FINANCING AGRIBUSINESS
Angel investors are jumpstarting agripreneurs and pushing them to profitability

INTERVIEW
Dr Benjamin Kwasi Addom explains why ICTs are integral to agricultural transformation

BOOSTING TRADE
Formalising the way women do business in Eastern Africa

Agricultural trade
TRANSFORMING THE INFORMAL ECONOMY

A global perspective on agribusiness and sustainable agriculture
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The Brussels Development Briefings are a joint initiative of CTA, European Commission (DG DEVCO), the ACP Secretariat and ACP Group of Ambassadors, CONCORD and various media.
Climate change is having a devastating impact on agriculture across ACP states. With severe droughts, floods, hurricanes and other climatic events, many farmers are facing a dire situation. The Caribbean island of Dominica’s agriculture was devastated following Hurricane Maria in 2017 (see p8). In Southern Africa, recurrent droughts have significantly reduced yields of staple crops, such as maize and rice. Cape Town has been in the media recently as the first city in the world to impose severe restrictions on its population as it risks running out of potable water. Farmers have now agreed to release water from private dams and restrict usage for agriculture.

Worldwide, agriculture uses around 70% of accessible freshwater. Despite progress in recent years, much more needs to be done to efficiently manage use of water resources, such as using climate-smart agricultural farming practices and innovations, including digital data collection tools. Many farmers now receive localised climate information and weather forecasts to their mobile phones, which helps to make informed decisions about when to plant and harvest crops, and take pre-emptive action in an unpredictable climate.

Improving farmers’ resilience, at the same time as increasing productivity and profitability, is a key focus of CTA’s refreshed strategy for 2018 to 2020. CTA’s Southern Africa Flagship project offers farmers a bundle of climate-smart solutions, including drought-resistant seeds, index-based weather insurance and timely climate information services. Combining traditional knowledge with science for climate adaptation is also part of CTA’s intervention, as highlighted by a recent book on Indigenous Knowledge Systems and Climate Change Management in Africa (see p42).

Investment in the right technology has the potential to transform smallholder farming and CTA is at the forefront of the move towards precision agriculture for smallholder farmers in ACP regions. With data captured by special sensors on drones, farmers are able to detect weeds and disease among their crops and assess the amount of fertiliser required for optimum yields as Ben Addom, CTA’s Team Leader ICT4Ag, emphasises in his interview.

In this edition, we also highlight the innovative developments of entrepreneurs from Africa and the Caribbean (see p17). Young people provide enormous potential for economic growth and agricultural development, and supporting youth entrepreneurship, job creation and enterprise development will continue to be a key aspect of CTA’s strategy for the next 3 years.
Even out of ten Africans are involved in agriculture, and investments in this sector are estimated to be two or three times more effective at reducing poverty than investing in other sectors. African farmers are generally poorly integrated into value chains, lack access to technical expertise and markets, and have little access to capital. Among these are many would-be agripreneurs and micro-, small and medium enterprises (MSMEs) – they are too big to get micro-loans, yet too small to access credit or capital from financial institutions. According to the World Bank, 22 million of the 40 million MSMEs across all sectors in Africa are unserved or underserved. Thus, investing in MSMEs, including the ‘missing middle’ as SMEs are often referred to, is crucial to boosting agricultural productivity and generating employment opportunities.

**Filling the finance gap**

A range of newer, creative financing options are emerging in Africa to fill the financing gap for early-stage enterprises that are getting off the ground, but despite these new opportunities, take-off can be bumpy.

Kigali Farms is a start-up agricultural enterprise that launched a mushroom industry in Rwanda to provide farming families with a highly nutritious food and a new source of income. The business has become the largest supplier of oyster mushroom substrate in Rwanda, and the largest supplier of fresh mushrooms as a result of their buy-back commitment to the farmers who purchase their substrate. Agripreneur, Laurent Demuynck, who launched the farm in 2010, found that local banks were not keen to finance agricultural enterprises and that interest rates were upward of 16%. Eventually, Demuynck received a €200,000 grant from DEG, which finances and supports private sector enterprises in developing countries to promote sustainable economic growth and societal impact. This financing unlocked the door to several other grants and social/impact investments. “Without this seed money, I would not have been able to reach more than 1,700 small farmers, provide employment, or continue to grow the business,” he emphasises.

Agripreneur Claudia Castellanos ran into similar difficulties in Swaziland. After working with a social business that provided local artisans with market access for their crafts, she sought to replicate that business model in the agricultural sector. In 2010, using their own savings, she and her husband launched Black Mamba, a start-up which produces chilies and chutneys sourced from local ingredients. In 2014, they secured a loan from a bank in Swaziland that helps cover operating expenses. They did not have much collateral to offer the bank, only a well-structured business plan, but this convinced the bank to loan them the money at the prime rate (the standard interest rate that banks charge creditworthy customers) plus 4% for the loan. Castellanos says, “Larger, regular businesses pay only prime +1% and some get loans as good as prime -2%. The small guys pay more.” However, they plan to pay off the loan by April 2018. “It was so excruciatingly expensive and almost killed us,” she adds.

In 2014, Black Mamba also received a €25,000 grant from the World Bank’s marketing investment fund, which the business used to get their processing plant an FSSC 22000 Food Safety System Certification. Based on ISO standards, FSSC 22000, which is fully recognised by the multi-stakeholder Global Food
Safety Initiative, has unlocked markets for them worldwide. The company also used the funds to buy equipment such as cold storage and a freezing room. Breaking even in 2016, Black Mamba is now on the path to profitability.

Both Kigali Farms and Black Mamba exemplify the challenges that start-ups face in attracting capital or credit in order to grow their businesses. Often, they have to resort to a form of blended capital, creatively drawing from a range of institutions and new financing mechanisms. The media platform, Devex notes, “With a blended capital approach, entrepreneurs can combine grants and investments, filling the gap that exists between philanthropy and public funding and traditional investment.” Nevertheless, writing grants, applying for loans, or following complex reporting procedures is often beyond the capacity of would-be entrepreneurs.

Profile of an angel investor

Enter the angel investor. Also known simply as ‘angels’, these are affluent individuals who invest early in new enterprises in exchange for equity ownership once the business is more established. While angels can be part of a blended capital approach, they usually invest in their own right. Because angels leverage their own financial resources, they typically provide more favourable and flexible financing than most banks and formal financial institutions. Furthermore, they can bypass the onerous application and reporting requirements of formal and blended capital that can thwart undercapitalised agri-enterprises.

According to Sheena Raikundalia of IntelleCap, a company that builds and scales social enterprises to attract investors, “African angels tend to be successful business people who want to give back. They want to go from ad hoc charitable giving to investing in enterprises that can scale and grow and have a beneficial impact on society.”

Idris Bello, a self-described ‘afropreneur’, is an angel investor, as well as co-founder of The Wennovation Hub (see Spore, Channelling investments into agribusiness: https://tinyurl.com/ybva23ge). According to Bello, angels in Africa are nothing new, but they have generally invested in real estate, oil, mining and similar less-risky enterprises. However, in the last couple of years, there has been more interest in ‘impact’ or ‘social’ investments in enterprises that include sustainable agriculture, clean energy and affordable basic services such as education and health.

Bello has made a few agricultural investments including one in Rashak, a Nigerian palm kernel oil processing enterprise, in 2016. “Besides investing
capital for new equipment and generators, we infuse technology and provide management expertise to help the business scale,” he says. Rashak works with a cohort of 25 small farmers and buys products directly from them to cut out the middleman. The farmers are organised into a cooperative and given access to other benefits such as credit. This is a small to mid-scale business,” he notes. “We don’t want to scale too fast.” The company not only provides employment but is helping farmers with post-harvest storage, since oil palm is a seasonal crop and farmers, instead of being at the mercy of low prices at the end of the harvest season, can have an assured income year-round. Rashak’s next step will be to provide other benefits for the farming families involved, such as education and farm extension.

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Overcoming the visibility challenge

Bello states that, “There is a visibility challenge on several levels when it comes to investing for impact.” Through Rashak and other social investments he, and other angels, will need to demonstrate that a financial return, as well as social impact, is possible. “Potential angels need to be moved from an ‘either-or’ mindset before they will invest,” he says whilst adding that, “The best way to do this is to show them results – that you can invest for financial returns and also have social impact.”

Angel investors also need to know where to look for potential enterprises that they can invest in. Raikuandalia, who is based in Eastern Africa, stresses that enterprises must first be ‘investment ready’ to be presented to possible investors. Her team works with selected enterprises and showcases eight to ten of them to their network of potential angel investors several times a year.

Similar financing forums and platforms are springing up throughout Africa, playing a crucial role in bringing angel investors together with entrepreneurs who need capital to build and scale their enterprises. In 2012, Bello and some partners, found the Lagos Angels Network (LAN) with technical support from infoDev. LAN has attracted a younger generation of Lagos residents willing to invest money in and mentor entrepreneurs and their start-up enterprises. The network now has more than 40 members and has also led to the creation of the Africa Business Angels Network, which supports early stage investor networks and wants to get more investors excited about the opportunities in Africa.

Black Mamba: Packing a powerful punch to benefit Swazi smallholders

Black Mamba chilli sauces may come in small packages, but they pack a powerful punch. The start-up also wants to have a powerful impact on the smallholders who grow the ingredients for their products. They started with 12 farmers and now have about 30 farmers in their supply chain. The company has developed a business relationship with Guba, a local NGO that liaises with local farmers. Guba focuses on food security, so they maintain an emphasis on growing foods but have added a component to generate income for farmers. Guba buys the produce directly from the farmers which then goes through quality control by Black Mamba before it is accepted. High standards are maintained and Guba trains farmers in production techniques. In return, Guba keeps a small percentage of what the farmers grow to fund their activities. Black Mamba sources organic products which command a higher price throughout the value chain. This also benefits the farmers because the price they are paid as part of an annual contract is based on the market plus a margin of up to 30% which is what organic produce commands.

Farmers benefit from getting training in permaculture, and then share the techniques learned within their communities. Farmers have also been able to invest in water pipes and fencing, and in one case built a home from the income earned through sales to Black Mamba. Twenty-one out of the 30 farmers working with the start-up are women. “We want to work with women farmers as women pay the school fees and are more concerned with family care,” says co-owner Claudia Castellanos. Castellanos says, “We wanted to make sure we have a sustainable impact on the communities we work with before we scale up to include more farmers. We’re not interested in just adding a dollar a day to their incomes. Black Mamba must be profitable for all involved.” The company is now ready to scale up to reach at least 80 farmers by 2022 and are also beginning to share their model with other African countries with potential to connect smallholders producing high-value agricultural products with markets. Investors will be needed to enable this growth.

ACRE, a platform which provides access to technical support and access to rural enterprises with growth potential, connected VGC’s Masole and Gersigny with Castellanos to help Black Mamba develop a business plan to attract investors. Gersigny notes that once VGC is operational, “Black Mamba is the type of company that we would invest in. From an angel investor perspective,” she adds, “Black Mamba is a good example of the types of impact investments that are available to investors in Africa.”

Investing in women entrepreneurs

Seeking not just to transform agriculture but also to empower women in Africa, Victus Global Capita Ltd. (VGC) was founded in 2016 by two African-born women, Bo Masole and Zee De Gersigny. VGC seeks to ease the difficulties African women entrepreneurs face in accessing capital by investing in women-led or 50% or more women-owned businesses.

Masole who has extensive experience in agri-processing and food manufacturing was surprised to discover that “Many African countries are large net importers of food and there is very little value addition to food produced on the African continent. There is lack of technical know-how and market access. Not
only can we bring technical expertise, but we have connections with local and regional markets and MoUs with many retailers." Leveraging this expertise, VGC seeks to transform agriculture by focusing on food processing. “There are three pillars to growing the SMEs,” Masole notes. “One is market linkages, the second is capacity building and the third is finance. You can’t just throw money at the SME – it’s not sustainable without the other two. If anything, you have to figure out the other two pieces before you come in with the finance.” 

While VGC focuses on women owned agro-enterprises, Masole also emphasises that, “You need to understand the entire supply chain so that it can deliver – you have to look at what’s going on with the farmers and smallholders.” As part of their strategy, VGC looks at the farmers who supply the agro-enterprises and key metrics such as their average input, cost, farm sizes and livelihood measures to be able to measure social impacts.

Gersigny has set up many funds in Africa that traditionally tend to invest in listed equity, credit, and real estate, such as shopping centres or office buildings. “With Victus we hope to build a €40 million investment fund within the next 2 years that will invest as little as €20,000 and up to €8 million in an enterprise,” she states. The fund will be 80% institutional investors, mostly from South Africa, and the remaining 20% will comprise of high net worth individuals, or angel investors, and families. The risk-to-reward ratio for investing in SMEs is high, so coupling equity financing and technical expertise with a firm foundation of institutional investors may also encourage wary angel investors to dip their toes in impact investing.

“Besides investing capital for new equipment and generators, we infuse technology and provide management expertise to help the business scale.”

Attracting angels
In a similar vein, Bello proposes that bringing in experienced angel investors from more developed countries will encourage African angels to invest for impact. He noted that Facebook founder, Mark Zuckerberg’s surprise visit to Lagos in 2016 and investment in Nigerian tech start-up Andela, through the Chan Zuckerberg Foundation, created “a bit of a buzz” among Nigerian investors and brought credence to investing in start-ups. Raikundalia agrees, noting that in Eastern Africa, “Expat investors are a big part of angel investing.” The Somali AgriFood Fund, for example, has unlocked capital from the global Somali diaspora totalling over €800,000 (see Spore, Agriculture - a promising market for the diaspora: https://tinyurl.com/ya8h2gf). Local co-investors are also attractive to outside investors because they know the local customs and can open doors.

While new angel investor networks are cropping up throughout Africa, this form of investment alone is not going to solve the capital and credit gap for MSMEs. However, angels are beginning to serve start-ups and the ‘missing middle’ by helping to get enterprises off the ground and, once established, enable them to access finance from standard or blended capital sources. By providing equity financing coupled with three crucial ingredients – mentoring, management, and a commitment to social impact – angel investors are demonstrating new pathways to transform agriculture in Africa.
Hurricane Maria caused widespread devastation to Dominica’s agriculture sector

SMART STRATEGIES

Sowing the seeds of climate-resilient agriculture in the Caribbean

In September 2017, Hurricane Maria decimated the agriculture sector in Dominica and Barbuda. By employing climate adaptation and climate-smart agriculture strategies, both countries are working to ‘build back better’ to ensure their agriculture sectors are more resilient.

Natalie Dookie

In the aftermath of Hurricane Maria, losses of €160 million for the agricultural sector were estimated by a post-disaster needs assessment led by the World Bank, EU and UN. As a first step to rehabilitation, €565,000 for emergency intervention was mobilised by FAO and, in partnership with the Ministry of Agriculture and Fisheries in Dominica, agricultural inputs such as seeds, seedlings, water containers, tools, fertilisers, animal feed and material for animal shelters were supplied and distributed to more than 4,000 households. Emergency projects have also been developed to rehabilitate the fisheries sector, which suffered damage worth about €2.4 million, by providing fishing nets, cooling systems and fishing gear. Farmers will also be trained in climate-smart agricultural production techniques, accessing markets and nutrition.

In addition to providing immediate short-term assistance, in coordination with Dominica’s Ministry of Agriculture and Fisheries, FAO has identified key priority areas for the long-term rehabilitation of the agricultural sector. “Road and farm land clearance remain imperative to enable many farmers in the country to resume their agricultural production,” explains Daniele Barelli, FAO Emergency Focal Point and Disaster Risk Reduction Specialist in the Caribbean. “There is also a need for the region to conduct agricultural censuses, which are more than 15 years old in most countries, and maintain historical data on the recurrence of natural hazards and agricultural production of the past 5–10 years to act as a baseline, which would make it easier to assess the impact of natural disasters and recommend preparedness, mitigation and recovery interventions to support the sector,” Barelli adds.

Rebuilding Barbuda

Antigua and Barbuda’s agricultural sector also suffered damage estimated at €400,000 as a result of the hurricane, including to standing crops, machinery, agricultural input tools and livestock. Prior to the disaster, Barbuda had adopted a ‘green island concept’
Sustainable land husbandry techniques on Rwanda’s hillsides are increasing crop productivity and incomes for smallholder farmers. As part of the government-funded Land Husbandry, Water Harvesting and Hillside Irrigation project, land management practices such as soil bunds, terraces, cut-off drains and reforestation have been implemented across more than 21,300 ha to enable farmers to diversify their crop production, and alleviate poverty in the country’s remote rural zones.

With funding of €118 million from the Rwandan Government and development partners, graduated terraced farms have been constructed in the fertile hills of 13 rural districts to help conserve soil, water and fertiliser. This practice has improved crop production for hundreds of thousands of poor rural farmers and the land husbandry works have provided more than 35,000 job opportunities. “I participated in the terracing works and the money I got helped to pay for health insurance for my family and my children’s school fees,” says farmer Joseph Bihoyiki.

Prior to the introduction of the new technologies, farmers endured chronic poverty due to rains washing away the precious topsoil. “Our land was unproductive and barren; we only survived on maize and wheat because that is where we managed to get yields,” says smallholder Olive Nyirahabimana. “But after using land husbandry technologies, we immediately cultivated Irish potatoes and the harvest was amazing.” Since the project’s implementation, in some places, potato and maize harvests have increased by up to 500% and 300% respectively.

Sustaining the recovery

To further improve technical and institutional capacity for disaster and climate risk management and sustainable agriculture in the region, FAO is also implementing a project in Guyana, Jamaica and Suriname. In a separate project, the feasibility of offering agricultural risk insurance is being assessed in Grenada, Jamaica, and St Vincent and the Grenadines. “We have also been providing technical assistance for the development of readiness proposals to Guyana and St Kitts and Nevis, with respect to accessing the Green Climate Fund which invests in low-emission and climate-resilient development,” says Lystra Fletcher-Paul, FAO Sub-Regional Coordinator for the Caribbean. “While most Caribbean countries are not large emitters of greenhouse gases the impact of climate change has hit them hardest,” she adds. As a result, FAO in collaboration with CARICOM and its partners across the Caribbean are also preparing for future extreme weather events by developing a regional Emergency Response Strategy and Action Plan for the agriculture sector – addressing the main response challenges of coordination, data and communications – which should be ready before the start of the next hurricane season.
New apps close the gap in farmer knowledge

Mobile apps and handheld scanning devices are providing Kenyan farmers with information on the type and composition of their farm’s soil within minutes.

Edith Mosop, a farmer and extension officer based in Nakuru county in Kenya’s Rift Valley says the LandInfo app enables farmers to better plan with regards to crop cultivation. “The innovation empowers farmers to adapt to climate change. This is because they access information on weather patterns and make informed decisions,” Mosop explains. Patrick Ng’ang’a, a farmer based in Meru county, central Kenya, notes that he has been able to ascertain the most timely period to plant and achieve good harvests during both short and long rainy seasons. “Accurate weather forecasts have enabled me to select ideal crops for the two seasons annually,” says Ng’ang’a, who cultivates cereals and legumes.

Daniel Kobia, also a Meru farmer, received training on the use of the app in 2016 and says it has enabled him to determine which crops to plant during different seasons and which part of his 2 ha farm to grow them on. Through the information accessed via LandInfo, he has identified sorghum and millet as ideal crops instead of maize and beans, whose productivity had been steadily declining. With the new crops, Kobia’s yields have almost doubled, and he urges others to utilise the app. “Our economy is agriculture based yet we face food insecurity. Adopting such an innovation can reduce poverty and ensure adequate food,” he enthuses.

As part of a SoilCares Scanning for Success project, a separate tool that provides practical soil information to users within 10 minutes has been distributed to over 2,900 smallholder farmers in Kenya. The handheld device connects to a smartphone via Bluetooth and generates a report about the soil’s status and nutrient needs. The scanner uses near-infrared sensors and connects to the SoilCares Global Soil Database to accurately determine soil properties such as pH level, organic matter and NPK content. The device allows farmers to apply the exact type and amount of fertiliser that their soil needs, leading to improved yields, lower fertiliser costs and reduced environmental damage. The project also provides training on soil sampling, fertiliser use and soil fertility. “We believe that closing the food gap begins with closing the knowledge gap. That is why we have developed a series of training materials [in the form of booklets] on soil testing, soil sampling, applying fertiliser, soil fertility and introduction to soil science. We hope these materials will build the capacity of our partners and help them in sharing the information with farmers,” states Christy van Beek, director of the SoilCares Foundation.
Solar-powered irrigation has provided more than 10,000 people in Mozambique with access to water

Solar-powered irrigation has changed the lives of smallholder farmers in Mozambique and Rwanda by generating the power needed for sustainable irrigation. In Rwanda, the energy produced by this renewable source is used in the savannahs and marshland areas in the east of the country, which have long been plagued by recurrent droughts. In Mozambique, the systems are providing nine communities, which are vulnerable to severe and prolonged droughts and flash floods, with water fit for human consumption, as well as agricultural and irrigation purposes.

Plan°C is an international initiative to mitigate climate change in Cabo Verde, Mozambique and São Tomé and Príncipe. The Community Adaptation Action Plan (PACA) project was implemented in Mozambique between 2013 and 2016 which Inês Mourão, general coordinator for the project, says has ‘climate-proofed’ previously vulnerable communities. “The water is pumped from a nearby river or small creek to tanks, drinking troughs and water storage reservoirs,” Mourão explains. Two years after the conclusion of the initiative, “More than 10,000 people still enjoy easy access to water, even during drought periods,” she adds.

The low-carbon project reduces the need for fossil fuels to pump water and promotes climate-smart conservation agriculture, such as planting drought resistant crops, establishing horticultural nurseries and implementing new agroprocessing techniques. Based on community needs, new activities are scheduled to be launched throughout 2018, with another 12 communities, selected by Mozambique’s Government, set to benefit from the scheme up until 2020.

In Rwanda, a pilot initiative using solar-powered irrigation has been jointly implemented by the Rwanda Agriculture Board and FAO since November 2017. The project covers 1,300 ha of marshland areas and has already provided over 580 farmers with sustainable irrigation.

Gerard Munyeshuri Gatete, a bean grower in Rwanda’s Nyagatare district, uses a solar-powered pump to irrigate his crops during drought periods. Of the funds set aside for the initiative, €163,000 has been allocated to subsidise procurement of pumps for farmers. Gatete and his family paid 25% of the cost of the equipment, which pumps about 3.5 m³ of water per hour. “Before we had this innovative pump, we would harvest about 1 t of beans per hectare, but now we harvest almost double,” says Gatete.

For more information visit: https://tinyurl.com/yd44crl6

Passport pledge
Palau’s paradise policy

A FIRST OF ITS KIND immigration policy has been implemented in the tiny Pacific island nation of Palau, whereby visitors are required to sign a pledge to ‘tread lightly’ and ‘act kindly’ on arrival. The environmental promise serves to, ‘preserve and protect your beautiful island home’, for the benefit of Palau’s children. This policy was introduced in December 2017 and in the first 2 weeks 6,000 people had the signed pledge stamped into their passports. Since 1993, the sea level around Palau has risen by 9 mm each year and tourism is believed to have damaged Palau’s beaches and coral reefs. This latest measure is part of President Remengesau’s plan to halt what he calls, “Our global warming doomsday.”

For more information visit: https://tinyurl.com/y7syarzs

Biomass power
Adding value with waste

RURAL ENTERPRISES in Kenya are benefitting from mobile power plant units fuelled by macadamia nut shells, maize cobs, coffee husks and bagasse crop residues. Using 18 kg of macadamia shells or 32 kg of maize cobs, for example, the biomass units can produce up to 10 kW of electricity and 40kW of thermal energy every hour. In Muranga County, Kenya, a women’s mango cooperative is using the units to rapidly dry their fruit and thereby significantly reduce the amount of spoilage that occurs with sun drying. Super-heated steam produced by the plant processes 300 kg of fresh mango into 20 kg of dried mango in just 6 hours, whereas sun drying the same weight would take 48 hours. Village Industrial Power, the American start-up which developed the units, say that the innovation is helping farmers to increase the value of their crops by up to 10 times.

For more information visit: https://tinyurl.com/yd44crl6
**BIOFORTIFIED BEANS**

‘Super seeds’ reach refugees in Uganda

To promote food security in Uganda among smallholder farmers and refugee communities, new bean varieties have been bred to tolerate the changing climate.

Sophie Reeve

In Uganda, high yielding, drought and disease resilient bean varieties are enabling smallholder farmers and over 1 million South Sudanese refugees to boost production and feed their families. The resilient seeds, known as ‘NAROBEANs’, were bred by the Pan-Africa Bean Research Alliance, the National Agricultural Research Organization and other international partners, to tackle malnutrition and reduce anaemia in the country.

Prior to release of the NAROBEANs, 16 different varieties were evaluated for their yield potential, ability to accumulate micronutrients, such as iron and zinc, and farmer preference. Five varieties – including three bush and two climber growth types – fulfilled all requirements, were tested for growth suitability across six agro-ecologies in Uganda, and identified for release. Many of the evaluated seeds were sourced from the Center for Tropical Agriculture’s (CIAT’s) genebank in Colombia, which houses 37,000 common bean varieties – the largest collection in the world. “These beans have been bred conventionally over many years, combining iron sources from our CIAT genebank in Colombia with locally adapted germplasm,” says Dr Wolfgang Pfeiffer, global director of product development at HarvestPlus, based at CIAT’s headquarters in Colombia. “It is a long process to track down varieties with higher iron content, and then ensure that they can also tolerate harsh conditions in our environment, like drought,” Pfeiffer explains.

Uganda currently hosts an estimated 1.4 million refugees, most of whom are from South Sudan, and has a progressive policy which provides them with land to live and farm on, encouraging self-sufficiency. In 2017, to further promote food security among refugee communities, FAO contracted a large commercial producer to supply refugee camps with 21 t of the new varieties, which have been found to yield up to three times more than local varieties. “Instead of buying expensive supplements, communities can now buy and grow these beans as a way of boosting nutrition and reducing anaemia, knowing that they will get yield despite drought,” says Stanley Nkalubo, team leader and breeder at Uganda’s National Crops Resources Research Institute.

The ‘super’ beans have become popular among consumers due to their fast-cooking, superior taste and climate resilient qualities, and Ugandan farmers are able to make a profit of €0.28–0.60/kg (UGX 1,200–2,500) when selling to traders. “On 1 acre you can get almost 250 kg [of the new varieties], but using the local variety, you get 40, 50 or 70 kg. That is the difference. And the new ones are very easy to cook and don’t waste much fuel,” says Charles Latiego, a farmer in Gulu district, Uganda. Seed companies are also taking up production of the NAROBEAN varieties, including Pearl Seeds Limited whose main objective is to contribute towards poverty eradication and livelihood improvement of small, medium and commercial farmers by providing a constant supply of high quality seeds. “In a season, we sell about 250 to 300 t of beans. So many people are after them, it’s a first come, first served basis,” says Richard Masagazi, managing director at Pearl Seeds Limited.
**Gene discovery**

**Defeating stem rust**

Researchers have identified genetic clues – which indicate whether or not the stem rust pathogen can overcome rust-resistant genes of the crops it affects – by sequencing the genome of the fungus. Stem rust is one of the most damaging pathogens to cereal crops – and wheat in particular – due to its ability to evolve and adapt to disease-resistant genes. However, Australian researchers have pinpointed the genomic sign that indicates resistance to Sr50 – a rust-resistant gene introduced to high-yielding wheat varieties to combat the disease. This means rapid DNA testing can be carried out on samples infected with the pathogen to determine if the crop needs to be sprayed with costly fungicides for protection, or whether the stem rust will be overcome by the resistant genes, saving farmers unnecessary expenses.

**Wild rice**

**Crop improvements**

Genome sequencing for seven wild rice varieties has been completed by the International Rice Research Institute (IRRI) 15 years after the study began. Published in *Nature Genetics*, the study provides a vast genetic resource that compares the genomes of the wild varieties and two cultivated varieties, and guides breeders to the genes plants use to resist pests, thrive in inhospitable environments, and produce abundant amounts of grain. With rice providing 20% of daily calories consumed globally, this important breakthrough will enable scientists to accelerate efforts to develop new varieties that are both higher yielding and sustainable, and “improve crops with traits that are preferred by farmers and consumers,” says Ruaraidh Hamilton, lead scientist at IRRI.

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**PEST CONTROL**

**The ‘push’ to combat fall armyworm**

As African farms remain under siege from fall armyworms, new strategies to help control the spread and combat the effects of the pest are showing early signs of promise.

*Benson Rioba and Alex Miller*

A new ‘push-pull’ technology is being implemented across Africa in an attempt to combat the fall armyworm which, since its introduction to the continent 2 years ago, has spread to 43 countries and affected up to 35 million ha of maize.

Believed to have been introduced to the continent through imported produce, fall armyworm moths can fly 100 km in one night and lay 1,000 hungry larvae in 10 days, overwhelming smallholders and devastating agricultural produce. However, the introduction of foliage around crop fields to distract, or pull, fall armyworms away from produce, and the practice of intercropping repellent plants into the field to ward off, or push, fall armyworms away from crops is showing early signs of promise.

Greenleaf desmodium has proven to be an effective repellent and Napier grass can be used as foliage to entrap fall armyworm eggs in this ‘push-pull’ technique.

Mary-Lucy Oronje, an agricultural researcher from the Centre for Agriculture and Bioscience International (CABI), acknowledges that getting the seeds of the push and pull plants to farmers can be difficult. Equally, in drier environments, some farmers find that the push-pull plants can’t survive unless they are using climate adapted seeds. Those who have successfully introduced the technology in Kenya, Tanzania and Uganda, however, are reporting 86% reductions in crop damage and on average 82.7% less fall armyworm larvae per plant.

Other suggested solutions include spraying biological pesticides and encouraging natural predators, but “The push-pull technology is proving to be one of the most reliable methods of controlling the [fall] armyworm, as it uses natural methods,” says Dr Saliou Niassy from the International Centre of Insect Physiology and Ecology. Across Africa, 140,000 farmers have already embraced the technology and a further 150,000 farmers have been trained in how to plant push-pull seeds correctly.

**For more information about protecting against fall armyworm, see a new technical guide: Fall Armyworm in Africa: A Guide for Integrated Pest Management:**

https://tinyurl.com/y9jw9poy
SPREADING THE WORD

Promoting safer hygiene and healthy eating in Senegal

Local radio adverts and face-to-face training have persuaded Senegal’s rural communities to adopt healthy eating and safer hygiene practices.

Vincent Defait

When Thiéne Dramé – a resident of a village in Senegal’s Kaolack region – found that she could no longer feed her seven children and four grandchildren, she decided to start growing her own fruit and vegetables. “My youngest grandchild was always sick,” Dramé says. “As soon as I learned that orange-fleshed sweet potato is a nutritious crop for preventing anaemia in pregnant women, improving mothers’ breastmilk, and ensuring children grow up healthy, I didn’t hesitate [to plant it].” The USAID-run SPRING (Strengthening Partnerships, Results, and Innovations in Nutrition Globally) project trained Dramé how to grow nutritious vegetables so she could feed her family a more balanced diet.

Between 2015 and 2017, the SPRING project helped to improve maternal and child nutrition in three regions of Senegal (Fatick, Kaffrine and Kaolack) – chiefly by delivering healthy eating and safe hygiene training to women, and broadcasting messages on local radio stations which is by far and away the most popular media channel among rural communities in the country. The project teamed up with six radio stations, airing over 14,000 adverts and around 30 programmes in local languages on a variety of nutrition-related topics. The programmes covered simple hygiene measures, such as using tap water and soap rather than communal basins for washing hands, and stressed the benefits of exclusive breastfeeding for infants under 6 months. “[This is] very problematic as there is widespread belief that infants need to drink water,” explained Robert de Wolfe, SPRING project manager. But infants regularly fall sick because the water is often not safe to drink.

The project worked alongside national authorities and local and regional NGOs to promote healthy eating and nutrition advice to 430,000 women, mostly through radio broadcasts and direct contact with 7,500 households.

Senegalese women like Dramé have also been taught how to grow bio-fortified maize and millet, as well as carrots, black-eyed peas and orange-fleshed sweet potato to provide their family with a more varied diet. In addition, more than 500 people working for partner organisations were trained to dispense advice on nutrition.

Dramé now enjoys a better standard of living. Like other women who received training, she earns an income by selling her surplus vegetables and raising chickens with a women’s group. She also has access to meat, fish and eggs, and is able to feed her family a more varied diet. “My youngest grandson doesn’t fall sick as much now, so we don’t have medical bills like before,” says Dramé, who is now sharing the benefit of her experience with family and friends. “In my community, all the women have started their own gardens and I invite other women to do the same.”

430,000 women have received advice on healthy eating and nutrition in Senegal

Community health workers have received SPRING training to integrate nutrition messages into their work
Food Vouchers

Strengthening nutrition and local markets in Haiti

A safety net scheme in Haiti is providing the country’s poorest households with food vouchers to purchase locally produced, nutritious food.

Alex Miller

Each month, 18,000 financially insecure Haitian households are receiving food vouchers which allow them to purchase otherwise unobtainable, locally grown produce from a network of just under 1,000 food vendors across five of Haiti’s ten regional departments. The Government of Haiti, with support from USAID and CARE International, manage this safety net programme in order to provide fruits, vegetables and tubers to households who otherwise would be unable to afford nutritious produce.

By relying on local vendors, the scheme is also strengthening local markets. Designated vendors, who accept the food vouchers as payment, can redeem the vouchers for cash. In some cases, vendors are using the money to expand their businesses, through the purchase of livestock, for example. Three quarters of Haiti’s population live on less than US$2 a day and so money from the voucher scheme is a vital economic stimulus for communities across the country, and has helped to bolster trade in local Haitian markets since its inception in 2013.

The World Bank suggests that 90% of Haiti’s population are vulnerable to natural disasters and the poorest households are most susceptible to food price spikes. The voucher system ensures that families are more resilient to such shocks by helping to foster stronger economic frameworks, which can be relied upon in the event of natural disasters or sudden price increases. This community-managed, safety net scheme is believed to have increased household food security in Haiti and reduced the risk of child malnutrition, not only by making local produce more attainable, but also through the use of outreach officers who provide information related to health and hygiene alongside the food vouchers.

A 2017 CTA study entitled Building the Evidence Base on the Agricultural Nutrition Nexus: Haiti highlights that Haiti has enough food to feed its population only if it imports approximately half of all the food that it needs. Through the use of the food vouchers, the Government of Haiti is aiming to support local agri-businesses in order to reduce Haiti’s reliance on imported produce. “In order to build a stable and economically viable Haiti, addressing issues such as food security are critical,” says USAID spokesperson Ryan Essman. “Assisting Haiti to strengthen its own social protection system will build resilience and help the country better withstand natural disasters.”

Tigernut milk

A premium, healthy drink

In West Africa, a nutritious alternative to dairy milk is proving popular amongst health-conscious consumers. Farmers in countries including Côte d’Ivoire and Ghana are producing tigernut milk in their homes and selling the nutrient-rich product at premium prices. Tigernut milk contains oleic acid, a mono-unsaturated fat also found in olive oil and avocado, and is extracted from the nuts of the yellow nutsedge plant. The fibrous nuts are soaked in water, blended and then strained to create a sweet milk, rich in antioxidants. Tigernut milk is also lower in cholesterol than dairy milk and high in iron, magnesium and potassium. In powdered form, the milk is sold for €0.73 (320 Naira) per 100 g in Nigeria, compared to dairy milk which sells for €0.30 (135 Naira) per 100 ml.

Geo-nutrition

Mapping micronutrients

Cropland mapping and analysis of micronutrient movement through soils and food systems to determine the impact on human health is the focus of a new programme in Ethiopia and Malawi. The initiative, known as GeoNutrition, aims to overcome selenium and zinc deficiencies which are endemic in both countries and known to impair growth, inhibit cognitive development and suppress the immune system. As Southern and Eastern African soils are many thousands of years older than European soils, they often lack sufficient micronutrients to keep crops – and people – healthy. With funding from the Bill and Melinda Gates Foundation, the programme will therefore test the efficacy of organic matter and fertilisers enriched with micronutrients, such as zinc, to biofortify soils and crops.
In the Pacific, three seafood companies using sustainable fishery practices to conserve the health of marine ecosystems and contribute to the local economy have received international recognition for their novel business models.

Stephanie Lynch and Bernadette Carreon

Three fishing companies – from Palau, the Solomon Islands and Vanuatu – were shortlisted for the finals of the global Fish 2.0 business competition, which recognises businesses in the fishery sector that employ innovative and sustainable approaches to simplify supply chains, while increasing incomes for fishers. In Palau, Indigo Seafood has trained local people to use sustainable methods to farm high value products, such as grouper and giant clams. The company employs over 75 local people, in addition to working with 70 giant clam farmers. To increase growth rates and reduce pressure on wild-caught sources of fishmeal, such as sardines and other forage fish, Indigo Seafood has also developed protein-rich feeds from soy and other grains.

“Our goal at Indigo is building a sustainable aquaculture company to have a positive economic impact for the citizens of Palau, while protecting the pristine coral reef,” says James Sanderson, co-founder of Indigo Seafood. “Though we are still a small company, we have been positively impacting the community for several years. With our giant clam exports, we have brought thousands of dollars to local clam farmers and their families,” he adds. Since 2011, the company has collaborated with the Palau Aquaculture Cooperative Association (PACA) to provide their member farmers with seedlings to culture giant clams, which Indigo Seafood export to Asia, Europe and the US. With access to these profitable markets, Palauan clam farmers can earn around €4,816 per year according to PACA’s president, Bernice Ngikrelau.

Indigo Seafood has also recently deployed its first two rigid polyhedral Aquapods™. These submerged cages, designed by Mexican company Ocean Farm Technologies, are lowered into deep water off-shore. The free floating, untethered cage is able to change location with the ocean’s currents, creating...
SEAWEED FERTILISER

A liquid solution for enhancing crop production

In St Lucia, an organic seaweed-based fertiliser that enhances plant root development is increasing crop yields whilst removing the invasive *Sargassum* seaweed which impacts the country’s tourism and fishing industries.

Shervon Alfred

Algas Total Plant Tonic, a natural fertiliser, is made by Algas Organics from *Sargassum* seaweed; the algal growth hormones and micronutrients stimulate vigorous root development, helping to boost plant growth and crop yields.

Algas Organics, the first indigenous agriculture biotech company in the Caribbean, carried out research for 11 months to determine how to extract key nutrients and hormones from the seaweed before identifying a business opportunity to develop it into a liquid biofertiliser. “Plants have a wider root span, the roots go deeper into the soil, the plant is better able to absorb nutrients and, consequently, produce sugars through photosynthesis which enhances crop yield as well as plant health,” says Johanan Dujon, founder of Algas and one of the Organisation of Eastern Caribbean States 30 Under 30 Entrepreneurs.

Dujon’s biotech company was established in 2014 at a time when inundations of *Sargassum* seaweed in St Lucia had significantly increased due to changes in ocean currents and warmer sea temperatures. Piles of seaweed accumulating along the coast cause problems for the fishing and tourism industries by clogging boat engines and obstructing general vessel traffic. The dead seaweed also generates a strong odour that discourages tourists from visiting the beaches. But this environmental problem has effectively been turned into an agricultural solution through the efforts of this young entrepreneur.

During the peak season, Algas Organics employs up to 20 staff to process and collect the seaweed; the company currently sells around 5,000 l of fertiliser annually. However, through funding from the government and other donors, the company recently increased its capacity to produce 300,000 l each year. The tonic is already available in six of St Lucia’s major retailers, and is now also being sold in neighbouring Barbados.

Regional success

Didds Fishing Company, a social enterprise based in the Solomon Islands – which was selected as one of the eight Fish 2.0 2017 winners – enables island communities to fish for premium bottom-water species off-shore to relieve pressure on in-shore fisheries. “Fishing is line-specific, fish-specific – we do not go all out with nets or other unsustainable methods,” explains Toata Molea, owner of Didds Fishing. “And because the men are fishing about 6 km off the reef, it relieves pressure on in-shore fisheries so reef fish are actually spawning and thriving,” Molea adds. The company provides boats, fuel and ice to fishing families in the community of Makwau. Didds Fishing pays for the fish directly into the fishers’ accounts, which they can access at the local village store. The increased access to cash has boosted families’ capacity to send their children to school, as well as purchase food and clothing.

Shepherd Islands Organic Seafood, a company based in Vanuatu which farms organic sea cucumbers and sea urchins, was also shortlisted for the finals. “I feel blessed to be part of the Fish 2.0 2017 competition. It’s been an amazing opportunity. Through the competition I’ve become clearer in my vision for Shepherd Islands Organic Seafood and championing sustainable fishing practices,” says company owner, Obed Matariki. His company has developed a lucrative customer base among Chinese seafood distributors and pharmaceutical companies for its exported sea cucumbers and sea urchins and successfully diverted artisanal fisherman and turtle hunters into more sustainable livelihood activities.

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A biotech company in St Lucia is transforming invasive *Sargassum* seaweed into an effective plant fertiliser.
The use of ICT for agriculture (ICT4Ag) is a prominent feature of CTA’s new strategy. Why are ICTs so integral to the transformation of agriculture in ACP regions? To achieve effective agricultural transformation, farmers need tools and technologies that can help them address issues such as low productivity, weak market linkages, and dysfunctional policies – these are all a key part of CTA’s strategy. Such a transformation is especially needed in Africa, where smallholder farmers provide about 60% of food for the population.

To help farmers increase their production, we need to take advantage of the tools that can provide customised information and messages for farmers on what to do, how to do it and when to do it. This is a role that ICTs can play, helping provide farmers with timely information that is precise and locally relevant. Location-based solutions are enabling producers to find relevant markets for their goods, and consumers to trace the sources of their items. ICTs also have a role in facilitating agricultural transformation at the policy level. CTA works with decision-makers in over 79 ACP countries and these partners need access to accurate data to help them introduce effective policies that drive agricultural processes and the efficient allocation of resources.

The ICT4Ag sector is evolving very quickly. Which of the technologies that you are working on are you most excited about?

Agriculture – today and tomorrow – is about data. Hence, remote-sensing technologies such as unmanned aerial vehicles – otherwise known as drones – satellite images, and other ground vehicles equipped with sensors are helping to capture data not only on farmers, but also on agro-input dealers, traders, financial institutions and so on – stakeholders along the entire value chain. Using these technologies gives location-specific data which is key to making cost-effective decisions and providing needs-based services. This data can be used to build an inventory of farmers’ assets to demonstrate why service providers should engage them in business.

Images from satellites and drones, however, only show the surface picture, they don’t go down into the soil. Yet, if these images are integrated with soil sensors, water sensors, moisture sensors, etc., then we can increase the value of the data and provide better services to farmers. This is what we refer to as precision agriculture and, at CTA, we are promoting its use among smallholder farmers in Africa. The technology may not be the same as that used by farmers in The Netherlands or the US, but it’s still very precise – to the level that smallholder farmers can make better decisions.

A variety of ICT4Ag approaches are also working together to increase the productivity and profitability of farmers and help build their resilience to the changing climate. With the right combination of images, sensors and mobile technologies, for example, we are able to know which part of the field needs a particular kind of fertiliser, so we can inform producers on how to apply it judiciously, helping to minimise wasteful use of inputs. A combination of ICT4Ag technologies is also enabling inclusive financial services. In our MUIIS (Market-led, User-owned ICT4Ag-enabled Information Service) project in Uganda, for example, farmers are able to pay for services through their mobile phone. The index-based insurance product provided through this project is based on the GPS location of farmers’ fields and they receive their insurance pay outs via their mobiles.

With the rapid development of these technologies farmers must have concerns about the information that is being collected about them. What is CTA doing in terms of making sure that data is used appropriately?

Of course farmers have concerns and CTA is also concerned about all the
data we are facilitating. For example, the farmers in our MUIIS project were worried that recording their farms’ GPS coordinates and the size of their fields would lead to the takeover of the land by the government. We are gathering data about them and their fields, and they naturally want to know how we are going to use it. I think the most important thing is to create awareness of the value of the data. It takes training, capacity building, education, and awareness creation about the increasing importance of this data for accessing credit and other services. In fact, for the MUIIS project, we are working on a slogan that states, “The more [data] you give, the better the services we provide to you.”

We also still need to go beyond this to explain how the data is used. A number of projects and systems that we work with will tell you that raw data is not usually used. Most of the time it is processed and then can be made anonymous with identities taken out, but it still has value for end users. For example, in Uganda, we created a huge database with over 150,000 farmers, who each answered more than 20 detailed questions. This is a huge dataset that still has value without farmers’ personal details. Financial institutions are looking for this kind of data to have a general idea of how, for example, maize production is distributed in Uganda. They may not be interested in specific farms, but in a region or district. These companies can get all that they need to know about things such as how mobile phones are being used and which mobile network operators are serving different segments of producers without having the personal details of the individuals.

So concerns are there, but we have to educate farmers about how their data is being used so that they are willing to release what they have and we can use it to provide better services to them.

Do you see age discrepancies in terms of how ICTs are picked up and used by farmers or do you see an encouraging trend that even older farmers are willing to try these new technologies?

Of course age is a factor! But we are doing our best to reduce the gap. We are using middlemen to improve digital literacy – young people who are willing to try new technologies and have the desire to use it. Once they take these technologies up, they will be able to convince older farmers to use them as well. But technologies are becoming easier and easier for everybody to use. A few years ago, mobile phones didn’t even have camera features, but now even an old lady living in a rural village, like my mum, can take a picture of herself once she has been shown what to press. So the barrier is there but we need to do more to improve digital literacy and this is key to a number of CTA’s activities. Through CTA’s MUIIS project farmers are trained on the navigation of smart phones. For example, they learn how to send a message and how to take a picture of a disease or pest in their field. So with these efforts, I think the digital literacy barrier may not close completely but will gradually be minimised as the years pass by.

**CTA is obviously investing a lot into ICT4Ag and part of this is the recent development of an Apps4Ag database. How is this helping different stakeholders in the sector?**

The Apps4Ag database aims to achieve a number of goals. One of them is to link young entrepreneurs who have interesting apps to potential investors. So the database is intended to make information about new apps available for investors to quickly find.

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**“ICT4Ag approaches are working together to increase the productivity and profitability of farmers and help build their resilience to the changing climate.”**

Another goal is to help young entrepreneurs with the development of new apps. Many of these young people come out of university with their degree in computer science and are eager to develop an app, but they don’t carry out market research to see what is already there. Instead, they get straight into developing a new app and sometimes realise that a similar app is already in the market. With the Apps4Ag database, they will be able to look up what is already out there to enable them to identify the gaps in the market, so they don’t invest their time and financial resources on something that is already available.
We also know that international development partners have difficulties finding the information they need on apps. With this database they can see which apps are located where and with what technology so that they can decide how to integrate them into their projects. Big development players, such as the Alliance for a Green Revolution in Africa, the Bill and Melinda Gates Foundation and others approach CTA to find out about ICT4Ag both in a specific country and across ACP countries. So at the backend of this database, we can pull data together to provide high level information about the use of ICTs in agriculture.

The database was launched in December 2017, and it is our intention to improve upon it. We will also work with app developers to regularly feature interesting apps on the front page of the website, new features for a given app, and an app of the week/month, etc.

“CTA builds the capacity of farmer organisations to become the owners of their data instead of leaving it to the control of governments or private sector companies.”

CTA is not the only organisation working in the ICT4Ag field. What is unique about how it works in this sector and the value its work adds?

There are three areas that I can talk about that make CTA unique. The first is promotion and awareness creation among youth, the second is scaling out solutions through partnership building, and the third is linking big data analytics with farmer organisations. CTA is supporting ICT4Ag development in several ways and our approach has been to create awareness about the value of ICTs. For example, the Plug and Play events help to organise entrepreneurs and provide them with platforms to showcase their apps. And then there is the Pitch AgriHack! programme, which helps young entrepreneurs to scale up their ICT4Ag start-ups. The participants' apps have already been tested and piloted, but need both business and financial support to become profitable. CTA offers them mentorship and opportunities to showcase their business to investors so that they can gain some extra funding to take their business to scale. The Centre also invests in and supports these entrepreneurs with business development services and seed funding to prepare them to sell their business. Most of these young entrepreneurs are techies; they don't have the skills for business development, hence this support is really useful.

Another unique part of what we do is bringing different partners together to scale a given tool or application. An example of this is the MUIIS project, where we have pulled together partners that have the expertise and skills in index-based insurance, weather forecasting, agronomy, ICTs, user engagement and training. This kind of partnership building is unique to CTA. It is often challenging, but we are able to pull such diverse partnerships together and the MUIIS project is working well in Uganda as a result. We have just submitted another proposal for a similar partnership in Ghana and there are other ongoing partnerships operating in Southern Africa and Eastern Africa on climate resilience and livestock information services respectively. All of these are driven by CTA with a number of partners cooperating to scale out new technologies.

Finally, a number of our competitors and partners focus on big data, but CTA's emphasis uniquely concentrates on linking farmer organisations and cooperatives with this data to enable them to realise its value. CTA builds the capacity of farmer organisations to become the owners of their data instead of leaving it to the control of governments or private sector companies. We train these organisations to engage in the data profiling process and to manage their database themselves, as well as in data protection and accessibility issues. By taking full ownership of their data, farmer organisations and cooperatives can engage private sector partners for the tools and technologies to transform the raw data into practical information and services.
The informal sector provides income and jobs for the most vulnerable populations in developing countries and, if gradually formalised, has potential to become a major lever for growth and development.
**THE INFORMAL ECONOMY**

The ups and downs for agriculture

The informal food sector – from the field to the market – constitutes a large proportion of agricultural trade in developing countries. To harness the potential of this vast section of the economy, policymakers and the private sector must facilitate stakeholders’ access to training, financing and technological innovations, whilst also taking their difficulties into account.

Vincent Defait

Sub-Saharan Africa is hampered by chronic malnutrition, and access to food is highly dependent on cross-border markets. It is estimated that 75% of intra-regional trade is informal, a substantial share of which constitutes staple foods. Thus, informal trade has a direct impact on food security and according to the International Monetary Fund (IMF) report, *Regional Economic Outlook: Restarting the Growth Engine*, it represents “a safety net, providing employment and income to a large and growing working-age population.”

In 2012, an African Development Bank (AfDB) brief, *Informal Cross Border Trade in Africa: Implications and Policy Recommendations*, estimated that 43% of the African population gained income via informal cross-border trade (ICBT). “ICBT can have positive macroeconomic and social ramifications such as food security and income creation, particularly for rural populations, who would otherwise suffer from social exclusion,” the AfDB brief explains. “If properly harnessed, ICBT has the potential to support Africa’s ongoing efforts at poverty alleviation.”

However, informal trade often results in substantial loss of revenue for states, so the key question is how can countries take advantage of the informal economy to create jobs, and support growth and sustainable development?

**Informal yet inclusive**

According to FAO’s 2017 report, *Formalization of Informal Trade in Africa: Trends, Experiences and Socio-economic Impacts*, the informal economy, “includes legitimately-produced goods and services that do not necessarily follow formal processes such as standards regulations, business registration or operational licenses.” Informal trade is not necessarily illegal, but it is also not really legal, and yet it is vital to developing country economies.

The informal sector generates up to 90% of employment opportunities in some sub-Saharan African countries, while also accounting for a significant share of GDP. The sector often supports the most vulnerable people in society, including women, youth and the rural poor, as underscored by the International Institute for Environment and Development (IIED) report, *The Rural Economy: Understanding Drivers and Livelihood Impacts in Agriculture, Timber and Mining*. AfDB also estimates that around 60% of informal traders at the borders of West and Central African countries are women. The IMF report points out that similar trends prevail in the Caribbean, where the informal sector also accounts for a substantial share of national GDPs (see p26).
In developing countries, the informal economy tends to remain very pervasive. Many factors are responsible for this trend, including: lack of trade facilitation, inadequate border infrastructure, limited access to finance and market information, corruption and insecurity, limited knowledge, education and business management skills. Moreover, “it is the inclusive nature of the informal food economy that explains its resilience,” says Bill Vorley of IIED. Low-income consumers, which often depend on little cash, can easily find staple and fresh foods, animal products, processed and prepared foods at affordable prices.

**Interactions with the formal economy**

The problem, however, is that “informality means that there is no access to the best production technology, financing structures or innovation capacity building instruments. This has all slowed growth,” says Ousmane Badiane, director for Africa at the International Food Policy Research Institute. Most agricultural processing companies are small, home-based and located far from technological innovation centres. Moreover, no banks will issue loans to unlicensed traders without a clearly outlined development plan. “Informality creates jobs and wealth, but at a rate that is not sufficient to overcome poverty,” concludes Badiane.

Rural areas are nevertheless increasingly linked to national and international markets. In its report, IIED mentions that “the traditional informal practices of rural communities now interface with the rules and regulations of urban and global markets.” Long-standing practices and formal rules form a resilient rural informal economy that runs parallel to the formal economy, interacting with it along the value chain. This is the case for the groundnut, coffee and cotton sectors, for instance, where smallholders sell their crops to duly licensed processing companies, often via intermediaries or cooperatives.

Informal trade is most intense at country borders (see p30), as a report by TradeMark East Africa – a non-profit organisation that aims to promote and structure trade in Eastern Africa – points out. At the Kenya-Uganda border, the city of Busia attracts diverse traders, like Harriet Nafula, a Kenyan farmer who has a stall along the main road. She sells pawpaw fruit and pineapples that she buys wholesale and ripens at home. She also grows maize and bananas, which she sells at her farm. She has 10 regular customers, living about 100 km from Busia, who place and pay for their orders by mobile phone. She then ships them their fruit and seed purchases by minibus.
Further south, the cities of Mwami and Mchinji, located between Malawi and Zambia, jointly constitute one of the most active informal trade hubs in Southern Africa. Here, the Common Market for Eastern and Southern Africa (COMESA) has determined that informal trade amounts to €2.4 million per month, compared to €1.35 million for formal trade.

The road to progress

Another major problem is the difference in productivity between informal and formal businesses. On average, based on real output per employee, the productivity of informal firms is only 25% of small formal companies and 19% of medium-sized formal firms. The IMF explains that, “This likely reflects a lower level of physical capital and skill levels of workers.” Moreover, according to the already quoted FAO report, working in the informal sector often deprives employees of their rights, such as social and health protection, freedom of organisation and participation in the social dialogue on the transition to a formal economy.

Nevertheless, “Great progress in formalising the food sector has been made,” says Badiane. “Concerning millet in Senegal, for example, in the 1970s you had to live in the vicinity of a millet cropping area to have access to this cereal. Nowadays, in Washington I can buy ready-to-cook millet-based products from Senegal. It’s the same story for Nigerian cassava. Much of the African agriculture sector is becoming formalised.” According to Badiane, who also underlines that access to financing and training is essential, “the bottleneck in formalising agricultural trade concerns access to innovation technology for processing, packaging, production procedures and the creation of new products.”

However, better access to innovations and technology are often now facilitated by the private sector, which has been encouraged to invest in agricultural value chains due to social transformations that have increased demand for high quality products. “Formalisation is accelerating because the distribution channels are changing,” says Badiane. “There are a lot of mini-supermarkets in urban areas that promote the processing and distribution of conventional agricultural products. Another interesting phenomenon is the rise of the African middle class, which, as affluence increases, is boosting the demand for traditional processed and improved products. This, in turn, stimulates the processing, packaging and branding sectors, [for example] with regard to white maize in West Africa, cassava in Nigeria and millet in Senegal.”

Thanks to the emergence of a strong middle class and the construction of numerous shopping malls, the Kenyan retail sector has become the second most formalised on the continent. In Ethiopia, the return of a large diaspora community and the formation of a somewhat growing middle class have boosted the local coffee roasting market – the capital now counts over 100 companies against
a handful only a few decades ago. In a country where people are used to roasting coffee themselves at home and the best quality beans are exported, this is a significant change.

**Technology's role**

Transformation of the informal sector can also occur through technological innovations. In South Africa, Mastercard and a local technological innovation firm, Spazapp, are offering small staple food shops the possibility of connecting to formal markets and digital payment systems through a mobile phone app. The Spazapp platform gives traders collective bargaining power to order a large variety of products at competitive prices, which they can pay for via their mobile phones using Mastercard's digital wallet, Masterpass. The innovation has already proven beneficial for 2,600 informal traders. The app enables traders to access supplies quickly and reliably, while saving time by having traceable goods delivered. Meanwhile, producers can avoid intermediaries, as well as receive market information and quick payments, overcoming many uncertainties inherent to the informal sector.

"Informality creates jobs and wealth, but at a rate that is not sufficient to overcome poverty."

**A measured approach**

Rather than deploring informality, authorities are also being encouraged to facilitate a gradual transition to formal trade, as in the International Labour Organization's recommendation 204 adopted in 2015. This primarily involves simplifying customs and tax procedures. COMESA and the East African Community have recently introduced a Simplified Trade Regime aimed at streamlining trade by reducing taxes and simplifying bureaucratic procedures. However, these legislative instruments will only have an impact on the informal sector if stakeholders understand the mechanisms. FAO and the NGO, Catholic Relief Services, have organised information sessions at the Rwanda-Democratic Republic of Congo border, where women cooperative members are able to learn about customs taxation from customs officials and government representatives. In Rwanda, the research paper, *Productivity and Informality in Rwanda: Evidence from the Food Processing Sector*, revealed that once they are educated and trained, people often turn to the formal sector. Conversely, fiscal and legislative sanctions for informal activities usually have negative impacts.

In addition, as a priority, trust in institutions must be restored in order...
to formalise the economy. “Legality alone will never persuade enterprises of the benefits of formalising. Authorities may have to overcome deep distrust of state policy, as a force for harassment and exclusion of informal enterprises,” states Vorley. The Mouride ethnic group in The Gambia and Senegal, the Yoruba in Benin and Nigeria, the Burji in Kenya and Ethiopia, and the Lugbara in Congo and Uganda have all created strong informal trade networks that facilitate the dissemination of market information, ensure contract enforcement, and enable the provision of credit and rapid transfer of funds at a low cost, which the authorities failed to provide.

Creating the right environment

For governments, fostering the right business environment for formal trade is key. For example, providing land titles can improve access to credit and have a positive economic impact as in Ethiopia, where a government programme focused on land certification has improved tenure security, investment and the supply of land to the rental market. Additionally, in supporting smallholder farmers to organise into cooperatives, or similar formal groups, governments can help them to access finances more easily. Being members of such farmer organisations also reinforces farmers’ bargaining power and ability to agree formal contracts that provide greater price security, embed quality standards and encourage investment.

The informal sector generates up to 90% of employment opportunities in some sub-Saharan African countries, while also accounting for a significant share of GDP.

In Kenya, where the informal dairy sector generates 70% of the 40,000 marketing and processing jobs and 86% of all milk is sold in informal markets, a joint IIED and International Livestock Research Institute study, *Legitimising Informal Markets: A Case Study of the Dairy Sector in Kenya*, showed that adopting a progressive approach to transforming the sector has paid off, at least initially. Instead of sanctioning stakeholders in the informal dairy sector, the government has offered them the opportunity to be trained on formal production practices and quality control. The study ascertained that, “Training and certifying informal market traders in Kenya has had sustained benefits: helping the government to protect public health, supporting the livelihoods of producers and traders and increasing the availability of milk to nutritionally insecure households.” At the same time, producers are earning a higher income and they have greater bargaining power to get the best deals.

Such initiatives demonstrate that it is essential to address the needs and constraints of everyday agricultural stakeholders, who often do not have any other option but to trade informally, in order to transform the informal economy into a major lever for growth and development. As Vorley outlines, “Recognition of the informal food economy and its stakeholders is a key step towards formalisation, as are meetings with farmers, traders, processors and sellers in their markets.”

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**Formalising informal agricultural trade in the Caribbean**

Since the 2007 global financial crisis, the slowing down of Caribbean economies has resulted in a marked expansion in the informal sector and a rise in small and medium-sized enterprises. The more prominent the agriculture sector, the larger the informal economy. With an estimated tax burden of 43.2%, and the importance of agricultural raw material and food products, which make up 30.7% of total exports, Dominica has a large informal sector. However, it is the only market in the Caribbean where ‘hucksters’ (independent traders) have formed a formal trade association.

Hucksters are the biggest exporters of agricultural products within the Caribbean Community and Common Market. For example, hucksters are the main buyers of fresh produce in Barbados, and of fruit and root crops in Grenada and St Vincent and the Grenadines. These entrepreneurs are very price sensitive; usually operating in the informal sector, hucksters are able to offer lower than wholesale prices and tend to compete with the state marketing boards in each country. To maintain good business, hucksters’ buying criteria is based on quality, price and availability.

In Dominica, formalisation of the huckster’s trade has helped its members overcome difficulties related to market access, creating economies of scale, supply and financing, as well as regulatory and bureaucratic challenges. The Dominica Hucksters Association (DHA) Limited comprises of approximately 120 members, who benefit from a range of services to facilitate formal exporting activities, including training in exporting fresh produce, and support with document preparation and market research on regional and international markets. The main commodities exported by the DHA are banana, plantain, sweet potato, dasheen, tannia, pineapple and passion fruit. The potential for increased business growth through a formal bargaining body has also had positive effects on the local economy through income generation and the creation of employment.

Arnold Babwah, a management consultant who produced a Market Study for Fresh Produce in 2016, which included a review of the DHA, states that, unlike many hucksters operating in the informal economy, “Members of the DHA tend to pay a reasonable price to farmers, usually higher than the wholesale price, as they want to maintain long lasting relationships with farmers in order to sustain their business.”

*Natalie Dookie*
As the executive director and CEO of the Eastern Africa Grain Council (EAGC), which brings together producers and processors, Gerald Makau Masila describes the barriers to formal trade for agricultural value chain actors.

What are the key reasons for the prevalence of informal trade in Africa, particularly in agriculture?

The key reasons, first of all, are to do with the structure of production. Most African agriculture is carried out by smallholder farmers who produce relatively small quantities that they try to channel to the market to sell. However, because the quantities they handle and sell are so small, the trade ends up being informal. The other reason is that to be involved in formal trade, you have to abide by a number of standards that have been created from a regulatory perspective, especially for food related items. Smallholder producers, and also micro-enterprises that are involved in agribusiness, don’t always meet those standards and, as a result, end up having to bypass the formal system.

Are there any benefits of informal trade?

Informal trade of agricultural produce moves a substantial amount of food from production to consumption centres. If informal trade were not possible, we would be suffering massive shortages in the availability of food, and that would drive prices extremely high. Informal trade does not have to be condemned in totality, but we should be able to address some of the issues so that we can start migrating trade from the informal to the formal level.

What can policymakers do to encourage the formalisation of agricultural activities without implementing exclusionary regulations and barriers to trade?

First of all, policymakers need to appreciate the structural nature of production and trade and that it is highly dominated by small and micro-enterprises and smallholder producers. Then they need to bring in interventions such as the provision of central, suitable market places, with proper marketing infrastructure for food and food items, where smallholders can sell their produce. Providing and investing in market infrastructure in this way also helps to formalise the market by providing access to information such as market prices, and the quantity of produce being sold.

There is also need for capacity building and training on food safety and food quality standards so that producers and traders are able to understand what the requirements are, and be able to meet them. This way, they would not be excluded even though they are not formal agribusiness enterprises.

How do innovative ICT systems like the EAGC’s Regional Agricultural Trade Intelligence Network (RATIN) encourage more formal trade in Africa?

One of the definitions of informality is not being able to trace information of exactly what is being sold. ICT systems are able to capture information and data about various products and agricultural commodities that are being traded through informal channels, so by capturing that data and information you are starting to formalise the sector. ICT systems such as RATIN, which monitor the cost and quantity of cross-border trade, disseminate this data to actors in the value chain, including farmers, traders and processors. With this information, a farmer can decide to grow more soya, beans or rice, for example, in response to what the market is looking for.

ICTs also help to provide services at the farmer level. We have ICT solutions that are helping to map out mechanisation requirements so farmers can use these applications to book a tractor or a dryer for their farm. Also through ICTs, we are going to get much more integration because the supplier and the producer are connected in a more efficient way. I am very confident that agribusiness will be transformed by ICTs.
Taking the brakes off formalising agricultural trade

Strong demand for processed products, and efforts by the government to facilitate administrative procedures, mean that conditions are right for the formalisation of Senegal’s agribusiness sector – but there are still hurdles to overcome.

Manon Laplace

In 2002, Fatoumata Diop set up Oumou-Mountaga to help women formalise their businesses. The organisation’s status as an economic interest grouping means that several entrepreneurs can join forces to improve and grow their businesses. Each year, she delivers training to 400–500 women, teaching them how to dry, process, package and sell local cereals, fruit and vegetables. Oumy Diouf, in her forties, is one of those women. Before joining Oumou-Mountaga in 2012, she lived hand-to-mouth by selling fruit and vegetables by the roadside as a bana-bana – an itinerant trader who account for the overwhelming majority of the informal sector. Diouf has been trained in how to make couscous from millet and maize and, since going formal by joining a cooperative, has enjoyed a steady income meaning she can now pay her rent and take care of her mother.

Formalisation spurs growth

For both Diop and the authorities, one of the biggest challenges is persuading people working in the sector that going formal is a good move. “There’s an issue of trust,” says Ismaïla Dione, head of division at the Directorate for Small and Medium-sized Enterprises (DPME), part of Senegal’s Ministry of Trade. “Many informal traders see formalisation as a way to force them to pay tax. Yet formalising brings many benefits – it can help businesses grow, open the door to exporting (official figures show that only 0.1% of informal production units export their products), boost turnover and allow business owners to pay their taxes.” “Formal businesses tend to produce more, generate bigger profits and, in some cases, create more jobs,” adds Kwaw
Andam, researcher at the International Food Policy Research Institute.

The authorities also struggle to gauge the true scale of the informal sector. The most recent 2016 census of production units (formal and informal), conducted by the National Agency of Statistics and Demography, excluded the agricultural sector because it was too hard to obtain reliable data. The figures nevertheless show that 97% of businesses in Senegal are informal and, according to the DPME, thousands of these informal units operate in the food processing industry.

The benefits of formal contracts

Formalising is a way for farmers to safeguard their income for the long term. “[Formalising] has one major benefit that farmers aren’t always aware of,” explains Éric Binson, managing director of SOCAS, a Senegal-based industrial tomato puree processing firm founded in the 1970s which employs around 100 people. “Running an informal business is a lottery. It’s a sort of gig economy. There’s no stability. If farmers can’t find someone to buy their produce, they’re left with nothing.”

Informal farmers and traders have no guaranteed outlet for their produce but farmers who sign contracts with a formal company have regular orders, with prices set in advance.

Formalising also gives business owners access to logistics and financial support. “If farmers aren’t officially registered, they’re precluded from government procurement, and they can’t secure loans or other funding to buy equipment,” explains Dione. “Without identification, registration or a business plan, there’s no chance of getting a loan. It’s as simple as that.”

Persistent barriers to formalisation

Although the informal sector provides livelihoods for many people in Senegal, it remains a barrier to development. “Formalisation is high on the government’s agenda,” adds Dione. “We need to monitor and quantify the sector so we can devise the right policies.” In 2014, the government launched the Emerging Senegal Plan (ESP) to foster the emergence of entrepreneurship, to turn the country into a major exporter of fruit and vegetables, and to improve the organisation/structuring of small agricultural producers around modern large-scale farmers through the establishment and promotion of adequate contracting mechanisms.

Four years on, no assessment of the impact that the ESP has had on the informal sector is available.

Despite a range of incentive schemes, access to funding remains the main barrier for businesses, according to the World Bank. Moreover, processing units – most of which are micro-enterprises operating out of family homes – struggle to find suitable premises, and are often priced out by steep electricity, water and packaging equipment costs. “Production costs are high,” explains Diop. “It can cost as much as €0.80 (CFA 525) to process 1 kg of millet, so we have to sell at €0.91 (CFA 600).” By comparison, figures from Senegal’s Food Security Commission show that locally-produced rice goes for just €0.40 (CFA 263). Rather than selling to the domestic market, Diop sees much greater potential in exporting to France, Italy or Spain, where a bag of millet sells for more than €1.

Strong demand for processed food among the middle class

The outlook for the domestic market is nevertheless promising, with an urban population that is enjoying ever more disposable income – the result of a burgeoning middle class, returning diaspora, and growing demand for processed, packaged, traceable, easy-to-prepare food products. As such, private businesses could play a vital role in formalising Senegal’s economy by putting in place officially registered production units that comply with food processing standards and regulations, and, in so doing, encourage other value chain actors to follow suit.

“Senegal’s emerging middle class is embracing new food shopping habits,” says entrepreneur Djiby Diagne. “People are taking a greater interest in local, high-quality produce.” Diagne hopes to tap into this new trend. In spring 2018, he plans to open a new mango processing unit in Casamance where, he claims, 70% of mango harvests are lost because of a lack of storage and transport infrastructure. The involvement of the private sector and establishment of registered premises and storage facilities should go some way to addressing the issue of post-harvest loss, the same way it has helped sustain Senegal’s tomato-growing sector. “Without the canning industry, Senegal wouldn’t be able to grow tomatoes on this scale because harvests would be lost,” Binson adds.
EASTERN AFRICA

Realising the potential of informal trade

With women making up the majority of informal traders in the East African Community (EAC), various initiatives are encouraging them to use safer formal trading routes and facilitating their participation in formal trading activities to help increase their incomes.

Bob Koigi
At the Kenya-Uganda border town of Busia, thousands of traders hustle against each other as they compete with trucks to get their goods cleared at the border post. The flourishing cross-border trade stems from the booming demand between the two Eastern African nations, providing livelihoods for millions and a rich source of revenue for the governments of Kenya and Uganda in taxes and custom duties. But, while Kenya has managed to gazette (certify) more than 35 official cross-border points, mostly with Uganda, only recently has positive progress been made to support informal traders, while also increasing protection for women who have traditionally borne the brunt of the risks of informal trading.

Informal cross-border trade accounts for around 60% of all transactions in the EAC, with women accounting for 80% of all informal traders.

Making business easier

According to TradeMark East Africa (TMEA) – a key institution for enhancing trade in the region – informal cross-border trade accounts for around 60% of all transactions in the EAC, with women accounting for 80% of all informal traders. “The issue of informal trade in East Africa cannot be separated from women. It is therefore very important to understand where women are coming from to trade, what information they have received in order to trade, and what they need in order to streamline their trade and ensure they can transact more easily and conveniently,” says Gloria Atuheirwe, TMEA women and trade programme officer.

But formalising the way women do business has not been easy. Traditionally, thousands of traders, afraid they would be forced to pay more at the borders, use alternative, ungazetted and often dangerous routes, including crossing forests and rivers. Edna Mudibo, a Kenyan trader who has been selling cereals and peanut butter since 2012 has had her fair share of woes. “I lost count of how many times my goods were confiscated by police for using dubious routes. I would lose all my savings because I used to move with almost all of my cash to go trade. I had no bank or anywhere to store my money. Even after paying hefty bribes to avoid being arrested, we still feared going through the official border points. The custom officials were mean and the amount of money we used to pay was exorbitant,” she recalls.

Mudibo’s experiences are corroborated by a 2013 World Bank report, Women and Trade in Africa: Realizing the Potential, which stated that up to 80% of traders in the Great Lakes region (Burundi, Democratic Republic of Congo, Kenya, Rwanda, Tanzania and Uganda) paid bribes. An earlier 2007 survey by UN Women also indicated that bribes are not the only issue and that 26% of the women who were informal traders at that time were raped, predominantly by law enforcers, as they tried to move produce across trade routes. However, with the coming into force of the EAC Custom Union and the Common Market Protocol – which opened up borders to free movement of people, goods and services in 2010 – traders selling goods worth less than €1,700, which are primarily produced in EAC member states are now exempted from custom duty. “Considering we have informal traders in their thousands crossing the Busia border on a daily basis and trading in small produce, it makes sense to incentivise them to use the official border routes,” states Atuheirwe.

As a result of heightened campaigns on the importance and benefits of crossing through designated border routes, and forming associations that allow informal traders to easily access market information and open savings accounts, women traders are now able to access more funding and collateral to grow their businesses. It is also a lot easier for women to formalise their operations by obtaining certificates of origin to prove their goods have been produced in the EAC and are worth less than €1,700, and attain personal identification tax numbers to speed up clearance at the border. Consequently, since the Custom Union and Common Market Protocol was introduced, at least 8,000 informal cross-border traders in the four major Eastern African border points – Busia and Malaba (Kenya-Uganda border), and Namanga and Taveta (Kenya-Tanzania border) – have moved from using ungazetted routes to mainstream border posts, with the majority coming from Kenya, according to TMEA data.
Empowering women to trade

One particularly successful association is the Busia Women Cross-Border Traders Association that has more than 3,000 active informal women trader members, with most of them trading in cereals, fresh produce and fish. The women members are able to get commodity prices via their phones, access available markets in the two countries, and get connected to financial and information service providers. In addition, the association also runs a savings scheme to allow members to borrow, or use as collateral when seeking credit.

“On average, one informal trader involved in cross-border trade supports about seven dependents.”

The Eastern African Sub-Regional Support Initiative for the Advancement of Women (EASSI), a body that works with women traders, has also been particularly instrumental in helping to improve custom official and trader relations. Through dialogue meetings, the two groups meet and discuss misunderstandings arising from their interactions. “EASSI has been quite helpful,” says Annet Auma, EASSI Busia border project assistant. “Women get the courage to lay bare issues to the custom officials such as time taken for clearing at the border, which results in them missing buses to the next market, or how some pockets of bribery and harassment still exist at the border. Custom officials, on the other hand, get to explain to traders which specific areas they should queue in to get faster services. As a result of increased understanding of custom procedures, women spend less time at the border, have increased their earnings and built cordial relations with the officials they once feared.” As a result, TMEA states that Busia has been voted as a model border post in improving relations between custom officials and traders.

The Busia women’s association, EASSI and Busia county government in Kenya have also been working on assisting traders to obtain the required identification, which costs only €1.23. This provides details of their name and what they sell and makes it easier for the women to get clearance at the border point. “These businesses are not illegal. As long as they are trading legally produced goods along ungazetted routes, we have a duty to ensure we move them into full registration so that they can be spared unnecessary risks and can also earn decently. We like to call this the first and most fundamental stage of formalisation,” says Richard Wanzala from the Busia county government.

Strengthening safeguards

While it has been a relatively smooth experience in getting the traders to embrace formality, there are still too many ‘rogue’ officials at the border asking for bribes, which is discouraging some traders from using the posts. It is hoped that greater accountability and transparency will soon be possible with the adoption of a formal Cross Border Trade Charter that will ensure that border officials carry identification, and that no male official can conduct a body search on a female trader.

TMEA is encouraged to see countries introducing policies and measures like the Common Market Protocol that recognises these traders. “Our studies have shown that, on average, one informal trader involved in cross-border trade supports about seven dependents,” Atuheirwe says. “Moving forward, we look to a time when informal traders will get full recognition for the pivotal role they are playing in driving inter-regional trade.”

Saving time and money at the border post

From 2005 to 2012, Agnes Opus was in the business of informally buying and selling maize and millet between Kenya and Uganda. It was a tumultuous journey for the 50-year-old, who came up against custom officials and the police due to tax evasion.

Opus was introduced to the business by another trader and taught the informal routes to pass through the Busia border, where, if stopped by police, she could be made to pay exorbitant bribes. The informal route from Uganda to Kenya can take up to 4 days compared to a day trip using the formal system. At times, she would cross the river with sacks of cereals using a makeshift raft, or hire the services of fishermen to help her. In her first encounter with police officers and custom officials, they took her bags of millet and all the money she had.

However, when an opportunity presented itself through the Busia Women Cross Border Traders Association in 2013, she decided to join and has never looked back. The association, comprising of an estimated 3,000 women traders in Kenya and Uganda has assisted Opus to register herself as a trader, acquire a formal trader’s ID and conduct her business legally. “I am now able to check market prices in real time and find out where demand is ripe,” she explains. “I have also managed to save with the cooperative, allowing me to access credit when I need it.”

Having encouraged hundreds of informal women traders to join, Opus is now secretary general of the association in Uganda and regional treasurer of the East African Traders Association. She travels to Kenya twice a week where demand is high and where she is able to make up to €57 (Ksh 7,000) per visit. Such proceeds have enabled her to pay school and university fees for her four children. “By moving my goods through the formal routes, I earn more, save on time and have reduced numerous expenses like hiring people to help me cross to Kenya illegally,” she says.
Economy

VALUE CHAINS
Entrepreneurship: rice provides youth with employment opportunities

TRADE
Caribbean trade: harmonising sanitary and phytosanitary measures

BUSINESS
Adding value: pumpkins turn a profit for young farmers in Uganda

FINANCE
Agri-lending: lessons learned from Ghana
Two pilot projects are aiming to bring better advice to West African farmers ahead of the crop season and give them access to all-important soil preparation, harvesting and storage machinery. AfricaRice and the Syngenta Foundation trialled the RiceAdvice app and the Farmers’ Equipment Service Centres (CEMA) project across several West African countries between 2015 and 2017, in an effort to improve local rice yields, make the crop more competitive and boost farmers’ incomes.

Initial studies have shown that fertiliser, soil preparation and harvesting machinery are where production costs are steepest. Poor yields and meagre profit margins also mean that farmers find it hard to secure bank loans.

But rice is something of a paradox in Africa. Population growth, urbanisation and new food habits are pushing up consumption across the continent, yet in 2016, imports still accounted for between 10% and 90% of domestic consumption in 22 of Africa’s 43 countries, at an estimated total cost of €4.46 billion. That said, there is still huge potential for job creation in the rice value chain.

However, a lack of education, support and prospects means that young people struggle to seize these opportunities. Meanwhile, active rice farmers have limited access to improved seeds, markets, new technologies and funding.

“Youth employment is one of the key challenges facing the sub-region,” says Vincent Fautrel, Senior Programme Coordinator on Agricultural Value Chain Development at CTA. “As urban demand for food products keeps growing, there are huge job opportunities for young people in the agribusiness sector across West Africa.”

A decision support tool
RiceAdvice, a mobile app developed by AfricaRice and the Syngenta Foundation, targets one end of the value chain. The app is designed to help farmers make informed decisions as they prepare for the season ahead, covering issues such as target yields, plant nutrition, crop calendars and good agricultural practices. Between 2015 and 2017, AfricaRice and the Syngenta Foundation tested the app in Mali, Nigeria and Senegal. Field visits revealed how, in many cases, poor fertiliser practices were producing low yields, polluting the environment and degrading the soil. A team of 238 specialists was deployed, training 19,000 farmers to use the app. “Tests have consistently shown that farmers can achieve significantly higher yields when they follow the advice delivered through the RiceAdvice app,” says Youssou Diagne, regional coordinator at the Syngenta Foundation, which ran the trial in conjunction with AfricaRice. During the trial, farmers using the app reported average yield gains of between 0.6 and 1.8 t/ha, while their average income increased by between €81 and €162/ha (US$100 to US$200). Estimates suggest that, between 2015 and 2017, farmers across the three countries produced an additional 9,323 t of rice to normal production, worth €3.15 million. By the end of the trial, 95% of the farmers said they wanted to carry on using the app.

Partners behind the project believe that the app could even spark the emergence of a new rice farming consulting industry and, in doing so, help tackle the scourge of rural youth unemployment.
Most rice farmers are illiterate and do not own a smartphone, leaving a gap in the market for young people living in rural areas. With the right training and equipment, they could start marketing consulting services to both farmers and cooperatives.

The brand-new CEMA model

The CEMA project, trialled in 2015 in Mali and Senegal, is an altogether different proposition. Under this model, farmers club together to form their own businesses and procure soil preparation, harvesting, processing and storage machinery (such as tractors and combine harvesters) from the centres – an investment they would be unable to fund on their own. “What makes the CEMA model different is the way the centres are managed,” explains Diagne. “Each centre is run privately, or at the very least independently.” The machinery is owned by a farmers’ organisation, but managed by a separate, internal, private entity, which is tasked with running the centre, maintaining the equipment and managing its finances in line with the agreed terms and conditions. During the trial, the Syngenta Foundation set up a guarantee fund and helped farmers write business plans so they could secure bank loans. It also trained them in how to use, maintain and manage the machines.

In Senegal, the early trials pushed up the percentage of farmers growing two crops per year from 40% to 88%, because the new machinery meant they could harvest their crops faster and get straight on with preparing the ground for replanting (either rice or market gardening crops). On a similar note, harvest costs were down by between 12% and 16% across different seasons when compared with manual harvesting. “One of the main benefits of the CEMA model is that it builds trust between farmers and banks,” adds Diagne. “Because repayments are made in arrears, service providers are better able to prioritise how they allocate their income.”

Fostering youth entrepreneurship

“The advent of ICTs and machinery has paved the way for innovative young entrepreneurs to move into rice farming, processing, marketing and other activities,” says Mandiaye Diagne, value chain specialist at AfricaRice. “Now we have to make sure that young agripreneurs and rural young people in general get the right education, training, skills and support.”

CTA, AfricaRice and the Syngenta Foundation have teamed up to launch a new project entitled PEJERIZ (Promoting youth entrepreneurship and job creation in the West African rice value chain), with this very aim in mind – building youth entrepreneurship capacities, forging closer market ties, and promoting wealth-creating activities in the rice sectors of Mali and Senegal. The first phase of the project, which is due to run for 2 years, should begin in March 2018.
Harmonising sanitary and phytosanitary measures

In order to build economic resilience, the Caribbean Community (CARICOM) must expand its more than €16 billion export market by improving regional and international market access. Upgraded sanitary and phytosanitary (SPS) measures can lead to increased production and trade in agricultural and fisheries products that meet international standards, while protecting the environment.

Natalie Dookie

The Caribbean’s ability to boost its foreign exchange earnings and access new intra-regional and international export markets has been severely hampered by gaps in its agricultural health, food-safety and fisheries SPS measures. And yet, improving the competitiveness of food products through enhanced SPS measures is known to increase agricultural productivity, help to address supply chain challenges and improve regional food security. In order for the Caribbean to take advantage of export opportunities through compliance with EU measures, and to further integrate the 15 CARIFORUM States (CARICOM plus the Dominican Republic) into the global SPS market, the Inter-American Institute for Cooperation on Agriculture (IICA) launched a 4-year project in 2013 under the 10th European Development Fund (EDF) programme.

Building SPS capacity in the Caribbean

During the project, EDF stakeholders worked to strengthen legislation, coordination and regulatory mechanisms of the 15 CARIFORUM states to fortify SPS systems. Since project completion in early 2017, model regional plant, animal health, fisheries and food safety legislation are undergoing the final steps towards formal endorsement, and initial strides have been taken towards a

SPS guidelines are now available for countries to utilise in the production and marketing of fish and fishery products
harmonised SPS approach for the movement of food within the Organisation of the Eastern Caribbean States.

Guidelines and protocols are also now available for countries to utilise in the production and marketing of fish and fishery products, including the publication *Guide to Food Safety Hazards in Caribbean Fishery Products*. Legislation to facilitate modernisation of the honey trade in Trinidad and Tobago has also been updated. “Additionally, we developed effective national and regional coordination mechanisms in support of the SPS regime, including a framework for regional coordination in the areas of agricultural health, food safety and fisheries,” explains Dr Robert Ahern, the agricultural health and food safety leader at IICA. “As a result, active participation of Caribbean countries in the SPS international standard-setting process increased by 50%.”

The final component of the EDF initiative focused on developing national and regional regulatory and industry capacity. “We were able to improve capability across the region in agricultural health and food safety, contributing to stronger systems and thereby setting the stage for improved market access and the production of safer food,” Ahern explains. In regards to ongoing issues, Ahern continues, “The main challenge in the Caribbean has been highlighting the importance of SPS measures, so the required funding, support and personnel resources can be secured.”

**Resolving intra-regional trade issues**

To execute SPS actions more effectively and efficiently through a single body, the Caribbean Agricultural Health and Food Safety Agency (CAHFSA) was established in 2014. “Unfortunately, within member states, SPS requirements can be selectively interpreted, with members discriminating against each other, often citing protection against the spread of diseases as a reason to not let a product enter their domestic market,” states Simeon Collins, CAHFSA CEO. In order to address this issue, CAHFSA has completed country risk assessments for Barbados, Belize, Guyana, Jamaica, Suriname and Trinidad and Tobago to determine SPS risks for intra-regional trading of agricultural produce. The risks were identified as low or non-existent and, due to this, the Council for Trade and Economic Development has since taken a decision that poultry and duck meat can be traded among member states. Nine poultry processing plants in these six countries have been approved to trade among member states.

A number of other trade issues are being addressed by CAHFSA at the CARICOM level, such as intra-regional trade of Caribbean honey. Currently, honey from Guyana must be shipped through Trinidad and Tobago for regional and extra-regional marketing. However, Trinidad and Tobago laws prohibit the transportation of honey within 1 mile of its coastline. “We are looking at harmonised conditions for a permit controlling the importation of germplasms from animals and plants throughout the Caribbean, so every country will have the same procedure,” says Collins.

Through the Caribbean Development Bank, CAPSHA is also establishing ‘reference labs’ in the region to analyse animal and plant tissues, and has developed guidelines for preparing market access proposals to gain entry with the least hindrance to trade while, at the same time, preventing the spread of pests and diseases into new countries. “Finally, in the interest of transparency and knowledge-sharing, regional governments must notify members of any new SPS measures and this is not happening,” Collins explains. “Consequently, we are creating four web-based databases related to agricultural health and food safety to improve the exchange of information among technocrats and decision-makers across the Caribbean.”

“Intra-regional trade of honey is currently being addressed by CAHFSA”

“Active participation of Caribbean countries in the SPS international standard-setting process has increased by 50%.”

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Pumpkins turn a profit for young farmers in Uganda

Byeffe Foods Company is working with a network of over 5,000 young farmers in Uganda to produce value-added, nutritious pumpkin products which are sold across the country.

Fatuma Namutosi was 24 years old when she started Byeffe Foods Company (byeffe meaning ‘ours’) in western Uganda in 2015 to address the high levels of malnutrition in her country. The company now produces 20 t of nutritious pumpkin-based products annually, such as flours and seed snacks, which are supplied to schools, hospitals and supermarkets across the region.

After a year spent researching crops that are both easy to grow and nutritious for consumers, Namutosi set up Byeffe Foods Company with an initial capital of €114 (USh 500,000). Her research revealed that pumpkins are grown by most households, and contain a higher level of antioxidants, proteins and vitamins than most vegetables. The leaves can also be boiled and eaten to provide a good source of dietary fiber, protein and vitamins A and E.

In order to initially identify local farmers to supply her company, Namutosi worked with USAID’s Feed the Future Uganda programme. With the support of the programme, Byeffe Foods trained over 5,000 young farmers in pumpkin production and provided them with seeds to ensure quality control. In 2016, Byeffe participated in a Feed the Future Youth Leadership for Agriculture event to promote the company’s business model and products, which led to their partnership with primary schools in the country to supply flour containing zinc and vitamin A.

Due to high demand for the healthy products and Byeffe’s limited supply of fresh pumpkins, Feed the Future mobilised an additional 1,280 young contract farmers to work with the company. With low production costs and high yields – on average, 1 ha of pumpkins produces between 15,000 and 30,000 kg of pumpkin heads – as well as Byeffe’s commitment to provide seeds and extension services, the youth were eager to assist. To produce 1 kg of dry flour requires 10 kg of fresh pumpkins and Byeffe purchases 1 kg of pumpkins from its farmers for €0.07 (USh 300). The pumpkins are then solar dried and milled to produce flour which is packed in 500 g or 1 kg bags – the latter being sold for €0.90 (USh 4,000).

Byeffe Foods produces gluten-free pumpkin flours blended with soya and millet, as well as pumpkin leaves and seeds and is currently generating €15,000 annually in sales to schools and supermarkets, and directly to customers. Namutosi aims to expand her network of farmers to produce 50 t of pumpkin products by the end of 2018. “We do not have the capacity to feed the whole country yet and that’s why we need to expand our partnership [with farmers], and build our own production plant,” says Namutosi. The company is now in the final stages of being certified by Uganda’s Bureau of Standards, which will allow them to penetrate new markets for other high-value pumpkin-based products including wine, juice, and pumpkin seed oil.
Lessons learned from Ghana

Through incentives, training and technical assistance, USAID’s 5-year Financing Ghanaian Agriculture Project (FinGAP) has changed the way financial institutions and business advisory service providers engage in agriculture.

Helen Castell

Since its launch in July 2013, FinGAP has facilitated over €123 million of finance and investment to over 2,700 agribusinesses in northern Ghana’s maize, soy and rice value chains, easily beating its target of unlocking €60 million of lending. How has it done this and what can banks and governments in other ACP countries learn from the project?

Build capacity

FinGAP’s main focus has been to cultivate a market for business advisory services provision and build capacity at more than 50 financial institutions by providing them with training on financing tools, introducing them to potential partners and clients, and changing the way they approach the agriculture sector. Andrew Ahiaku, head of agribusiness finance at Barclays Bank Ghana says FinGAP helped the bank develop the right structure and capacity to support agriculture financing. Ahiaku has learned that banks must develop a formal agri-lending strategy, create a dedicated team headed by an official who is senior enough to “engage in a meaningful way” with top management, and invest in training its members.

Manage risks

Although the risk of lending to agriculture is not as high as traditionally perceived, it is vital to guide financial institutions towards available risk management tools, as FinGAP has done, states Ahiaku. A solid risk management strategy meant that Barclays Ghana has suffered just two bad loans since the launch of FinGAP. FinGAP also helped Barclays Ghana limit its risk by introducing it to Eximguaranty, a local provider of credit guarantees to financial institutions that lend to small and medium-scale enterprises in Ghana. Some of the bank’s clients have also been supported by the Ghana Agricultural Insurance Pool, a group of Ghanaian insurers that mostly offer drought index insurance for maize and soya.

Develop new products

To lend sustainably to smaller agribusinesses, banks must create innovative lending products. FinGAP has introduced banks to more than 33 tools, including collateral-free loans. In 2015, for example, Barclays Ghana indirectly financed small maize producers via a €533,000 (GHS 3 million) loan to a poultry farmer who used the funds to buy and lend them inputs. Collection rates from the smallholders – who repaid the poultry farmer in kind with feed – were above 98%, which encouraged the bank to double the facility in 2016. Barclays Ghana has also introduced collateral-free ‘business instalment loans’ of up to €35,500 (GHS 200,000) for smallholder farmers and aggregators, who repay them immediately after production has been completed.

Incentivise and support first movers

More than three-quarters of the financing facilitated by FinGAP was at least partly driven by a pay for results scheme that awarded grants to banks that met lending targets within specified time periods. “It’s worked fantastically as a stimulus,” says Amanda Grevey, manager of economic growth at Palladium, which implemented FinGAP. By initially targeting banks that already had a clear interest in expanding their agrifinance portfolios, FinGAP was also able to use their earlier success stories to demonstrate to other banks what was possible and create an atmosphere of competition.
Agriculture: a springboard to livelihood diversification

Aida Cuthbert Isinika is a professor of agricultural economics at Sokoine University of Agriculture in Tanzania and has over 40 years’ experience in rural development. Fred Mawunyo Dzanku is a research fellow at the Institute of Statistical, Social and Economic Research at the University of Ghana. Here, they discuss what can be done to improve access to farm and non-farm livelihoods.

Why is equal access to agricultural assets between men and women important for the agricultural sector today?

Aida: It is important because men and women both play an important role in agricultural production and a lack of access to productive resources is a major limitation to improving productivity. In Tanzania, women constitute more than 50% of the population and they play a very important role in agriculture. As such, studies and experience have shown that including women in agriculture is critical for wide-reaching development because the majority of agricultural workers are women. Agriculture can also serve as a springboard for smallholders to step into other livelihood options, such as providing food services, opening up small shops or buying and selling grains.

Gender differences in productivity are more substantial in low agro-productive areas where environmental factors limit output. What can be done to help women in these areas access non-farm sources of income?

Fred: Because there is a link between agricultural productivity growth and non-farm activity growth, we need a two-pronged approach: one that addresses the gender gap in productivity in low agro-productive regions while looking for innovative ways of enhancing women’s access to non-farm sources of income. Addressing the gender gap in ‘poor’ regions requires state-induced investments in infrastructure and new technologies – irrigation, improved seeds and roads, for example. Second, women’s non-farm self-employment activities could be enhanced in these regions through targeted credit schemes, which have been shown to enhance entrepreneurship.

Agriculture, Diversification, and Gender in Rural Africa addresses, among other topics, recent policies that encourage poverty reduction through smallholder production. Have such policies enabled farmers to access more profitable markets?

Aida: Yes and no. In Tanzania the government and other stakeholders have facilitated markets to operate under the liberalised economy. The government has also developed institutions such as cooperatives and infrastructure, such as roads and market places, which facilitate smallholder farmers – and women in particular – to operate as farmers, traders, input suppliers or processors in agricultural value chains. Sometimes, however, the government supports one type of policy but then limits the potential of this support through other policies that contradict growth, such as export bans. This makes it difficult for farmers to move on a sustained trajectory of...
Cross-country analysis
Addressing the gender gap in agricultural production

Female-managed farms make up 30% of all farms in sub-Saharan Africa, yet women still have much poorer access than men to resources, such as land, water sources and livestock, as well as critical inputs. This gender discrepancy has led to varying levels of agricultural productivity. Where women struggle to access agricultural sources of income, the availability of opportunities off-farm, such as small-scale trading – and the ability of women to diversify into such – is key to overcoming rural poverty.

Agriculture, Diversification, and Gender in Rural Africa explores the linkages between gender, geography and source of income for farming households in Ghana, Kenya, Malawi, Mozambique, Tanzania and Zambia to analyse farm and non-farm livelihood patterns over time. Comparing household-level data collected from 2002 to 2015, the study finds that women are more likely to diversify into non-farm self-employment than men, whilst men are more likely to have wage employment. At the same time, markets for non-staple food crops have become dominated by men, particularly in Malawi, Mozambique and Tanzania. Most significantly, in terms of asset ownership and income, gender gaps have widened for all countries over the study period.

Based on the lessons learned from the study, the book’s closing chapter outlines the weaknesses of current policies to address gender inequality, and makes recommendations for how development policies could become more inclusive to drive agricultural growth and reduce rural poverty.

Agriculture, Diversification, and Gender in Rural Africa
By A Djurfeldt, F Dzanku & A Isinika
Oxford University Press, 2018; 286 pp.
ISBN 978-01-9879-929-0
€34
Downloadable as a PDF file from: https://tinyurl.com/ycnk5u5y

Improved incomes because export bans mean the local market becomes flooded, and farmers have to sell their products at very low prices, reducing their returns.

Women face the problem of ‘dual exclusion’ from agricultural productivity and non-farm employment options. What is needed from the public and private sectors to facilitate their access to agricultural livelihoods?

Fred: Empowerment of women through education and participation in community-level decision-making processes holds an important key to ensuring that resources, including agricultural livelihood assets, are equitably accessed. State-sponsored programmes that encourage technology adoption by women using innovative approaches, such as radio listening clubs and mobile phone voice messages, could boost women’s productivity. The private sector is naturally driven by profit motives but the fact that African women are entrepreneurial provides the opportunity for partnership with private sector actors in the form of credit schemes, for example, which could boost agricultural investments.

In your opinion, what technologies have had the best reach in Tanzania and how are they making a difference for smallholder farmers?

Aida: Drudgery-reducing technologies on the farm, such as tractors and milling machines, and productivity-improving technologies, such as chemical fertilisers and pesticides, allow smallholders to increase their farm income while generating savings and time to engage in more rewarding non-farm activities such as food vending, hair salons and shops.

Poverty alleviation
Women’s empowerment

In sub-Saharan Africa, lucrative commercial crops, such as hybrid maize and tobacco, are typically perceived as ‘male crops’, while lower-value crops for home consumption are perceived as ‘female crops’. Among other topics, What Works for Africa’s Poorest? looks at the potential for engaging women farmers in high-value crop activities, the barriers women face to accessing profitable agricultural livelihoods, and impacts of the interventions intended to remove these obstacles.

What Works for Africa’s Poorest?
Programmes and Policies for the Extreme Poor
Edited by D Lawson, L Ado-Kofie & D Hulme
Downloadable as a PDF file from: https://tinyurl.com/y9aoz5ba

Land rights
Rural development

Before the colonial era in Kenya, access to land had been the fundamental determinant of a woman’s status, material situation, and prospects in life. Women were the primary farmers and agricultural decision-makers, using methods rooted in the teachings of mothers, grandmothers, aunts and sisters. By exploring the parallels between rural populations in 17th century England and 20th century Russia and Kenya, Women, Land Rights, and Rural Development finds that, after the British conquest, new tenure transformations were imposed that radically undermined both the land claims of rural women and their sustainable agricultural systems.

Women, Land Rights, and Rural Development: How Much Land Does a Woman Need?
By E Kingston-Mann
Routledge, 2018; 194 pp.
€40
www.routledge.com
**CLIMATE RESILIENCE**

**Drawing on indigenous experience**

Africa’s growing population and its dependence upon climate-sensitive employment sectors demand new solutions to mitigate the impacts of climate change on agriculture, such as the use of indigenous knowledge (IK).

Each year, Africa’s GDP drops by approximately 1.4% due to the effects of climate change. Given that agriculture is the continent’s largest employer and UN global population reports predict a 1.3 billion rise in the African population over the next 30 years, finding different solutions to increase agricultural resilience and enhance food security is becoming an extremely pertinent issue. One solution is to integrate the knowledge held by indigenous communities about their surrounding environment, often referred to as IK, into climate adaptation approaches. Indigenous peoples have developed strategies to cope with unpredictable changes to the local climate, which – if properly documented – can help mitigate the impacts of climate change.

Paul Sillitoe, the author of *Indigenous Knowledge: Enhancing its Contribution to Natural Resources Management*, explains how specialised indigenous veterinary knowledge aids livestock farmers who struggle to keep their animals healthy in increasingly harsh environments. Sillitoe also examines how crop farmers use IK to better defend their yields against pests and weeds, which are becoming an ever-prevalent threat due to climate change. The detailed knowledge that indigenous communities hold about their local environments can be used to improve natural resource management and increase the efficiency and productivity of the land.

The benefits of IK are also promoted by the authors of CTA’s *Indigenous Knowledge Systems and Climate Change Management in Africa*, but their analysis of the complexities of gathering IK emphasises the challenges that this method of learning poses. IK is passed down orally through generations and, where knowledge has not been shared with younger community members, it can easily be lost forever. One way to protect and harness IK is to integrate it with scientific seasonal forecasting to create highly informed climate predictions. The lessons learned from IK then need to be properly documented and disseminated into mainstream teaching in schools and universities.

*Unjust Burden*, a recent publication from IRIN, recognises the value that small-scale farmers gain from IK which has been accurately documented and shared. With agriculture helping to lift over 200 million people out of poverty in the last two decades, this publication aims to continue that trend by sharing the wealth of climate-related knowledge that indigenous peoples can provide. In order to shoulder the ‘unjust burden’ of climate change, smallholder farmers can use IK to spot the early warning signs of disasters and develop effective disaster prevention strategies. Modern society often views IK as inferior to western scientific knowledge, but this marginalisation is showing signs of coming to an end as its potential to aid climate adaptation is realised.

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**Unjust Burden: How Smallholder Farmers in Africa are Adapting to Climate Change to Improve Their Food Security**

By IRIN

IRIN, 2017; 164 pp.

Downloadable as a PDF file from: https://tinyurl.com/ya435dso

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**Indigenous Knowledge: Enhancing its Contributions to Natural Resources Management**

Edited by P Sillitoe

CABI, 2017; 272 pp.

ISBN 978-17-8064-705-0

€112.50

www.cabi.org

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**Indigenous Knowledge Systems and Climate Change Management in Africa**

Edited by OC Ajayi & PL Mafongoya

CTA, 2017; 316 pp.


Downloadable as a PDF file from: https://tinyurl.com/y72lbes4

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ICT4D

Bridging the digital divide to deliver development goals

In developing countries, far more people now have access to a mobile phone than to sewerage, piped water or electricity. The widespread use of mobile phones and, to a lesser extent, the internet and broadband in these areas mean that ICTs are playing an increasingly significant role in international development. The connection between ICTs and development goals, such as economic growth and environmental sustainability, is referred to as information and communication technology for development or ‘ICT4D’. So how – and to what extent – can ICT4D help overcome some of our biggest problems?

In Information and Communication Technology for Development, leading ICT4D researcher, Richard Heeks, provides answers to these questions. The first three chapters set out the foundations of ICT4D, including the underlying components needed for ICT4D to work and best practice in implementing ICT4D, whilst the subsequent chapters use real-world case studies from developing countries to analyse key development goals and assess ICT impacts. Extensive diagrams, tables and boxed sections help to illustrate the more abstract theories. Chapter 4 looks specifically at the role of ICTs in delivering economic growth in developing countries. Among other examples, Heeks explains the opportunities for ICTs to reduce costs relating to sales and purchasing for farmers and rural entrepreneurs who, until recently, have spent a significant amount time and money travelling to buy and sell produce/goods. In Niger, for example, smallholders have to take a 3-hour round trip on average to reach the nearest main market. Substituting that with a phone call in order to gather information saves them around €0.45 (CFA 300). Likewise in Malawi, smallholders using online trading platforms, as opposed to travelling to markets, are estimated to save an average of €0.80 per purchase/sales transaction, with savings calculated in terms of both time and transport.

The final chapter of the textbook looks ahead to emerging technologies and models of ICT-enabled development, and predicts that in the near future, mobile device prevalence will continue to grow as will connectivity, cloud computing, and the use of ‘smart’ systems and digital services in agriculture, health, education and finance. By clearly positioning ICTs within the field of development, the publication will help development students, practitioners, researchers and other readers understand the ICT-enabled changes already underway and the key issues and interventions engaging ICT4D practice and strategy.

Fall armyworm
Africa’s ongoing fight against an invasive species

In early 2016, the moth Spodoptera frugiperda arrived in Africa from South America. The moth’s caterpillar, known as fall armyworm (FAW), feeds on up to 80 different crops. With its presence now confirmed in over 30 African countries, the food and income security of millions of smallholder farmers is at risk. Whilst some strategies to curtail the invasive pest show early signs of success, for example push-pull intercropping (see p13), more information about FAW’s behaviour and how to manage it are seen as crucial to controlling it in the future.

Fall Armyworm in Africa: A Guide for Integrated Pest Management provides an essential manual to help plant protection professionals, extension agencies, research institutions and governments working with farmers to tackle the voracious FAW. This publication, written by USAID’s Feed the Future programme in collaboration with international and national research and development partners, is an informative guide which features a number of clearly laid out diagrams and tables which help to define what the FAW is and how it can be managed. Drawing upon pre-existing knowledge from South America, the chapters focus on FAW’s biology, integrated pest management solutions, host plant resistance, biocontrol, and agroecological landscape management, but crucially all within an African context, which enables the manual to be relevant to the current situation across the continent.

Some of the new strategies proposed to help control the invasive species, include the use of the pest’s natural African enemies, such as parasitoid insects – whose larvae grow inside and then kill the FAW host – and predator insects which eat FAW. These so-called ‘beneficial insects’ are being mass reared so that they can be made commercially available for strategic introduction around infected fields. This is just one of the many prevention strategies analysed in this manual, which offers an important outline of management practices that are helping farmers effectively control the pest without damaging human health or the environment.

Fall Armyworm in Africa: A Guide for Integrated Pest Management
Edited by B Prasanna et al.
CIMMYT, 2018; 120 pp.
Downloadable as a PDF file from:
https://tinyurl.com/y7ofmhu4
Unlocking access to finance for youth agripreneurs

There are many ways for youth to get into agriculture or offer agri-related products and services to solve problems along the agricultural value chain. However, when starting an agribusiness or agri-related enterprise, young people are often missing the necessary business skills and support. In addition, one of the biggest challenges for young ACP agripreneurs is the difficulty in accessing finance. Lending to agricultural start-ups entails significant costs due to their high risk ratings, which causes financial institutions to shy away from investing in this area and leaves a significant funding gap. Regardless of the business idea, entrepreneurs need to be able to validate their business model and ‘de-risk’ their enterprise in order to increase their chances of obtaining finance.

Across the ACP, we have lots of agribusiness start-ups, and a growing number of AgTech (agricultural technology) start-ups, which have been supported through incubation or accelerator programmes. However, the reason they are called start-ups is because they have yet to learn how to monetise, validate and test their business model. One of the main reasons that start-ups fail is due to unproven business models; young entrepreneurs need to be taught how to make their existing business models more sustainable.

Training start-ups to become investor ready

Financial literacy and education are key to developing sustainable business models. Start-ups are often too busy trying to develop and grow their business to put financial systems in place and keep good records. This is really critical because, at some point, they will need to access finance from investors and potential financiers will need to have historical records of the company’s financial transactions. Programmes are therefore needed to help start-ups become ‘investor ready’, by ensuring that their business models have market traction through testing and validation.

In addition, these programmes can support entrepreneurs by encouraging them to document their journey and providing them with the tools to produce records, which can be supplied to potential investors. There are a lot more programmes that are now being created specifically focused on ‘investment readiness’ or ‘finance readiness’ to help start-ups understand how investors think, how financiers operate and how to better articulate their value.

Filling the gap in financial education

In the ACP, a major gap still exists when it comes to support for investor readiness. But there are also not enough private investors or business angels (people using personal wealth to support start-ups) that sufficiently understand agriculture, particularly the AgTech sector, to invest.

Nevertheless, we are just beginning to see an increase in foreign direct investors coming to look for new investment deals to diversify their portfolios and increase return potential. While this is a good opportunity for start-ups, we – in the financial support sector – have a responsibility to ensure that our entrepreneurs are market ready and in a position to pitch a profitable venture to investors, as well as negotiate terms to close an investment. Additionally, start-ups need to be viewed as a new asset class that generate returns worth investing in to unlock more wealth building opportunities.

Fostering an enabling environment

Policymakers also have a role to play in creating a facilitative environment for start-ups to thrive. Start-ups can generate new jobs and technological advancement, not to mention having a direct impact on a country’s GDP. It is therefore in the interest of governments to engage and invest in youth entrepreneurship. Some policies that could be encouraged include: simplifying the business registration process; subsidising tariff rates for start-ups wishing to acquire equipment and goods; and the specific allocation of government funds for youth entrepreneurs. Creating an enabling environment for innovation will also support the emergence of alternative funding opportunities that can facilitate start-ups’ access to finance.

For international donors, capacity building is a very resource-intensive process and, while I am all for new projects, sometimes a 3-year project doesn’t allow for true capacity building and growth. International donor organisations have the potential to do more in terms of better coordination with other stakeholders within the AgTech ecosystem, to unlock financing and financial support mechanisms which can contribute to longer-term start-up programmes.
GERALD OTIM

Seeking investment: tips for start-ups

African start-ups are the least funded in the world; 80% of funding goes to Kenya, Nigeria and South Africa with most directed to financial technology start-ups. Ensibuuko, a Ugandan company providing mobile finance services, received financial and incubation support as winner of CTA’s AgriHack programme in 2013. We are now involved in CTA’s Market-led User-owned ICT4Ag-enabled Information Service project. Along the way to becoming Uganda’s most funded start-up, we have learnt some key lessons in applying for finance and looking for investment.

Perseverance

Time and effort are key. We have attended many events, workshops and even a couple of accelerator programmes. You have to work hard to attract investors and we always did our best to stand out. Over the last few years, we have talked to many people at many events.

People invest in people

Building relationships is crucial. You have to invest time in keeping in touch. An encounter with an investor at an event may be a one off, but you have to follow up. Many start-ups fail to do this. Investors take an interest in people they like. So if you invest in relationships, you start as friends, they will want to learn about your business and then they might recommend you to other people who are willing to invest.

You will fail many times before you succeed

Don’t let failure hold you back. It takes time to put business plans together and you are lucky if you get a response at all. It can get frustrating being repeatedly turned down, but if you let it hold you back, you will fail. It is important that when you don’t succeed, you learn, and you ask for feedback on ways to improve.

Too often start-ups get defensive, they want to justify the challenges they face and prove themselves as a business. But it is important to accept that these people are the experts and their advice can help you to improve. Get to know the investors, ask them whether there is someone on their team that can advise you if you encounter an issue, and sometimes they will come back to you and ask “Did my advice work? Is there any other help I can give you?”

Ask for funding and you may only get advice

Many times when we approach people for funding, we have only received advice in return, but this always helps us to improve and to look for the next opportunity. However, sometimes when we ask for advice, we get funding.

We first met one of our current investors in 2014. He was one of our mentors and often travelled to Uganda. He would make time to visit and we would sit together to work out the issues we were facing. He became really involved in the business, investing emotionally as he got to know us better. Then, when we came to him and said we had worked on achieving a good business model but needed money to progress, he said, “Ok – I will speak to investors in Canada.” In the meantime, he told us that he could see we needed cash so he gave us an advance to help us become investor ready. Since his financial investment, he is still emotionally invested and we are constantly in touch, keeping him up-to-date with what we are doing. We know that we can go to him for advice and even get further help with funding.

To learn more about Ensibuuko’s online banking services visit: www.ensibuuko.com
To find out about the entrepreneurship opportunities available through CTA’s Pitch AgriHack! programme visit: http://pitch-agrihack.info/

Poll

What is the most important aspect for increasing young agribusiness leaders’ access to finance?

- Training and mentorship to help improve young agripreneurs’ financial management capacity [50%]
- Improved networking and relationship building opportunities for young agripreneurs [34%]
- Increased support for young agripreneurs from local investors, venture capitals and banks [16%]

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