reuters Foundation. The purpose of the website *place* (property. land. access. connections. empowerment) is to create the first global team of journalists dedicated to the subject. In Africa, 90% of property rights are not registered, a situation that leads to silent crises as explained by Monique Villa, CEO of the Thomson Reuters Foundation in *Jeune Afrique*: "The denial of such basic rights leads to exploitation and financial instability. It can destroy livelihoods, create inequality and even foment conflict." While some articles describe cases of expulsion and dispossession, the site also presents successful projects that are helping to guarantee access to land.

For more information visit: ***www.thisisplace.org***

INSECTS

Nutrient rich fish and poultry feed

Researchers in Eastern Africa have identified insect species suitable for use in fish and poultry feed which are nutritionally superior to fishmeal. Using accessible techniques, insects can be sustainably mass reared, providing a unique opportunity for the economic empowerment of youth and women.

Sophie Reeve

In Kenya and Uganda, a multi-funded research initiative is developing nutritionally superior insect-based feeds for sustainable, safe and cost-effective poultry and fish production. Scientists involved in the Insect feed for poultry and fish production in sub-Saharan Africa (INSFEED) project, led by icipe in Kenya and Makerere University in Uganda, have identified 16 insect species with higher levels of crude protein, polyunsaturated fatty acids, flavonoids, vitamins and minerals than are currently available in fishmeal used for fish and poultry feed.

Across much of sub-Saharan Africa, poultry and fish industries are among the fastest growing agribusiness sectors. Such growth represents a good opportunity for smallholder farmers to increase their income, but as demand for animal products rises, so too does the necessity for quality animal feed. With livestock feed accounting for 60–70% of total production costs, the high cost of silverfish used in feeds is threatening the survival of the fish and poultry sectors.

Sixteen insect species are being reared and harvested, including Black Soldier flies

With the help of private sector feed companies, market potential was assessed for insect-based feeds; farmer interviews revealed 91% of poultry farmers and 85% of fish farmers are willing to use insects in feed. In response, the INSFEED project has trained more than 75 farmers and young agripreneurs in insect mass rearing using sustainable, accessible and cost-effective techniques, such as harvesting the locally abundant blue Calliphora fly.

According to INSFEED results, a 5% replacement of fishmeal within poultry feed in Kenya alone would require around 32,000 t of dry insects, and the engagement of young agripreneurs is key to meeting the necessary volumes for this venture. In Kenya, a partner research project – the Metro AgriFood Living Lab – is supporting young people to launch their own business ventures, with many interested in insect rearing. Since 2015, training has been provided to help 35 young people produce quality business proposals in order to attract funding from banks and microfinance institutions, enhancing youths' access to resources, markets and income.

"What excites me most about this project is the huge potential it holds for job opportunities among the youth," enthuses INSFEED project coordinator, Dr Komi Fiaboe. Also heading the project is Dr Dorothy Nakimbugwe who says of public engagement, "It is especially exciting to hear the public's enthusiasm and interest in the project on local radio programmes. A common request is, 'I want to rear and use insects, where can I get them?'"

Following various successful stakeholder meetings in Kenya to promote insect inclusion in livestock feed, the National Animal Feeds Technical Committee prepared and released a draft standard for public review on the use of insect-based feed in January 2017. The Uganda Bureau of Standards is working on amending the feed standard to integrate insects as part of the revised draft. ■

Partnerships

Improving plant biosecurity in Africa

THE AUSTRALIA-AFRICA Plant Biosecurity Partnership is facilitating skill transfer in designing, delivering and managing plant biosecurity to fellows working at public institutions in 10 African countries. Initial training for 15 fellows was conducted in Australian institutions for 6 weeks. A key to effective capacity building was to not only focus on the technical skills required for biosecurity monitoring, but in understanding how to communicate with people and influence policy, which is critical for long-term biosecurity success. The 15 fellows trained in Australia are now mentors to 30 new fellows selected in 2016, who are being trained and mentored in Africa.

Triple S

Combating sweet potato shortages

A ROOT-BASED vine multiplication technique is countering shortages in sweet potato planting material, improving production for farmers in Ethiopia, Kenya, Tanzania and Uganda. Developed by International Potato Center researchers and dubbed 'Triple S' (sand, storage and sprouting), the system enables farmers to store sweet potato roots in sand during the dry season, plant them in seedbeds 6-8 weeks before the rainy season, and produce enough vines to plant once rains commence. Sweet potato roots can be stored for 3-5 months and 40 undamaged roots generate around 1,500 vine cuttings for planting.

RICE

Korean-African breeding partnership

The Africa Rice Center (AfricaRice) and the Republic of Korea are producing Tongil-type, stress-tolerant rice varieties to increase production across Africa.

Busani Bafana

© BUSANI BAFANA

Improved rice varieties are key to helping smallholder farmers in Africa raise their productivity

High yielding and stress-tolerant rice varieties, including Korean Tongil-types, are being bred by AfricaRice researchers in an initiative which will benefit more than 35 million smallholder farmers across 20 African countries. In partnership with the Rural Development Administration of the Republic of Korea, under the Korea-Africa Food and Agriculture Cooperation Initiative, the Center will also support seed multiplication and dissemination of the newly released cultivars. By employing an innovative breeding technique, the partnership is expected to develop and distribute new rice varieties across Africa faster than ever before.

Rice is the second most important source of calories in Africa after maize, but farmers are not producing enough to meet growing demand. In Nigeria alone, 17 million t of rice has been imported from South Asia and the US over the past 5 years. Duties for imported rice are at 60% and the price of a bag of rice doubled in 2016. After experiencing rice shortages and food insecurity during the grain market crisis in 2008, rice farming has been a priority in Nigeria.

Korean Tongil-type varieties can yield up to 8 t per ha of milled rice, quadruple the average yield produced by African farmers. Some varieties also exhibit a tolerance to low temperatures which will enable rice area expansion in high elevation areas in Eastern and Southern Africa such as Ethiopia, Madagascar and Rwanda. "The new varieties are expected to be high yielding, with high grain quality, and will help improve rice production by expanding the area and duration over which rice can be grown," says Baboucarr Manneh, an irrigation rice breeder at the AfricaRice regional center in Senegal.

To speed up development and distribution of rice varieties in Africa, the rice researchers will use an innovative technique, known as anther culture, which reduces development of a new breed to 1 year. Development of a fixed breeding line usually takes about 3 years. "When developing anthers, the pollen bearing organs of flowering plants are cut from unopened flower buds and developed in the laboratory into young plants using specialised techniques," explains Manneh. "Anther culture-derived plants do not need to be propagated through several generations to fix them which shortens the time needed to develop new rice varieties." ■

MILK SAFETY

Increasing quality and consumption in Rwanda

A dairy sector competitiveness programme in Rwanda has instituted a dual-pronged approach to provide regulatory support for safe, high quality products.

Sophie Reeve

Dairy product safety in Rwanda is being improved by a dairy sector competitiveness programme (RDCP II), which is enhancing farmers' expertise in the areas of improved feeding for dairy cows, herd health, milk quality and handling, and reproductive management. The USAID programme, implemented by Land O'Lakes, is enhancing farmers' incomes by enabling them to supply larger quantities of unspoiled milk to milk collection centres and large dairy processors. Demand for milk and milk products has also been increased following the development of marketing campaigns on the nutritional benefits of milk, which have reached 1.6 million consumers.

The dairy sector contributes 6% to the Rwanda's national GDP. However, raw milk and other dairy products sold through informal markets can pose significant health risks, potentially transmitting diseases such as bovine brucellosis and tuberculosis from infected cows. Smallholder farmers often lack the necessary financial access and infrastructure to ensure cleanliness, proper storage and temperature control at every stage of dairy production, which jeopardises product safety.

Issues of product quality are also a hindrance to business growth for larger dairy processors. "We used to reject 60% of milk coming from milk collection centres across the country. This limited our ability to increase milk volumes and create value-added dairy products," says Chris Kabalira, marketing and sales manager at Rwanda's largest dairy processor, Inyange Industries. In 2012, RDCP II provided farmers with milk production and quality training, and milk collection centres with tailored business and equipment training to improve operations. "Rejection at the milk collection centres is nearly 0%, and due to the improvements in quality, our milk processing volume has increased from 20,000 to 100,000 l a day," says Kabalira.

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Demand for milk and milk products in Rwanda has been increasing

1.6 million
consumers have been reached by the RDCP II campaign

In collaboration with the Rwanda Agriculture and Livestock Inspection Services, RDCP II implemented a Seal of Quality programme in 2013. The Quality certificate is awarded by the Ministry of Agriculture and Animal Resources (MINAGRI) to actors in the milk supply chain as recognition and reward for meeting safe handling standards and requirements. "Milk is an extremely perishable product and if not handled and treated correctly can result in a loss of income to the people who need it most. The Seal of Quality programme is therefore designed to reward quality and begins at the farm level," says Ernest Ruzindaza, MINAGRI permanent secretary.

Consumer demand for milk and milk products has been increased through targeted messaging on the importance of milk consumption and household nutrition. The RDCP II *Shisha Wumva* dairy consumption campaign has extended community outreach through radio slots, parade floats, billboards and signs across the country. Such efforts have reached 1.6 million consumers and milk consumption per person has increased from approximately 40 l in 2012 to 59 l in 2016. ■

WHYFARM

Engaging youth to protect food security

WHYFARM is using educational entertainment to inspire youth involvement in agriculture and help tackle the global food crisis in Africa and Caribbean.

Stephanie Lynch

An innovative approach to engaging and educating school children in the importance of agriculture for food security and nutrition has been developed by a young entrepreneurial farmer in Trinidad and Tobago. Alpha Sennon, WHYFARM founder, plans to grow the world's future feeders by turning agriculture into 'agricoolture' with the help of his superhero, *Agriman*. Originating in the Caribbean, where the average age of farmers is 55, the not-for-profit organisation intends to address the pressing challenge of who will feed the world in 2050.

Sennon is acutely aware that, "It's not just about growing food today, but about making the industry sustainable for future generations." For this reason, WHYFARM concentrates on using educational entertainment to transform young people's perception of agriculture and influence their decisions towards improving nutrition.

© LUKE SMITH

Agriman is transforming young people's perception of agriculture

AgriVenture – agricultural adventure camps – is another WHYFARM initiative. WHYFARM Haiti has received a grant from the Pollination Project to help fund these camps, which run over the course of 2 months, with 30 young participants engaging in a series of workshops outside of school. The children are taught to build their own vegetable gardens and by participating in fun, hands-on activities, they learn about sustainable agricultural practices, such as composting and water preservation. The camps help to cultivate students' interest in agricultural development and empower them to contribute to food security in their communities.

In Trinidad and Tobago, *Agriman* has been visiting schools with the WHYFARM team. Working with the children, *Agriman* demonstrates a simple way for them to plant their own fruit trees using WHYFARM's SelGri (self-growing) box, and encourages them to try it themselves. The sessions inspire young people by showing them new technologies that are evolving in the agriculture sector. After *Agriman*'s visit to Arima Girls RC School in Arima, Trinidad and Tobago, Sennon notes that, "The children were truly excited and saw agriculture in a new light."

Projects focused on imparting agriculture skills and nutritional knowledge to young people using educational entertainment are also currently being rolled out by WHYFARM teams in Rwanda and Zambia. ■

Local diets

Better nutrition, not just food

A GLOBAL CAMPAIGN, Generation Nutrition, has produced key recommendations for agricultural organisations to combat child malnutrition. Research into over 7,000 agricultural programmes revealed that many had no evidence that crop yield increases had improved nutrition and diet. Generation Nutrition is calling policymakers to design agricultural programmes around nutrition objectives by incorporating explicit nutrition objectives and indicators especially targeted at smallholder farmers and vulnerable groups. Other recommendations include increasing nutrition-sensitive approaches for agriculture, tackling recurring seasonal food shortages and integrating with other initiatives to tackle the multi-sectoral causes of undernutrition.

Food waste

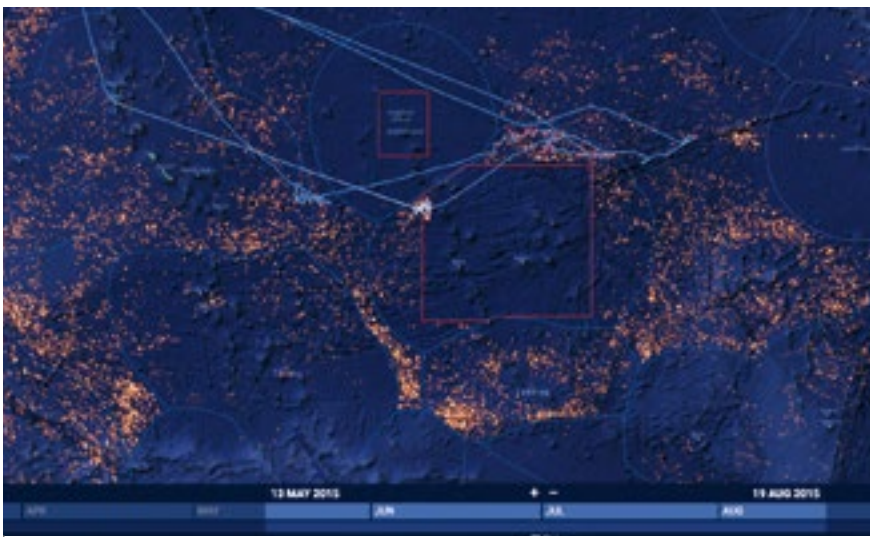
Tomato chocolates: a talking point for hunger

A CHOCOLATE made with dried tomatoes from Nigeria was handed out at the 2017 World Economic Forum to raise awareness of hunger and encourage people to think about ways to use 'wasted' food and generate additional revenue streams for young farmers. The truffle created by the Roca Brothers, three Spanish chefs, was named after the Nigerian region of Kaduna. According to the UN, up to 75% of the 1.5 million t of tomatoes harvested each year in Nigeria do not make it to market. The chefs, who are also UN goodwill ambassadors, have been exploring food preservation techniques: "The food industry should not be a threat to sustainability, but a source of sustainable development," the brothers explained in an interview with the UN Development Programme.

SATELLITES

Technology takes on illegal fishing

Satellite mapping technology is being used to identify illicit fishing practices and help enforce tighter regulations to protect global fish stocks.



© GLOBAL FISHING WATCH

The blue line represents the satellite-tracked movements of the Central Pacific Fishing Company's vessel, which clearly enters the Phoenix Islands Protected Area indicated by the red box

Stephanie Lynch

Vital new technologies and initiatives to help identify illegal, unreported and unregulated (IUU) fishing practices are being supported by international organisations and policymakers to facilitate the application of tighter regulations against corruption within the industry. The launch of Global Fishing Watch, the first free online platform for tracking the activity of over 35,000 fishing vessels, in September 2016, signalled a significant step towards tighter control and increased transparency of fishing practices.

IUU fishing activities amount to annual costs of €9–22 billion worldwide; €1.2 billion is lost from West Africa's shores alone. Not only do these figures represent substantial financial losses, but they also indicate an unsustainable depletion in global fish stocks and a threat to the livelihoods of over 500 million people who work in the fishing industry.

Global Fishing Watch, founded by SkyTruth, Oceana and Google, allows anyone with internet access to monitor commercial fishing activities and identify suspicious behaviour. The site uses data collected by the Automatic Identification System (AIS). Originally designed for navigational purposes, AIS transmits information from vessel transponders to satellite and terrestrial receivers. The data provides a global feed of vessel locations, which Global Fishing Watch uses to classify 'fishing' activity and update its map tracking vessel movement.

David Kroodsma, research program manager at Global Fishing Watch, stated that the technology "is dramatically increasing transparency in the world's fishing industry. What was once far over the horizon and out of sight can now be tracked." The platform enables citizens to hold seafood suppliers, as well as authorities, to account for any failure to uphold sustainable fishing regulations. The simple tool helps law enforcement agencies to aggregate evidence needed to prosecute IUU fishing practices. For example, the Kiribati government used images produced by Global Fishing Watch to track a Marshall Islands fishing vessel's movements inside Kiribati's Phoenix Islands Protected Area, forcing the Central Pacific Fishing Company to pay €1.8 million in compensation.

Since Africa Progress Panel's 2014 *Grain, Fish, Money* report highlighted the rapid depletion of ocean fish stocks caused by IUU fishing, tighter regulation and increased transparency has become top of the policy agenda. In February 2017, the European Parliament voted overwhelmingly in favour of new regulations to combat IUU fishing outside the EU. The new legislation should deter illegal commercial fishing in African waters, such as off the coast of Somalia where, without EU assistance, the government lacks the resources to effectively police the high-powered industrial trawlers fishing in protected areas.

To ensure effective enforcement of international fishing regulations, the Fisheries Transparency Initiative (FiTI), a global multi-stakeholder initiative, launched its framework for transparent governance of the fishing sector on 27 April 2017. Established in 2015 with support from the governments of Guinea, Indonesia, Mauritania, Senegal and the Seychelles, FiTI intends to promote sustainable fishing practices which protect ocean ecosystems and food security. ■

€9-22 BILLION
is lost globally each year as a result of IUU fishing

Insurance

Protecting Caribbean fishing

A NEW RISK INSURANCE SCHEME, Caribbean Ocean Assets Sustainability faciliTy (COAST), will provide 180,000 Caribbean fishing businesses with access to insurance for losses from severe weather. The Caribbean Regional Fisheries Mechanism (CRFM) has designed the scheme to build resilience to climate change and strengthen food security in the region, by offering countries insurance to help protect their fisheries sector. CRFM intends to implement the first pilots for COAST with interested countries before the hurricane season begins in June 2017. Jamaica is one of the first countries to express interest in the scheme.

Certification

Credibility questioned

THE CREDIBILITY of the Marine Stewardship Council (MSC) label has been called into question. Created in 1997 by WWF and Unilever, MSC seeks to ensure the long-term future of fish stocks by certifying sustainable fishing practices, and more than 10% of the world's fish catches are now certified by the label. However, a report by WWF in November 2016 stated that tuna fished in the Indian Ocean should not receive the MSC label as a result of overfishing and the absence of catch rules in the area. One month later, the NGO, Bloom, denounced the certification of the orange roughy fishery in New Zealand. These fish – which live for 150 years – are caught by bottom trawling, a practice that is no longer permitted in Europe.

FADs consist of a large buoy attached to a floating 'mat' a few metres across

ATTRACTING FISH

Rehabilitating Somalia's fishery sector

Fish aggregating devices along the coast of Somalia are enhancing the incomes of local fishers by attracting off-shore sustainable fish stocks.

Munyaradzi Makoni

The livelihoods and food security of small-scale fishers in 20 communities of Somalia are being uplifted through the deployment of 25 fish-aggregating devices (FADs). Positioned at carefully selected deep-water locations, the FADs, otherwise known as fish magnets, are attracting large numbers of fish species otherwise unavailable to the fishermen such as tuna and mackerel. The FADs are also reducing the distance fishers have to travel for their catch and increasing incomes.

In Somalia, over 1 million people face severe food insecurity, while an estimated 307,800 children under the age of five are acutely malnourished. Rebuilding the fisheries sector after years of conflict will be key to strengthening food security and nutrition among the Somali population and generating employment, especially among women.

Economic opportunities are also being promoted for young people living in coastal communities in north-eastern and central areas of Somalia. The Coastal Communities against Piracy project is providing technical training on fishery management to almost 200 youths to increase fish catch, reduce fishing costs and better manage vital marine resources. "The fight against piracy cannot be achieved just by strengthening regional coordination and capacity for maritime security, it must be supported by creating alternative livelihoods and economic opportunities," says Veronique Lorenzo, the EU's head of delegation for Somalia. ■

For more information visit: https://tinyurl.com/m8phn88

REETA ROY

Youth – the driving force for agriculture in Africa

Susanna Cartmell-Thorp

Reeta Roy, President and CEO of The MasterCard Foundation, highlights the work of the organisation's second Young Africa Works Summit.

How do you see youth as drivers of agricultural transformation rather than passive participants?

African youth are tapping into technological change and innovative market solutions, transforming the agricultural sector across the value chain. They have a deep understanding that agricultural entrepreneurship is a commitment that will enable them to provide job opportunities, share knowledge, and serve as models for others in their community, their country and their continent. They see the value and opportunity that exists in the face of challenges across Africa.

Pilirani Khoza, one of the young agripreneurs who spoke at the Summit, said that agricultural transformation is a clarion call for Africa's youth, and that youth are technological doers and thinkers. Pilirani is quite right – youth are driving change, spearheading the modernisation and transformation of Africa's agricultural sector. Some of those who spoke at the Summit have already started their own ventures, including connecting farmers with new agricultural techniques via model farms in Tanzania; improving access to quality markets for smallholder coffee producers in Rwanda; and developing alternative credit scoring for smallholder farmers who would otherwise be left out of the formal banking and loans systems in Burundi.

We've also observed astounding innovations among Foundation partners, which are allowing smallholder farmers to invest in the agricultural value chain. For instance, with *icipe* in Ethiopia, we are providing training to youth interested in silk yarn and honey production, which also creates opportunities for an additional 25,000 people involved in harvesting, processing, packaging and marketing of honey and raw silk.

What support is The MasterCard Foundation providing for young people to modernise agriculture and improve resistance to the challenges posed by climate change in Africa?

Learning how to manage and mitigate the impacts of climate change will be critical to ensuring the long-term survival of the agricultural sector, and so we welcome the efforts of young agripreneurs like Janet Maro, Founder and Director of Sustainable Agriculture Tanzania. She joined us at Young Africa Works 2017. She works not only with farmers, but also universities and government extension officers. Janet understands that young farmers can address the impacts of climate change, whether it's by adopting better irrigation techniques or crop rotation, to successfully manage the impacts of climate change on crops, soil fertility, and overall food security.

Likewise, the Foundation connects young people with educational and skills-training programmes that place sustainable farming methods at the centre of their teaching practice. Through our programmes, we have partnered with organisations that work directly with smallholder farmers to address some of the challenges of climate change. For example, we have collaborated with the One Acre Fund to extend microfinance and bundle in other financial services to nearly 330,000 farmers across Burundi, Kenya and Rwanda. Their training includes sustainable agricultural practices that help protect the soil and includes topics like erosion prevention and integrated soil fertility management, as well as composting to produce organic fertiliser.

We also work with NCBA CLUSA to mobilise young people to form new or strengthen existing youth associations, which provide mentoring and skills training in the agriculture sector, helping youth to improve their livelihoods over the long-term. The project leverages NCBA CLUSA's successful Uganda Conservation Farming Initiative in northern Uganda, which preserves soil

Reeta Roy outlines the importance of supporting Africa's youth to transform the continent's agriculture sector

and water, and improves the fertility of the land for agricultural activity.

We're deeply proud of these collaborations, but we also recognise that more remains to be done. We anticipate that future partnerships will focus on supporting training and skills-building for smallholder farmers in climate-smart agriculture.

A number of young entrepreneurs spoke at the Summit. Which particular initiatives were you excited to hear discussed and shared?

I very much enjoyed hearing from all the youth delegates who spoke on the first day of the Summit. These included agripreneurs, Rita Kimani and Laetitia Mukungu, who spoke at the Summit in 2015. Rita is co-founder of FarmDrive, which connects smallholder farmers with available loans via SMS, and Laetitia is founder of Africa Rabbit Centre, a women-led rabbit farming co-op. She is also a MasterCard Foundation Scholar.

We also heard from Jean Bosco Nzeyimana, founder of Habona Ltd., a social venture that produces affordable and environmentally friendly biofuels from waste; Brian Bosire, founder of UjuziKilimo, an agtech company bringing real-time data and actionable insights to rural farmers via SMS; and Clarisse Murekatete, co-founder and chief marketing officer of Carl Group, a youth-led food processing company specializing in Rwandan sweet potato products.

"African youth are tapping into technological change and innovative market solutions, transforming the agricultural sector across the value chain."

Each of these remarkable young people discussed the relationship of their efforts and connected their experiences to one of the three key sub-themes of the Summit – technology, gender, and climate-smart agricultural practices – with a great deal of cross-pollination among them all.

CTA is involved in the innovative Market-led, User-owned ICT4Ag Enabled Information Service (MUIIS) in Uganda, which was highlighted at the Summit. How is this and other similar approaches making a difference to the youth in Africa?

MUIIS and services like UjuziKilimo, which I described earlier, are two strong examples of systems and services for farmers made possible by technology. There is so much potential to leverage technology to help solve challenges faced by farmers and farming communities – we believe that the opportunity to apply these innovative solutions will really help get young people interested in agriculture.

Will the Youth Summit become a regular conference for The MasterCard Foundation? What other themes will The MasterCard Foundation be supporting in its activities?

Young Africa Works will become a regular Summit. Young people are at the heart of the majority of our collaborations and creating opportunities for these young people to lead is a core tenet of The MasterCard Foundation.

In 2017, the Foundation is also embarking on a year of consolidating our learning to date, and planning our next decade. We will be creating a new strategic plan that will focus on young people and work in Africa – be it formal or informal work, employment and entrepreneurship. Access to quality, relevant education and to basic financial products and services such as savings, credit and insurance can put young people on a sustainable path to prosperity.

Nevertheless, Africa's youth unemployment is still a cause for concern. How is The MasterCard Foundation working to address this issue?

Agricultural growth will be key to improving youth employment in Africa. ›

In partnership with *icipe*, the MasterCard Foundation is providing training to young people interested in honey production in Ethiopia

› The Summit provide an ideal opportunity for private sector and government actors to hear directly from young agripreneurs leading the charge for the sector's transformation, as well as from our partners. The Foundation works with partners active in the private sector to ensure that young people are equipped with relevant skills to meet market demands. We also work to ensure that partners tap into complementing government programmes and policies in order to create holistic employment systems that support young people and their interests.

Our work with TechnoServe is an excellent example of how our partners are collaborating with private sector actors such as businesses and financial service providers. The partnership aims to generate income and economic opportunities for 48,000 young people in rural Eastern Africa, with TechnoServe committed to training local public and private sector partners to deliver the programme to 40% of its participants. Government-run training institutions in Rwanda have also adopted aspects of the TechnoServe model and incorporated it into their training approach for rural youth interested in starting agricultural related businesses.

In Ghana, we are working with Solidaridad which is implementing the MASO project in partnership with private sector actors, financial service providers, educational institutions, and government agencies to empower youth as catalyst for change in the cocoa sector. These partnerships ensure a holistic approach is used and they help to harness the energy, ability and ambition of young cocoa agripreneurs. They also ensure that these young people have access to comprehensive and intensive support combining practical training, coaching, and access to critical resources, such as land, finance and markets. In this example, the Cocoa Board, the government agency partner charged with regulating the cocoa industry in Ghana, is providing MASO youth with seeds and fertilisers. They are also securing the most favourable arrangements for the purchase, grading and sealing, certification, sale and export of cocoa for young people.

Change starts with recognising the entrepreneurial and thoughtful ways that young people are currently getting involved in the agricultural sector, and embracing them and the solutions they are proposing to longstanding problems facing farmers. Financial service providers, educational institutions, and government bodies must work in service of these young people's aspirations and better tailor their policies and practices to align with their vision for agricultural transformation. ■

For more information on the Young Africa Works Summit visit: http://youngafricaworks.org/

Dossier

NEW GENERATION COOPERATIVES: A MORE AGRIBUSINESS APPROACH

In an increasingly market-driven world, agribusiness cooperatives are strengthening vertical and horizontal links along the value chain to be more reliable and profitable.

COOPERATIVES

Farmers work together for a better future

New generation cooperatives are adding value to agricultural production and empowering rural smallholders. Key ingredients are value chain integration, public-private partnerships and business-development services. There are lessons for sustainability and expansion.

Wendy Levy

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In this increasingly market-driven world, new generation cooperatives can ensure that small producers get advice and support to grow better quality, more consistent crops that attract regular and committed buyers from a wider range of markets.

Cooperatives can strengthen vertical and horizontal links along value chains, which respond to market incentives. As market needs change, the global cooperative movement requires support to revitalise both governance structures and business strategies during a period of transition.

History of cooperatives

Agricultural cooperatives have been in existence in different forms for more than 100 years. The road from farm to market can be both rocky and winding and groups have suffered with corruption, lack of transparency, state interference, and donor funding and subsidies, making them unsustainable.

However, a new cooperative model linked to the specialisation of agriculture and value chain development is emerging. New cooperatives are designed to provide farmers with links to markets that are more reliable and more profitable, from the beginning. Many new cooperatives offer finance, as well as business services to their members. They may also assist in linking their members to existing financial institutions and business service providers to get them a better deal, says the International Labour Organization (ILO), in a value chain development briefing paper.

While some new cooperatives are driven by big business, such as large agribusiness firms needing to work

New generation cooperatives have much to offer farmers around the world

with farmers in groups, others spring up from the grassroots, when farmers come together to access a market. Often, founding members will have a common background – they are from the same area and grow the same types of crops.

Overall, cooperatives have had a positive impact on farmers' technological innovation, productivity and technical efficiency. In Ethiopia, for example, dairy marketing cooperatives have improved farmers' access to artificial insemination and cross-bred cows, boosting milk productivity. Cooperatives have also produced a positive and significant impact on seeds and fertiliser adoption and application by Ethiopian farmers. The benefits don't just affect the farmers using cooperatives; there can be a flow-on effect to other farms in the area, such as promoting the adoption of sustainable technology by neighbouring farmers.

Changing the style of cooperatives

What brought about the change from old style to new generation cooperatives? Professor Michael Cook, a leading agricultural cooperative specialist from the University of Missouri, says that, in the US a generation of cooperatives emerged in the 1990s and early 2000s as a reaction to the agricultural crisis of the 1980s. The more progressive farmers wanted to continue pursuing the advantages of collective action while improving the rules and policies of the internal organisation which existed in traditional cooperatives, he says. As the agricultural depression of the 1980s continued, rivalry increased in this competitive environment. "Bottom line, new generation cooperatives required more upfront capital from members, which in turn created a greater incentive to follow the new rules regarding delivery of quantity and quality. The new rules also acted to balance supply with demand and consequently reduce volatility of commodity pricing."

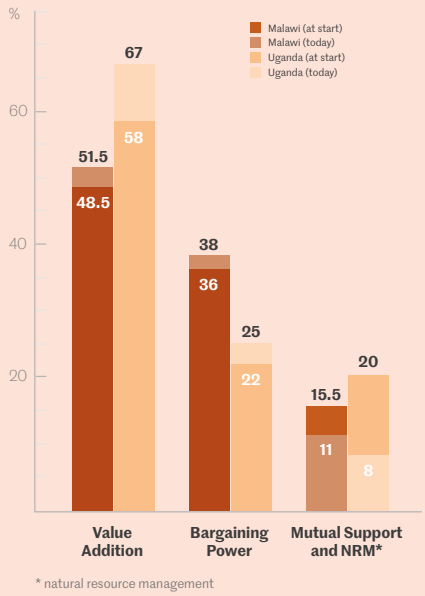
New cooperatives may encourage young people who are giving up on farming for the promise of a different life in a big city. The average age of farmers in Africa is around 50 to 55, says Pierre Van Hedel, director of the Rabobank Foundation. "Young people find the idea of selling mobile phones in large cities much more modern and appealing, but that market is already pretty much saturated. There should be more incentive for younger generations to pursue a career in farming and this requires that they can purchase and sell their products through a cooperative," Van Hedel says. "If their farms are slightly larger, they can substitute manual labour for machines and start using more modern technologies, including more accurate weather forecasts, superior sowing seeds and cattle species, and soil investigation," he says. These inputs can be supported through new cooperatives.

Women may also benefit from joining cooperatives, states the ILO in a leaflet about cooperatives in Africa. Their presence in traditional agricultural cooperatives has been limited by factors such as landownership practices, role divisions and the types of agricultural jobs available. However, the ILO says, "Women are becoming increasingly cooperatively organised in agriculture," with benefits for productivity, incomes and quality of life for both members and the community. In Tanzania, for example, the ILO-SIDA (Swedish International Development Cooperation Agency) and CoopAFRICA supported the Nronga Women Dairy Cooperative Society as part of an HIV/AIDS project. The ILO assisted 400 dairy women to keep proper records of milk sold and used by the family, and to follow other profit-focused business practices. This enabled the women to better understand their business and search for new markets for their products. "Women are no longer scared to take risks and start new business ventures," emphasises the ILO.

It may be too early to know if new generation cooperatives are going to work better than their predecessors. Gian Nicola Francesconi, CTA's Senior ›

African cooperative objectives

The objectives of a cooperative may change over time from when they started with more cooperatives today pursuing value addition activities

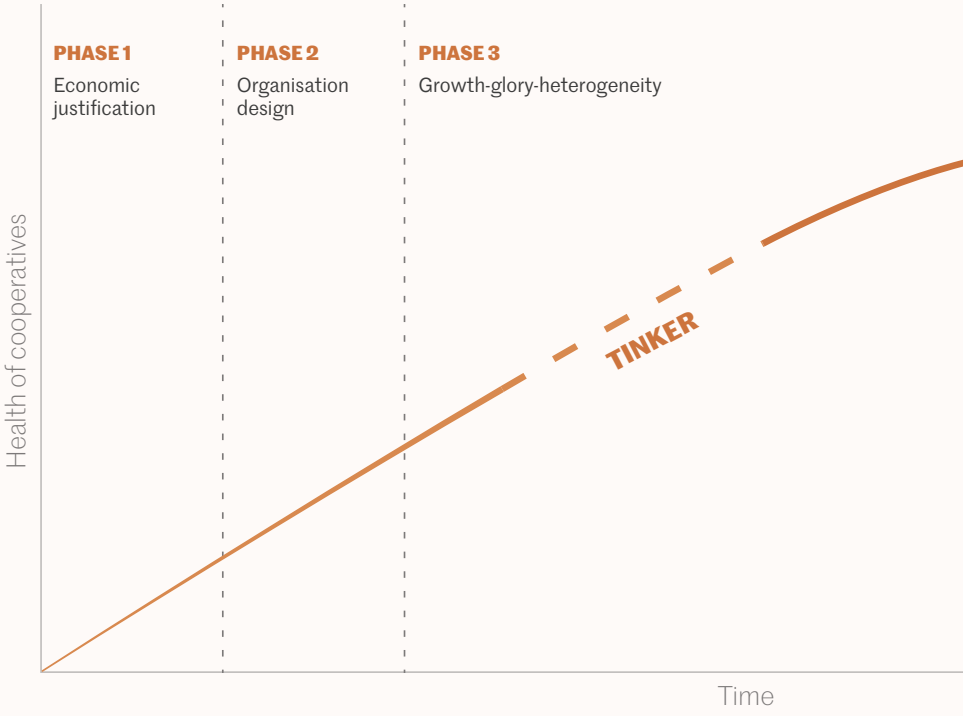


* natural resource management

SOURCE: COOPERATIVE LEADERSHIPS EVENTS IN MALAWI AND UGANDA, 2016

Cooperative life cycle framework

This dynamic framework suggests actions cooperative leaders may take to sustain the health of the cooperative

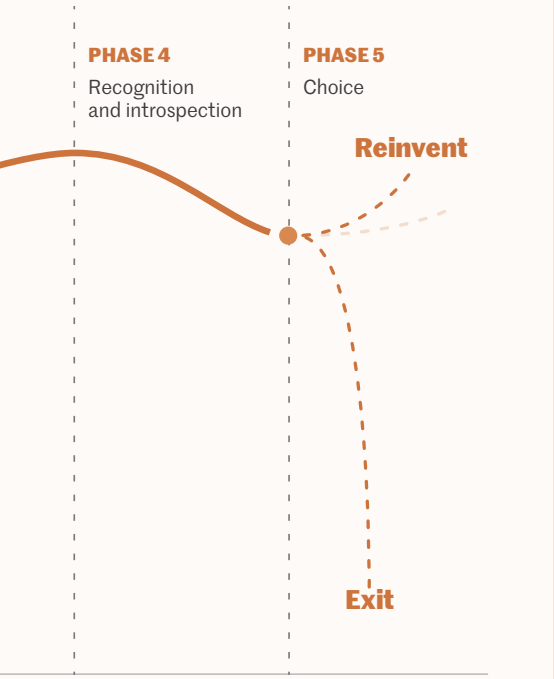


› Technical Advisor for Cooperative Agribusiness Development, says that in Africa, new generation cooperatives are at an infant stage of development; they are emerging but are far from being a success story. "We know that traditional or community-based organisations have repeatedly failed to promote agribusiness and rural employment. Traditional cooperatives have contributed to create a 'dependency syndrome' among rural communities in Africa, serving mostly as passive channels for governmental and non-governmental subsidies. Yet, it is difficult to see how smallholder farmers in developing countries can lift themselves out of poverty without organising themselves and in the absence of collective action. New generation cooperatives have the potential to mobilise farmers' investments into human and physical resources for adding value to agricultural production," explains Francesconi.

"New cooperatives may encourage young people who are giving up on farming for the promise of a different life in a big city."

Challenges on the ground

For smallholders, joining a cooperative association can change the way they market their products. They may attract higher prices for their products, taking advantage of improved storage facilities managed by the cooperative and marketing assistance. Yet starting a new generation cooperative can be easier said than done. Farmers need to make significant upfront investments so they can hire professional managers and buy value-adding assets, and this is difficult when rural smallholders are usually facing major liquidity constraints. "The other problem is that new generation cooperatives require changes in rural customs through the relaxing of traditional cooperative principles of inclusion, equity and patronage – or the support that cooperatives unconditionally bestow to their members," explains Francesconi. "Legal reforms, as well as training and coaching, can promote and



SOURCE: COOK AND BURRESS, 2007

Nature's Way Cooperative

Nature's Way Cooperative (Fiji) Ltd (NWC) was formed to carry out mandatory quarantine treatment on behalf of Fiji's fruit export industry in 1995. Over the years, NWC has grown from a small business handling just 30 t of papaya to an agribusiness treating 1,300 t of exported fruit for fruit fly each year. They are well-known for their top-quality papaya, mango, eggplant and breadfruit.

NWC is a service-cooperative that treats and packs fruit on behalf of its members and charges a fee per kilo for this service. Their core business remains quarantine treatment of fruit fly host products. It is not involved in exporting, which is handled by individual exporters. It has more than 140 members, both growers and exporters, who are also shareholders in the company. Most shareholders are small farmers who could not access the export markets without the services provided by NWC.

The cooperative runs Fiji's only quarantine treatment facility for fruit fly host products in Fiji. It also provides an effective field service that supports the core business of quarantine treatment services. Research activities have been incorporated into several commodity projects, such as the Fiji Papaya Project and the Pacific Breadfruit Project, based at the NWC complex. NWC has started bulk-buying field crates and papaya seed on behalf of its members. This small-scale activity has proven highly successful, providing a valuable service to members and a small profit to the business.

NWC has become the *de facto* body representing the horticultural export industry in discussions with government and with donor and technical-assistance organisations. A number of factors have contributed to its success, not least, the quality and continuity of management. It has an appropriate PPP and there has been no government or shareholder interference in the operations of the business. Quarantine treatment fees were set at an economic rate from the outset, ensuring the business could meet operating costs, fund repairs and maintenance, invest in expansion, and make provisions for events such as cyclones and trade bans.

facilitate change in rural customs and cooperative governance," he says.

Agricultural cooperatives often struggle to make the transition from farmer or community-based to consumer or market-driven organisations. A new strategy is required, one that takes into account emerging value chains for agri-food commodities and their requirements. Producers need to meet targets for volume and quality and adhere to deadlines. Next, agricultural cooperatives need to link to the emerging value chains. Public-private partnerships (PPP) can assist, especially those between private companies who will buy commodities from cooperatives and NGOs experienced in working in rural development. NGOs may assist with building and supporting professional management, even financing such positions, although this should not be seen as a long-term arrangement as it is essential for cooperatives to become self-sufficient.

Help can be at hand when NGOs, donors and governments agree to take up some of the risk and costs associated with upfront investments. Public funds earmarked for development work can be used to make and sustain investments until cooperative farmers are able and willing to manage these costs themselves.

Increasingly, agribusiness firms in Africa are contracting smallholder farmers to produce their goods. Private agribusinesses may be in a position to improve their farmers' productive economic capacities as well as their links to farming inputs and markets. If farmers and buyers are to form sustainable value chain links, producer organisations must be strengthened

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Training for leaders

Leadership training is vital for farmers to get the most from their cooperative. Leaders and managers must be able to anticipate organisational problems that may arise over time, and take the necessary precautions to ensure member farmers remain focused and united. Agricultural cooperatives are complex organisations, but in Africa they are often led by poor farmers with scant entrepreneurial and organisational experience. Extension services focus on book-keeping, business planning and farming technology, so Cooperative Leadership Events (CLEs) are designed as capacity building platforms, for training and coaching cooperative leaders and managers.

In Malawi, capacity strengthening was a focus at a CLE supported by CTA. It was attended by more than 200 leaders, managers and stakeholders of local agricultural cooperatives. CLEs bring together public and private stakeholders and promote and facilitate new impact investments for the rise of new generation cooperatives. Recommendations ›

› from the event covered a range of issues, mostly aimed at policymakers, such as the Trade Ministry, to promote cooperative agribusiness. The events are organised by Enhancing Development through Cooperatives (EDC) in collaboration with Oxfam, and provide a forum to thrash out policy issues and find solutions to common challenges. The focus is on strengthening the leadership, governance and management of agricultural cooperatives. EDC offers training, coaching, and mutual learning experiences to groups of at least 200 leaders and managers of agricultural cooperatives. These events are also used to collect additional cooperative-level data to feed further research and guide policy debates with governments, donors, and investors (see Madagascar field report, p30).

The way ahead

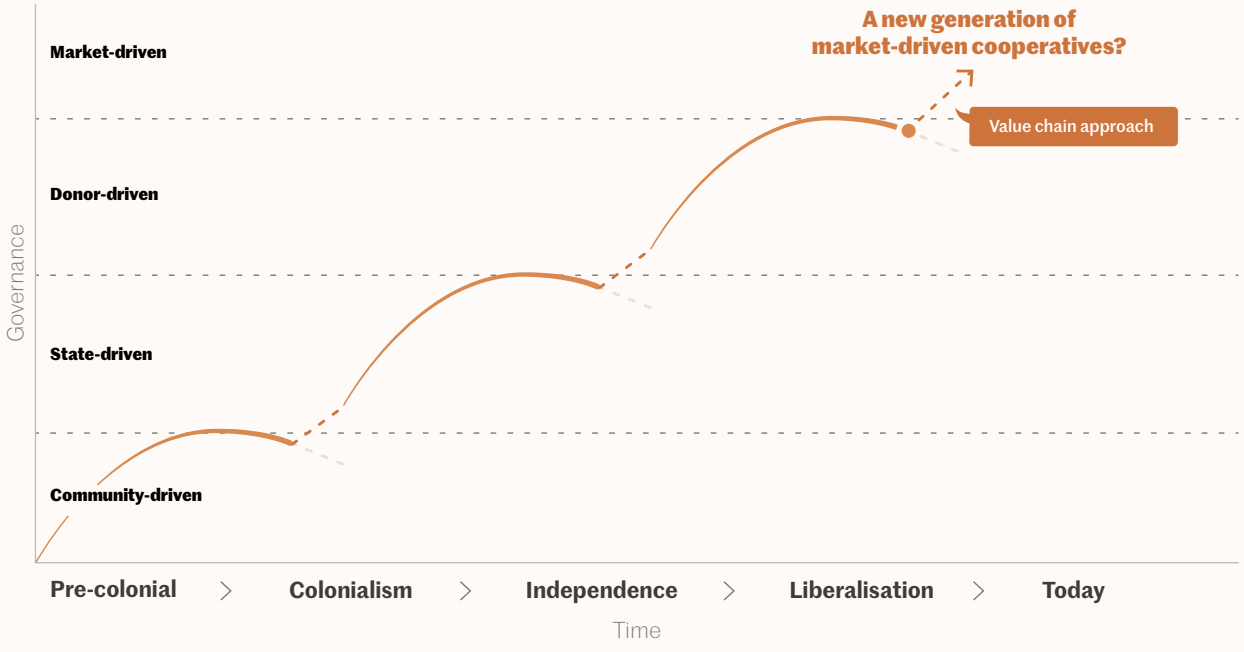
New generation cooperatives have much to offer farmers around the world, especially those in developing countries. A study by EDC showed that economic incentives are necessary to increase the number of African agricultural cooperatives and the productivity, efficiency, and sustainability of their farmers. However, incentives alone will not bring about an increase in produce sold. EDC's analysis states that economic incentives must be better targeted to selectively promote the development of agricultural cooperatives with defined membership rules, decision and claim rights, and a common purpose. Entry to the cooperative needs to be regulated, such as through entrance fees, and exit from the group must be facilitated. Members need clear rights in decision-making and a clear understanding of benefits. They need to be involved in choices about the quantity and prices of produce to be sold, and to be able to voice their opinions through regular committee discussions and other forums. ■

> "New generation cooperatives have the potential to mobilise farmers' investments into human and physical resources for adding value to agricultural production."

For ILO's value chain briefing paper and leaflet on cooperatives, see https://tinyurl.com/j46qusu and https://tinyurl.com/qzbl95w, and for EDC's study, see https://tinyurl.com/jozxquq.

The longevity of African cooperatives

Agricultural cooperatives in Africa have existed for over 100 years and have proved to be very resilient, although the driving factors for their existence have changed over time



SOURCE: EDC, 2017

INTERVIEW

Kristen Schach Moller: "Integrating farmer groups into structured trade"

Charles Mkoka

Kristen Schach Moller describes the progress farmer-based organisations have achieved with support from the Agricultural Commodity Exchange (ACE) and explains the challenges which still need to be overcome.

The transition from farmer-based organisations to consumer driven organisations is challenging. What is ACE doing to support this process?

ACE believes that farmer groups can be integrated into structured trade, by promoting and assisting farmer groups' ownership and operation of storage facilities in rural areas. Access to finance and structured markets is improved when a farmer organisation offers storage, handling and aggregation. The ACE model for the development of rural warehouse infrastructure is designed to achieve this. The vision is to develop professionally operated and well utilised warehouses for rurally located farmer groups. This is an economically sustainable model as the farmer groups are able to collect a fee for the aggregation and storage services that they provide.

Finance is a key limitation for cooperatives. How is this being addressed in Malawi?

The ACE warehouse receipt system is a mechanism to unlock finance using the deposited commodity as collateral. An ACE certified warehouse is recognised for quality and adherence to high standards of collateral management, thus the banks are confident of the stock management and are willing to provide collateral finance to the commodity owner.

In Malawi the type of collateral finance that cooperatives can access is limited and ACE is developing modalities that will increase the value of finance available. There is no doubt that finance is crucial to the development of the rural economy. Finance provides cooperatives with the choice: to sell now or wait for seasonality changes in the market price.

A CTA cooperative leadership event in 2016 concluded with a number of recommendations to improve cooperatives. To what extent have these been acted upon by policymakers?

The major recommendations from the event focused on the establishment of cooperative banks and the development of education for cooperatives. ACE is confident that both these recommendations have been taken on board by Malawi's Ministry of Industry and Trade.

What more should public-private organisations be doing to support the evolution of agribusiness oriented farmer-based organisations?

It is crucial to build sustainable structures that will support the evolution of cooperatives; without an enabling environment they will struggle to develop. Of course, commodity exchanges and warehouse receipt systems are examples of such institutions, but there are many others that need to be developed.

Is there one farmer-based organisation in Malawi that you would identify as a good role model to others and why?

We have seen Mwandama Cooperative Union in Zomba, which is a construct from the UN Millennium Challenge project. They have a large, well-operated warehouse, which supports several community activities including the warehouse receipt system. Over the years, they have won many contracts to supply maize and pulses to the World Food Programme. The structure and management of the cooperative seems to be the driving force behind its success.

© AMOS GUMULIRA

Kristen Schach Moller is the chief executive officer of the Agricultural Commodity Exchange in Malawi

UGANDA

Oil palm: A profitable business for Ugandan farmers

Fishing was once the most important social and economic activity on Bugala island in Lake Victoria. The island used to be one of the poorest places in Uganda, facing increasing depopulation, especially by youth, however the introduction of commercial oil palms and business development services over the last 10 years have been transforming the island's economy.

Peter Wamboga-Mugirya and Dr Nicola Francesconi

Commercial oil palm production was introduced to Bugala island, in the Kalangala district of Uganda in 2007 with support from the government-funded Vegetable Oil Development Project (VODP) and the International Fund for Agriculture (IFAD). "Oil palm is a good source of income as ripe fruits are harvested every 10 days and farmers are paid monthly for their produce. Regularity of income-flow enables farmers to borrow from banks," reveals the VODP national coordinator, Connie Magomu Masaba. She adds that banks consider oil palm gardens as stable collateral and less risky than other agribusinesses.

From fishing, the islanders have gone to oil palm cultivation and the situation has changed dramatically. According to Masaba, "Mature oil palms (3–4 years old) can be harvested for 20–25 years, providing farmers with a steady monthly income of about €300 per ha." The average size for an oil palm garden is around 2.3 ha per farmer and new gardens may be soon established on other neighbouring islands and suitable areas on the mainland.

Oil palm cultivation has been so lucrative that teachers, policemen and local politicians are also now getting involved and public-private investments in roads, electricity and ferries have been multiplying. Not only have the pristine forests of the islands remained intact, but tree coverage on the island has actually increased because oil palms

replaced mostly what was grass and agricultural land in disuse. Additionally, buffer zones have been built to prevent fertiliser leakages from the oil palm gardens into Lake Victoria.

A supportive business

To provide smallholders with the necessary support to grow oil palms (i.e. access to seedlings, fertiliser, know-how and credit), the government and IFAD established the Kalangala Oil Palm Growers' Trust in 2006-07. Oil palm growers are part of the Board of Directors of the Trust. Over time, the Trust has emerged as the key provider of business development services for oil palm growers. It also provided loans to help farmers bear the risk and cost of planting oil palm seedlings and waiting for the trees to mature and be productive, extension services, as well as services for collecting, transporting and selling the growers' fruits to Oil Palm Uganda Ltd. (OPUL). This multinational corporation then mills the fruits and processes them into edible oil, biofuel, detergents, and other products.

> 2,000 growers will have generated up to €37.5 million in income (€19,000 per grower on average) by 2018

In 2006, the farmers established the Kalangala Oil Palm Growers Association. It works to improve farmer's bargaining power. Nelson Basaalidde, general manager of the Kalangala Oil Palm Growers' Trust explains that, "The Kalangala Oil Palm Growers Association is a production cooperative made up of 1,800 smallholders, including 600 women, who have graduated to commercial farming." Basaalidde further reports that individual farmers currently own around 4,500 ha of oil palm gardens, while OPUL owns a plantation (also located on the island) of about 6,500 ha. Given that the demand for palm oil is currently unlimited, healthy competition between smallholders and OPUL is demonstrating who is the most efficient producer. However, in order to convince the government to include more farmers in this lucrative business as oil palm gardens are developed in other areas of the country, it is crucial that smallholders stay competitive.

Commercial oil palm production is providing farmers with a steady monthly income

Cooperation for competition

External donor and government support to the Kalangala Oil Palm Growers' Trust will end by December 2018. By this time, the 2,000 growers involved will have generated up to €37.5 million in income (€19,000 per grower on average). Such considerable revenues will allow growers to finance the Trust themselves. However, this will only be possible if the Kalangala Oil Palm Growers' Trust succeed in organising growers and mobilising their resources for the common good. Collective action is thus the answer for ensuring the sustainability of the Kalangala Oil Palm Growers Association–Kalangala Oil Palm Growers' Trust–OPUL value chain.

By the end of 2018, Kalangala Oil Palm Growers Association will be expected to take over the ownership and control of the Kalangala Oil Palm Growers' Trust, in order to develop a new generation cooperative, or a hybrid organisation integrating both the management and services of the Kalangala Oil Palm Growers' Trust, with the membership of the Kalangala Oil Palm Growers Association.

Time will tell whether the transition to a new cooperative enterprise, without government and donor support, will succeed. If not the government will still continue expanding oil palm production, but mostly through large commercial plantations, rather than through smallholders' gardens. ■

For more information on the Enhancing Development through Cooperatives initiative visit: www.edc.cta.int

MADAGASCAR

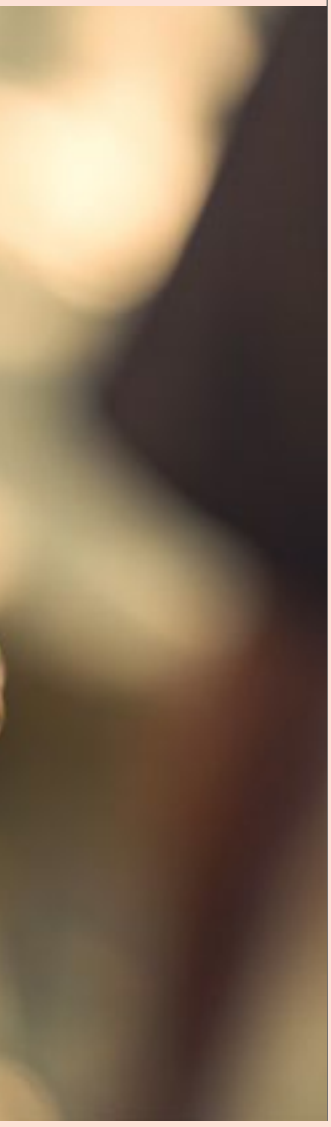
Cocoa – strength in unity

Exporting cocoa – long the preserve of large commercial cocoa producers – is now within the reach of smallholders in Madagascar via agricultural cooperatives.

Mamy Andriatiana

© MENAKAO MADAGASCAR CHOCOLATE

Overseeing *grand cru* cocoa farms in Haut Sambirano in northern Madagascar, Nesth Voavy closely monitors the plantations of members of the local Union de Coopératives Lazan'ny Sambirano (UCLS) farmers' cooperative, based on specifications provided by cooperative technicians. As a farmer-controller, his job is to detect irregularities, especially the possible presence of chemical substances in the plantations (often as a result of discarded batteries, insecticide-treated mosquito netting, and plastic bags) to ensure the high quality of 'fine' cocoa produced by member farmers. Voavy also checks that the cocoa fermentation and drying operations are running properly by recording and checking the drying, fermentation and crop ripening times. He promptly applies the *Dina* – an internal law that sets out the production rules to which members must comply – once he notices an irregularity.



Madagascar's cocoa is ranked among the best in the world

A new generation cooperative

The main focus of UCLS is to promote exports and it now has sufficient resources to achieve this goal, including plantations, harvesting and transport equipment, quality control devices, and vitally, customers, and technical and financial partners. UCLS is the only exporter of certified organic fair trade dried cocoa in the region. UCLS, with some 400 members, produces around 500 t of cocoa a year on 600 ha of land, which represents a tenth of Madagascar's production. The Union has a general assembly and a board of directors consisting mainly of farmers, along with an executive secretariat run by technicians. "We have been able to reach new markets with our new structure," says Georgette Zafianaka, member of the cooperative board. Cocoa growers' income has also sharply increased. "UCLS buys our products at a two to threefold higher price than elsewhere, i.e. MGA9,000/kg (€2.5) compared to MGA3,500/kg (€1) on the regular market, in addition to the organic and fair trade premiums paid by Ethiquable," Zafianaka says (organic premium MGA400/kg [€0.12]; fair trade premium MGA420/kg [€0.13]). "That's the end of collector-middlemen who have fattened their wallets at our expense!"

UCLS is a new generation cooperative focused on generating profits for farmers, in sharp contrast with cooperatives that were set up during colonial times, at independence or during the socialist regime in the 1980s, when farmers were left behind and corruption was rampant at all levels (politicians, civil servants, technicians, farmers' leaders) in the sector. Antoine Roger, an old cocoa grower in Ambalavelona, bitterly remembers the lean years of the socialist era, "we never profited from our production," he says. Niasy Ramarojaona, constituency head for the Ministry of Agriculture, remembers the role of, "collector-middlemen who forced cocoa growers to accept ridiculous prices and cheated on the cocoa weights, thus driving them into a spiralling cycle of debt." Now each cooperative member can follow the selling process. "Nobody can infiltrate or take advantage of the cocoa growers, who make mutual decisions through the UCLS general assembly," says Tesla Ratsirinony, adviser for Agriculteurs Français et Développement International (AFDI), a French farmers' association involved in development cooperation, which is supporting the cooperative.

A market-oriented vision

UCLS has gradually become self-sufficient. In the 2000s, growers were aware that they were being unfairly treated and decided to form small cooperatives to collaborate with local exporters. The cooperative status authorised them to market their products, which individual cocoa growers were not legally allowed to do. By 2009, 23 cooperatives grouped together to create UCLS and take advantage of their joint experience. Then their first customer, the French cooperative enterprise Ethiquable, showed up with an order for 125 t of organic fair trade cocoa. That windfall strengthened their independence.

UCLS has 400 members producing a total of 500 t of cocoa a year

UCLS is now rubbing shoulders alongside major cocoa operators, despite the slump in world cocoa prices, thanks to several assets. First, the grassroots unity within the cooperative, as reflected in the work of the well-trained farmer-controllers who have focused on overseeing product quality. "This is a real boon, as the farmers are able to understand and readily adjust in a straightforward and objective way," says Samuel Ramamonjisoa, a UCLS technician. "Everyone is contributing to producing high quality competitive products with a market-oriented scope," says a local operator. Secondly, their unity is consolidated by the effectiveness of the *Dina* laws, whereby defaulting cocoa growers are punished. "No irregularities are accepted. Requisite exchanges between farmers generate specific dynamics within the union and a strong sense of belonging. There is a form of positive competition, which creates a culture focused on quality," says Zafianaka.

© MAMY ANDRIATIANA

UCLS export high quality certified organic fair trade cocoa

Emergence of a national strategy

After Uganda in May and Malawi in September 2016, it was Madagascar's turn to organise a Cooperative Leadership Event from 13-17 February 2017, with the support of CTA. Two hundred leaders, from 150 cooperatives scattered throughout Madagascar, attended as part of the government's National Development Plan aimed at promoting a more entrepreneurial mindset within rural communities.

The goals of this meeting were ambitious: to review the Malagasy cooperative movement, to facilitate dialogue between cooperatives and the different development stakeholders, and to launch a process to redefine national policies and legislation regarding cooperatives. Pilot project implementation and the development of a new generation of inclusive sustainable cooperatives was also on the agenda. This event also provided an opportunity for participants to meet, exchange and connect with both African and global cooperative networks. The topics covered included the organisational structure and features of new generation cooperatives.

Madagascar hosts over 1,900 cooperatives with around 40,000 members. According to Jules Randrianavelo, president of the Koloharena Cooperative, "This forum is very promising since the government has decided to support farmers in coping with middlemen, who have been robbing them for centuries." After the Event, participants drew up several recommendations that were submitted to the appropriate authorities. The government then committed itself to creating an inter-ministerial cooperative development committee and forming a working group to address the urgent needs of cooperatives, while streamlining the legal and regulatory frameworks – all with the aim of launching a national strategy for the development of cooperatives.

Three factors have strengthened the cooperative: an organic fair trade cocoa market generated by Ethiquable and the Dutch company Cocoa Nect, AFDI's support, and pre-funding provided by the financial institution, International Solidarity for Development and Investment. Ethiquable and Cocoa Nect have helped enhance production quality through demanding specifications. AFDI has supplied organisational and technical support for the cooperative, including training, staff coaching and equipment provisions. But UCLS has still not been immune to turmoil, as breaches of trust have recently been committed by some executive members. The board of directors has nevertheless played its role, resulting in the dismissal of the cooperative director, who has been temporarily replaced by an acting director.

Malagasy cocoa has wind in its sails

There is reason to be hopeful for the promotion of Malagasy cooperatives, especially those involved in the cocoa sector. A CTA-supported Cooperative Leadership Event, held in Madagascar in February 2017, resulted in a firm government commitment to strengthen and support cooperatives (see box, *Emergence of a national strategy*, see above). The Malagasy cocoa sector is also supported by the Integrated Growth Poles Project, funded by the World Bank. Cocoa trees that are almost 100 years old are currently being replaced as part of a collaboration between the Regional Development Committee and the Centre National de la Recherche Appliquée au Développement Rural, Madagascar's national agricultural research centre. Built to block sunlight and heat, the largest shade house in Africa (4,000 m²), where 500,000 new cocoa plants will be propagated by cuttings, has been set up in Ambanja, in order to preserve the high quality of Malagasy cocoa. ■

Demanding specifications set by big buyers have helped to enhance production quality

Economy

COLD CHAINS

Strengthening the weak link

Development of the cold chain in ACP countries is necessary if they are to meet the Sustainable Development Goal of reducing food waste.

Anne Perrin

Preserving the quality and safety of food products from slaughterhouse, fishing or harvesting sites to the final consumer is the goal of cold chains. The different steps in this system include postharvest storage, processing, transport and marketing. Unfortunately, the lack of reliable electrical power often limits cold chain use in ACP countries, despite the vital need for this technology due to high prevailing temperatures.

According to a 2011 FAO report, *Global Food Losses and Food Waste*, in sub-Saharan Africa alone the lack of a reliable cold chain is responsible for an estimated loss of about 30% in meat commodities and 50% in roots, tubers, fruits and vegetables. The situation is not much better in the Caribbean where high quantities of tropical fruits and tubers are regularly lost during inter-island shipping. At the Carrier Summit on world cold chains held in Singapore in December 2016, Mohammed Majeed, lecturer at the University of the West Indies (Trinidad and Tobago), reported weekly postharvest commodity losses of 375-425 t between Barbados, Saint Vincent and Trinidad. The same problems affect pepper exports from Trinidad and Tobago to Canada, with up to 52% of postharvest losses caused by cold chain interruption.

ColdHubs solar-powered cold storage rooms can hold 2 t of perishable farm produce

These losses are inevitable without cold chain infrastructure. But the cold storage capacity of developing countries is tenfold lower than that of developed countries on average, and even lower in sub-Saharan Africa. A 2014 FAO policy brief, *Developing the Cold Chain in the Agrifood Sector in Sub-Saharan Africa*, based on different sectors (meat, milk and dairy products, seafood, fruit and vegetables), revealed substantial differences in the per-capita cold storage capacity between countries, which ranged from 2 l in urban centres in Ethiopia to 15 l in South Africa compared to around 200 l in developed countries.

Health and economy threatened

Food losses resulting from an insufficient refrigeration system have direct impacts on food and nutrition security of communities in ACP countries. Perishables (mainly fruit and vegetables) start degrading immediately after harvest, resulting in loss of produce weight, texture, taste, appearance and nutritional value. This degradation can be considerably stalled by cooling, thus increasing the shelf life of the commodity. According to a 2015 University of Nottingham report, *The Impact of Reducing Food Loss in the Global Cold Chain*, 190 million pre-school age children and 19 million pregnant women are at risk of severe visual impairment or blindness due to vitamin A deficiency. The degradation of such vitamins in food can be considerably stalled by cooling, thus increasing the nutritional value, as well as shelf life, of agricultural commodities.

Markets are also affected by the lack of access to efficient cold chains. Many farmers without means to preserve their excess produce are obliged to sell it at low prices in saturated markets. EU initiatives to streamline health standards have also significantly limited the marketing of refrigeration-dependent commodities. In the early 2000s, for example, when the Beninese shrimp sector was booming, export of these shellfish to markets in Europe was banned due to a lack of compliance with European standards. This led to an estimated loss of 60,000 jobs in Benin.

Investment and regulation

Cold chains must only be developed if they are environment-friendly. In addition to high power consumption, refrigerant gases (hydrofluorocarbons [HFCs]) involved in cold chains are responsible for high greenhouse gas (GHG) emissions. Didier Coulomb, director general of the International Institute of Refrigeration (IIR), an intergovernmental body which promotes scientific and technical knowledge on refrigeration, welcomed a 2016 international agreement in which 197 counties committed themselves to halting HFC use by 2050. Coulomb states that this commitment will require heavy investment and long-term policies, however recent studies have shown that suitable cold chain technologies can reduce GHG emissions by 50%.

IIR primarily aims to encourage governments to set up and regulate cold chains. Recent statements by the United Nations – which considers that refrigeration is decisive for food security – have boosted awareness. But there is still much to be done according to Coulomb, who stresses the importance of political commitment to ensure the involvement of local private stakeholders and funding agencies, including the World Bank and regional development banks.

Will solar power ensure the future of the cold chain?

Some countries have built cold chain infrastructure, but mainly for the refrigeration of produce for export or local urban markets. Kenya, for instance, has invested in refrigeration technology to preserve the quality of flowers and green beans for export. Remote rural areas do not benefit from these facilities, which are primarily geared towards agribusiness.

Some initiatives have nevertheless been set up to serve these rural areas, such as ColdHubs, a Nigerian start-up producing modular solar-powered cold storage rooms with the capacity to hold 2 t of food. Installed at farms and markets, ColdHubs provides 24/7 off-grid cold storage for perishable farm produce with the potential to extend freshness by up to 20 days. Farmers are charged a flat fee for each crate of food they store in the cold storage room.

In Uganda, Station Energy has developed similar solar-powered cold storage units for cooling and freezing produce in isolated areas – farm cooperatives are the main targeted users. Station Energy has calculated that the yearly economic benefit for a farmer renting 1 m^3 of cold space will be €5,250. Solar energy has proven to be an interesting option for the development of independent refrigeration systems. The problems to be overcome are the costs involved in scaling-up production of solar powered storage units and ensuring a steady flow within the cold chain, which is crucial. ■

For more information visit: Global Food Losses and Food Waste (https://tinyurl.com/kkn52e6), Dramé, D., Njie, D., Meignien, X. and Coulomb, D. 2016. Developing the Cold Chain in the Agrifood Sector in Sub-Saharan Africa. FAO and IIR Agroindustry Policy Brief (https://tinyurl.com/h57wqea), and The Impact of Reducing Food Loss in the Global Cold Chain (https://tinyurl.com/z5dzzat).

A private partnership for refrigeration

The Alliance for a Green Revolution in Africa (AGRA), in partnership with the Indian company UPL Limited, launched an initiative to boost cold storage capacity in Africa at the World Economic Forum in Kigali in May 2016. This public-private partnership, with US$2 million (€1.82 million) in funding support, aims to benefit 100 million people. The project is still in its infancy, but substantial knowledge and experience have already been gained, as indicated by Valentine Miheso, head of financial inclusion at AGRA, "The pilot project set up in Kenya is targeting 3,000 potato producers. It was built based on experience in India which, over a 50 year period, was able to transform its production through the use of refrigeration and improved seeds. A 3,000 t capacity refrigeration unit was built with funding from the International Fund for Agricultural Development. This now belongs to farmers' organisations and farmers are obliged to pay a fee to store their produce". Future developments are planned in Rwanda and Uganda.

PACIFIC

Organic on the horizon

A new participatory organic farming certification system is giving farm products from the Pacific easier access to fast-growing organic markets.

Magali Reinert

Organic production in the Pacific is on the rise. Since 2010, organic certified farms have increased four-fold (72,000 ha in 2016), and this trend looks set to continue. "The organic market remains largely untapped in the Pacific. It is up to us to make arrangements to supply it with produce," explains Stephen Hazelman, board member of the Pacific Organic and Ethical Trade Community (POETCom). With members from 17 Pacific island countries, POETCom has been supporting the sector since 2009.

A large share of the region's organic products are exported to Australia, the EU, Japan and New Zealand. The first to benefit from the organic boom in these markets were long-established players in the organic sector, including the Samoa-based Women in Business Development, Inc (WIBDI), which was created in 1991. Between 2012 and 2013, the company doubled its production of virgin coconut oil; around 200 organically certified farmers are now the sole suppliers of virgin coconut oil to The Body Shop, which buys around 20 t each year from WIBDI. To certify its products, WIBDI uses the National Association for Sustainable Agriculture, Australia. Controls by external third-party bodies have long been the only way for Pacific island states to promote organic products. However, the high cost (approximately €2,000 for the producer) has restricted this market to the most lucrative businesses. "Many products from the Pacific can only access organic markets if they are certified organic, which may seem fairly ironic because traditional farming in the Pacific is very similar to organic farming. Yet obtaining certification is very costly. Those who do obtain certification, however, benefit from unique access for their products," states Kyle Stice, manager of the Pacific Island Farmer Organisation Network.

© IFAD/SUSAN BECCIO

Workers shred, dry, then press coconut to make virgin coconut oil at a Women in Business Development model farm in Nuu Station, Samoa

© AVNEEL ABHISHAY

Products with the Organic Pasifika label are certified to the Pacific Organic Standard

Towards more accessible certification

Today, organic certification is becoming more accessible. The creation of a Pacific Organic Standard (POS) is gradually expanding the foundations of organic production. Driven by POETCom since 2008, this pioneering initiative has adapted the rules for organic farming to the local context. The POS has, in particular, revealed technical issues, such as how the system can function without locally available organic seeds. This standard and its label, Organic Pasifika, have opened the way for an alternative certification scheme: the organic Participatory Guarantee System (PGS) – which has been taken up elsewhere in the world – relies on controls set by the farmers themselves. According to Hélène Moquet, from Bio Calédonia, a pioneer of PGS in the Pacific, this system is a hundred times cheaper for producers than traditional certification (at around €20).

Producers and processors are therefore embracing PGS to carve themselves a niche in the organic market. Six PGSs have been approved by POETCom to use the Organic Pasifika Mark which verifies their compliance with POS. Approximately another six are under development including a Vanuatu PGS – being implemented by Farm Support Association – and established local businesses such as Tanna Coffee, which is made up of 700 small coffee farmers.

72,000 ha

of farms in the Pacific are certified organic

90%

of Cie Adi Chocolate and Fijiana Cacao is sold on Fiji's local tourist market

Unsurprisingly, one major local outlet is the tourist sector. In Fiji, local organic products are on the rise in hotels, airports and specialist shops. To further expand on this opportunity POETCom has developed an organic tourism standard. It creates the opportunity for hospitality providers to have their whole destination, a restaurant or even a specific menu item organically certified and include this as part of their marketing and promotion.

A political challenge

The enthusiasm for organic products is also apparent among political leaders. The region pays a high price for its dependency on poor quality imported foods. In the face of the obesity and diabetes epidemics, the supply of fresh and nutritious products is becoming a health priority. Organic farming is also in line with the Pacific Island States' environmental positions in climate negotiations. But, while organic produce is much discussed, are institutional support measures being introduced? Only slowly, according to Hazelman, hence POETCom's recent introduction of a Policy Tool Kit to help policymakers turn words into action. ■

For more information visit: https://tinyurl.com/hybrq9k

A 'bean to bar' business model is adding value to the region's cocoa sector

INNOVATION

Caribbean cocoa: from bean to bar

Cocoa production in the Caribbean has declined steadily since the 1950s, however rising world prices for fine flavour cocoa is attracting new investment to the sector.

Natalie Dookie

A pioneering regional 'bean to bar' business model in the Caribbean, and investment in research, development and best practices, is enhancing the sustainability of the region's cocoa sector. In 2015, entrepreneur Ashley Parasram launched the first cocoa processing factory in Trinidad – Trinidad & Tobago Fine Cocoa Company (TTFCC) – through a public-private partnership. The state of the art facility, which utilises the latest bean-to-bar technology from Brazil, produces up to 100 t of cocoa products per year under its brand, 'Truly Exceptional', and offers value added processing services to local growers and private companies, such as the House of Arendel. Fine flavour cocoa accounts for 5% of world cocoa production with seven of the eight exclusive producers located in the Caribbean.

House of Arendel has also benefitted from training provided by the Cocoa Research Centre (CRC). The company's managing director, Richard Trotman, believes that participating in the centre's chocolate making training programme increased the company's product innovation; today they incorporate local fruits and jellies, including guava and mango, into their cocoa products.

With the aim of increasing cocoa quality and yield from 650 t in 2015 to 1,000 t in 2020 and ensuring access to value-added markets, the TTFCC, in partnership with the InterAmercian Development Bank and CRC, has launched the Improving Marketing and Production of Artisanal Cocoa from Trinidad & Tobago (IMPACTT) project. IMPACTT is developing new standards, a chain-of-custody system, a certification system and a range of marketing tools to help growers sell their beans for the highest value. "Trinidad and Tobago's fine flavour cocoa fetches three to four times the value per tonne on the world market and improvements in flavour, quality, certification and branding through geography can further increase this," head of CRC, Professor Pathmanathan Umaharan explains.

The establishment of the International Fine Cocoa Innovation Centre (IFCIC), with a €2 million grant from the European Union/African, Caribbean and Pacific Science and Technology Fund, will also support linkages from farmers to chocolatiers. In addition to housing a 'Chocolate Academy', which will host practical courses on utilising indigenous cocoa beans and promote the innovation of new products and recipes, IFCIC will also offer a 'business incubator' to provide technical, business and logistical support to local enterprises. ■

1,000 t

of quality cocoa is TTFCC's target yield by 2020

€2 million

grant for IFCIC will support linkages between farmers and chocolatiers

For more information visit:
https://tinyurl.com/zpts75v

RISK SHARING

A tough target for 2017

An innovative mechanism targeted at de-risking lending to the agricultural sector aims to stimulate transformation across agricultural value chains. A subsidiary of the Central Bank of Nigeria, NIRSAL is enabling the flow of affordable financing to all agricultural players.

Helen Castell

© MILE 91/BEN LANGDON

NIRSAL's objective is to enable the flow of affordable financing to everyone along agricultural value chains

The Nigeria Incentive Based Risk Sharing System for Agricultural Lending (NIRSAL) has set itself a tough target for 2017, pledging to attract 60 billion naira (€180 million) of fresh commercial bank lending to agriculture, mostly by offering guarantees to lenders, promoting the use of insurance and providing technical support to improve the bankability of agribusinesses. The sum is ten times as big as NIRSAL's own balance sheet, meaning the leverage it must achieve is enormous. Backed by the Central Bank of Nigeria, NIRSAL has built a good track record of de-risking agricultural lending since its creation in 2011, but how will it achieve such a gargantuan task?

Within Nigeria, NIRSAL launched a partnership with the Federal Ministry of Water Resources in February 2017 to facilitate private sector investments aimed at optimising under-utilised land, infrastructure and water resources in the country's 11 River Basins Development Authorities (RBDA). Developed in the 1970s and 80s with a mission of ensuring the availability of reliable water sources to enable year-round agriculture, the RBDAs have not lived up to expectations. Private investment – facilitated by NIRSAL's risk-sharing guarantees – will allow infrastructure to be upgraded and fully utilised, explains NIRSAL.

Another partnership saw NIRSAL receive €284 million of African Development Bank funding in December 2016 that it will deploy this year to encourage and reverse a shift away from agriculture among the youth. The funds will be used to guarantee loans to young people aged 18-35 years to identify opportunities and develop innovative business plans in areas including aquaculture, crop farming, marketing and processing. The idea is to nurture a new generation of agricultural professionals with the necessary skills to make the sector more economically sustainable.

NIRSAL's track record has won it plaudits from abroad and has already inspired the government of Ghana to explore a similar agri-finance risk-sharing model. NIRSAL is certainly much admired across the African continent, however more transparency would be useful. To provide a truly practical model for other governments, the initiative needs to offer more evidence of its success, not just that additional commercial finance is flowing to Nigerian agriculture, but that it has been leveraged by its presence. ■

INTERVIEW

An inclusive approach to achieving the 2030 agenda

In his new publication, Dr Kanayo Nwanze, the outgoing President of the International Fund for Agricultural Development (IFAD), argues the case for collaborative innovations to deliver the Sustainable Development Goals, and enable Africa to achieve rural development on its own.

Sophie Reeve

Why did you decide to title this book 'A Bucket of Water'?

There is a proverb where I come from when things don't seem to work out the way you expect, that life is like a stream. When you reach the stream and dip your bucket into the river, what you collect is your destiny because it is from the river of life. We all have a collective destiny and we are all walking towards achieving our dreams but like a river of water, some will get there and some will not.

You are passionate about the role of women in agriculture and farming as a business. What do you think are the key steps that need to be taken to really give them the support they need?

Smallholder agriculture today is very much feminised because young people and men tend to migrate from rural areas into urban areas looking for greener pastures. Women are engaged in the business of feeding their families and making money, but they are not looking for charity or handouts. When you consider smallholder farming as a business, you ask why these businesses are not successful. The answer is that the women running these businesses are rural, they are marginalised, and there are no investments. A business that wants to thrive has to have basic infrastructure and market connections. So if we are serious about rural development, feeding the world, and achieving the 2030 Sustainable Development Goals, we must invest in the rural populations and we must invest in women.

© ONA WOLFF FOR WARWICK IN LONDON

Dr Kanayo Nwanze is President of IFAD and is dedicated to eradicating poverty and hunger in developing countries

Youth are key to CTA as well as IFAD activities. How are the younger generation to have hope in agriculture, particularly in a changing and more challenging climate?

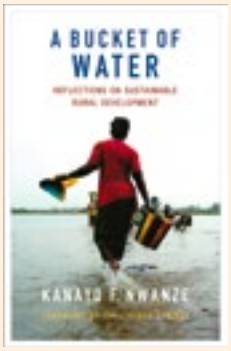
Young people have to be given the opportunity to see that agriculture is not just a back-breaking exercise for poor people and old people. Agriculture needs to be seen as a business and a dignified profession that not only feeds people but generates wealth. Technology advancements provide young people with tremendous opportunities to transform the agricultural sector, but financial instruments need to allow youths to finance their businesses and access land and land rights. Today there are about 200 million young people below the age of 25 in sub-Saharan Africa. Where else are they going to get the jobs?

Science, innovation and technology all have their role to play in agricultural development but you make the point in your book about the ingenuity of people. Do you think this is too often overlooked?

Smallholder farmers know their soil, they know their land, weather and the planting conditions. We need to listen to them first, learn from them and

A bucket of water

A refreshingly practical approach to tackling poverty and hunger



A Bucket of Water lays out the case for smallholder farming as not only the key to achieving global food security by 2030, but also for creating a pathway out of poverty for rural people. Drawing on decades of rural development experience, Dr Nwanze argues that food security, nutrition, and livelihoods in the developing world can be improved if smallholder farmers are given the opportunity to invest in their businesses.

However, for small and medium sized farms to thrive, they need to be connected to the corporate private sector. The lack of access to resources faced by farmers, particularly women, provides little incentive to increase productivity. A dynamic partnership that goes beyond the traditional public-private partnership is therefore needed to provide farmers with market linkages and to recognise the role of producers who, when organised into groups and cooperatives, are an immense force to bring about change.

Providing an accessible discussion on other themes such as peace and development and the future of farming, *A Bucket of Water* insists that only context-based, inclusive innovations involving both men and women, will bring about the collective vision needed to meet the sustainable development goals.

A Bucket of Water: Reflections on Sustainable Rural Development
By KF Nwanze
Practical Action Publishing, 2017; 216 pp.
ISBN 978-18-533-9970-1
€44.65
Practical Action Publishing
www.practicalactionpublishing.org

from that point, find out what they are doing that they could do better. They are always innovative, they have survived millennia. Innovation must begin from where the farmers are. When we talk about development, it is not something we can do for someone, development is something people do for themselves. Our role is to support and encourage them and to make sure they can get the help they need.

Do you ever have doubts about meeting future challenges and fulfilling the 2030 agenda?

I don't have doubts because I have seen the resilience of rural populations. When people are given opportunities, they bring about incredible changes. I do believe that change will come if we learn to share our buckets of water with others, and we will be able to overcome many challenges. But it takes time and development is a process. And whilst development assistance is positive, if people never learn to walk down to the stream with their own legs, they will never experience difficulties in life. Over reliance on development assistance deprives them of that experience. No nation was able to transform itself based on assistance. Development starts at home. ■

Rural development

Adapting innovation

Innovation Systems provides a collection of commentaries, opinions and reflections from a wide range of experts on innovation systems (IS) thinking and approaches in agriculture. Case studies demonstrate the 'serendipitous' nature of innovation through the sometimes unintended positive outcomes and unforeseen challenges. This publication discusses the importance of adaptation within IS to deal with new and emerging issues of sustainability and inclusive development, and how a revised approach could benefit smallholder farmers.

Innovation Systems: Towards Effective Strategies in Support of Smallholder Farmers
By J Francis, L Mytelka, A van Huis et al.
CTA, CoS and Wageningen University and Research, 2016; 255 pp.
ISBN 978-92-9081-561-7

Downloadable as a PDF file from:
https://tinyurl.com/zz6g687

ICT4Ag

Young innovators

The *Youth e-Agriculture Entrepreneurship* issue of CTA's *ICT Update* magazine highlights innovative businesses led by young entrepreneurs in Africa, the Caribbean and the Pacific. Recognising the potential of ICT-enabled services to boost agricultural productivity in their regions, many recent ICT4Ag applications focus on the provision of extension and advisory services. This colourful, well-structured magazine covers topics such as business strategy development, start-up support programmes and the social impact of e-agriculture.

Youth e-Agriculture Entrepreneurship
CTA, 2016; 24 pp.

Downloadable as a PDF file from:
https://tinyurl.com/hewvfp9

FARMING SYSTEMS

Diversity and adaptability are key to sustainability

Three recent publications examine pathways to sustainable, productive farming, including agroecology in Africa and examples from our global agricultural heritage.

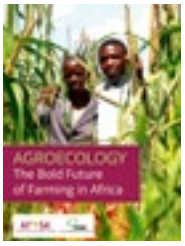
Mike Davison

The role of politics in determining how we understand our world has never been more apparent. Agricultural research and development are no exception: politics can lead to one approach becoming mainstream while others are silenced or blocked. But achieving sustainability in agricultural systems demands a respect for diversity, encouraging broader thinking about solutions and providing political support for farmers to make choices. The 15 case studies in *Agroecology – The Bold Future of Farming in Africa* highlight agroecological initiatives across the continent. Diversification, typically through mixed cropping, agroforestry and integration of livestock, is central. Through such interactions, biological processes are optimised, whether by nutrient recycling, nitrogen fixation or biological pest control. But introducing or promoting technologies to smallholders is not enough for agroecology to flourish. Farmers also need access to land, seed, water, credit and local markets; supportive economic policies, financial incentives and market opportunities are a vital part of the picture.

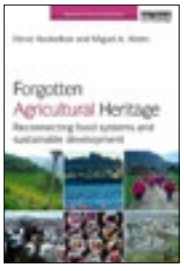
Agroecology has been the bedrock of traditional agricultural systems around the world, but being adaptable to socio-economic and environmental changes is essential for such systems to persist. This is one message to emerge from *Forgotten Agricultural Heritage*, which documents an initiative to recognise and protect Globally Important Agricultural Heritage Systems. Developed over millennia, farming systems such as China's rice-fish production, or the integrated management of coastlines, farmland and forests found on Chiloé Island, Chile, enable us to better understand what has given these systems such resilience.

While agroecology and traditional food production systems have their champions, for policymakers they are only some of the options available. In assessing those options, *Agriculture and Food: Pathways to Sustainability* offers thought-provoking and practical support. An introduction by Ian Scoones explores how different pathways emerge in agriculture and how sustainability is generated. How we judge success, and why certain projects attract support, is important. How and by whom agricultural research is carried out – by farmers or lab researchers – impacts on how technologies are valued, and disparities in governance, for example between global norms and local realities, can also determine success or failure. The 'pathways approach' examines how different pathways to sustainability are understood and presented by different actors and how this affects both the options that are chosen and who ends up benefiting. ■

Agriculture and Food: Pathways to Sustainability
By I Scoones et al.
Routledge and ESRC STEPS Centre, 2017; 132pp.
Downloadable as a PDF file from: https://tinyurl.com/jk6hcod



Agroecology: The Bold Future of Farming in Africa
Edited by M Farrelly, GC Westwood & S Boustred
Alliance for Food Sovereignty in Africa (AFSA) and Tanzania Organic Agriculture Movement (TOAM), 2017; 88 pp.
ISBN 978-99-7689-851-4
Downloadable as a PDF file from: https://tinyurl.com/zoopj7q



Forgotten Agricultural Heritage: Reconnecting Food Systems and Sustainable Development
By P Koohafkan & MA Altieri
Routledge, 2016; 296 pp.
ISBN 978-11-3820-415-7
£32.99 • €38
www.routledge.com

Drone regulation

A guide to the laws governing UAVs

The use of unmanned aerial vehicles (UAVs) – otherwise known as drones – is becoming increasingly common in agriculture for the management of crops, livestock and fisheries. Yet, there is currently no agreed international standard dictating proper civilian use of these vehicles. However, this report on drone governance satisfies the pressing demand for a clear set of guidelines on the regulations governing the use of UAVs in different countries.

The report provides a summary of the existing policies, laws and regulations regarding the use of UAVs in the 79 ACP countries. The informative study, carried out by CTA, is essential for any farming or fishing organisation using drones to facilitate data collection and monitoring. The results of the research contributed to the population of an online database, comprised of a straightforward country directory with helpful summaries of national drone laws that are regularly updated in line with any changes to regulations.

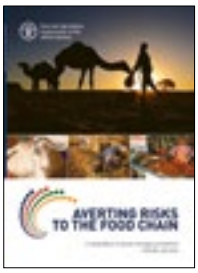
Co-author, Giacomo Rambaldi, explains that, "Governance is a key issue for the development of consulting services based on the use of drones, which has begun in an almost total legal vacuum." The information provided in the report was sourced from online newspapers; civil aviation authorities; businesses engaged in sales of UAV-related equipment and training UAV operators; and project websites on UAV-related research programmes and initiatives. This thorough research is sure to promote the responsible use of UAVs across ACP regions. ■

Drone Governance: A Scan of Policies, Laws and Regulations Governing the Use of Unmanned Aerial Vehicles (UAVs) in 79 countries
CTA, 2016; 14pp.

Downloadable as a PDF file from:
https://tinyurl.com/gnebfn9

Transboundary diseases

A toolbox to protect the food chain



Outbreaks of transboundary animal diseases and plant pests and diseases have been increasing over the past years, compromising access to quality food and jeopardising livelihoods and human health, worldwide. For example, more than 200 diseases are spread through food, and plant pests and diseases account for an estimated 30% of global crop production losses worldwide, costing billions of Euros each year. *Averting Risks to the Food Chain* is FAO's response to the increasing number of food chain emergencies, and demonstrates the organisation's approach to preventing food safety incidents – before they occur.

This report describes how the food chain crisis emergency prevention system, known as FCC-EMPRES, is making a difference in the areas of animal health, plant protection, food safety and coordination and intelligence. Surveillance, early detection, early warning, risk analysis, intelligence and timely response are key components of FCC-EMPRES, which is an integrated and interdisciplinary collaboration of experts working in the fields of animal and aquatic health, food safety, and plant and forest protection.

Consisting of 23 FCC-EMPRES information sheets, the tools proving to be effective in defeating threats to the food chain are described in this compendium. For example, the Desert Locust Information Service is the key monitoring and early warning tool in preventing Desert Locust plagues from devastating farmers' fields in Africa and Asia. And the EMA-i app in Mali and Uganda is facilitating the exchange of information on animal disease reporting between all actors, from farmers to chief veterinary officers. Through their mobile phones, livestock farmers are able to collect animal disease information from the field using the EMA-i app, and these data are sent in real-time to the Global Animal Disease Information System at FAO where the information is validated and stored.

Intensive farming, deforestation and climate change are all contributing to the spread of transboundary plant pests and diseases. The combined effect of such factors will make meeting the agricultural demands of a growing population more challenging states another insightful FAO report, *The Future of Food and Agriculture: Trends and Challenges*. ■

For more information visit: https://tinyurl.com/zgqcw8v

Averting Risks to the Food Chain: A Compendium of Proven Emergency Prevention Methods and Tools
By FAO
FAO, 2017; 108 pp.
ISBN 978-92-5-109539-3

Downloadable as a PDF file from:
https://tinyurl.com/hnbwuff

Microfinance, a good idea?

LAMON RUTTEN

Microfinance for farmers: too early to write off?

Lamon Rutten
CEO of Indonesia's commodity exchange

Microfinance has experienced a rough patch since the beginning of the decade. To quote from a 'systematic review' by the UK Department for International Development: "Despite the apparent success and popularity of microfinance, no clear evidence yet exists that microfinance programmes have positive impacts." Some observers argue that it is time to consign microfinance to the dustbin of history. How is this possible when so many microfinance institutions (MFIs) have been reporting high repayment rates, and all enthusiastically share the stories of clients who used micro-loans to transform their lives?

The discrepancy is because MFIs mostly look at the success of individual borrowers, whereas their critics look at the wider communities in which these borrowers function. When an extortionate loan is replaced with a micro-loan, the borrower gains, but the moneylender operating in the same community loses. If you empower a woman to expand her business selling processed foods, her competitors lose – after all, both share the same market of low-income consumers. As long as microfinance does not increase the size of the pie, but just redistributes the money, no societal gain is generated and its transaction costs actually leave society poorer.

This is not the place to argue whether these criticisms are entirely fair. Nevertheless, they do provide a powerful pointer to MFIs: if they want to have a claim on public money because they are 'doing good', MFIs better operate in a way that ensures their lending increases the aggregate revenue of the communities in which they operate.

It remains to be seen how many MFIs will take this to heart. Interestingly, however, MFIs engaged in agricultural finance do not need to change as much to mend their ways; they already empower their clients to sell more of their stock at reasonable prices, and with lower risk, to buyers outside of the community.

Take the example of BASIX, a large MFI in India focusing on the rural poor, which started in 1996 and was rapidly seen as a success. It thus came as a shock to BASIX management when an impact assessment commissioned after 5 years of operation found that, on aggregate, the income gains of BASIX customers were disappointing, and as many as a quarter actually showed falling incomes.

In response, BASIX decided to change tack. It started to directly tackle the problems that its borrowers faced: unmanaged risks; low productivity; and unfavourable markets for both inputs and outputs. BASIX developed service packages in all three areas, and gave them equal weight to credit provision. Among other things, BASIX started providing insurance for weather risks, livestock mortality and health risks. A large extension team was established and, as well as providing soil testing and training on integrated pest management, microcredits for cows were packaged with veterinary services (such as livestock vaccination) and training was provided to farmers on feed and fodder use.

To improve market conditions, BASIX promoted various contract farming schemes. This often wasn't easy due to the vested interests of traditional input dealers and traders, but ultimately resulted in far better incomes for farmers. The approach worked on bringing new traders to different areas to provide more competitive markets. Warehouse receipt finance was also developed so that farmers were no longer forced to sell directly after harvest, but were instead able to store their crops and receive credit against the collateral. For some commodities, such as cotton and dairy, comprehensive value chain finance schemes were developed that allowed farmers to move up the value chain and capture more lucrative markets.

All in all, BASIX did not just tailor its loan products to agricultural cycles (there were no daily repayments in small amounts, as in traditional microfinance), but also tried to ensure that its clients' revenues would increase enough to repay their loans without difficulty. BASIX began to build risk mitigation into its loan structures to protect clients from external risks. These are not traditional considerations for a bank or MFI, but they make sense in agri-finance. A financier may end up with more agronomists and extension agents on its payroll than credit officers, but if this ensures profitability, why not?

Other MFIs successfully engaged in agricultural lending have taken similar approaches, and some have even added micro-leasing to finance agricultural equipment, which is another way to increase the size of the pie. There is undoubtedly still room to learn and improve, in particular by fully adopting all the benefits of modern ICTs. By building microfinance into a large package that includes risk management, support for improved yields and better market linkages, MFIs have shown that reports of the impending death of microfinance, at least for agriculture, are greatly exaggerated. ■

MIKE WARMINGTON

Smallholder finance: banking on impact?

Mike Warmington
Director – Microfinance Partnerships, One Acre Fund

More than 75% of the world's population living in poverty are farmers. Just US$50 billion of the US$200 billion global demand for smallholder finance is currently being met – half of it through informal channels, according to a report by the Rural & Agricultural Finance Learning Lab and the Initiative for Smallholder Finance, published in 2016 (https://tinyurl.com/jevqelw). But financial service providers (FSP) largely focus on urban clients.

Investment in agriculture is two to four times more effective at raising incomes among the very poor than investments in any other sector. The scale and impact of meeting that demand makes smallholder finance the greatest opportunity today for financial inclusion.

There are already some great examples of financial services for farmers. The six members of the recently formed Propagate Coalition (https://tinyurl.com/jffbdom), offer a variety of smallholder finance services. However, there are three reasons why such services are so hard to come by.

1) Cost: it's expensive to work in rural areas. Operating costs are higher, business loans are usually smaller than in urban areas, and longer loan tenors are needed to accommodate the farming season. This all makes it harder to cover the running costs and capital needs of the FSP.

2) Risk: working with farmers is perceived as relatively high risk. FSPs worry about weather, pests, diseases and market fluctuations. Even with a bumper harvest, the glut of supply can push prices down and threaten loan repayment.

3) Complexity: agricultural loans can be complicated. Training and value chain linkages are needed to maintain a healthy and impactful portfolio, but this expertise is often outside the comfort zone of an FSP and its team.

For these challenges to be overcome, FSPs, the financial inclusion sector and the agriculture industry need to collaborate more effectively. There are three ways they can do this.

1) Better structured wholesale finance: there is a mismatch between the terms offered by investors and the borrowing needs of farmers, making it difficult to offer farmers the right loan structure and pricing, and less likely that FSPs will take on the additional credit risk. By addressing this discontinuity, lenders would be able to offer farmers the terms they need, increasing the impact of their investment.

2) Focus on impact: this also helps to mitigate risk. If an FSP offers a loan product with a higher agricultural impact, this will lead to better yields and wealthier customers who are more willing and more able to repay their loans.

3) Create stronger partnerships: by sharing existing knowledge and best practices, FSPs will quickly develop better products. Building stronger partnerships with technical and other service providers will deliver more impactful smallholder-focused products.

There is currently a high level of interest in smallholder finance. Closing the economic gap will have a huge impact on the poor, and by focusing on these recommendations we can achieve that goal much more quickly. What are we waiting for? ■

Poll

Microfinance, a good idea?

50%
To be effective, MFIs need to better target the right borrowers

30%
To be effective, MFIs must tackle risk, productivity and markets

20%
Microfinance provides an effective pathway out of poverty

0%
There is no clear evidence that microfinance has a positive impact

Other debates

Find *Spore*'s *Opinion* pages, and a third blog on this topic, online

https://tinyurl.com/mdmcktp

In the next issue

185 June-August 2017

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Financing models for agriculture

How innovative approaches to financing can catalyse growth for ACP farmers

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Precision agriculture

Does smart farming offer affordable and realistic solutions for the future?

INTERVIEW

Roots and tubers in the Caribbean

Overcoming access barriers to domestic and international markets for these valuable staple crops

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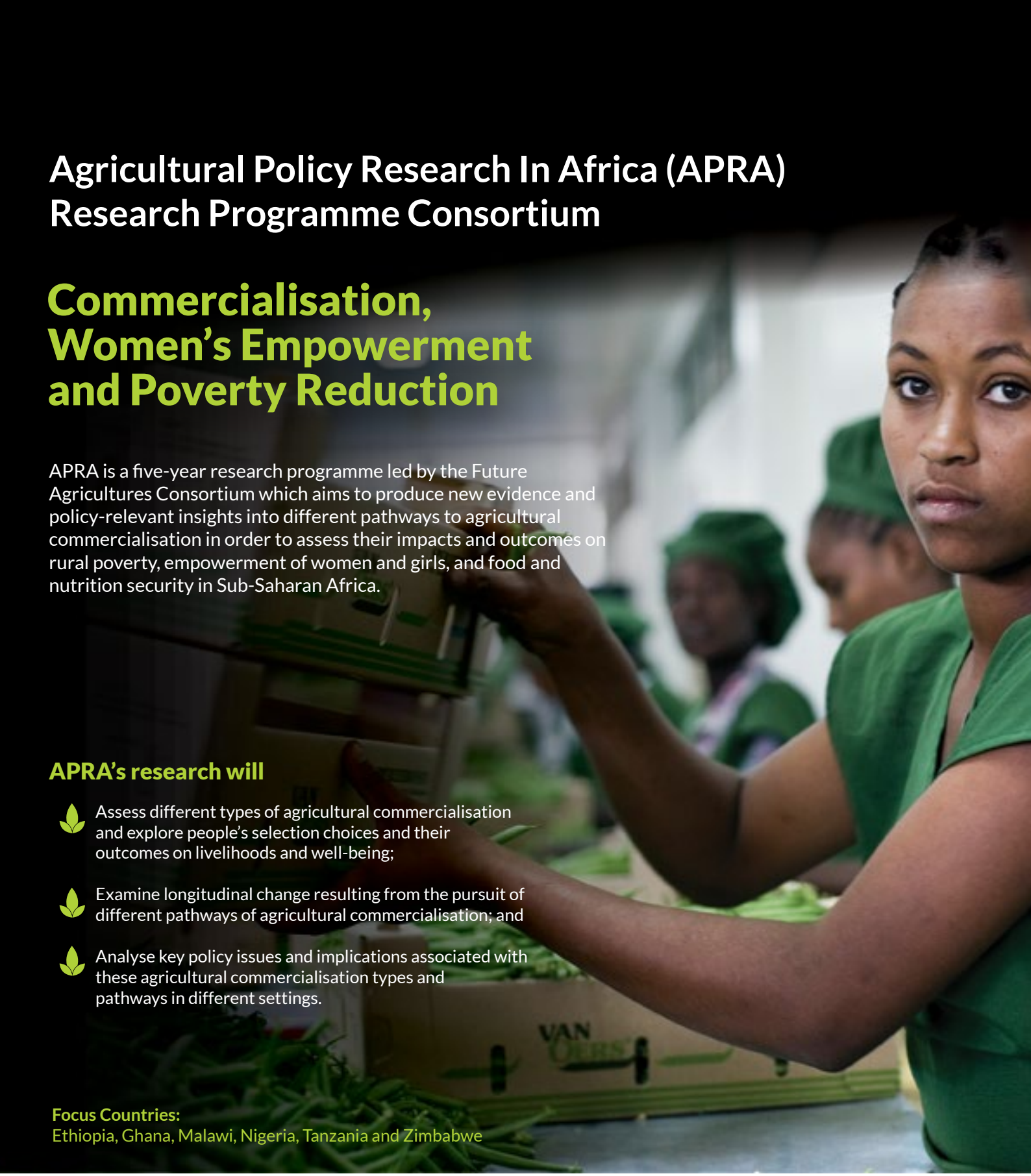

Commercialisation, Women's Empowerment and Poverty Reduction

APRA is a five-year research programme led by the Future Agricultures Consortium which aims to produce new evidence and policy-relevant insights into different pathways to agricultural commercialisation in order to assess their impacts and outcomes on rural poverty, empowerment of women and girls, and food and nutrition security in Sub-Saharan Africa.

APRA's research will

- Assess different types of agricultural commercialisation and explore people's selection choices and their outcomes on livelihoods and well-being;
- Examine longitudinal change resulting from the pursuit of different pathways of agricultural commercialisation; and
- Analyse key policy issues and implications associated with these agricultural commercialisation types and pathways in different settings.

Focus Countries:
Ethiopia, Ghana, Malawi, Nigeria, Tanzania and Zimbabwe

APRA
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