

SECONDARY TOWNS

Hives of activity and growth providing value added markets and opportunities

INTERVIEW

Dr James Mwangi explains how financing mechanisms are empowering farmers

INSURANCE

Building climate resilience in Jamaica and St Lucia

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REDUCING RISK AND MAXIMISING REVENUES



A global perspective on agribusiness and sustainable agriculture





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MONTPELLIER
PANEL

Evidence and Dialogue for Better Outcomes in Agriculture and Food Security

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

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SPORE N°186

TRENDS

4 | Secondary towns: hives of activity and growth

AGRICULTURAL PRODUCTION

8 | Improving agronomic and business skills for sesame

9 | High-income seeds: community-based farming

ENVIRONMENT

10 | Agropastoralists: getting a grip on the environment

11 | Boosting farmers' resilience in Malawi

RESEARCH

12 | Innovation for food safety

13 | Improved malt for Ethiopia's beer industry

NUTRITION & HEALTH

14 | Nutritional wheat flour substitute

15 | Fast-cooking yam couscous

BLUE ECONOMY

16 | Strengthening Caribbean fisherfolk participation

17 | A sea change for local fisheries in Benin

18 | INTERVIEW

Dr James Mwangi: helping farmers manage their money

21 | Dossier

Big data and climate insurance: reducing risk and maximising revenues

33 | Economy

34 | VALUE CHAINS

Artisanal fisheries: Indian Ocean fisherfolk come together

36 | TRADE

Caribbean: condiment exports heat up

38 | BUSINESS

Reducing wastage to provide niche fish products

39 | FINANCE

Financing agribusiness for sustainable development

40 | PUBLICATIONS

EDITORIAL

Agriculture and agribusiness remain key

Michael Hailu, director - CTA



Responsible investments in the rural and agricultural economy, value chains and integrated markets play a crucial role in fostering economic growth, job creation and development in African countries. These critical issues have been the subject of recent meetings in Rome and will form a key component of the forthcoming EU-Africa

summit to be held in November 2017 in Abidjan, Côte d'Ivoire.

In July, I attended the Agribusiness Investors Forum for Africa, organised by the EC's Directorate-General for International Cooperation and Development, with some 80 participants. The event primarily focused on presenting the European External Investment Plan (EIP), which was followed by a high-level panel discussion on the new opportunities that the EIP offers for sustainable investment in agriculture and agribusiness. The main goal is to use public funds to leverage private sector investment (blending); an approach which is increasingly being taken by donors to encourage private sector investments. The EIP, which aims to leverage up to €44 billion from private sources, will have three components – innovative finance (guarantee schemes, equity, etc.), technical assistance (e.g. preparation of investment proposals), and policy dialogue (to improve the investment climate). It will also provide a one-stop shop and web portal, enhancing transparency, accessibility and efficiency. Agriculture and agribusiness will be key beneficiaries of the EIP.

Private sector investment was also the focus of the African Union-EU Agriculture Ministers Conference which took place on 2 July at FAO headquarters in Rome. A few conclusions from the conference which will be presented at the EU-Africa summit in November include: the need for alignment of public and private investments for agriculture/agribusiness and that these investments must have local impact on jobs and incomes; and that there is a critical role for governments in creating a conducive investment climate.

Besides these, other conclusions from sessions at the conference included the role of ICT to enhance productivity, create jobs and increase incomes for young farmers, and to increase ICTs in climate-smart agricultural monitoring and early warning systems. These topics will also be discussed at the EU-Africa summit and CTA will follow discussions with interest as they are close to our priorities and projects.

In this issue of *Spore*, and also online where we have additional articles, you will find plenty of informative articles that relate to these key topics. We will be highlighting these issues and events through our social media channels and we hope you will follow the conversations leading up to the EU-Africa summit in November.

SECONDARY TOWNS

Hives of activity and growth

Recognition of the importance and vitality of secondary towns is very recent. These dynamic commercial hubs provide rural areas with markets and opportunities for young people, whilst urbanisation and stronger rural-urban linkages offer new and value-added markets for farmers and entrepreneurs in fresh and processed foods.

Bénédicte Châtel

The proportion of urban dwellers in Africa has grown from 14% in 1950 to 40% today and is expected to reach 50% by 2030, as reported in the *African Economic Outlook 2016*. Moreover, the urban population has increased by almost twofold in Africa over the last two decades (from 237 million in 1995 to 472 million in 2015), and will likely double again between 2015 and 2035. The report points out that Africa, like Asia, is urbanising twice as fast as Europe did during the 19th century.

Contrary to some preconceived assumptions, small secondary towns, rather than large capital cities or megacities, are the driving force of this rampant urbanisation. “Between 2000 and 2010, urban agglomerations with fewer than 300,000 inhabitants accounted for 58% of Africa’s urban growth,” the *African Economic Outlook 2016* report states. The border between rural and urban areas is also becoming increasingly blurred. The spatial intrusion of towns into rural areas

currently accounts for 60% of urbanisation according to the *Urbanisation, Rural Transformations and Food Systems: The Role of Small Towns* report by the International Institute for Environment and Development and International Fund for Agricultural Development. Roughly 75% of all Africans live in this ‘grey area’ that lies between rural areas and secondary towns.

But only recently has interest been focused on secondary towns, particularly rural secondary towns. The first World Bank study was carried out on this subject just 7 years ago. “A growing number of governments are showing increased interest in these secondary towns and boroughs,” explains Luc Christiaensen, a senior economist at the World Bank. “This is an emerging trend.”

The success of the Africa Regional Forum of Intermediary Cities that took place in Côte d’Ivoire in May, under the aegis of the United Cities and Local Governments of Africa, with over

100 mayors participating, is further evidence of this interest. In addition, of the five recommendations issued by the joint EU–African Union meeting on youth unemployment in Africa held at FAO in June 2017, one highlighted the importance of strengthening, “the physical, economic, social and political links between small urban centres and their surrounding rural areas.”

Small towns – the lifeblood of urbanisation

While big cities generate more economic growth because they enable economies of scale, secondary towns are highly dynamic commercial hubs where local farmers come to sell their produce and in turn purchase manufactured goods. The small village of Karatina, located 200 km from Nairobi, hosts at least 1,400 sellers three times a week. Sagana, 100 km from Nairobi, also serves as a centre for the entire area south of Mount Kenya, say Hélène Mainet and Ephantus



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Secondary towns create centres of economic activity that benefit smallholders and consumers

Kihonge, researchers at the University of Clermont-Ferrand in France. Sagana also hosts many major businesses, including the National Cereals Board, Kenya Breweries, a petroleum depot, and the agricultural storehouses of the Kenya Planters Cooperative Union. In West Africa, dynamic rural hubs are generating investment: the market in Doufelgou, northern Togo, was recently completely refurbished and expanded; and in Kaolack, the main town in Senegal's groundnut growing area, has just been given the go-ahead for the reconstruction of its central market at a cost of about €68.5 million.

Growing links between school canteens and farmers are one example of thriving interactions between secondary towns and rural areas. Initiatives to improve these links are under way and increasing throughout Africa. In the Senegalese town of Kédougou, for example, as part of a 10-year training and education pro-

Rurban Africa combating preconceived notions

As a sign of the new and growing interest in secondary towns in Africa, the 4-year African Rural-City Connections (RurbanAfrica) project, developed by the University of Copenhagen with EU funding, was launched in 2012. Focused on Cameroon, Ghana, Rwanda, and Tanzania, the aim has been to explore links between rural areas and towns in order to enhance planning for the future needs of small town residents. One study into the use of wild resources in small towns found that even after being 'urbanised' for 10 years, almost 60% of rural town inhabitants still use fuelwood, about 50% consume wild vegetables and medicinal plants, while less than 40% eat wild fruit. Another revealed that in the vicinity of Mount Kilimanjaro in Tanzania, there has been a considerable rise in demand for tomatoes from urban markets. The study explains that this rising demand has encouraged many young farmers to focus on growing and processing tomatoes, which is more lucrative than conventional coffee growing. The research found that young people who have not received any inheritance (land, or coffee trees) are particularly attracted to the commodity, and that some are using their mobile phones to become intermediaries, or middlemen.

gramme launched in 2012, 1,000 farmers are distributing 60% of their harvested rice to over 170 canteens, which has created a fully-fledged distribution chain.

One of the reasons small town markets provide an ideal outlet for farmers' products is because transport costs are minimal, thus ensuring that they will

› recover a larger share of the end-product value. According to the NGO Research for Community Access Partnership, transport costs represent 27.5% of the average market price of agricultural products in Kenya and Malawi. In Mount Meru, Tanzania, coffee growers have halted their usual activity in order to grow vegetables to sell in local urban markets, with gross margins of up to €4,250 per harvest. Less transport also means reduced product loss and in turn, higher incomes.

A vibrant urban market

Secondary towns are becoming more accessible to rural youth while offering them an opportunity to fulfil their desire for urban life. About 60% of the 230 million young people in sub-Saharan Africa live in rural areas, but many see very few opportunities in the agricultural sector, where wages are low and uncertain, and people have little access to land, financial services and the internet. So they often leave and head to the nearest small town, while regularly returning to their villages, bringing back money, new ideas and vitality. Christiaensen stresses that without secondary towns many people would not have any activity opportunities or potential destinations for migration.

Closer contact with increasingly demanding urban consumers enables farmers to sell their products with greater added value, said Steve Wiggins, research fellow at UK's Overseas Development Institute, during a Brussels Policy Briefing on rural-urban linkages in Africa. These farmers are able to sell their products more easily – and often informally and efficiently – in small town markets than in the supermarkets of large cities where market standards are harder to meet, explains Wiggins.

This closer contact with urban consumers – often rushed and seeking ready-made foods – is also encouraging rural farmers to sell higher value-added 'convenience' foods. "With their lifestyle, urban dwellers need processed ready-made products," says Mamadou Cissokho, honorary president of the network of West African farmers' and producers' organisations, Réseau des Organisations

Secondary towns are highly dynamic commercial hubs where local farmers come to sell their produce and in turn purchase manufactured goods.

Paysannes et des Producteurs de l'Afrique de l'Ouest, in the book *Nourrir les villes, défi de l'agriculture familiale*. "Everyone is aware that food processing is essential because, even in rural areas, a woman will prefer to buy ready-made couscous (if she finds it) rather than going through the process of making it herself with a mortar and pestle. So rural women have triggered a major change in this respect." Cissokho goes on to say that women have also – by equipping themselves and creating added value – "progressed in the processing of agricultural products. Many small processing units are thus now found throughout rural and periurban areas. You can find ready-made fonio, couscous and porridge – a range of products that require a lot of work to make but can now be bought ready-made."

Diets of urban people are also changing, with higher proportions of fruit, vegetables, meat and fish, as well as processed products. Young urbanites are creating their own food culture using local agricultural products, which

Nicolas Bricas, researcher at the French Agricultural Research Centre for International Development, refers to as a 'food modernity' trend. In Côte d'Ivoire, *La garba* is an Abidjanian invention made from cassava, fish and condiments. This dish, which is made with local produce, is popular with young people. But he underscores the importance of ensuring that this trend is balanced between towns and rural areas so that the setting of prices and terms will not be monopolised by the towns. He explains that in Vietnam, for example, Hanoi is trying to organise solidarity contracts with rural areas to guarantee a supply of quality products while investing in the rural and agricultural development of supply areas. "African countries are faced with a choice: to rapidly industrialise the sector to access what some consider to be food modernity, with the risk of creating relatively few jobs, or the other option, which consists of relying on a network of small enterprises, thus generating thousands of jobs," Bricas states.



Stronger rural-urban linkages offer farmers new value-added markets

Policies for success

The development of secondary towns is leading governments to decentralise or create more local branches of large public enterprises, which also encourages private companies to expand into secondary towns. This provides greater access – without a need to travel to capital cities, which is often time-consuming and expensive – to inputs, equipment, training, schools, and financial, advisory and health services. The Botswanan super-market chain, Choppies, which has been well-established throughout Southern Africa for over 15 years, has been expanding into secondary towns and semiurban areas, while also offering a range of ancillary mobile money and currency transfer services. This expansion has been highly successful, with its revenues increasing by 34% during the second half of 2016. The group has also moved its distribution hub in Botswana from Lobatse, 75 km from

Closer contact with increasingly demanding urban consumers enables farmers to sell their products with greater added value.



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Mbale – rewarded for its commercial vitality

The rise of small towns is generally illustrated by the increased vitality of their markets. Rural agglomerations have always been trade hubs, but their dynamic activity has increased incredibly in the last decade, leading to congestion and inefficiencies. This prompted the Ugandan government as well as the Markets and Agricultural Trade Improvement Project to launch a study in 2008. Twenty-one markets were earmarked for renovation, including 5 in the first phase (Fort Portal, Wandegaya in Kampala, Hoima, Jinja and Mbale) and 11 others in the second phase (beginning in 2016), at a cost of €82 million. Importantly, the project provides for positive discrimination in favour of women with regard to the allocation and reallocation of stands in the different urban markets. The first phase of the project benefited 20,000 registered sellers, more than 60% of whom are women. Some 900,000 households, or 4.5 million people, have directly or indirectly benefited, including 150,000 to 200,000 households managed by women.

southeast of Gaborone, to Francistown, a town of about 120,000 inhabitants in the north of the country.

In 2012, the Rwandan government launched a large-scale urban development project in six secondary towns (Huye, Muhanga, Musanze, Nyagatare, Rubavu and Rusizi). Significant investment was put into developing electricity supplies, roads, hospitals, schools and taxi parking areas. In Muhanga, by 2014, both the Bank of Kigali and Sonarwa (the biggest insurance company in the country) opened four-storey agencies in Muhanga. Business executives abound and importers are relocating. Revenues in the Huye coffee-growing region also doubled following the construction of a modern bus terminal, dubbed Smart Park, which includes car parks, a shopping centre with 82 shops, a hotel, restaurants, and cybercafés. Huye, Musanze, Rusizi and Rubavu are also set to see Korea Telecom Rwanda Networks offices open, as part of an expansion of their 4G internet network to 92% of the country, which was announced in 2017. The company currently aims to enhance internet connectivity across the country starting in secondary towns, says Desire Ngabonziza, the company's chief strategy officer.

Managing the upswing

The revolution of secondary towns is under way, but the challenges are daunting. The first clearly concerns land, with the encroachment of towns into the countryside. Secondary towns are generally overcrowded, with poor housing, inadequate low-density public transport

and infrastructure, unreliable internet connectivity and above all, a high cost of living. Water supplies and sanitation are also problematic. In secondary towns in Senegal, 68% of households are connected to the water supply system, while the remaining 32% depend on water hydrants. Only 36.7% of households have basic sanitation (toilets, septic tanks). Outside of Dakar, only Kaolack, Louga, Mbour, Rufisque, Saint Louis, Sally and Thiès, have even partial access to a sewer system, so household waste management is incredibly complicated.

Less than 20% of cities and towns have an urban plan, which even if available, is generally obsolete or not implemented due to the lack of urban management capabilities in local communities. However, human capacity building in small towns is being strengthened. With German support, decentralisation reform is progressing in Ghana with the aim of enhancing knowledge and control of local planning, while determining how to generate revenue and organise public services in 40 districts, including 25 towns. Streets are being named as a way to identify residents and businesses, thus providing a basis for local taxation to enable investment. Innovative participatory methods are also being developed to ensure that planning is more inclusive, while being especially responsive to women's needs. ■

✦ *For more information visit: Brussels Briefing 48 on rural-urban linkages in Africa (<https://tinyurl.com/yd8um7b4>) and a recent Spore blog on rural-urban links (<https://tinyurl.com/mdmcktp>).*



Ndemulikiwa Mbise uses her smartphone to train other farmers and run her business

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MOBILE LEARNING

Improving agronomic and business skills for sesame

In Tanzania, sesame farmers are receiving training in the agronomic and business skills they need to sell better quality produce at a higher price. Mobile phones are also being used as learning tools to deliver timely and convenient information to smallholders.

Sophie Reeve

A sesame production and marketing project in Tanzania is supporting smallholder farmers to sustainably improve sesame cultivation and increase food security and household incomes. A mixture of business, trading and agronomic training has been provided through workshops and demonstration farms to over 8,240 farmers in Babati district. Of this group, 5,470 farmers have also been trained in good agricultural practices, providing farmers with the skills to penetrate high value export markets. The Farm Africa-supported initiative is also delivering training via a mobile app.

Through the adoption of best practice information, provided in the training sessions, sesame production increased substantially, from 0.25t/ha to 0.98 t/ha,



8,240

farmers in Babati, Tanzania, have received business and agronomic training

during the first phase of the project between 2011 and 2014. ‘Model’ or ‘lead’ farmers, who are trained intensively and supported by the project to train others, have seen a jump in their yearly incomes due to increased yields and improved marketing skills, from €258 to €530 during this period. The 920 lead farmers have

reached 5,520 ‘adopter’ farmers, who have seen an increase in their income from, on average, €223 to €347. Post-harvest losses have also fallen from 40% to 20% per hectare. “When you grow crops following best practices, you grow more than when using local techniques. I was trained in business skills, and now I am using those skills and practising business as a community entrepreneur,” says Ndemulikiwa Mbise, a female farmer.

Between November 2013 and April 2014, the use of tablet computers to deliver training modules was tested as an alternative to visiting model farms. Ten lead farmers were provided with tablets as ‘portable demo plots’ to train sesame farmers in their communities. This approach reached around 500 sesame farmers with information on improved

agronomy practices, and tested their understanding of the training with in-built learning questions. After taking the tablet course, 71% recognised that different sesame varieties had varying resistances to disease, and 86% identified correct planting methods.

More recent training to help farmers share knowledge with fellow farmers is being delivered using a new smartphone app designed by Farm Africa and the technology platform, Esoko. At the end of 2016, approximately 100 community entrepreneurs and lead farmers from farmer business groups were provided with smartphones to receive training on the app. The mobile learning tool consists of five modules: land preparation, planting, plant care, harvesting, and post-harvest and marketing; each module takes approximately 10 minutes to complete. The majority of the content is in Kiswahili and is locally produced. “The smartphone allows me to train other farmers and helps me with my own business communications, such as making it easier to communicate with buyers,” says Mbise.

A video function on the app allows farmers to watch demo plot training on their phones as many farmers, particularly women, find it difficult to travel to model farms. “I have just started receiving training through a smartphone. Among the things I’ve learnt is land preparation and the use of spacing and quality weeding, and timely weeding and harvesting,” enthuses Isa Hamisi, a 52-year old farmer.

“The smartphone allows me to train other farmers and helps me with my own business communications.”

“Transitioning from tablets to mobile phones has improved the delivery of consistent, high-quality and timely information about the latest agricultural techniques to smallholder farmers. The previous phase saw lead sesame farmers’ incomes double between 2011 and 2014 and we intend to build on this success to deliver these gains to more Tanzanian farmers,” states Nicolas Mounard, Farm Africa’s CEO. The next step is to connect farmers with buyers via their smartphones. ■

HIGH-INCOME SEEDS

Community-based farming

Smallholder farmers are receiving tailored training and financial advice from a social enterprise that guarantees them a good market price for their seed.

Friday Phiri

A community out-grower approach to seed production and marketing in Zambia is facilitating smallholder farmers’ access to the lucrative and high-impact market of legume seeds. To help smallholders tap into the seed market, 5,200 farmers are receiving a personalised bundle of services to grow quality seed to then sell under the brand, Good Nature Seeds.

A social enterprise operating in eastern Zambia, Good Nature Agro, identified seed as a missing link in the legume value chain and saw an opportunity for smallholder farmers to fill this void. As seeds are traditionally difficult to grow and expensive to buy, smallholder farmers have, until now, been excluded from the multi-billion euro seed industry that is dominated by multi-national interests.

The initiative’s holistic model provides farmers with three key services that are generally hard to access: personalised financing for inputs, reliable information, and a profitable market. The company coordinates farmers’ access to one trained extension agent for every 40 growers, customised advice on inputs and financing, and a guaranteed market through their commitment to buy the produce.

“We know that the challenge of increasing smallholder farmers’ yields and incomes is essentially limitless in scale, but that doesn’t mean that we need one-size-fits-all solutions,” says Carl Jensen, co-founder and CEO of Good Nature Agro. “Farmers deserve a business partner that supports their individual goals and who is willing to customise a path that helps farmers achieve them. That is what we do differently.”

Samson Tembo from the village of Chikwanda in eastern Zambia is among those already benefiting from the approach. The 37-year old is expecting to earn over €760 from the 1,275 kg of cowpea he harvested in early 2017. “Last year, I bought two cattle, six bags of fertiliser and paid all school fees for my children. My plan this year is to extend my iron-roofed house,” states Tembo.

By the end of the 2018-19 season, Good Nature Agro aims to have 50,000 farmers growing for them, supported by around 1,000 agents. ■



Good Nature Agro provides one trained extension agent for every 40 of their farmers to help increase seed yields and incomes

AGROPASTORALISTS

Getting a grip on the environment

In Niger, daily access to reliable climate information by using solar mobile telephones, radios and rain gauges is allowing semi-nomadic populations to make better use of natural resources.

Ousseini Issa

In the mosque in the village of Tokobinkani, around 30 km east of Niamey, Niger, villagers gather to listen to a trainer from the Association for the Revitalisation of Livestock in Niger (AREN) as he discusses the year's seasonal forecasts.

"Everyone from the village is here; our survival depends on it," states agropastoralist, Boube Amadou. "There's so much uncertainty about the seasons that we've always farmed crops and livestock here without access to the information we need." He continues, "We don't know whether the winter period will begin early or late, whether to expect plentiful and widespread rainfall, or whether we'll have enough grazing land and water to keep

our cattle alive." In the past, this uncertainty has created resource management conflicts with sedentary populations.

However, since April 2015, the BRACED-PRESENCES initiative – a 3-year environmental and social resilience project for around 103 vulnerable communities (304,000 people) in Niger's Tillabéri region – has better equipped agropastoralists to adapt to climate fluctuations. The programme is funded by the UK's Department for International Development and covers 13 countries in Asia, Eastern Africa and the Sahel. In Niger, the project aims to improve the quality and access to climatic data for agropastoral populations.

Manzo Issoufou, pastoralism expert at AREN explains, "The climate data come from the National Meteorology Department and from Agrhymet (a branch of the Permanent Interstate Committee for Drought Control in the Sahel) and the information is then translated into a format that agropastoralists can understand and use to make the right decisions at the right time."

In each village, kits composed of radios, solar mobile telephones and rain gauges are made available to a committee to provide daily rainfall forecasts which inform their communities. Issoufou continues, "These new technologies, which are an innovation in the project, have helped increase agricultural production, improve animal well-being and reduce natural resource management conflicts in our target areas."

Issoufou Ouma Kaltoume, knowledge and learning manager at the NGO CARE, which is implementing the project in Niger, explains, "With this information system, we can broadcast information about climate hazards on community radio stations. Rural farmers, who face uncertainty from the varying climate, can then choose which strategy to adopt."

Agropastoralist, Abdourahmane Salifou, affirms the change brought about by the information, especially regarding when to

move their livestock, where the best grazing grounds and water supplies are located, and what type of seeds to plant. "Before, our decisions were based solely on empirical knowledge which made our journey extremely risky," he says. Like others, he is delighted with the training he has received on agriculture, livestock farming and sustainable natural resource management. He continues, "With access to information about seasonal trends, we now have a better grip on our environment. When a situation now arises, we know when to take that all-important decision, and how to make more money from farming."

Many of the agropastoralists are now demanding an extension of the initiative to neighbouring countries where they also move with their cattle. ■

304,000
people in Niger
have benefited
from better access
to climate data



Access to climate forecasts are helping to improve the resilience of herders in Niger

VICTORY GARDENS

Boosting farmers' resilience in Malawi

The cultivation of low-cost vegetable gardens is helping Malawian households to diversify their diets, reduce reliance on maize and improve their resilience to the changing climate.

Charles Mkoka

In 2016-17, Malawi faced its worst food crisis in 30 years with a 42% decline in its main staple crop – maize – and many households were unable to feed themselves. However, an initiative launched in July 2016 in three rural districts is helping 150,000 villagers ward off famine.

Based on successful pilots in other countries, the Victory Gardens campaign supports the establishment of small vegetable home gardens using local resources and sustainable permaculture and organic farming techniques. In the first year, over 100 village garden facilitators have been trained by the NGO Face to Face which conducts 1-day village workshops with 20-30 villagers and creates at least one garden on the day of the workshop.

In Kazitenge village, maize and sunflower crop residues are being used to fertilise the soil before cultivating vegetables. The village chiefs first learnt about the new techniques from a field day

which was used to showcase sustainable farming practises such as minimum soil disturbance, use of indigenous knowledge to curb pests and diseases, and water and soil conservation among other climate-smart approaches. After the demonstration, the villagers immediately set about establishing 52 gardens. According to Maliselino M'ninga, the Kazitenge group village headman, "Those not practising the initiative are the ones that are failing to benefit from organic vegetables that are fresh and nutritious."

Susan Manuel, a 35-year-old mother of five, started her home garden in March 2017. She has been using crop residues with goat dung to make organic manure to put on the garden before she plants the vegetable seeds. "I am getting vegetables on a daily basis without spending money. I have beans, Chinese vegetables, carrot, pumpkin leaves, sweet potatoes and even okra," she states. Instead of buying vegetables, Manuel now redirects her savings to household necessities and essentials for her children, like school books. "Traditionally, women have had to travel long distances to look for vegetables. Today, I am home doing other household chores and I can just walk into my garden to get vegetables," she adds.

So far the Victory Gardens initiative has reached 55,000 households that are all practising various permaculture initiatives and it is expected that, by the end of 2017, another 22,000 households (100,000 people) will benefit from home gardens. During 2017, the initiative is also being expanded to rural households in Mozambique and Tanzania. ■

Irrigation

Local mapping

REMOTE SENSING TECHNIQUES have been employed by the International Water Management Institute (IWMI) to accurately investigate the status of irrigation in South Africa. By focusing on specific regions, this technology provides reliable mapping data on the scale of irrigation carried out by smallholder farmers at the local level. Discrepancies currently lie in data available to national governments on the areas being supplied by irrigation water. However, a recent working paper by IWMI states that by replicating this local mapping approach across Africa, such inconsistencies would be overcome. This is essential for identifying and addressing the key flaws in irrigation systems, including areas where water supply is no longer sufficient during the extended dry season.

✦ For more information visit: <https://tinyurl.com/y8qwxslc>

Conservation

Community farming

TOURISM AND CONSERVATION TECHNIQUES are generating an annual gross income of over €31,000 for a marginalised community in Uganda. The group of around 400 women, youth and Batwa Pygmies, living next to Bwindi Impenetrable Forest, are engaged in beekeeping, as well as vegetable and livestock farming. The majority of produce is marketed to forest tourist lodges with any surplus sold at local markets. Training from Community Initiatives for Biodiversity Conservation has helped the community to employ organic farming, integrated crop and animal management, and drought-resilient cultivation methods. Along with agribusiness skills' training, this approach has helped 40% of community members increase daily household income from under €1 to at least €2.25.

© CHARLES MKOKA



By practicing permaculture, Susan Manuel has access to a sustainable source of fresh vegetables

DRY CHAIN

Innovation for food safety

Low-cost, low-tech innovations are now measuring food dryness to prevent development of mould in stored crops in Africa, improving the quality and nutritional value of smallholder produce.

James Karuga and Elias Ntungwe

A new, easy-to-use device that determines whether dried food is at a low enough moisture content to prevent mould growth during storage has been developed by researchers at the University of California (UC) Davis. The so-called 'DryCard' is being used by farmers across Africa to prevent aflatoxin contamination and reduce post-harvest losses. When mould grows, it reduces the market value of dried foods, resulting in

reduced incomes for farmers. However, this inexpensive indicator is able to inform farmers of the relative humidity of the air around the product and, thus, whether the food is sufficiently dry to prevent mould development.

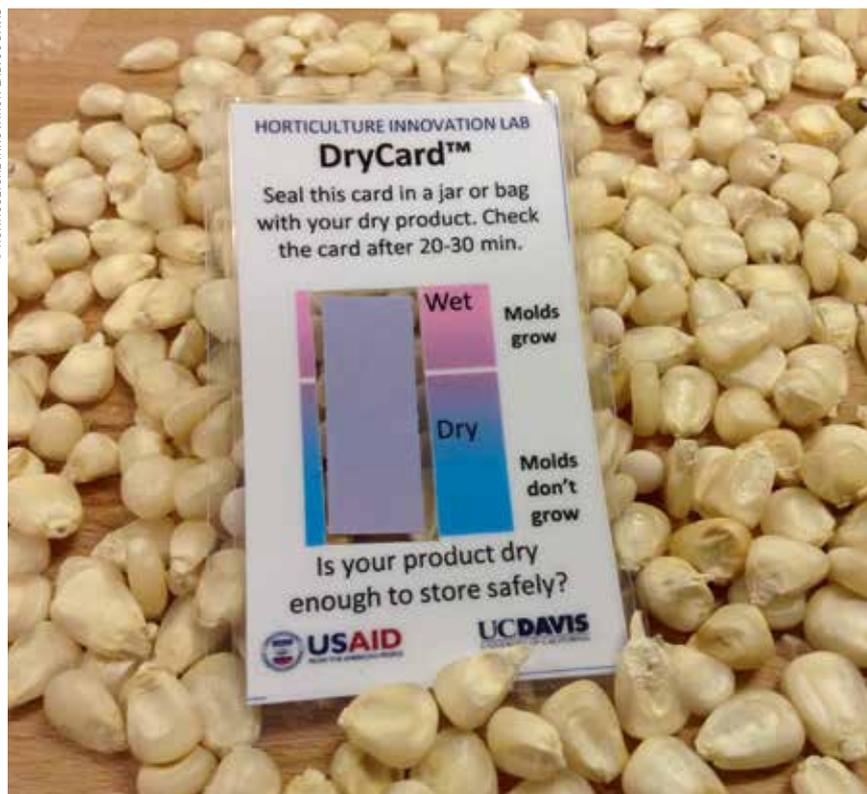
The DryCard is made from a cobalt chloride humidity indicator strip and printed paper that has been laminated into a card. When placed in a moisture tight container with dried foods, it

changes colour within 20–30 minutes, relative to the humidity. Matching the colour of the indicator strip with the scale on the card informs farmers whether the food is dry enough; if the strip turns pink, the food is too wet for storage, but if it turns blue or grey, the food is dry enough. Where food is indicated as 'too wet', they should be dried further or eaten before mould can develop. Providing the DryCard is stored without any contact with water, this cheap and effective device can be used multiple times to test the moisture content in produce such as rice, maize and dried vegetables.

In March 2017, the DryCard beat more than 200 entries at an 'All Africa Postharvest Technologies and Innovation Challenge' to take first prize. "My hope is that we will find entrepreneurs and donors to help us spread this technology, so that every farmer who dries produce has access to it," says Elizabeth Mitcham, director of the UC Davis Horticulture Innovation Lab.

The Horticulture Innovation Lab has distributed 950 cards in 2017 to rice and maize growers in the six regions of Tanzania, at a price of €0.80 per card. Orders have also been placed by the Ministry of Agriculture in Kenya and by a USAID project in Sierra Leone for 100,000 cards.

Meanwhile, in Cameroon, over 8,000 cocoa farmers belonging to the Konye Cooperative (KONACOOOP) are getting better prices for their produce after being supplied with moisture-content testing machines by the Cameroon office of the International Institute of Tropical Agriculture (IITA), in August 2014. Prior to this, members were often exploited by buying agents, who took advantage of the lack of testing machines to offer farmers low prices for their produce. However, the machines enable farmers to measure the exact moisture content of their cocoa beans and argue for a better market price depending on the moisture level, which KONACOOOP farmers say has greatly improved their incomes. Officials at IITA say that, in future, such assistance will be extended to other cocoa farmers facing similar difficulties. KONACOOOP farmers now sell their partially dried cocoa at between €1.2–1.5/kg whereas the same amount was previously sold at less than €0.90. ■



The DryCard can be used to test the moisture content in produce such as rice, maize and dried vegetables

Identification kits

Fall armyworm field materials

A SERIES OF FLYERS AND POSTERS have been developed by researchers and disseminated to over 70,000 farmers and extension workers in Ethiopia, Ghana, Kenya, Malawi, Uganda and Zambia to help identify and manage fall armyworm (*Spodoptera frugiperda*). The South American pest was first discovered in Africa in Ghana in early 2016 and is now affecting large areas of maize across much of Africa, with crop losses estimated to be at least 20%. The Plantwise Knowledge Bank materials are being used in plant health rallies and in radio and social media campaigns to advise farmers to employ prevention measures (e.g. deep ploughing and early sowing), regularly monitor crops and handpick larvae, as well as spray pesticides, if available and affordable.

★ For more information visit: <https://tinyurl.com/y98rcdfj>

Macro-propagation

Multiplying banana plants

MACRO-PROPAGATION TECHNOLOGY is enabling farmers in Rwanda to quickly multiply their own disease-free banana planting materials in large quantities. Healthy-looking suckers are selected from mother plants and outer leaf sheaths removed to expose the meristem (growing part of plant). This is cut into pieces and placed in sterilised chambers for 15 days until the pieces sprout plantlets. Using this method, a sucker can produce up to 20 plantlets, instead of just one, which are ready for field planting after 2 to 3 months. The technique allows Rwandan farmers to cultivate improved varieties such as Injagi and Fhia 25, and offsets poor yields from drought and disease.

BARLEY FOR BREWING

Improved malt for Ethiopia's beer industry

Improved malt barley varieties from Ethiopian research centres are helping to meet demand and reduce imports under a public-private partnership with local breweries.

Andualem Sisay Gesesse

As demand for beer continues to rise in one of Africa's fastest growing economies, Ethiopian breweries are providing improved malt barley seed varieties to local farmers. Geletu Tafa, who farms 5 ha in Arsi Tiyo district, is one of over 20,000 smallholder farmers producing improved malt barley varieties, such as 'Traveller' which originated from France, for Heineken Ethiopia.

"After I began using Traveller seed, my production on 1 ha has increased to 6-7 t from 2.5-3 t. The money I get from selling 1 t of the new variety has also increased to around 1,000 birr (around €38) from around 600 birr (around €23) I used to earn 3 years ago from other crops such as wheat and other barley varieties," says Tafa.

Barley is a major crop grown on close to 1 million ha in the Ethiopian Highlands by around 1 million smallholder farmers. However, despite being resilient to drought and extreme temperatures, conventional barley varieties are low yielding and are susceptible to pests and disease. Domestic

malt demand for the brewing industry is currently 118,000 t. In 2015, the country spent over €33 million importing over 63,000 t of malt for its brewing industry as Ethiopia's two malt factories only have the capacity to produce a total of 52,000 t.

"The country has the potential to produce enough malt barley for our breweries and increase farmers' income, but all actors need to work together," states Dr Berhane Lakew, senior barley researcher at Holleta Agricultural Research Center of the Ethiopian Institute of Agricultural Research (EIAR).

Since 2011, EIAR has been collaborating with four breweries and Assela Malt Factory under a public-private partnership to improve Ethiopian malt barley seed varieties. One new variety released in late 2016 – Singitan – is resistant to shoot fly, a major pest in Ethiopia which can cause total losses during short rainy seasons. The improved variety is also higher yielding (up to 4.1 t/ha) and has good malting qualities e.g. protein content. Earlier released varieties include HB 1963 and HB 1964, which can yield up to 6 t/ha, also demonstrate excellent malting qualities ensuring that they are attractive to the malting industry and provide valuable additional income to local farmers.

"By financing provision of improved seed varieties through regional agricultural bureaus, we are working with some 46,000 smallholder farmers in the Amhara region, who are supplying their barley to Gondar Malt Factory," says Abreham Zerihun, PR manager of Dashen Breweries. "As a result, we have been reducing the amount of malt we have to import and increasing farmers' income." ■



Improved varieties of malt barley improve the yields and incomes of smallholder farmers in Ethiopia

OFSP PUREE

Nutritional wheat flour substitute

Increasing demand for nutritionally beneficial bread made with orange-fleshed sweet potato (OFSP) puree is helping to combat vitamin A deficiency in Africa, whilst growing a profitable market for bakers and OFSP farmers.

Oluyinka Alawode

Bakers in Ghana, Kenya and Nigeria are using OFSP puree in wheat bread to increase its nutritional value and, with less imported wheat flour and sugar needed, reduce production costs by up to 15%. Farmers are also benefiting from this trend as the increased demand for OFSP, combined with higher prices offered by bakers and processors, is raising their incomes. With a higher content of beta-carotene than the white or yellow sweet potato varieties predominantly cultivated in Africa, the switch to OFSP is helping to improve vitamin A consumption on the continent.

Prior to sweet potato value additions (processing into puree, flour and sweeteners) less than 20% of produce was sold commercially in sub-Saharan Africa (SSA). However, over the last 3 years, the International Potato Centre (CIP) has been advocating the nutritional benefits of OFSP through various initiatives, including training bakers in Ghana and Nigeria to make bread with 40% of the wheat substituted for steamed OFSP puree. Fatai Ganiyu, a trained baker from Nigeria, supplies OFSP composite bread to 20 schools and has been told the children love the taste. To bake enough bread, Ganiyu requires 60 kg of OFSP roots every 2 weeks, which he buys from a small farm near his bakery.

According to CIP, only about 125 g of OFSP is needed to supply the required daily amount of vitamin A and one slice of 40% OFSP bread provides 5–10% of this requirement. Dr Tawanda Muzhingiri, food scientist at the CIP-SSA regional office, says sweet potato generally provides more edible energy per hectare than wheat, rice, or cassava. It is also a good source of dietary fibre (2.5–3.3 g/100 g), potassium, vitamins C and E, and has a low glycaemic index.

In 2014, viable bread recipes using at least 40% OFSP puree to replace wheat flour were developed through CIP partnerships with supermarket chains in Kenya. OFSP puree is preferred to flour, not only because processing OFSP into flour reduces the vitamin A content, but also because it is more efficient – 1 kg of OFSP flour requires about 5–7 kg of



© TAWANDA MUZHINGIRI/CIP

Over 2,000 OFSP bread loaves and buns are being produced by bakeries in Nairobi each week



125 g
of OFSP is
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vitamin A

fresh OFSP, whilst 1 kg of OFSP puree only requires about 1.5 kg of OFSP roots. The recipes have created a need for increased OFSP production with the largest supermarket chain in Eastern Africa – Organi Limited – now buying OFSP fresh roots from farmers at a price 10% above local market prices. The supermarket processes the roots and supplies 2–3 t of puree to around 30 bakeries in Kenya each week. These bakeries are currently making more than 2,000 OFSP bread loaves and buns (weighing 400 g) per week.

This scale of demand for OFSP bread is replicated in Ghana and Nigeria, generating a profitable market for farmers as consumers are willing to pay a premium due to the nutritional benefits and better taste. CIP plans to further broaden this market to Burkina Faso, Ethiopia, Malawi, Mozambique, Rwanda and Tanzania. ■

PROCESSING

Fast-cooking yam couscous

A tasty, nutritious, pre-cooked, dried yam couscous, produced by Benin-based Fenou Foods, has slashed preparation time of traditional yam couscous.

Claude Biao

Maxime Hountondji and Sonita Tossou – the brains behind Wassa-Wassa Tchigan – sold their first bag of pre-cooked, dried yam couscous in March 2016. Yam, in various forms, accounts for more than 25% of household food intake in Benin, helping this revolutionary new concept quickly become an agribusiness success story. “Wassa-Wassa Tchigan is a quick-cook product that’s easy to store and transport,” explain Hountondji and Tossou.

Anyone who has cooked wassa-wassa, using traditional time-consuming methods, understands why this new concept is so ground-breaking. “The traditional wassa-wassa recipe is a labour of love,” explains Dina Monra, who owns a small restaurant in Parakou, 415 km north of Cotonou. “It takes half a day to make, and you can’t take your eye off it for a second or the grains will stick together.” Fenou Foods decided to tackle the preparation time issue head-on, with a new pre-cooking process in which the product is steamed then oven-dried. The firm’s workforce of around a dozen staff

produce fully separated wassa-wassa grains, which take just 15 minutes to prepare at home.

Wassa-Wassa Tchigan, which comes in 200 g semi-transparent bags, is so quick to cook and easy to store and transport that the young entrepreneurs have rapidly cornered the market in Benin. After just 1 year in business, the company’s product is now stocked in around a dozen supermarkets in the capital, Porto Novo, and exported to neighbouring countries, retailing for around €2 per bag. Spurred by ever-growing demand, Fenou Foods increased output from 150 bags a month in 2016 to its current production of more than 3,000 bags a month.

Wassa-Wassa Tchigan offers no nutritional benefits over the traditional recipe, but Azarath Ogbon, the firm’s nutrition expert and production director, stresses that the product “meets food safety and hygiene standards” established by Benin’s national food regulation agency. In April 2017, the product even won second prize for quality in the NGO Act for Development’s awards at the Benin agribusiness expo – recognition that has gone down well with consumers, who no longer have to spend hours in the kitchen to make one of their favourite dishes. “My husband and children love it, but it’s something I could only prepare on the occasional weekend,” says Audrey Dossoukpè, mother of two daughters aged 7 and 12. “Now, I can make it whenever they want, and it doesn’t require much effort. It’s incredible – I can do in 15 minutes what used to take me 5 hours. It’s been an absolute godsend!”

As well as producing Wassa-Wassa Tchigan, Fenou Foods also sells Telibd’or (yam flour) and ground spices. ■

Improved poultry Hatching a plan for enhanced nutrition

POULTRY BREEDS that grow 150% larger in their first 3 months and produce four times as many eggs as local breeds have been introduced in Ethiopia. A partnership between USAID’s Feed the Future and top poultry supplier, EthioChicken, is increasing access to this affordable protein source, and creating an income which generates opportunity for rural farmers. The improved breeds are sold to smallholders at a cost of €0.9–€1.3 each via a network of rural extension workers. The agents, who are provided with vaccinated, day-old chicks from EthioChicken, raise the poultry over the next 45 days before selling to farmers. Over 3 million chicks have been sold to nearly 330,000 small-scale farmers since 2010, helping to improve family nutrition and earnings from the sale of chickens and eggs.

Edutainment Reducing post-harvest loss

SMALLHOLDER FARMERS, retailers and wholesalers in Nigeria are being trained in post-harvest handling, storage, cooling and packaging of fresh fruits and vegetables to reduce post-harvest losses and improve food security. ColdHubs’ ‘edutainment’ outreach days, involving comedians, local DJs and dancers, educate smallholders in food quality and safety through competitions, dancing, food spoilage demonstrations and a short lecture series on nutrition. The model is used, in particular, to demonstrate the effectiveness of cold storage in reducing nutritional loss of food over time, in comparison to foods exposed to direct sunlight. ColdHubs estimates that the edutainment model has so far benefited 3,000 people, 70% of whom have committed to cut down on post-harvest losses.



Fenou Foods produces 3,000 bags of pre-cooked yam couscous, Wassa-Wassa Tchigan, each month

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Caribbean fisherfolk organisations are being strengthened to increase their involvement in national and regional governance and management issues

GOVERNANCE

Strengthening Caribbean fisherfolk participation

The small-scale fisheries sector in the Caribbean plays a vital role in the region’s food security but is overshadowed by marine industries including shipping, tourism, and oil and gas extraction. An EU-funded initiative is providing a stronger voice to fisherfolk to advocate their needs.

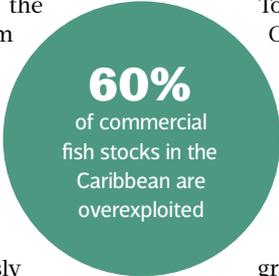
Natalie Dookie

The contribution of the small-scale fisheries sector to food security in the Caribbean has been strengthened through a 4-year EU funded initiative that has been building the capacity of regional and national fisherfolk organisations to actively participate in governance issues. The EuropeAid programme, which ended in December 2016, was implemented by the Caribbean Natural Resources Institute and partners working with the Caribbean Network of Fisherfolk Organization and national fisherfolk organisations in 17 Caribbean states.

With more than 35 coastal and small island economies, the Caribbean Sea

is vital to sustaining the small-scale fisheries sector in the region. According to a 2016 World Bank report, *Toward a Blue Economy: A Promise for Sustainable Growth in the Caribbean*, the annual gross value from regional fishery activities in 2012 was €4 billion, and aquaculture contributed a further €1.68 billion, figures that will have undoubtedly increased in recent years. However, the region’s fisheries are seriously depleted; nearly 60% of commercial fish stocks are overexploited or have collapsed. Lack of equipment, poor

security, climate change threats and inadequate government support are also serious challenges for the small-scale fisheries sector.



To address the fact that Caribbean fisherfolk have had little or no involvement in national and regional governance and management issues, small grants have been issued under the Fisherfolk Strengthening Fund. The grants are intended to help enhance internal governance, leadership, strategic and business planning, and communication and advocacy

among fisherfolk, as well as create awareness about the benefits of fisherfolk organisations.

One recipient organisation of a small grant of around €10,000 is the Trinidad and Tobago United Fisherfolk (TTUF). Joslyn Lee Quay, TTUF president, stated that the money has been used to strengthen the organisational structure and develop a communications plan for improved governance. “We undertook a committee-driven approach and divided the country into segments, with a local representative responsible for the mobilisation of fisherfolk in different areas. We also engaged a local organisation to strategically review our executive structure to put forward recommendations, which we are currently implementing. These include regular elections and bringing ‘new blood’ into the association.” However, Lee Quay acknowledged, “One of the challenges we have faced was achieving full participation in the training workshops; as fisherfolk are self-employed, there were constraints on their time.” Around 100 people from 22 fisher organisations have participated in the TTUF training.

“We have to stand up and let governments know that they have to get their act together.”

As a direct result of the project, TTUF have been able to better prepare and develop their positions in order to influence decision-making at the annual meetings of the Caribbean Ministers of Agriculture on matters that affect them, such as trawling and piracy, amongst other issues. Within Trinidad and Tobago, TTUF are using new media engagement and social media skills to better communicate key messages to policymakers. “We have to stand up and let governments know that they have to get their act together with respect to trawling, piracy, seismic surveys and the prevention of oil spills, which are destroying marine life and our livelihoods,” states Lee Quay. “We will continue to work with the fisherfolk within our national network to share information and forge consensus on these governance issues.” ■

FROZEN PRODUCE

A sea change for local fisheries in Benin

Benin-based Awa Fish is one of the leading frozen seafood firms, a position it has established by working closely with its suppliers – small-scale fishermen.

Claude Biao

Awa Fish, based at Cotonou port, is a leading player in the frozen seafood market. The firm owes its success to founder Awa Codjo and her ground-breaking business model. By bridging the gap between traders and more than 400 fishing families, the company stands apart from its competitors, most of which source their produce from outside Benin.

“One day, I saw how fishermen at the port were throwing away their unsold daily catches in high season,” explains Codjo. “It seemed like such a waste. So I came up with the idea of storing the unsold catches in cold stores.” The firm was founded in the 1990s, when it produced 170 t of frozen fish a year. Now that figure has risen to 700 t, and Awa Fish is one of the top-two frozen seafood exporters to the vast Nigerian market.

The company’s growth has also helped improve the livelihoods of local fishing families, who no longer have to sell their produce to traders – sometimes at a loss – or throw away unsold catches. Some 4,000 fishermen land their catches at buying centres along the country’s coastline every day.

In 2009, Awa Fish secured a €295,000 loan as part of a five-year compact between the Government of Benin and the Millennium Challenge Corporation (MCC) – a US development assistance agency – to purchase new cold stores and fund an accounting training course for its staff. With its new equipment, the firm has gone from strength to strength, leaving it better placed to negotiate prices with traders. Some fishermen have even brought in bigger catches to meet demand. The company has also doubled its line of credit thanks to its improved credit rating.

But the firm is still grappling with an unreliable electricity supply – a major challenge facing businesses across the sector. In 2015, the government of Benin and MCC signed the Benin Power Compact – a €335 million agreement to boost local electricity production, improve distribution and introduce reforms to public-private energy sector investment. Reflecting on her meeting with Codjo, then-MCC CEO Dana J. Hyde said: “A reliable electricity supply means she will no longer have to rely on an expensive generator to keep fish frozen during power outages.” ■



Awa Fish owes its success to founder, Awa Codjo, and her ground-breaking business model

DR JAMES MWANGI

Helping farmers manage their money

Dr James Mwangi, CEO of Kenya's Equity Bank, outlines how innovative financing mechanisms, including mobile banking and financial education for women and young people, are empowering farmers.

Bob Koigi

The Equity Group Foundation (EGF) has reached out to and trained almost 1.5 million women and youth in financial education. How important is the financial education of young and female farmers for the growth of the agricultural sector?

EGF offers financial literacy training for farmers with the aim of improving farmers' capability in terms of knowledge, skills, attitude and behaviour towards financial and money management. Young farmers are empowered to become better managers of the income earned from their farming activities.

The financial education programme covers four modules – budgeting, savings, debt management and financial services. To increase reach, especially of the youth, the financial literacy content has also been successfully converted into a mobile-user format. Farmers can now access this content through their mobile phones. The content is displayed in terms of tips, questions, answers and financial education.

Financial literacy training among women and youth has resulted in a transition from subsistence to commercial farming. EGF's agriculture pillar has field staff trained in agronomy-related subjects who train farmers on good agricultural practices and this has

resulted in better crop performance and thus improved incomes. Additionally, increased incomes have contributed to the good performance of loan repayments, as farmers are already trained on debt management.

ICTs and mobile banking are revolutionising the way in which agri-finance is delivered. Which new innovative initiatives do you feel have the most potential to make an impact?

ICTs and mobile banking channels have revolutionised money transfer and payments, with customers having greater control and freedom to manage their bank accounts. Equity Bank customers are now embracing the new ideology that, 'Banking is something you do, not a place you go to', which is an exciting phenomenon for rural farmers who, until recently, had to travel long distances to access financial services.

Equity Bank has led the pack in ICTs and mobile banking, as it strives to deepen the financial inclusion agenda. The bank has recently introduced new digital platforms such as Equitel, a mobile banking solution which allows customers to access banking and telecom services from voice, data and text message services. The Eazzy Banking

App, a revolutionary platform, helps customers manage their money and track their financial goals. The digital banking products are developed with a focus on enhancing accessibility, convenience and affordability of financial services.

With the self-service digital platforms, farmers are able to undertake various bank transactions, such as transfer of money, payment of bills, and access to credit, within the comfort of their homes. Through the Eazzy Banking App or Equitel, the bank can quantify farmers' creditworthiness through credit scoring thus enabling risk-based pricing of loans to them.

Through the EazzyChama digital platform, women and young farmers have also been encouraged to be part of groups or associations. EazzyChama is a digital book-keeping tool for groups, commonly known as 'chamas' in Kenya. Through these groups, they are better able to mobilise their earnings and combine them to be able to qualify for higher loans. Group members can also guarantee each other so that they can access financing even without conventional collateral. The EazzyChama platform enables the farmers in the group to be able to monitor contributions to the group, how much money is in their group account, how many loans they are servicing and any withdrawals from their group account.

The representation of women in agribusiness is still quite poor. How can innovative financing mechanisms better support women entrepreneurs?

The bank has encouraged women entrepreneurs to engage in agribusiness activities, by working closely with other partners to offer market linkages. For example, the bank has worked with partners such as the World Food



Dr James Mwangi, CEO of Kenya's Equity Bank, explains how the bank has used innovative approaches to provide farmers with access to finance

Programme's Purchase for Progress initiative, East Africa Breweries Ltd (linking sorghum farmers), and Frigoken Ltd (linkages for horticulture producers).

Equity Bank has also adopted innovative financing partnerships to implement projects that focus on women empowerment. For example, we have partnered with GROOTS Kenya to finance rural women who engage in agribusiness activities. The main component of the project is to build the business capacity of rural women and facilitate market linkages. The programme targets 3,400 rural women in Kitui and Nakuru counties. The loan repayments in this project have been very good and the project has also continued to register great success in transforming the lives and livelihoods of rural women. As a result, the World Bank has given GROOTS the highest ranking in terms of impactful projects.

Equity Bank is also currently implementing a project called the Kenya Cereal Enhancement Programme (KCEP), which is a strategic public-private partnership between the Government of Kenya, the EU, the International Fund for Agricultural Development and Equity Bank. Equity's role is to provide an e-voucher platform that enables

“Financial literacy training among women and youth has resulted in a transition from subsistence to commercial farming.”

farmers to access inputs from selected agro-dealers. Farmers are issued with ATM cards that have an e-wallet which hosts several components, for example a wallet for seeds, fertilisers, equipment, etc. Agro-dealers are also issued with customised point of sale (POS) devices; the farmers swipe their cards at the provided POS to acquire various farm inputs. Once a farmer swipes the ATM card at an agro-dealer's POS, all transactions are processed online and in real time. To date, close to half a billion shillings (€4.3 million) has been disbursed to over 27,000 project beneficiaries

(58% of farmers served are women). Farmers enrolled in KCEP are also trained on financial education; to date 63% of total farmers trained have been women.

There is still reluctance within the private sector to invest in agribusiness due to its perceived higher risk when compared to other industries. How can policymakers and financial institutions act to reverse this cultural attitude?

The vast majority of African farmers have historically been excluded from access to financial services. Mainstream financiers tend to shy away from lending to the agricultural sector because of associated risks including reliance on rain-fed agriculture, low uptake of modern technologies, commodity price fluctuations and challenges in accessing markets. Equity Bank, working with other like-minded stakeholders, has been at the forefront in confronting these challenges through the adoption of innovative financial products that 'de-risk' the sector. The bank has adopted a value chain financing concept, which has been known to reduce costs, and de-risk and increase overall efficiency of agricultural value chains.

The bank also helps farmers to mitigate price risks by provision of warehouse receipt financing, being the first financial institution to implement it in Kenya. In addition, the bank, through the Equity Insurance Agency, offers agriculture insurance packages to farmers, enabling them to mitigate various agricultural risks at affordable rates. Index-linked livestock or crop insurance are some of the products that can help de-risk the sector by managing common systemic shocks that affect all farmers at some point.

Governments could also minimise risks in agriculture by increasing investment and incentives for smallholders to invest in irrigation, equipment and other technologies to mechanise and modernise agriculture activities and reduce over-reliance on rain-fed agriculture, which makes farming unpredictable and risky for financiers. Investment in



World Bank president, Jim Yong Kim, and Dr Mwangi are shown a few of the ways Equity Bank has increased the reach and access of banking services to farmers in Eastern Africa

› rural infrastructure, for example, feeder roads and local storage structures, would also minimise losses incurred due to food wastage/spoilage. However, many African governments are still struggling to meet the Maputo Declaration of allocating at least 10% of their national budget to agriculture every year.

As the largest commercial bank in Africa, Equity Bank has successfully led the way in providing financial services to smallholder farmers. What has the company learnt from this process that could help to bridge the remaining gap between farmers and financiers?

Emanating from its humble beginnings with customers and branches in rural areas, Equity has remained true to the objective of supporting farmers through financial intermediation. This has been achieved by innovatively developing financial interventions and training programmes that support smallholder farmers to become players in an inclusive financial system.

The bank offers financial services through a regional network of over 170 branches in Kenya, reaching out to farmers in rural towns. Equity Bank

also operates in Democratic Republic of Congo, Rwanda, South Sudan, Tanzania and Uganda. The extensive branch network is supported by over 29,000 agent outlets; the agents operate in rural areas and this has been extremely helpful to farmers as they are able to access financial services at their locality, saving time and money. Equity Bank's new digital platforms have further enhanced accessibility, convenience and affordability of financial services.

“ICTs and mobile banking channels have revolutionised money transfer and payments”

Equity Bank is also a market leader in agriculture financing in Kenya. The bank has a fully-fledged agriculture/agribusiness department headed by a general

manager with over 200 staff fully trained in agriculture who manage farmer relationships. The pool of agriculture staff offers training to farmers and advises them on how to undertake farming as profitable businesses. The agriculture department strives to understand the needs of its varied clients in agriculture and livestock value chains and thereby provide relevant and timely solutions to meet their specific needs. For example, credit facilities offered to farmers have a loan period and repayment schedule that is tailored to fit cash flow projections based on production cycle, enabling farmers to borrow and repay loans successfully.

Rural finance is more than credit provision; the bank therefore offers farmers a wide range of other financial support interventions. Equity Bank has invested heavily in ICT infrastructure to avail various payment solutions and savings products. The bank has a friendly remittance account for farmers; the account has no ledger fees, no minimum opening or operating balance, hence it is affordable to operate. Through our Hapo Hapo service, farmers can even open a new account using their phone. ■

SPORE

Dossier

**BIG DATA AND
CLIMATE INSURANCE:
REDUCING RISK
AND MAXIMISING
REVENUES**

Increasingly accessible agricultural data is facilitating the scaling out of index-based insurance schemes and helping farmers build resilience and adapt to climate change.

INDEX INSURANCE

A pathway towards agricultural adaptation and resilience

Closing the gap in agricultural data available to smallholder farmers and financial institutions in developing countries is essential for the agricultural sector to build resilience and adapt to climate change.

Stephanie Lynch

The lack of agricultural information and data available in ACP countries presents significant difficulties for agricultural risk management and leaves smallholder farmers acutely vulnerable to the impacts of climate change. On average, farmers sacrifice 12-15% of their annual income to reduce risk using traditional coping mechanisms, including liquidating productive assets, defaulting on loans and over-diversifying the types of crop they cultivate – methods which are often ineffective and counterproductive.

Between 1995 and 2015 there were 7,000 natural disasters, and 308 million people in Africa alone were affected by such instances. The increasing risk of climate shocks, such as drought, flooding and heatwaves, act as a disincentive for farmers to invest in valuable inputs and agricultural technologies that increase productivity and yields, like fertilisers and improved seeds. Even if farmers were inclined to invest in such technologies, financial organisations are reluctant to

offer farmers credit to buy them without available evidence proving their capacity to repay loans.

The rise of big data

However, investment in agricultural technology has increased by 80% each year since 2012 as the revolutionary impact that big data can have on the food chain has begun to be realised. This influx in capital has not only resulted in the development of precise remote sensing technology and other data collection tools – explored in a recent *Spore* article on precision agriculture (<https://tinyurl.com/y9wdgcufl>) – but has also seen the emergence of private sector agricultural data analytics companies. Farmers Business Network, an American start-up that aims to democratise information, provide unbiased analytics and create business competition in the agricultural sector, recently received €36 million worth of investment from well-known venture capital firms, including GV and DBL

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Accurate agricultural data is used to create weather indexes for insurance pay outs

Partners. Other similarly focused companies are broadening their data collection and reach to agriculture in the developing world. Gro Intelligence has designed a subscription-service software called Clews, which acts as a search engine to provide data analytics across a broad range of agricultural data from around the world. The company makes complex analysis of environmental data, based on satellite imagery, crop production, trade flows and demographics, both simple and accessible for a multitude of users.

The CGIAR Platform for Big Data in Agriculture, launched at the beginning of 2017 with more than 70 external partners, is also joining the trend for agricultural data. The platform brings together thousands of experts, from crop scientists to computer programmers, to collect, process and analyse vast amounts of data on crops, weather and soils, etc. Commenting on the potential of this platform, Andy Jarvis, research director at CIAT, confirmed that, “With enough data and enough analysts, we’ll be able to say if the rains will be late or on-time ... We’ll be able to anticipate shocks, reduce risks and maximise opportunities for profitable, sustainable agriculture.”

The availability of vast quantities of localised agricultural data is useful for facilitating farmers and policymakers in making timely decisions in response to the impacts of climate change. However, Sara Menker, Ethiopian born CEO and founder of Gro Intelligence, is more preoccupied by the potential of reliable statistics to evaluate, monitor and measure farming activities for encouraging commercial investment. When interviewed on solving the food crisis at the World Economic Forum, she outlined the importance of data in one simple question: “How are you going to price the risk of a farmer if you don’t actually understand what production cycles of

agriculture look like in a particular location in Africa?”

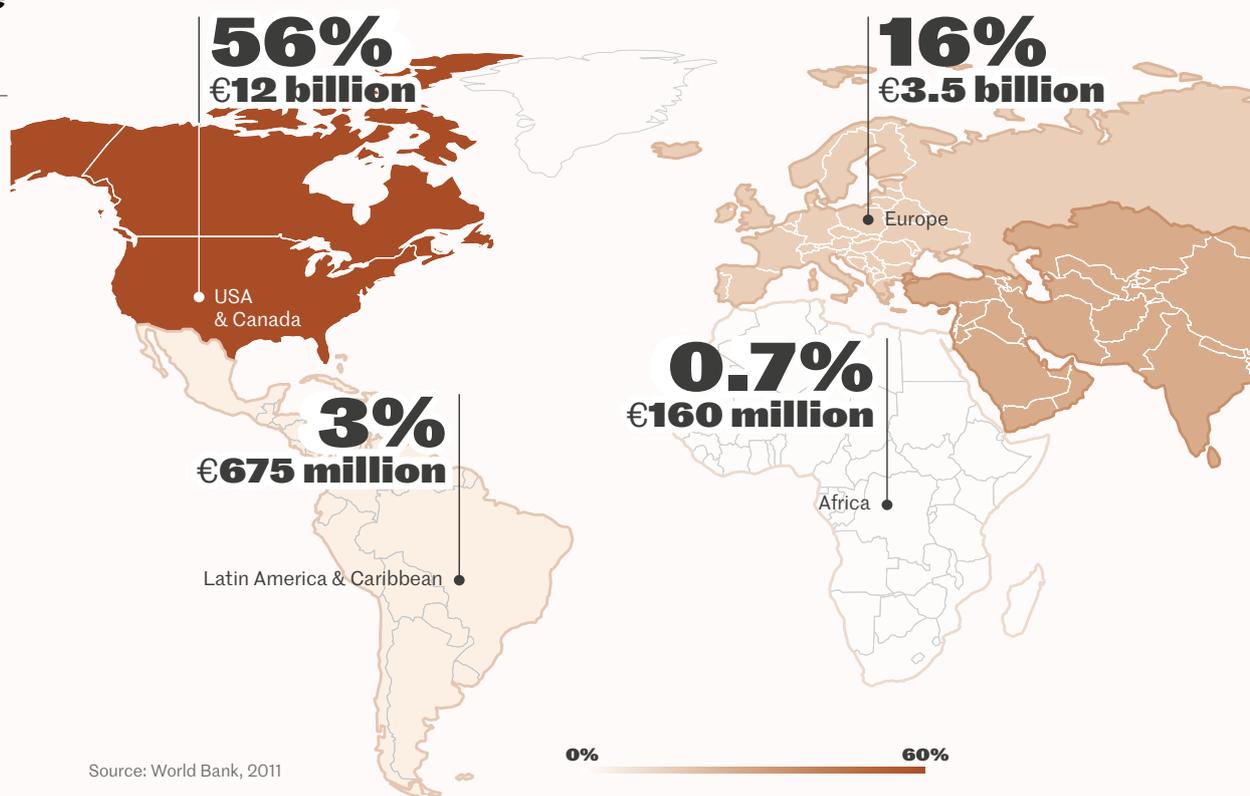
Index-based insurance

In this respect, the growth in the availability of agricultural data has not only encouraged more widespread provision of financial services to smallholder farmers in ACP regions, but also allowed for the introduction of index-based insurance, which offers a viable solution to the challenges of risk management in a changing environment. Rather than insurance pay outs based on individual yield losses or damage and health costs for livestock – like traditional indemnity-based insurance – index-based insurance does not depend on high-cost farm visits to make individual impact assessments. Instead, indemnities are based on an ‘index’ of values relating to variables that impact agricultural productivity, such as rainfall over time or vegetation status across a region.

To create these indexes, insurance providers need access to accurate and timely agricultural data, which is where companies like aWhere come in. Each day, aWhere collects more than 7 billion data points across the planet, which provide real-time, localised weather information and field-level agronomic intelligence across the agricultural value chain. Through a partnership with CTA’s Market-Led, User-Owned, ICT4Ag-Enabled Information Service (MUIIS) project, aWhere’s data is being used to offer smallholder farmers in Uganda crop insurance packaged with weather alerts and agronomic tips. Explaining his motivations for collaborating on the MUIIS project, John Corbett, co-founder of aWhere, states that, “The key to sustainable information services is to solve a problem and simultaneously offer valuable services.” However, he also emphasised that the project’s success

Agriculture insurance worldwide

Geographical distribution of agricultural insurance premiums



› depends on investment in educating the market on the benefits of insurance.

A similar initiative focused on improving the availability and use of climate information at both local and national levels, Enhancing National Climate Services (ENACTS), is providing the necessary data for index-based insurance for smallholder farmers in Ethiopia. ENACTS scientists improve the accessibility of climate data by combining quality-controlled data from national rain-gauge networks with satellite estimates for rainfall, elevation maps, and re-analysis products for temperature. This data is then made available online through ENACTS 'Maprooms'. The Maprooms are used by insurers to compare farmers' measurements from manual rain gauges with ENACTS rainfall monitoring data to evaluate the accuracy of insurance pay outs – this comparison has been used across hundreds of villages in Ethiopia by the R4 Rural Resilience insurance initiative.

Scaling out insurance products

As remote sensing technology and other data collection tools become increasingly available, the potential for index-based insurance to be scaled out to smallholder farmers across ACP regions is now being realised. A collaborative partnership of private sector, governmental and not-for-profit organisations in Zambia, led by non-profit company Musika, successfully insured over 60,000 farming households against drought and other adverse weather events in Zambia during the 2015/16 season. Agrotosh Mookerjee, a micro-insurance actuary consultant working on the project, states that, "This is an incredibly exciting watershed moment where we have succeeded in scaling up agricultural insurance to a level where we're working with tens of thousands of farmers, on a self-sustainable basis and we have some innovative features in the product to manage basis risk and maximise client value, while still being commercially viable for the insurers and re-insurers."

"With enough data and enough analysts, we'll be able to say if the rains will be late or on time."

Another success story can be found in Ghana where smallholder farmers are receiving insurance pay outs from WorldCover, triggered automatically by satellites monitoring rainfall levels. The private sector company promises investors a transparent risk model, which limits downside risk and provides positive expected returns. This level of protection from natural disasters and other climate-related phenomenon lowers farmers' credit risk so that financial institutions are more inclined to issue loans, allowing them to invest in more productive inputs without worrying about



extreme weather conditions ruining their ability to generate returns on such investments. Despite the evident value of such insurance schemes and the existence of 652,975 programmes that insure farmers in Africa and over 3 million agricultural insurance programmes in Latin America, 90% of the world's smallholders still have no access to crop insurance. To assess the challenges that need to be addressed in order to broaden the reach of these index-based insurance programmes, CTA co-hosted a conference on 'Scaling up agricultural adaptation through insurance' in Bonn, Germany, on 14 May 2017. For an overview of the key issues raised at the conference see *Big data: transforming agricultural insurance* (<https://tinyurl.com/yazv5arq>) from *Spore 185* and the 'Call to Action' published in the aftermath of the event (<https://tinyurl.com/ybfgzc8f>).

Where next?

Examining the experiences of existing index-based insurance programmes for

Bundling insurance with improved seed varieties

To increase adoption of both drought insurance services and drought-tolerant seeds by Eastern African farmers, a CGIAR-led project is combining the two climate-smart tools in a bundled package. Despite the increased availability of climate-adapted germplasm, Jon Hellin, a researcher at the International Maize and Wheat Improvement Center (CIMMYT), explains that, "Unfortunately, threats like drought – the very reason for adopting climate adapted crop varieties – also represent a huge risk that makes farmers reluctant to invest in new technologies such as drought-tolerant seed. However, bundling the seed with a risk mitigation tool such as index insurance, provides fantastic opportunities for increasing farmers use of climate-smart agricultural technologies and practices."

With the knowledge that they will automatically receive compensation from insurance providers if rainfall is under an agreed threshold, smallholder farmers can be more confident about investing in increasing the climate resilience of their farms. The project is, therefore, working with farmers, insurers, re-insurers and seed companies to develop appropriate index insurance products to bundle with climate-adapted germplasm.

Through a partnership with the Drought Tolerant Maize for Africa Seed Scaling project and the Agriculture and Climate Risk Enterprise (ACRE), CIMMYT is exploring possibilities for incorporating drought-tolerant maize seed into a replanting guarantee offered by ACRE to farmers. To trigger the replanting guarantee, farmers have to text a code to ACRE, which can be found inside each bag of maize seed, at the time of planting; their farm will then be monitored using satellite imagery for 21 days. If the drought index is triggered during this time, farmers are automatically paid for their losses via M-Pesa, a mobile money service, so that they can buy a new bag of seed. The insurance premium for this coverage is incorporated into the price of the maize seed, ensuring that smallholder farmers do not encounter any additional costs.

ACRE currently provides insurance services for inputs – including replanting guarantees for other seed varieties – harvests, and livestock to 800,000 smallholders in Eastern Africa, a figure that is projected to increase to 3 million by 2018. By collaborating with the largest index insurance provider in the developing world, CIMMYT intends to strengthen the reach and uptake of its tailored insurance products, and by 2019 deliver bundled services to 400,000 farmers in Eastern Africa's drought-prone areas via the seed supply chain.

agriculture, two significant challenges commonly arise. Firstly, the difficulty of increasing farmer uptake of insurance products. This ultimately stems from a lack of understanding and trust among farmers of the benefits of agricultural insurance and the accountability of financial institutions to issue pay outs on time. As Rahab Kariuki, managing director of micro-insurance product designer, ACRE Africa, noted at the Bonn conference, in many native languages a word for insurance does not even exist. A concerted effort, therefore, needs to be made by agricultural insurance providers to educate farmers and increase their

awareness of the potential remunerations of insurance. Dan Osgood, a lead scientist at the International Research Institute for Climate and Society, summarised that in order to persuade them to invest in insurance, "farmers need the data and science at their fingertips."

Not only is clear and transparent information about insurance products essential to increase farmer uptake, but the products must also be more available and responsive to farmers needs to convince them to buy insurance. In order to achieve this, farmers should be consulted during the design process of insurance products, and larger

commercial farms with more disposable income should be targeted first to prove the benefits of index-based weather insurance to smaller farmers so that they have the confidence to invest. The second key issue that is frequently raised in regards to index-based insurance is the question of whether it can ever be commercially viable. In order to act as a sustainable solution to climate change, agricultural insurance needs to attract private sector investment.

In light of this challenge, a for-profit social enterprise aiming to reduce the risk of investing in areas threatened by extreme weather and natural disasters was launched in June 2016. Global Parametrics sells risk transfer and index insurance coverage to organisations that are largely unprotected, such as NGOs, development banks, microfinance providers and even municipalities in low and middle income countries. The Financial Disaster Risk Management packages, which Global Parametrics

“Insurance alone is not enough, it should be provided in conjunction with complimentary services and inputs.”

offers, provide financial protection for vulnerable organisations so that they can efficiently respond to the impacts of severe weather and seismic disaster events (e.g. by issuing insurance payouts to farmers). To ensure its services are financially sustainable, the company shares its risk with third-party investors via an investment fund structure called the Natural Disaster Fund.

Another solution to make insurance more financially feasible for private sector investors is the concept of bundling index-based insurance in a package with

other financial and information services. At the conference in Bonn, Ishmael Sunga, CEO of the Southern African Confederation of Agricultural Unions, stated that “Insurance alone is not enough, it should be provided in conjunction with complimentary services and inputs.” The provision of a selection of services to help mitigate the risks of climate change has been shown to be more attractive to farmers, as well as to the private sector. Bearing this in mind, CTA’s Flagship Project in Southern Africa is focused on promoting the scaling up of weather-based insurance alongside three other proven climate-resistant solutions for cereal and livestock farmers: drought-tolerant seeds, improved climate information services and options to help livestock farmers diversify. With this bundle of services, CTA aims to improve the climate resilience of 200,000 Southern African smallholder farm households, primarily in Malawi, Zambia and Zimbabwe. ■

How can insurance improve adaptation and increase resilience

The impact of insurance:
an example of drought insurance in African states

Farmers' traditional safeguarding mechanisms



International disaster relief



Drought insurance



Insurance payout | Implementation

-2 -1 Harvest 1 2 3 4 5 6 7 months

SOURCE: SCALING UP ADAPTATION THROUGH INSURANCE, BONN, 14 MAY 2017

INTERVIEW

John Corbett: The role of data in sustainable farming systems

Stephanie Lynch

John Corbett from agricultural intelligence company, aWhere, explains the importance of ensuring that all stakeholders in agricultural value chains are kept informed with up-to-date farming and weather data.

How should technology be harnessed to help agriculture adapt to the impacts of climate change?

It all starts with the farmer. From smallholder to commercial row-crop farmers, the education and awareness of the farmer on information services is the key. As farmers come to understand how the 'science of agriculture' will improve their profits, then they will leap forward in their willingness to leverage technology to help solve real problems. The agricultural value chain must be made more robust so that farmers have the inputs they need when they need them, just as the markets need to know what is producing well, where, and when it will be harvested. Across the whole of the agricultural value chain only improved information can dampen the impact of variable weather.

Index-based insurance is becoming an increasingly popular approach to building agriculture's resilience to climate change. What are the challenges and opportunities for such data-centred agricultural insurance schemes?

There are two critical impediments to the effective, sustainable utilisation of index-based insurance schemes. First and foremost, the client (farmer or rancher) must come to understand and trust that the data utilised by the insurer fairly reflects the risks and costs – this is a significant communication and education hurdle. Secondly, the insurer is facing a nearly impossible task of calculating that risk

because the warmer atmosphere is presenting weather variability that has been far more impactful in the recent past (roughly over the last 5 years) than in the 'statistical' past – the last 30 years. My concern is that the insurers are far more exposed to loss than they realise as the frequency of weather-based agricultural impacts certainly appears to be far higher now than even a decade ago. This loss will lead to problems as the insurers will not generate enough profit to be sustainable. However, if the insurance is coherently bundled with other financial services, such as credit loans, and information services to balance the risk against the cost, it could be a commercially viable model. The difficulty lies in understanding the full extent of the risks.

What are the main barriers to scaling out successful data collection techniques to more remote locations and how can these be overcome?

Agricultural value chains in remote locations must be approached with a complete solution – a solution for all the key players in the specific agricultural value chain of interest. In other words, providing production information to farmers is great – it will help the production and profitability of farmers – but it is not sustainable if the input providers and the markets are not informed with aggregates of the same data received by the farmers. For example, with good applied science it is possible to boost cassava yields, but there must be a market otherwise the crop will rot! Markets and supply chain managers need to know how production is doing on the farm so that they can respond to farmers' needs – as do the input providers. Value chains must be strengthened in concert – or the chain will break!



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John Corbett (PhD) is aWhere's co-founder and chief science officer

ZIMBABWE

Bundling information and financial services

Zimbabwe's mobile network, Econet Wireless, is providing farmers with micro-insurance to cover crops and inputs against damage due to poor weather. The EcoFarmer subscription platform offers farmers a package of services, delivered through mobile phones, to increase their productivity and mitigate risk.

Busani Bafana

Mobile phone services in Zimbabwe have, in recent years, been revolutionised by Econet Wireless, the country's largest telecommunications services company, achieving more than 97% mobile phone penetration. However, critically for farmers, as well as providing mobile internet access and payment solutions, the company offers subscriptions to the EcoFarmer mobile platform, which delivers a range of services, including weather-based insurance, to farmers via SMS and voice-based messages to their mobile phones. The platform is specifically designed to be accessed using a basic mobile phone to enable customers at the lower end of the economic pyramid to access and receive the services.

Developed over 3 years ago, EcoFarmer provides innovative micro-insurance for farmers to insure inputs and crops against poor weather, such as drought or excessive rainfall. For example, Econet has partnered with Zimbabwe Farmers' Union (ZFU) – which represents more than 1 million farming households – to provide the 'ZFU-EcoFarmer Combo'. A €0.89 monthly subscription provides farmers with ZFU membership, from which they receive training in best farming practices, and EcoSure funeral insurance cover for individual farmers (dependents



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can be added for an extra cost); as well as maize production or cattle rearing tips and weather index insurance to cover maize crop failure for one season.

Elizabeth Tshuma, a 67-year old livestock and horticulture farmer on the outskirts of Bulawayo city, is a ZFU-EcoFarmer Combo subscriber. “In the past, I have had to worry about the loss of a family member and how to meet funeral costs but the ZFU-EcoFarmer Combo has solved my problems because my subscription takes care of this need,” states Tshuma. “The insurance for my crops is ideal, especially with the drought we experienced in 2016 and too much rain this year,” she adds. Tshuma – who also breeds cattle and goats and rears indigenous chickens – says that through EcoFarmer’s Dial-a-Mudhumeni (extension officer) service, provided in collaboration with the Ministry of Agriculture, she can call in for free to get timely farming information and advice on rearing her livestock. Tshuma’s neighbour, Magaret Gauti Mpofo, says she will be joining the insurance scheme after hearing

of the EcoSure pay out for funeral insurance from other farmers. The opportunity to receive farming and weather information through the service is also important to Gauti Mpofo, as she knows that access to such data makes a real difference to her farming.

Econet’s CEO, Douglas Mboweni, explains that any farmer can freely register for EcoFarmer services through their mobile phone; they are then asked to provide their location details and farm type. Using this information, EcoFarmer aims to ‘location profile’ farmers to provide information specific to their farming area. Mboweni is confident that Econet fosters financial inclusion through EcoFarmer, as every farmer interested in registering must first be registered on EcoCash (a mobile money payment tool).

“We are in the process, as a business, of perfecting our monitoring and tracking mechanisms to allow us to better measure and report our impact throughout the sector,” states Mboweni.

Bumper ICT services, bumper harvests

Zimbabwe is a largely agrarian economy, with over 70% of the population predominantly dependent on agriculture and more than 60% of people living in rural areas. Econet is therefore in the process of developing a variety of additional services to help farmers trade and access savings via their mobile phones, as well as receive loans or other insurance products, leveraging their pre-existing bundle offers, such as EcoCash and EcoSure. “Econet has the widest network coverage in Zimbabwe and, with a customer base of over 10.2 million subscribers, we recognise that the mobile phone is a powerful tool for transforming livelihoods,” says Mboweni. “We have also recognised that the information gap is one of the key challenges which smallholder farmers face and our primary endeavour is to ensure that our farmers have farming advisory services through their mobile phones.”

To engage with farmers, Econet works closely with local organisations such as ZFU, and NGOs such as Mercy Corps, to mobilise communities – an approach that farmers have found more ‘personal’. Econet’s engagement with community-based agents has helped drive literacy and awareness as most of the agents are recognised and respected opinion leaders, and services are offered in vernacular languages. However, digital and financial literacy among farmers remains a challenge. “One of our key learnings is that digital literacy and financial literacy are critical for our farmers in order to drive understanding and adoption [of Econet services],” says Mboweni. EcoFarmer has over 700,000 registered farmers, with many subscribed to specific EcoFarmer offers of their choice, but this is just the beginning as Mboweni explains, “We have been in pilot and learning mode, and plans are now underway to drive to scale so that we ensure our services have a greater social and economic impact on our farmers.” ■

Under the auspices of CTA’s flagship project in Southern Africa, Making Southern African cereal and livestock farming climate resilient (<https://tinyurl.com/y9usjohx>), the centre is supporting Econet Wireless and ZFU to scale up the EcoFarmer micro-insurance scheme to 3,000 smallholder farmers in three provinces of Zimbabwe (Mashonaland West, Masvingo and Midlands).

For just €0.89 per month, EcoFarmer offers farmers membership in the ZFU, crop or livestock farming tips, weather-indexed crop insurance and funeral insurance cover



JAMAICA AND ST LUCIA

Innovative insurance for minimising climate risk

Two insurance products offered by the project, Climate Risk Adaptation and Insurance in the Caribbean, are creating space for financial certainty in an increasingly unpredictable climate.

Desmond Brown



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Increasingly intense extreme weather events, such as hurricanes, cause flooding and devastation in the Caribbean



Over the last 30 years, 1.5 million people have been affected by floods and tropical storms in Belize, Grenada, Jamaica and St Lucia, causing more than €4.23 billion in damage. As these extreme weather events increase in their frequency and intensity, affected individuals in the Caribbean are benefiting from an innovative insurance initiative to help them safeguard against damaging impacts.

The loss and damage associated with climate change can set back development by potentially increasing not only the incidence, but also the severity of poverty. Poverty and vulnerability are deeply intertwined: the poor have low adaptive capacity because they have fewer resources to cope with climate risk; this resource base is further diminished with every extreme weather event, thus deepening their poverty. However, by compensating for damage caused by extreme weather events, climate risk insurance is helping individuals break out of this vicious cycle.

The Climate Risk Adaptation and Insurance in the Caribbean project, launched in 2011 by the Munich Climate Insurance Initiative (MCII), targets low-income individuals who are exposed to weather-related risks. Funding for the project, worth €4.6 million, has been provided under the International Climate Initiative by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Building. The project has developed two climate risk insurance products: Livelihood Protection Policy (LPP) – directed at individuals; and Loan Portfolio Coverage (LPC) – aimed at financial institutions.

The LPP is a parametric weather-index based insurance policy, which ensures the rapid distribution of pay outs to policyholders when threshold values for wind and/or rainfall are exceeded. Not only does the timely provision of pay outs help vulnerable individuals to get on with rebuilding their lives in the wake of a natural disaster, but the insurance coverage also reduces policyholders' credit risk giving them greater access to financial services. To encourage uptake of the insurance policy among the most at-risk individuals, the project engages vulnerable communities through its awareness raising and outreach activities.

Insurance pay outs in the event of extreme weather can range from €67 to €3,337

The LPC aims to help stabilise financial institutions after an extreme weather event by protecting their equity base against financial shocks brought on by the disaster. The level of certainty created by this risk coverage helps ensure that there will be no shrinking of economic activity in the long run. The LPC, therefore, has the potential to improve low-income individuals' access to lending and affordable financial services. This increased access to credit, combined with the guarantee of an insurance pay out in the event of severe weather, allows LPP policyholders to invest in assets to boost their productivity. The risk protection offered by both

insurance products, therefore, helps to stimulate economic growth, in spite of the growing frequency of natural disasters, creating jobs and developing markets and value chains.

By fuelling economic development in climate-sensitive sectors, the ultimate goal of MCII's Climate Risk Adaptation and Insurance in the Caribbean project – implemented with the Caribbean Catastrophe Risk Insurance Facility (CCRIF), and other partners – is to increase the resilience of communities affected by climate change in the Caribbean.

Climate insurance in action

During May 2017, 10 of the 14 parishes in Jamaica were flooded due to extremely heavy rain, which caused major landslides. The Jamaica Meteorological Services said the island had experienced an unprecedented level of rainfall, with the World Meteorological Organization recording rainfall figures of 63 mm at Norman Manley International Airport in Kingston on the 15th and 16th May, and 92.6 mm at Sangster International Airport in Montego Bay on 17th and 18th May – where the average rainfall usually totals 100 mm over a 12-day period during May.

In the wake of this heavy rainfall, several bridges were washed away and multiple roads damaged, leaving communities marooned. The island's agricultural sector was also hard hit by the heavy rainfall, suffering an estimated €5.3 million in damage with around 10,000 farmers affected. Bobby Pottinger has cultivated bananas and coconuts on his 44 ha farm at Highgate in the north-eastern parish of St Mary for

› the last 50 years. Explaining the impact of the rains on his farm, he stated that, “There was very, very heavy and sustained rain for days, which oversaturated the soil. When the soil is oversaturated and the wind is up, you have toppling of banana plants, so I had quite a loss of fruits that were almost ready for reaping.”

There are currently 300 paying policyholders in Jamaica, a figure expected to rise to 3,000 within the year.

However, thanks to the LPP pay out in response to the severe weather, it was not long before Pottinger was able to recover from the impact of the heavy rains. Pottinger explained that farmers like himself previously depended on the Banana Insurance Board for protection against such weather phenomenon, but the funds had depleted after about eight major hurricanes and multiple windstorms. The Climate Risk Adaptation and Insurance in the Caribbean project is welcomed, states Pottinger, “Because we had nothing to fill the void for a long time and I am not only encouraging banana farmers to utilise it; I also sit on the Coconut Industry Board and I am encouraging them to go into this type of insurance.”

Like Jamaica, St Lucia is also prone to extreme weather linked to climate change. In 2016, the island’s agriculture suffered as a result of flooding and landslides triggered by Hurricane Matthew. Cutis Fontenelle, a banana and plantain farmer and exporter based in southern St Lucia, said he lost 100% of his crops during Hurricane Matthew, the third time this had happened since he began farming. “Based on my

experience in this business, it can be very difficult to bounce back after natural disasters. Usually we go flat down,” he said. But fortunately for Fontenelle, who received compensation for his farm’s losses, the Climate Risk Adaptation and Insurance in the Caribbean project could not have come at a more opportune time. “In my opinion, it’s one of the best things to have happened, particularly for people in agriculture. This insurance is something that I would definitely recommend that everybody taps into,” he explained.

Strengthening insurance services

The Climate Risk Adaptation and Insurance in the Caribbean project is working with national disaster management agencies to closely align the flow of information to local insurers, so that policyholders can receive early warning alerts about an approaching extreme weather event. This allows policyholders to proactively manage and mitigate the risks that they may face by giving them time to implement necessary measures to protect their livelihoods. To this end, the project conducted workshops facilitating dialogue between the local insurers, national disaster management agencies and regional disaster and emergency management organisations (i.e. CCRIF).

The workshops aimed to strengthen transparency and trust between the different organisations involved in the project so that it can provide the necessary services to policyholders, as and when they are required. Successfully meeting policyholders’ needs in this way will encourage more individuals and institutions to invest in the insurance products – there are currently 300 paying customers in Jamaica and plans are to expand this to 3,000 over the next 12 months. The workshops also sought to engage Caribbean ministries of climate change, sustainable development and local government to build a consensus in support of weather index-based insurance and help the Climate Risk Adaptation and Insurance in the Caribbean project gain momentum in the region. ■

LPP: How it works

Under the LPP, farmers and other low-income individuals are entitled to insurance cover for any loss of income due to heavy rain or high wind speeds. Premiums are determined by the extent of insurance cover that policyholders wish to buy and can be paid on a weekly, monthly or annual basis. A trigger index for the amount of rainfall or the speed of wind that must occur for a payment to be made to policyholders is predefined. The four index levels are determined by a rigorous analysis of historical rainfall and wind data in the region.

The Climate Risk Adaptation and Insurance in the Caribbean project collaborates with partner organisation DHI to monitor extreme weather events using satellite data, which is continually reported to local insurers. When the threshold for an extreme weather event is triggered, policyholders receive a text message from the insurers telling them at what level a trigger has been met, and the amount that they can expect

to receive in payment – which can range from €67 to €3,337. This system means that policyholders themselves do not have to submit a claim to receive payment; instead insurance payments are automatically deposited into their accounts within 30 days of the weather event.

The process also avoids the need for insurers to make costly and time-consuming visits to verify claims; policyholders simply receive a text notifying them when the transaction has been completed. The simplicity and relative immediacy of the pay outs helps to ease the financial stress caused by the impacts of harsh weather events for farmers and other low-income individuals. The amount paid out by the insurer is calculated as a percentage of the coverage value purchased by the policyholder, but in all cases the more extreme the weather event (determined by the index level triggered), the larger the pay out.

SPORE

Economy

VALUE CHAINS

*Indian Ocean fisherfolk
come together*

34

TRADE

*Caribbean:
condiment
exports heat up*

36

BUSINESS

*Good investment:
premium cashew nuts
from Benin*

38

FINANCE

*Big data:
transforming
agricultural insurance*

39

ARTISANAL FISHERIES

Indian Ocean fisherfolk come together

Stakeholders in the Indian Ocean fisheries sector are collaborating to promote the sustainable management of marine resources and improve livelihoods for artisanal fishermen.

Mamy Andriatiana

“Fisherfolk in the Indian Ocean region are slowly but surely stepping back into the limelight,” says Dorothee Ravomanana, regional representative of the EU-funded SmartFish programme of the Indian Ocean Commission (IOC), which aims

to strengthen regional cooperation and promote the development of fisheries by focusing on governance, surveillance, trade and food security. This is encouraging news for artisanal fishers who are often marginalised, despite fisheries being crucial for Indian Ocean countries.

Artisanal fishers dominate the sector

Artisanal fisherfolk, in particular, account for a substantial share of production in the region. According to FAO, the sector generates over 130,000 direct jobs and helps sustain the livelihoods of millions of people



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The fishery sector directly generates over 130,000 jobs in the Indian Ocean and significantly contributes to the GDP of the region's islands

Enhancing tuna resource management through cooperation

in related activities, such as boat construction, gear maintenance and fish processing. In Madagascar, 60% of the sector's added value (through smoking, processing and transporting fish) is generated by small-scale fisheries and Coralie Gevers, World Bank representative in the Comoros says, "Small-scale fishing is a vital social safety net for disadvantaged people." Fisheries also provide an important source of protein for local communities.

In 2016, according to country data published by SmartFish, fisheries accounted for 6.7% of GDP in Madagascar, 10% in the Comoros, over 9% in the Seychelles and 1% in Mauritius. Yet, artisanal fishers often have no access to funding to obtain fishing equipment, such as lines, boats and ice boxes, and struggle with poor living and working conditions. For example, only around 10 of the 85,000 fishers in Madagascar have a motor boat, while regulations governing safety at sea and conservation of fishery products are almost non-existent.

Legitimacy now recognised

"It is often hard for donors to make the right decisions because the viewpoints of artisanal fishers are not sufficiently represented", says Andriamanana Hajaniaina, head of the Statistics Directorate at the Ministry of Fisheries in Madagascar. To overcome this lack of representation before national and international governmental and non-governmental bodies, fisherfolk in the Indian Ocean region – aware of their leading economic role and the need to organise themselves – launched the Indian Ocean Federation of Fisherfolk (FPAOI) with support from the SmartFish programme in October 2015. Through FPAOI, fisherfolk receive training in drying and smoking fish using processing technology, as well as on fisheries governance, and experiences are exchanged with artisanal fishers from other Indian Ocean islands.

In 2016, FPAOI became a member of the Indian Ocean Tuna Commission (IOTC), an intergovernmental organisation responsible for the management of tuna and tuna-like species in the Indian Ocean. Lala Ranaivomanana, former

The IOTC, formed in 1996, encourages cooperation among its 32-member states to conserve and optimise tuna resources in the Indian Ocean, and encourage the sustainable development of fisheries in the region. About 740,000 t of tuna, worth €2-3 billion, is caught every year in the Indian Ocean.

Of 16 motions presented at the 21st Session of the IOTC, held in Indonesia in May 2017, eight 'Conservation and Management Measures' were approved, including two proposed by the Seychelles. "We asked for a ban on the throwing of by-catches back into the ocean, suggesting that these fishes be taken to shore and used for export or processed," explained Seychelles' Minister for Agriculture and Fisheries, Michael Benstrong. The IOTC also agreed to reduce fishing allowances of the yellowfin tuna by 15% to combat over-exploitation. An agreement to establish a list of vessels presumed to have carried out illegal, unreported and unregulated fishing, and the phasing out of the use of large-scale driftnets were two more measures introduced.

FPAOI secretary general, explains that FPAOI's membership "enforces its legitimacy, so its voice is now being heard."

FPAOI also advocates for the rights of its marginalised members via unity, experience sharing and cooperation with different regional stakeholders within the sector. For example, the Tazara ship owners' association, a Malagasy FPAOI member, has been working closely with local traditional fishers, sharing its cold storage units with artisanal fishers to enable them to preserve the quality of their catch.

Integration at the national level

In the Seychelles, with FPAOI support, artisanal fishers have been increasing their collaboration with different stakeholders in the value chain to promote sustainable fisheries. Cooperation with the Seychelles Fishing Authority, the Bureau of Standards, hotels and consumers led to the launch of the 'Seychelles Label' programme; a code of conduct to ensure resource quality, freshness, traceability and sustainability, while preserving the environment. Consumers have confidence in the quality of products with the Seychelles Label, allowing fishers to fetch higher prices. "This label enhances the added value of the sector," says Beatty Hoarau, former president of the Seychelles Fishing Boat Owners Association. She explains that a hook-and-line technique, traditional to the Seychelles, is used to target specific species to sustainably catch fish compliant with the Label; the discarding of

unwanted fish does not occur, and little damage is inflicted on marine habitats.

In Madagascar, fisherfolk have become major stakeholders in the sector since the Fisheries Code, enacted in February 2016, gave them full authority over fisheries resource management, which is no longer in the hands of the state. Local fishing communities have come together in formal associations, so-called *Vondrona Olonafotony*, for the purpose of managing marine fishing areas and resources; fish stocks are now well-managed, the environment is better protected and fishery production has increased. NGOs provide support, such as capacity building through the renewal of equipment and facilitating access to funding, while the government monitors the legality of fishing activities.

However, despite FPAOI's progress in strengthening the representation of artisanal fishers, many still do not have the means to defend their interests, particularly as their literacy rates are so low. In Madagascar, for example, more than 75% of fisherfolk barely have any primary school education. In addition, Roginah Rafidison, director general of fisheries in Madagascar, states, "Besides the lack of political willingness to support the sector, the issue is more economic than technical. But once artisanal fisheries are consolidated, it will be necessary to strengthen professional export collectors to boost the sector." Export collectors act as middlemen, helping increase fisherman's access to international markets at good prices. ■

CARIBBEAN

Condiment exports heat up

From sweet preserves to spicy sauces, regional condiment agro-processors are investing in certification and standardisation in order to sustainably enter the highly developed international ethnic and gourmet export markets.

Natalie Dookie

The value of the global condiment market is expected to rise to €20.29 billion by 2020, with urbanisation, higher disposable incomes, and growing interest in world cuisine increasing the demand for exotic sauces in North America and Europe. International sales of sauces and mixed condiments from Caribbean Community (CARICOM) countries is less than €44 million per year, presenting an opportunity to harness the export and growth potential of Caribbean condiment brands and novel products.

The Caribbean's main spice and condiment crops are hot peppers, nutmeg,

mace, pimento, ginger and cinnamon, with key exports coming from Belize, Grenada, Guyana, Jamaica, St Lucia, St Vincent and the Grenadines, and Trinidad and Tobago. In the 1970s, Jamaica's Busha Browne Company became the first regional agro-processor to export jerk seasoning (a spice mix native to Jamaica) to the US. Today the firm also exports to Australia, Canada, New Zealand and the UK. In fact, Jamaica recently took a giant step to support its jerk seasoning exporters' by becoming the first English-speaking Caribbean country to register an indigenous product, 'jerk', under the

international geographical indication system.

Winston Stona, known as the 'Condiment King of Jamaica' is a co-founder of Busha Browne, and is recognised as being instrumental in building and shaping the speciality food industry. "The ethnic food market in the US is very strong and, by law, companies have to allow for purchases of at least 10 to 15% from minority-owned firms," Stona reveals. "This puts an extraordinary market right at the Caribbean's doorstep and with a large diaspora in Atlanta, Chicago, Florida, Georgia, New York and South Carolina, we can sell to



© BARON FOODS LTD.

Baron Foods manufactures over 150 products, including spices, gourmet sauces, dressings and seasonings



© FOODFOLIO/LAWY STOCK PHOTO

Caribbean condiment agro-processors are working hard to take advantage of growing international ethnic and gourmet export markets

‘our own’. We can also reach new customers through tourism, as food and tasting is very much part of the travel experience.”

Stona observes that one of the weaknesses of Caribbean condiment manufacturers is poor packaging: “Because labelling and the other requirements for export are expensive, new exporters’ need to be patient and first become established in their home markets. Agro-processors also need to invest in trademark registration prior to exporting, development of marketing and promotional materials, and undertake regular visits to build relationships in their export markets. New exporters can also ‘test the market’ by first supplying food service firms as this option will reduce packaging costs.” Stona also believes that regional condiment exporters should collaborate to solve some of their current challenges. “Access to a reliable, cost-effective supply of bottles is hampering production so, by working together, manufacturers’ will be able to obtain better economies of scale,” he explains.

Another Caribbean brand which has successfully internationalised is Baron Foods Ltd. of St. Lucia, which exports more than 50% of its production to over

25 countries from across the Caribbean, East Asia, Europe, the Indian Ocean and North America. Baron Foods is also the first regional agro-processor to break into the Cuban market. According to Ronald Ramjattan, CEO of Baron Foods, “Consistency of quality, packaging, delivery and word of mouth referrals enables me to work around my greatest challenge, which is confined budgets for marketing and advertising.”

€44 million

from international condiment sales is generated by the Caribbean every year

50%

of Baron Foods’ production is exported from St Lucia to over 25 different countries

Baron Foods has satisfied the main standards and certification criteria required for exporting, and operate according to international food safety

standards of FSSC 22000:2010. Their products also comply with US Food and Drug Administration rules and adhere to EU labelling standards. With three laboratories, Baron Foods invests heavily to ensure consistency of quality and flavour. “Regional condiment exporters’ must produce consistent quality and continuously invest in market intelligence in order to satisfy the demands of their export markets,” states Ramjattan.

“Exporting within CARICOM can be challenging – as there remains some degree of protectionism through the erection of non-tariff barriers such as additional trading documents required, new levies and duties, slow government response time and even the movement of labour – but exporting is an ongoing journey of survival, and Caribbean firms have to innovate and create niche products in order to target their markets,” Ramjattan concludes. ■

***Busha Browne and Baron Foods have worked to promote regional trade and agribusiness development in the Caribbean through their involvement in the Caribbean Agribusiness Forums, organised by CTA, the Caribbean Agri-Business Association and the Inter-American Institute for Cooperation on Agriculture: <https://tinyurl.com/ybqk8q9a>**

© KATI FARMS



Kati Farms processes farmed fish into a range of value-added products, including fish sausages

ADDING VALUE

Reducing wastage to provide niche fish products

Kati Farms, a fish processing enterprise in Kampala, Uganda, produces a range of value-added niche products using farmed fish sourced from over 1,000 fish farmers.

James Karuga

Situated in the suburbs of Kampala, Kati Farms was established in 2011 by Lovin Kobusingye with €700 of her own savings. Kobusingye aimed to reduce fish losses and wastage in Uganda by processing farmed fish into a range of value-added products. Today, the enterprise is valued at €350,000 and Kati Farm's flagship product is the fish sausage. Other fish products include fish powder, fillets, loins, oil, samosas, dried and salted sun-dried fish and fish meal for animals. "All the fish is used productively. We don't have any waste, including the fins," emphasises Kobusingye.

The first batch of fish processed by Kati Farms was supplied on credit from fish farmers Kobusingye had previously connected with, and initial production began with 100 kg of fish sausages daily. The enterprise currently uses farmed tilapia and catfish sourced from

over 1,000 farmers around Uganda, who supply Kati Farms with 15,000 kg of fish each month. After processing, Kati Farms sells 7-10 t of value-added fish products monthly to around

15,000 kg

of fish is supplied by 1,000 farmers to Kati Farms each month

84-120 t

of value-added fish products are sold by Kati Farms on a yearly basis

68-80 clients including supermarkets and restaurants around Uganda, as well as street vendors.

In addition, in March 2016, Kati Farms opened its first own branded outlet in Kampala, where customers buy pre-processed products, or sit down at the café to buy and eat various fish snacks. Since 2015, Kati Farms products have also been exported to Burundi, the Democratic Republic of Congo (DRC), Kenya, Rwanda, and Tanzania. For customers in regions like DRC where transporting raw fish can result in spoilage, Kati Farms have introduced salted sun-dried fish which last for over a year without refrigeration. "You have to keep on innovating so that you are not outdated, and researching in order to maintain the quality of the product," says Kobusingye.

To support farmers who supply them with fish, Kati Farms also conducts training on feeding routines, daily feed rations, feed formulation for better productivity, and proper storage of fish in ice to ensure they are delivered unspoiled. For a small fee, Kati Farms also hires out more expensive equipment, which some farmers might not be able to afford or only use occasionally, like fish nets and oxygen cylinders, and water transportation tanks for delivering live fish to the fish marketing centre.

Currently, Kati Farms has 38 staff, including 28 women, but another 500 people are indirectly employed including delivery staff and street vendors who sell the fish products. To increase their distribution, Kati Farms plans to open more branded outlets within the Eastern African region to sell products directly to consumers. In Kenya, the first branch will be opened in September 2017 in Nairobi. As demand for products increases within the region, Kati Farms aims to work with 2,000 fish farmers.

Kobusingye, since founding Kati Farms, has learned the best way to run a successful African enterprise is to work with locally available resources. "I innovated around what was here in order to find solutions for Ugandan people, using Ugandan products," she says. ■

CHALLENGE FUNDS

Financing agribusiness for sustainable development

Enterprise challenge funds in Africa are matching grant funding with agribusinesses that have the potential to grow and create impact for the rural poor.

Sophie Reeve

Innovative financing mechanisms in Africa, known as enterprise challenge funds, are channelling public funds to private businesses with a focus on sustainable development. A pre-defined development ‘challenge’ is widely promoted in the public domain with clear eligibility criteria, and is open to all who are willing to bid. Through this competitive and transparent process, challenge funds ensure that only commercially viable businesses with the best solutions to development problems receive funding. At the same time, grantees are provided with additional services, such as market risk mitigation support to help package their enterprises for donor investment.

Eligibility varies from fund to fund. Some, like the Africa Enterprise Challenge Fund (AECF) and the Malawi Innovation Challenge Fund (MICF) are only open to private companies and require grantees to cover at least half of project costs. AECF’s competitions target economic sectors such as agribusiness, renewable energy and rural financial services, and award loans of between €210,000 and €1.3 million. “We look for companies large and small but they must have two things: an innovative idea that will impact on the rural poor, and commercial viability,” says Dr Paul Greener, AECF CEO. To date, 41 projects have received funding from AECF since its launch in 2008, resulting in around 8,000 salaried jobs and generating a cumulative net wage of €85 million.

In March 2017, Malawi saw the opening of its first margarine and baking fat processing plant in Kanengo, Lilongwe, which will produce a long-life, fridge-free



© CHARLES MKOKA

A long-life, fridge-free margarine called Sunspread has been produced in Malawi by Sunseed Oil Limited – a beneficiary of the Malawi Innovation Challenge Fund

free margarine called Sunspread. The owners of the plant – Sunseed Oil Limited – are one of MICF’s grantees. The project is expected to improve value addition in sunflower production and will require 14,000 t of sunflower seed every year, expanding market access for over 10,000 rural smallholder farmers. Sunspread margarine has a ready market locally and there is a growing demand regionally, especially in Mozambique and Zambia.

In January 2013, the private, for-profit company, AACE Food Processing and Distribution Ltd. (AACE Foods), secured €408,000 in funding from AECF. Conceived as a social enterprise in 2009, AACE Foods sources grains, herbs, cereals and vegetables from smallholders

in Nigeria to produce a range of spices, spreads and sauces, and is focused on improving farmers’ livelihoods by offering microfinance and support services. With funding from AECF, AACE Foods was able to cover a portion of its start-up and farmer cluster development and training costs, and new product innovation. “It has been a tough task to build a local supply chain and change mindsets about locally-made products. However, we have been able to surmount many of these encounters through the support of development partners such as AECF,” says Juliet Fejro, AACE Foods sales and marketing associate. ■

✦ For more information on AECF visit: <https://tinyurl.com/yaeplnp9>

INTERVIEW

Good data: establishing the facts in agriculture

Luc Christiaensen, lead agricultural economist in the Jobs Group of the World Bank and project coordinator of *Agriculture in Africa – Telling Myths from Facts*, discusses the importance of accurate data in agriculture.

Sophie Reeve

Agriculture in Africa is all about differentiating facts and fiction. Why is accurate data and knowledge so important in today's agricultural sector?

Without good data and a good understanding of the stylised facts, policy-makers are basically flying blind. The agricultural sector in particular hasn't always been served well by good data. As a result, studies, often based on case study approaches in certain districts, regions or countries with salient facts and findings, get a lot of attention over time and are generalised without having been tested in more representative settings. Findings also become outdated.

Africa's agriculture now operates in a new environment. We have seen steady per capita growth, urbanisation and climate change. We have also seen a renewed interest in agriculture after the world food price crisis in 2008. This necessitates new baselines to assess the effectiveness of the new policies.

Your research found that African women did not carry out the majority of agricultural labour. What then is women's role in agricultural supply?

It has often been stated that, in Africa, women do 60–80% of the agricultural work. Combined with the finding that there is a 20–25% agricultural productivity gap between men and women,



Luc Christiaensen is the lead agricultural economist in the Jobs Group of the World Bank and has a keen interest in issues related to poverty and food security

this is used to justify disproportionate attention to women to boost global food supply. In our six study countries, we found that women do on average about 40% of the work in crop agriculture. Moreover, the productivity gap cited above measures differences in

output per hectare and between male and female managed plots (not in terms of labour). With the share of female managed plots and the gap in yields both not exceeding 25%, eliminating this gap would boost total supply by, at most, 6.25%. But there are good reasons to boost female labour productivity in agriculture, such as female empowerment.

The results of our study also only relate to the production side, and don't take into account processing or anything that happens after harvest. So if we talk about women's primary role on a family farm, when it comes to food processing, it is clear that this is done mostly by women. Overall, the findings highlight the importance of establishing the facts and using them in the right manner.

From your experience, which inputs and technologies are having the most success in improving agricultural productivity in Africa?

The main insight is that one single intervention is typically not very successful. Over the past decade, there has often been almost a singular focus on increasing fertiliser use. But this alone will not do the trick. A more integrated approach is needed. And while fertiliser subsidy programmes often do also

Food policy

Debunking the myths of farming in Africa



There are many commonly held beliefs about what agriculture in Africa looks like, and who the African farmer is. But are they truly representative? A recent series of studies on African agriculture, published under a special issue of *Food Policy*, is challenging these 'accepted wisdoms' and dispelling the myths of farming in Africa.

In order for policymakers and farmers to make informed, evidenced-based decisions, good quality and current data is required. Following rapid economic growth, urbanisation, and demographic and climatic changes, an up-to-date review of the situation in

Africa's agriculture is necessary for a contemporary understanding of the sector. Using georeferenced data from the Living Standards Measurement Study, *Integrated Surveys on Agriculture*, the *Food Policy* papers provide just that.

The 14 research articles of the journal discuss topics ranging from patterns of household income sources to access to credit for agricultural inputs and the share of labour productivity in sub-Saharan Africa. The data throws up a number of surprises, for example, youth are not turning their backs on agriculture any more than their parents, and women carry out less than half of the agricultural work on farms. Overall, however, the project calls for more attention to checking and updating 'common wisdom', which will require more robust and nationally representative data.

Food Policy: Agriculture in Africa – Telling Myths from Facts

Edited by L Christiaensen

Elsevier, 2017; pp. 192

Volume 67

Downloadable as a PDF file from: <https://tinyurl.com/y8fbwdc4>

include improved seeds, farmers don't always combine them on the same plot, pointing to the need of extension. Integrating interventions does increase complexity, but you only get a real bang for your buck by combining the different inputs. And production interventions should be further combined with measures to increase market access. Fully-integrated policy experiments are currently underway, for example, under the Farmer to Market Alliance in Tanzania.

With the increasing risks that climate change poses to agriculture, how can traditional farming families diversify their sources of income to increase their resilience?

Income diversification can happen on and off the farm. I believe there is an

important agenda for secondary town development to foster diversification off the farm. You then think about rural road development and issues of governance – so what type of independence or physical authority is needed to organise these districts and secondary towns. The largest share of the rural population in Africa – 20-25% – lives within 1-3 hours from a secondary town, while only 9% of the population lives between 1-3 hours from a city. So, they are likely to find it easier to access off-farm work when it is generated in secondary towns. Many of the off-farm employment opportunities in towns can also come from agri-businesses. We are talking about agro-processing, transport, storage, retail, wholesale, and not just for cereals but also for dairy, meat, as well as vegetables and fruits. ■

Rural roles Resource management



Rural women in developing countries often play a key role in supporting their households and communities in achieving food and nutrition security, generating income, and improving rural livelihoods and overall well-being. Their tasks include raising small livestock, providing firewood and water, contributing to the family budget from the sale of a variety of grown and wild foods, and caring for their children and homesteads. In Nahusenay Abate Dessie's, *Rural Women Roles in Sustainable Agriculture and Livelihood*, she explains that to accomplish these tasks, women are, formally or informally, resource managers.

Rural Women Roles in Sustainable Agriculture and Livelihood

N Dessie

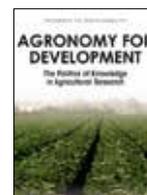
Lambert Academic Publishing, 2017; 72 pp.

ISBN 978-36-5989-298-1

€34.50

www.lap-publishing.com

Agronomy Knowledge politics



In the last decade, population growth, climate change, food price spikes and food safety scares have brought debates about food production and consumption

back into the public arena. Concerning the science of land management for crop cultivation, agronomy is at the centre of efforts to sustainably enhance agricultural productivity and address food security challenges. However, *Agronomy for Development* highlights that debates and knowledge politics around agronomy set the stage for some models of agricultural development to be favoured over others, impacting on its ability to address the challenge of sustainably enhancing agricultural productivity.

Agronomy for Development: The Politics of Knowledge in Agricultural Research

J Sumberg

Routledge, 2017; 216 pp.

ISBN 978-11-3824-031-5

£26.99 • €24.50

www.routledge.com

ECONOMIC OPPORTUNITY

Promoting Africa's cross-border trade

An increase in both intra and inter-regional trade in Africa has the potential to stimulate sustainable economic growth and stabilise the continent's domestic markets.

Stephanie Lynch

The exchange of money and goods between African countries, as well as on the global market, drives competitive pricing and increased productivity along value chains. This trend not only benefits consumers, as producers strive to fill gaps in the market and undercut competitors' prices, but also creates market stability as domestic economies are less vulnerable to local or regional shocks. In the agricultural sector, this stability can help improve national food security – the availability of imports, combined with the increased productivity of competing agribusinesses, prevents severe food scarcity and rocketing prices resulting from one failed harvest.

To support policymakers, development organisations and the private sector in maximising the potential of African agricultural trade, CTA and the International Food Policy Research Institute have published the *African Agricultural Trade Status Report 2017*. The report highlights the role of trade in facilitating the transformation of agriculture into a high-productivity sector, which offers producers attractive incomes and creates sustainable employment. However, the current status of Africa's trade – in which imports are growing at a faster rate than exports, leading to a significant trade imbalance – prompts the report to conclude that action on many fronts is needed, particularly by national governments, to remove constraints

to improving Africa's ability to trade, both internally and globally.

A major consequence of the existing constraints to African trade, including high costs and restrictive policies, is the expansion of informal cross-border trade (ICBT) – where transactions do not comply with local tax and license laws. ICBT accounts for about 40% of the continent's GDP and 20–70% of employment in sub-Saharan Africa. FAO's report, *Formalization of Informal Trade in Africa*, suggests how proactive policies that recognise the prevalence of ICBT can tap into its potential to improve livelihoods by steering participants towards proper regulatory status.

Informal traders, the majority of whom are women, are more vulnerable to corruption and have difficulty accessing credit, often relying on personal networks to obtain loans. The Southern African Migration Programme examined the impact of these challenges in their recent report: *Informal Entrepreneurship and Cross-Border Trade Between Zimbabwe and South Africa*. Noting the significant contribution of ICBT to both South Africa's and Zimbabwe's economies, the report states that policies need to encourage trade by addressing problems, such as border queues and delays, rather than seeking to restrict it with higher duties. ■



African Agricultural Trade Status Report 2017

By CTA and IFPRI

IFPRI, 2017; 205 pp.

Downloadable as a PDF file from:

<https://tinyurl.com/y9da2c98>



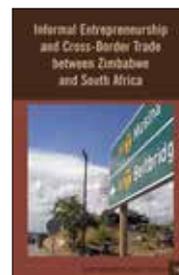
Formalization of Informal Trade in Africa; Trends, Experiences and Socio-economic Impacts

By S Koroma, et al.

FAO, 2017; 38 pp.

Downloadable as a PDF file from:

<https://tinyurl.com/ydxb8qx5>



Informal Entrepreneurship and Cross-Border Trade Between Zimbabwe and South Africa

By A Chikanda & G Tawodzera

Southern African Migration Programme

(SAMP), 2017; 47 pp.

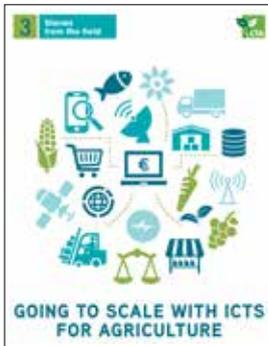
ISBN 978-19-2059-629-3

Downloadable as a PDF file from:

<https://tinyurl.com/ydyeanek>

ICT interventions

Bringing communication technologies to scale



In 2014, CTA launched a €400,000 project, 'Building Viable Delivery Models for ICTs for Agriculture in ACP Countries', to explore the role of ICTs, such as mobile phones and satellite data, in enhancing agricultural productivity at the individual farmer level. The 14-month project invested in seven promising ICT interventions, including an SMS service that provides market prices and a smart phone app that sends weather and tide information to local fishers, in Burkina

Faso, Côte d'Ivoire, Ghana, Mali, Sudan, Trinidad and Tobago and Uganda. *Going to Scale with ICTs for Agriculture* outlines the "varied and exciting" results.

In Ghana, with funding from the CTA project, a geospatial mapping service, eFarms, has been created by local company Syecomp to enable smallholder farmers to enter local and international organic markets. Organic certification bodies are increasingly demanding global positioning system-mapped farm boundary information to improve farm records and traceability of produce. Using such technologies, farmers are able to achieve organic certification and thus, set premium prices for their products. The pilot project has mapped 440 farms in the Central, Eastern and Volta regions and there is now the potential to target 120,000 farmers across the country.

An SMS subscription service in Gezira, Sudan, is alerting farmers when they need to irrigate their crops for improved production. The information, provided in Arabic, is formulated using satellite imagery of individual farms and the surrounding areas. This information is combined with meteorological and field-level data to provide advice to smallholders in the area – where productivity has recently declined due to poor irrigation management – on crop development, and farm monitoring and management decisions. Through the service, farmers are quadrupling their yields. The next phase of the project will focus on 1,000 farmers across 40,000 ha.

The role that ICTs can play in addressing the challenge of access to critical market information and facilitation is increasing as personal ICT devices become more widely available. However, there are limitations to their reach, including poor internet connectivity, illiteracy, and the inability of pilot projects to go to scale due to a lack of long-term funding. In *Going to Scale with ICTs for Agriculture*, the authors note that such restrictions will need to be addressed for a more equitable, healthy world, and to achieve the Sustainable Development Goals. ■

Going to Scale with ICTs for Agriculture

E Willmott-Harrop

CTA, 2017; 32 pp.

ISBN 978-92-9081-615-7



Downloadable as a PDF file from: <https://tinyurl.com/ycqk358l>

Trade

How 'fair' is Fairtrade in reality?



Consumers of Fairtrade products pay a premium for goods which they believe are helping to empower producers and promote sustainability. But do Fairtrade International's claims that the scheme contributes to a more sustainable and fairer world hold out under scrutiny? How is the impact of Fairtrade certification currently measured?

In answer to these pertinent questions, *Fairtrade Impacts: Lessons from Around the World*, draws on case studies of different

outcomes of Fairtrade, indicating that its value cannot be broadly defined.

As Fairtrade has expanded into mainstream global markets, its efficacy has increasingly been called into question with claims that the scheme is predisposed to exclude certain groups and regions. Tapping into such concerns, this book attempts to respond to the demand for a more in-depth understanding of the role Fairtrade plays in the complex interaction of factors that shape livelihoods and environmental change at a local level. The authors ultimately agree that Fairtrade needs to adapt a more flexible approach which takes into account the different needs and contexts of individual communities. ■

Fairtrade products from a variety of localities, including Nicaraguan coffee, South African raisins and Kenyan flowers. The authors examine the scheme's influence along the products' value chains, and discuss its impact on the livelihoods of the labourers producing the goods. The range of different case studies reveals the diverse impact and

Fairtrade Impacts: Lessons from Around the World

By V Nelson

Practical Action Publishing, 2017; 144 pp.

ISBN 978-18-5339-906-0

£15.15 • €16.70

www.practicalactionpublishing.org

Is REDD+ an effective way to tackle poverty?

ALAIN KARSENTY

How a virtual economy is bringing (more or less) virtual benefits to the poorest people



Alain Karsenty

Socio-economist and researcher at the French agricultural research organisation, CIRAD.

REDD+ (reducing emissions from deforestation and forest degradation in developing countries) is an international mechanism that seeks to financially reward countries, programmes and projects that reduce deforestation-related carbon dioxide emissions. Under this system, other countries or businesses can buy 'carbon credits' to satisfy their emission reduction targets. Other financial rewards come from the Green Climate Fund in the form of 'results-based payments'. REDD+ has come under criticism from many stakeholders, who feel that the mechanism could lead to the monopolisation of woodland, tempting programme initiators to ride roughshod over the customary access and usage rights enjoyed by communities whose activities (slash-and-burn agriculture, charcoal production, small-scale timber farming, etc.) contribute to deforestation. Others, meanwhile, see REDD+ as an effective way to tackle poverty by paying local people to look after forests.

To get to the bottom of this debate, we need to look again at results-based payments – the principle that is supposed to make REDD+ an effective mechanism. In many cases, reducing deforestation is not about cutting tree-felling in absolute terms, but rather against a 'reference' – i.e. against a 'what would happen if we did nothing?' scenario. By definition, it

is impossible to verify such scenarios (because they cannot be observed if the project is actually carried out), making them easy to manipulate. For example, if the scenario points to a 100% increase in deforestation in the coming years, and the actual figure is 'just' 60% (i.e. with the project), then the project can claim to have prevented the remaining 40%. Moreover, both NGO-initiated REDD+ projects and World Bank-supported jurisdictional REDD+ programmes (which cover a larger area) have to abide by rules on the rights of communities and indigenous peoples. REDD+ projects are covered by private certification schemes, while others are bound by World Bank rules.

These projects capitalise on the REDD+ scheme's key design weakness – 'predicting the worst and promising the best' – and on the profusion of deforestation scenarios. And by doing so, they are often able to secure financial rewards even if deforestation actually rises, provided the increase is below the 'forecast'. Another benefit of this 'virtual economy' is that it avoids the risk of confrontation with local populations seeking land or timber – a situation that might make it impossible to secure certification or cause project initiators to fall foul of big international donors' social rules. As it happens, these projects bear all the hallmarks of the conventional integrated

conservation and development projects they were supposed to replace and make little difference to everyday rural practices. In terms of poverty reduction, our research in Madagascar has shown that while socio-economic benefits accrue to some community members, marginalised populations – i.e. those whose dependency on natural resources is greatest – are less able to access these benefits.

Moreover, the sheer complexity of REDD+ makes it a boon for consultants, many of whom are less readily available in the South. A significant portion of the payments is eaten up by consultancy fees, often leaving little remaining for local populations. And in that sense, REDD+ is certainly not the most effective way to transform agricultural practices and reduce poverty. ■

✦ For more information visit:

Brimont, L. and Karsenty, A. 2015. 'Between incentives and coercion: The thwarted implementation of PES schemes in Madagascar's dense forests'. *Ecosystem Services* 14:113-121.

Seyller, C., Desbureaux, S., Ongolo, S., Karsenty, A., Simonet, G., Faure, J. and Brimont, L. 2016. 'The 'virtual economy' of REDD+ projects: Does private certification of REDD+ projects ensure their environmental integrity?' *International Forestry Review* 18(2):231-244.

AMY DUCHELLE

Can REDD+ benefit the poor?



Amy Duchelle
Center for International
Forestry Research (CIFOR)

This is a question that we have been asking for many years through CIFOR's Global Comparative Study on REDD+. The REDD+ Safeguards articulated by the United Nations Framework Convention on Climate Change bring the so-called 'non-carbon benefits' of REDD+ to the forefront, including rights, participation and social co-benefits. Accordingly, the success of REDD+ depends on both reducing carbon emissions and enhancing, or at least protecting, the rights and well-being of people who depend on forests (and often forest clearing) for their livelihoods.

Through the Global Comparative Study on REDD+, we have been evaluating the impacts of REDD+ interventions at 22 subnational REDD+ sites in Brazil, Cameroon, Indonesia, Peru, Tanzania and Vietnam since 2010. We combine an analysis of Global Forest Change data with longitudinal socioeconomic surveys in 150 communities and nearly 4,000 households to assess how REDD+ jointly affects forests and people.

So far, impacts of REDD+ on both forests and human well-being have remained incipient. A recent article in *Environmental Research Letters* highlights a reduction in tree cover loss at the village level in about half of the REDD+ sites studied, and no effect in another third, when compared to control areas (<https://tinyurl.com/yd2b9rxy>). Another article in *Forests* shows that REDD+ has not yet contributed significantly to local perceptions of well-being or income sufficiency at the study sites (<https://tinyurl.com/yc98wfyz>). These findings may be due to a variety of factors. The time horizon of our assessment is still very short (2–3 years in the 'after' period). Funding for REDD+ has not come through in the way initially envisioned, thus limiting the intensity of action on the ground. And the REDD+ bundle of interventions is mega-diverse, as it perhaps should

be in a pilot phase: land use-conditioned payments for environmental services are less prominent than (non-conditional) investments in sustainable livelihoods, which figure alongside enabling measures (e.g. tenure clarification) and disincentives (e.g. restrictions on forest access or conversion). We still must make better sense of what ingredients in this bundle – so far applied to a limited degree – have worked best for forests and people, respectively.

Still, we have evidence that social safeguards for REDD+ matter in managing tradeoffs between carbon and non-carbon benefits. New findings, soon to be published in *Ecology & Society*, highlight that while heavy-handed restrictions were most effective in curbing forest clearing, on their own they negatively affected tenure security and local perceptions of well-being. Yet when incentives to enhance livelihoods were added to the mix, the negative well-being effects were cushioned, reinforcing the potential of incentives to alleviate the burden of land-use restrictions. While smallholders were generally aware of local REDD+ initiatives, the findings also highlight their limited participation in decisions on what interventions would be applied, or how.

So, can REDD+ benefit the poor? The answer is 'yes, in principle'. But pro-poor outcomes in REDD+ seem more likely when local rights and livelihoods are a well-prioritised part of the action, when local people are genuinely involved in programme design and implementation, and when robust impact evaluation approaches have been put in place to properly track the social impacts of REDD+. ■

Poll

Is REDD+ an effective way to tackle poverty?

41%
Yes, but only if local rights and livelihoods are prioritised in the design and implementation of programmes.

25%
No, it has failed to have any significant impact on local perceptions of well-being or income sufficiency.

17%
No, it encourages the monopolisation of forests by programme initiators removing the customary access and usage rights of local communities.

17%
It depends, some community members gain socio-economic benefits, whilst many marginalised populations dependent on natural resources are less able to access these benefits.

Other debates

Find *Spore's Opinion* pages, and a third blog on this topic, online. New debate topics are published each month on the *Spore* website:

<https://tinyurl.com/mdmcktp>

In the next issue

187 December 2017 - February 2018

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APRA's research will

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

Focus Countries:

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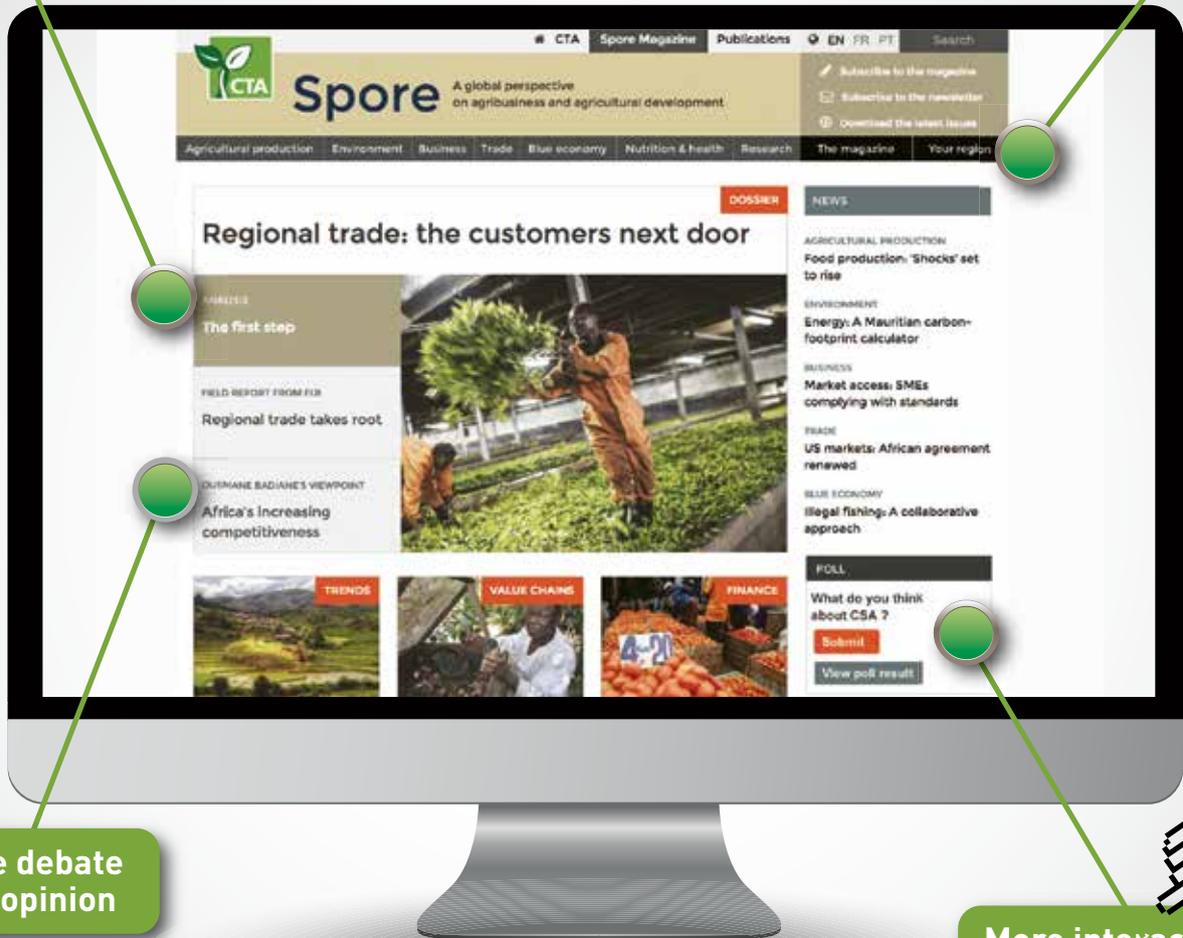
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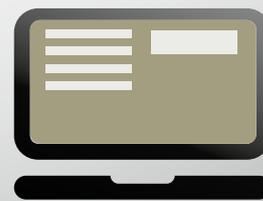
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