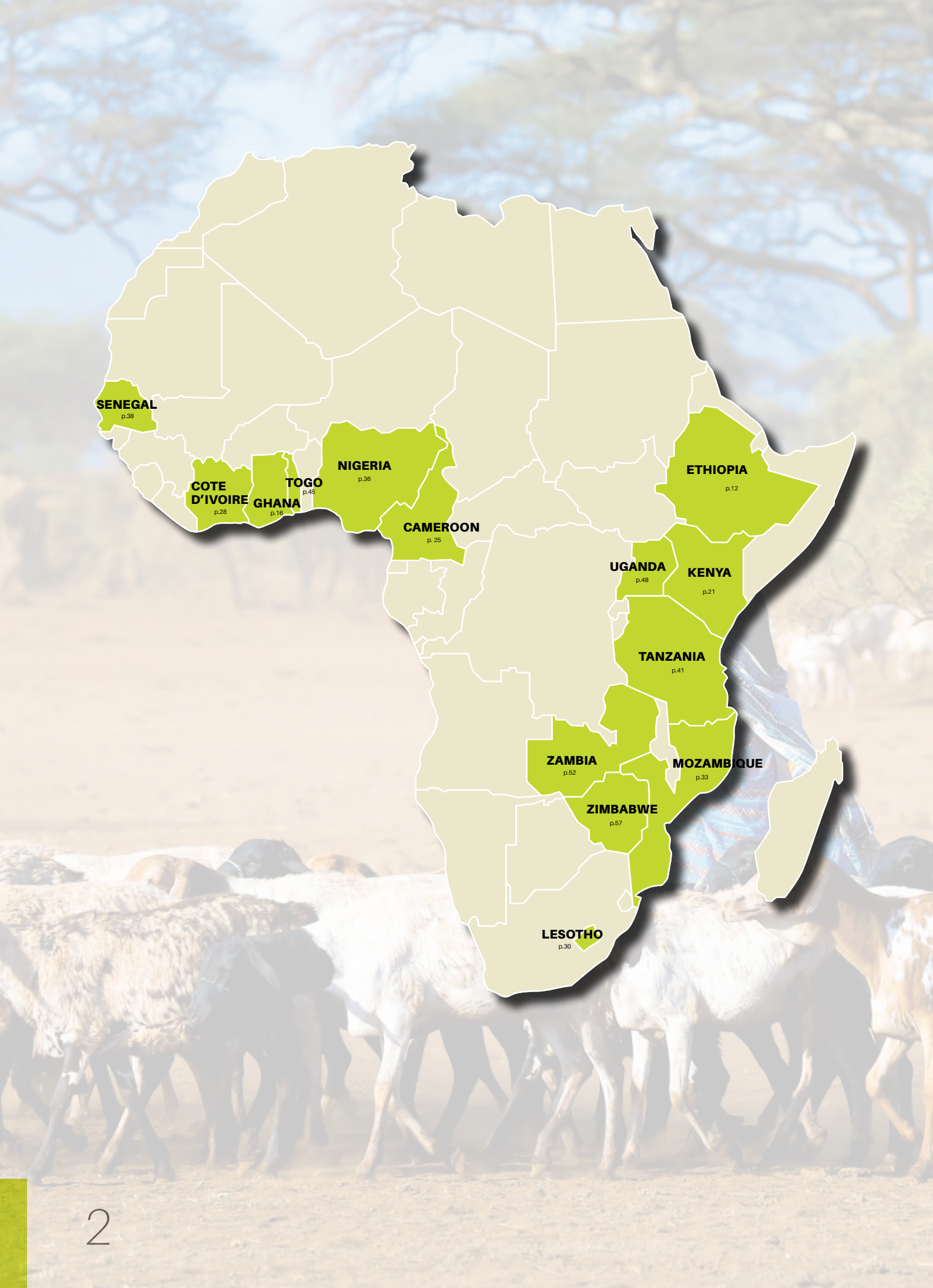
AFSA

ALLIANCE FOR FOOD SOVEREIGNTY IN AFRICA

STORIES OF AGROECOLOGY AND THE CLIMATE CRISIS

REPORTS OF GRASSROOTS INNOVATIONS BY JOURNALISTS FROM 14 AFRICAN COUNTRIES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Message from the **General Coordinator**

Here we go with another fascinating book from AFSA. This time it is on the climate crisis that the continent is facing and the competing stories of the people and those in power.

That the climate crisis is real and palpable on our continent, not our own making, is a public story. You hear that from the podium of every African government and CSOs alike. What is less obvious is the confusion in coping strategies by our governments and, as this book shows, the vast array of promising activities from our citizens. This book is about how farmers and communities around the continent are finding ways to cope with climate change. On average, close to 70% of our people depend on agriculture for their survival. This means we should use agriculture as a lens to look at the continent's preparedness for the impending climate disaster.

A look at the strategies of our governments, although some soil and water conservation activities are here there, show that the main focus is on increasing productivity.

The narrative driving the climate response plan is that the crisis would affect food security, and increasing productivity is presented as the ultimate solution. True that we should double or triple what we produce, but what about our health, environment, and the right to food? The propaganda machine of industrial agriculture uses the climate crisis to advance its market in Africa while the citizen of the continent is responding with practicing and scaling up agroecology. This book is about that response from the ground.

In general, it is evident from the stories in this book that we cannot address the climate crisis reasonably without dealing with the deep structural and political turmoil that we have in national, regional and international spaces. In most cases, policies designed to address the climate crisis are not coherent. For example, there is no linkage (or coherence) between agriculture, energy and water policies. And another example, an Agriculture policy promotes greenhouse gas enhancing technologies to increase productivity, while the climate policy promotes reducing the use of these same technologies. These chaotic and contradictory policies are why we have so many confused and disorganized strategies.

The stories in this book show how civil society movements on the ground are leading the way. They are pioneering various activities, including seed saving, water conservation, alternative energy sources, and regenerating landscapes. Local actors interact with farmers to facilitate understanding of future climate scenarios and prepare them for the worst. Local groups are also organizing farmers into associations and cooperatives for better social preparation. Others are building the cultural and social structure for social adaptation in the face of the crises to come.

The stories give you hope and show you the deep structural and political issues we must address to better cope with the impending disasters. I hope we dwell on the positives in these stories and recreate our narrative to push for a better Africa. I urge readers to pick up the positives in these stories as we recreate the narrative to push for a vibrant, climate-resilient Africa. Happy reading.

Million Belay, Ph.D.
General Coordinator,
Alliance for Food Sovereignty in Africa (AFSA)

70%

our people depend on agriculture for their survival.

True that we should double or triple what we produce, but what about our health, environment, and the right to food?

Executive Summary

What will it take for climate change to receive the attention it deserves?

BY ***CHARLES DHEWA***

That climate change is more than a pandemic is now beyond question. But what would it take for climate change to receive the urgent attention it deserves? A recurring question across Africa is: *What is preventing African policy makers from extending the same urgency with which they reacted to COVID-19 to climate change?*

Overwhelming evidence

The severity of climate change at community, national, regional and international levels is now beyond question. Mobilising action to address some of the challenges before they get out of hand cannot be overemphasised.

In Ethiopia, heavy and prolonged rains in the 2020 Kiremt season (June to September) have been the most severe in more than 30 years. The rains have forced several rivers to burst their banks and damage over 70,000 hectares of arable land. More than 200,000 people were

displaced the Afar region alone. As if that is not enough, the floods followed the worst desert locust invasion in 25 years.

In neighbouring Kenya, there has been a noticeable reduction in the amount of downpour recorded across key agricultural zones since the 1960s. Temperatures have also become warmer-adding to the challenges facing Kenya's climate-sensitive rain-fed agriculture.

In Tanzania and Uganda higher temperatures combined with increased incidences of drought and flooding are destroying crops and livestock, making it difficult for farmers to continue feeding their communities and earning a living.

Down in Southern Africa, Zambia is feeling the negative impacts of climate change which is said to be mostly affecting poor and marginalised communities. Zambia's agriculture is largely rain fed and easily affected by temperature regime and precipitation pattern changes.

The situation is the same in Zimbabwe. In spite of private seed companies marketing what they call high-yielding and drought-tolerant maize varieties, a series of climate change-induced droughts has caused continuous decline in yields by as much as 70% among smallholder farmers.

Meanwhile, Mozambique remains exposed to cyclones due to its location close to the ocean and Lesotho indicates that climate change is significantly contributing to food insecurity in many ways.

It is the same fate in West Africa where recent changes in Ghana's weather patterns threatens severe food insecurity. Climate models predict high but differentiated variability in rainfall patterns posing a threat to the development and the attainment of its Sustainable Development Goals.

The Sahelian part of Cameroon has once again experienced flooding in 2020. While only two months of rainfall are expected in these regions annually, rains are now famous for breaking the banks of Mayo rivers, destroying dwellings along the edges of the rivers, water points and gardens in the surrounding areas.

In Nigeria, Africa's most populous nation is currently undergoing its worst recession since 1987, with prices of food commodities at the extreme and little resources to combat the emerging threat to the nation's food security. Flooding, erosion and displacement of citizens in several communities across different states is disrupting agricultural production.

For the small nation of Togo, the impact of climate change is being acutely felt by all stakeholders. Irregular rainfall has led to drought directly impacting crops, forcing farmers to use chemical fertilisers, resulting in soil impoverishment and an increase in diseases and pests. Lack of grazing is leading to the death of many animals while incessant drought is leading to fires that destroy biodiversity. In the fishing sector, waters are warmer, creating conditions that are not favourable to the

On the ground

Heavy and prolonged rains

.... over 70,000 hectares of arable land damaged

200,000+ people displaced

Desert locusts invasion

Reduced / irregular rainfall

High temperatures

Increased poverty levels

Continuous decline in yields

Food insecurity

Dwellings destoryed

Recession

Flooding and erosion

Drought

Pests/diseases

development of plankton used as food for certain fish. Consequently a number of species are migrating elsewhere — reducing yields from fishing.

Galvanizing action around mainstreaming agroecology as a solution

The stories from across Africa demonstrate the extent to which local people and communities are reacting to climate change and taking matters into their own hands. Besides questioning the dominant industrial agriculture model that is exacerbating climate change and decimating food systems, these stories suggest solutions and reiterate the same messages voiced by farmers, communities and movements like the Alliance for Food Sovereignty in Africa.

In Ethiopia, there are strong views that the agricultural sector cannot continue to support and incentivise the conventional input intensive agriculture system that focuses on increasing production while exerting pressure on livelihoods and the environment. There is increasing emphasis on agroecological approaches and diversification to support the resilience of food systems. Such approaches focus on providing nutrition and a variety of foods which improve livelihoods while generating better income from selling surplus.

The advocation of climate change adaptation techniques are taking centre stage. New cropping practices like different timing of planting, greater use of water conservation technologies, diversification of activities, biological pest control are just some of the practices taking place.

Good practices tend to spread like wild fire, communities in western Kenya have learnt as they make agroecology the mainstream agricultural practice. In addition to using cow dung to fertilise crops, farmers embrace crop rotation — switching between maize, ground nuts and cassava — to maximise on yields. Water harvesting has become a major practice among farmers in the same community.

Agroecological practices have also proven successful in Uganda where one farmer has been practising sustainable farming for over 20 years. He says that he embraced agroecology because it allows food production that makes the best use of nature without destroying the same resources. Before he regularly battled with pests and harmful pesticides to combat them.

In Zimbabwe, smallholder farmers have united to discourage short-term income-generating activities that destroy the environmental buffer to a warmer climate. Community members have teamed up to campaign against deforestation as well as allocating each other duties to fill up gullies.

On its part, the government of Zimbabwe has adopted a climate change adaption scheme to lift half the country out of chronic food insecurity and monetise rural production. However, critics say that it remains too maize-centric at the expense of diversity. It also promotes industrial inputs like hybrids and synthetic fertiliser which, besides being too expensive for ordinary farmers, contribute to climate change.

Lesotho is also one of the Southern African countries prone to climate change-induced droughts and subsequent food insecurity. Government departments are encouraging farmers to practice water harvesting for later use and encouraging them to move away from maize and use of short-term maturity and drought resistant crops such as sorghum for cereals.

In Mozambique, in a critical effort to combat climate change, farmers have taken the organic seed production angle as a sustainable solution. Efforts to produce organic seed is stepping up production in Maputo's Green Belt. The initiative has received welcome support from the local municipality who seeks to enable farmers to increase their agricultural output and enable vulnerable young people to embark on viable farming activities.

Climate change is also compelling West Africa countries to set agroecology as part of the national agenda. In Ghana, the Peasant Farmers Association of Ghana (PFAG) is helping thousands of farmers to understand the effects of climate change and how they can mitigate it through their activities on and off the farm. Recognising the importance of agency and voice, the association is also ensuring farmers voices are heard at every level of policy formulation. They believe that providing technical support and other resources is not enough if farmers lack voice and platforms to articulate their concerns.

Policy makers in Cameroon are also going the extra mile by reconstituting production basins that have been violently affected by drought in recent years. The three main components are: agriculture, breeding and forestry. The waste generated by each production unit becomes raw material for another production unit. The family farm also includes the setting up of an artisanal earthworm breeding to produce organic fertilisers and maintain soil fertility.

The President of All Farmers Associations in Nigeria, Kabir Ibrahim is of the view that the production of food using agroecology is immensely beneficial and preserves the organic nature of the entire food system sustainably. Food insecurity and challenges confronting farmers, pastoralists and others due to global warming can be solved by going back to the local indigenous knowledge.

Going beyond policy documents and speeches

As demonstrated by stories in this publication, a number of good practices towards combatting climate change are at work in different contexts. However, it appears knowledge, evidence and information may not be enough unless deep-seated structural issues are addressed at policy and international levels.

Most African governments are signatories to several international climate-related commitments. Most countries have also generated their own national plans of action and strategies which are just not being translated into solutions. While lack of resources is often blamed for not implementing strategies, the elephant in the room is lack of political will.

Ethiopia's National Adaptation Plan recognises the importance of improving agricultural productivity in a climate-smart manner as a priority to enhancing

food security. However, according to climate change activists, the overall green economy strategies and plans lack practicality on the ground.

In neighbouring Kenya, according to the Agriculture ministry, weak polices, legislations, enforcement, and overlap of mandates coupled with poor coordination and collaboration among institutions and stakeholders have contributed to the country's inability to effectively address food security vulnerabilities and green house gas emissions.

In Uganda, ESAFF criticises the government's preference to market hybrid inputs and related practices over agroecological inputs and practices. As in many African countries where partisan politics control power and resource allocation, policies change with government cabinets. As seen in Nigeria when their Green Revolution strategy was abandoned following the election of a new of the Minister of Agriculture and Rural Development.

Confusing agroecology with other approaches.

One of the notable trends is an increasing tendency by government, development agencies and the private sector to confuse agroecology with other self-serving approaches. For instance, the notion of "Climate Smart" has been hijacked by proponents of industrial agriculture in ways that are meant to deliberately mislead farmers so that they embrace unsustainable inputs.

Clarifying boundaries and overlaps between agroecology and other approaches like "climate-smart" agriculture is very important. In some cases, organisations simply means conservation agriculture.

Where conservation agriculture uses hybrids, it becomes difficult to tie such practice with agroecology. More confusion is among perceived experts. A senior scientist from the International Institute of Tropical Agriculture (IITA) in Tanzania says that they are encouraging smallholder farmers to employ Climate-Smart Agriculture. Indeed, they have implemented technologies such as rainwater harvesting, bench terraces, zero tillage, crop rotation, and other agroecological practices. Since the technologies mentioned are part of agroecology, branding them "Climate Smart" risks confusing farmers. More so, farmers have been practicing many of these technologies for generations but these are now being brought back as 'new technologies' without acknowledgment of their rich heritage.

The confusion also extends to Zambia where agroecology is said to be covered in the Ministry of Agriculture's National Adaption Plans but expressed through terms like 'conservation farming', 'organic farming' and 'Climate Smart Agriculture.'

"Although these terms are found in the NAP and are indicative of acknowledgement of sustainable agriculture, we still need to be clear what exactly they mean and represent. If the use of chemicals is allowed and hybrid seeds are classified as climate smart technologies because they help with combating droughts, then we still have a lot of safety issues to look at", observed Lydia Chibambo the programme officer of the Zambia Climate Change Network.

Finally, what do we do when technical knowledge reaches its limits?

Despite numerous research projects and reports generated on climate change at national levels, not much has changed, suggesting scientific technical knowledge has reached its limits. It is time to embrace indigenous context-specific knowledge tied to agroecology. The most significant element of the word agriculture is "culture", which means farming is not just a commercial activity but part of people's heritage and way of life.

The main challenge is that Africans have lagged behind in documenting and contextualising their knowledge. While some terminologies related to agroecology make sense in particular local vernacular languages, Africans have not documented such terminologies to preserve the knowledge in a fluid state.

More importantly, colonisation has dominated the documentation and packaging of African knowledge in ways that perpetuate mental slavery. Much of the African local knowledge related to agroecology is yet to be properly captured or documented. Especially the techniques and skills of forefathers who actively coexisted with nature.

Had Africans formally documented their oral knowledge, passed from one generation to the next in ways that reinforce a fluid knowledge system, policy makers would not be confusing Illiteracy with ignorance. A naked expression of this predicament is how African countries are hoodwinked by industrial agriculture into thinking that a young person graduating from an agricultural college as an extension officer can go and teach farmers who have been practicing agroecology for more than 50 years how to farm.

This wrong notion of knowledge ignores the fact that, traditionally, Africans are aware of the intimate relationships between nature and human beings. African forefathers could predict weather patterns using wind, the moon and other phenomena which they had studied for generations. Such skills are undocumented because they were simply part and parcel of people's lives. They may not have published books and scientific journals, but African forefathers constituted thorough research in their own right. Agroecology is a call to revisit and recognise some of these forgotten treasures that can be used to adapt to our changing habitats, and particularly, combat climate change.

Ethiopia

PRODUCTIVITY vs. SUSTAINABILITY Agroecology as Climate Change Adaptation Option

BY ABEBE HAILE

Over 1.1 million people were affected and 300,000 displaced due to flooding in five regions of Ethiopia this year.

The heavy and prolonged rains in the 2020 Kiremt season (from June to September) are the heaviest in more than 30 years. They burst river banks and filled dams, resulting in flooding and landslides.

Flooding on the banks of the Awash.

It is common for the country's big rivers to overflow during rainy seasons. Still, this year, the overrun Awash River destroyed over 46,000 hectares of crops and 26,000 hectares of pasture and displaced more than 200,000 people in the Afar region alone.

While struggling with a humanitarian crisis caused by flooding, Ethiopia is also facing the worst desert locust invasion in 25 years. The heavy rain of earlier this year created a conducive environment for the swarms, which migrated from Yemen, to breed and multiply. According to reports, locusts destroyed over 900,000 hectares of crop fields and pasture lands in five regions and cities.

The Food and Agricultural Organisation says the damages done by both the floods and locust invasion could lead to a considerable drop in agriculture production, livestock feeds, and forest cover, further compromising already struggling livelihoods and food security.

Natural disasters aggravated by climate change, say experts

Many scholars noted that recurrent droughts and floods induced by rainfall variability had been exacerbated by climate change. The complex interaction of temperature and precipitation changes makes developing countries like Ethiopia particularly vulnerable to extreme weather.

Climate incidents that increase the average temperature and affect the rainfall patterns repeatedly hit Ethiopia. In 2018, 18 million people needed food aid, and 8.5 million people required emergency food aid due to the prolonged impacts of drought in 2017.

The diversity of different agro-ecologic zones demonstrates different levels of sensitivity to climate change impacts. Increased temperatures and prolonged drought generally impact pastoralists in the lowlands. At the same time, those farming in the highlands suffer from intense and irregular rainfall, affecting production and making them more susceptible to pests and disease.

According to Alemayehu Wasse (Ph.D.), an expert in agroecology and Director of Organisation for Rehabilitation and Development in Amhara (ORDA), conventional farming systems and agricultural expansion activities abuse the natural ecosystem. They degrade vegetation coverage, leading to a temperature increase that contributes to rainfall variations at regional and local levels.

"If you go to different terrains in the country, you see the same plowing system. Highland areas, for instance, are mountainous, steep and cooler. But, there is no suitable farming systems for that. Maximum tillage and free grazing is still widely practiced in the northern parts of the country. The traditional agricultural practices does not include soil and water conservation systems to compensate the natural ecosystem," the expert notes.

Chemical inputs are deceptive and, in the longterm, toxic

The country currently uses improved seeds, chemical fertilizers, and pesticides to boost productivity and reach food security. Critical of the policy direction, Alemayehu says it is unsustainable.

"It is true that a harvest can be increased using more inputs. But it limits food production to intensive chemical input usage only which may not always be available and affordable. Moreover, with the current broadcasting system, in 20 to 30 years, our arable lands will become toxic."

79%
of the population are small-scale farmers

The agricultural growth programs that the government has implemented to increase export and foreign currency earnings are a bid to transform the country into an industry-led economy. Such efforts may be beneficial in a short time for the economy but are essentially "nothing but a burden on the environment."

Experts clash on what is the best future for Ethiopian farming

Esayas Lemma, Crop Development Director at the Ministry of Agriculture (MoA), indicates that 79 per cent of the population are small-scale farmers. Most are food insecure — with 22 per cent living in poverty and more than eight million relying on the safety net of food aid. Considering these existing situations, the government promotes intensive inputs utilisation as a feasible strategy to boost agricultural productivity.

Lemma argues for the policy direction of using improved seed varieties adapted through systems like natural selection and breeding, fertilisers, integrated pest management, and acceptable agricultural practices.

Solomon Kebede, Director of Movement for Ecological Learning and Community Action (MELCA), disagrees.

1.6
million farmers in cluster farming

"The much needed attention has not been given to scale up agroecological practices known in agriculture. The sector continues to support and incentivise the conventional input intensive agriculture and it is costly to livelihoods and the environment," says Kebede, who is against Cluster Farming or Agricultural Commercialisation Cluster (ACC).

Why cluster farming is detrimental to small-scale farmers

ACC was introduced to Ethiopian agriculture in 2016 as a pilot project to boost smallholder farmer productivity.

More than 1.6 million farmers are engaged in cluster farming. Pilot projects show that the approach has enabled smallholder farmers to easily access and intensively use agricultural inputs and technologies that increased their average crop harvest.

But, Kebede sees the integrated effort as a monopolistic move to control

the land and farmers by big business conglomerates.

"With cluster farming, the farmers are not able to use their own seeds, knowledge and skills, and grow crops of their choice. Instead, they are bound by contracts to buy, obviously with loan, and intensively use imported seeds, fertilisers and pesticides and combine their farm lands to produce one commodity only."

Kebede argues that such an approach is too expensive to adapt to the hostile challenges of climate change to be sustainable for poor smallholder farmers in the long run.

"Diversity matters. If crop fails due to prevailing disease outbreaks and other climate variability, the farmers will be left with debts only. But, diversification increases their resilience allowing them to have a variety of crops that they can rely on," he explains.

Lessons worldwide show that agriculture based on agroecological approaches and crop diversity is resilient to socio-economic, climatic, and environmental shocks.

Ethiopia has already applied some of these practices to varying extents. Further, the country's commitment to creating climate-resilient development has been clearly articulated in its various plans and strategy documents, notably the Climate Resilient Green Economy (CRGE) strategy. Most of these policies have outlined adaptation priorities and implementation plans in the contexts of regional and sectoral development.

The National Adaptation Plan (NAP-ETH) also recognises improving agricultural productivity in a green manner as a priority to enhance food security. However, there are concerns that these strategies are merely hypothetical as they lack the means for practical application.

For Solomon Kebede, the available resources are yet to favor agriculture that considers ecological principles. Thus, MELCA, in addition to advocating the downside and vulnerability of industrial agriculture to climate change, has now drafted a policy recommendation on agroecology that urges a holistic, practical approach to transform the country's food system.

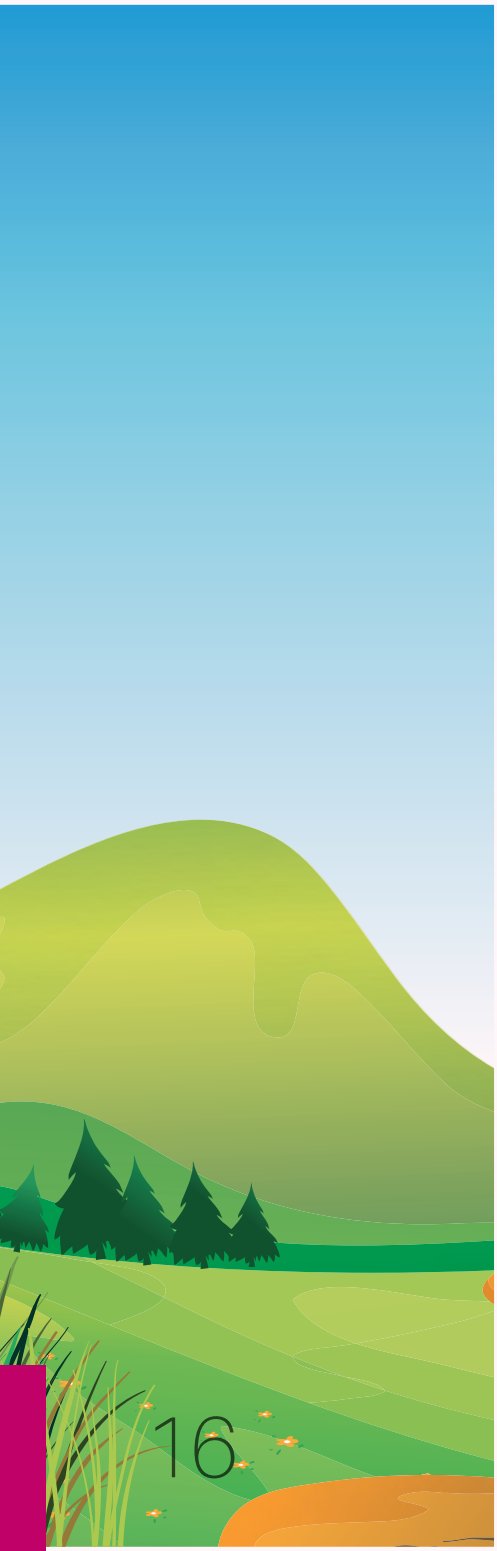
There is still a great need for further advocacy and further action, but for now, it is a step in the right direction.

A maize farmer on a cluster farm

> **Diversity matters.** If crop fails due to prevailing disease outbreaks and other climate variability, the farmers will be left with ..... a variety of crops that they can rely on.

Ghana

A national agroecology movement is taking root in Ghana



BY ROGER A.AGANA

A recent change in the weather pattern in Ghana indicates that climate change is a growing issue, and its impact will be severe in the future. Climate models predict high but differentiated variability in rainfall patterns across all ecological zones in Ghana. It poses a real threat to the country's development and attainment of its Sustainable Development Goals.

As a result, the Ghanaian government has been challenged to fully integrate climate change activities into its National Adaptation Planning (NAP) and to address it in a more integrated, coordinated, and sustainable manner.

The goal is to identify priority climate adaptation actions, facilitate institutional coordination of those actions, and accelerate the mobilisation of climate change adaptation funds.

The process adopts an ecosystem-based approach that places ecosystems at the centre of adaptation planning while conserving biodiversity.

NGO steps up to make sure smallholder farmers' voices are heard at policy level.

In Ghana, a farmer-based organisation called the Peasant Farmers Association of Ghana (PFAG) helps thousands of farmers across Ghana to understand the effects of climate change. They aim to show farmers how to mitigate climate change through their activities on and off the farm and ensure that their voices are heard at every policy formulation level.

Over the years, PFAG has set out to monitor government interventions in the agriculture sector and provide practical alternative policies that better suit smallholder farmers who have been limited climate change. Moderate achievements have been recorded, but a lot more can be done if the right policies and programmes are developed with the farmers' involvement.

... a lot more can be done if the right policies and programmes are developed with the farmers' involvement.

Over 45 per cent of Ghana's 30 million citizens are employed in agriculture; however, most workers live in rural areas and practice smallholder, traditional or rain-fed farming. These farmers often struggle to increase yields largely because of the numerous challenges they face during the pre-production, production, and post-harvest stages of farming.

As the coronavirus compounds the crisis, small-scale farmers are already facing uphill struggles — including climate change that causes severe droughts in the dry season, floods, high temperatures, and influxes of pests and diseases. On top of climatic issues, over-reliance on chemicals, lack of access to credit, simple mechanisations, inadequate storage facilities, and poor farm road network are just some of the other challenges facing these farmers.

Organisations like PFAG are therefore crucial support during this time.

A national workshop proves instrumental in raising awareness

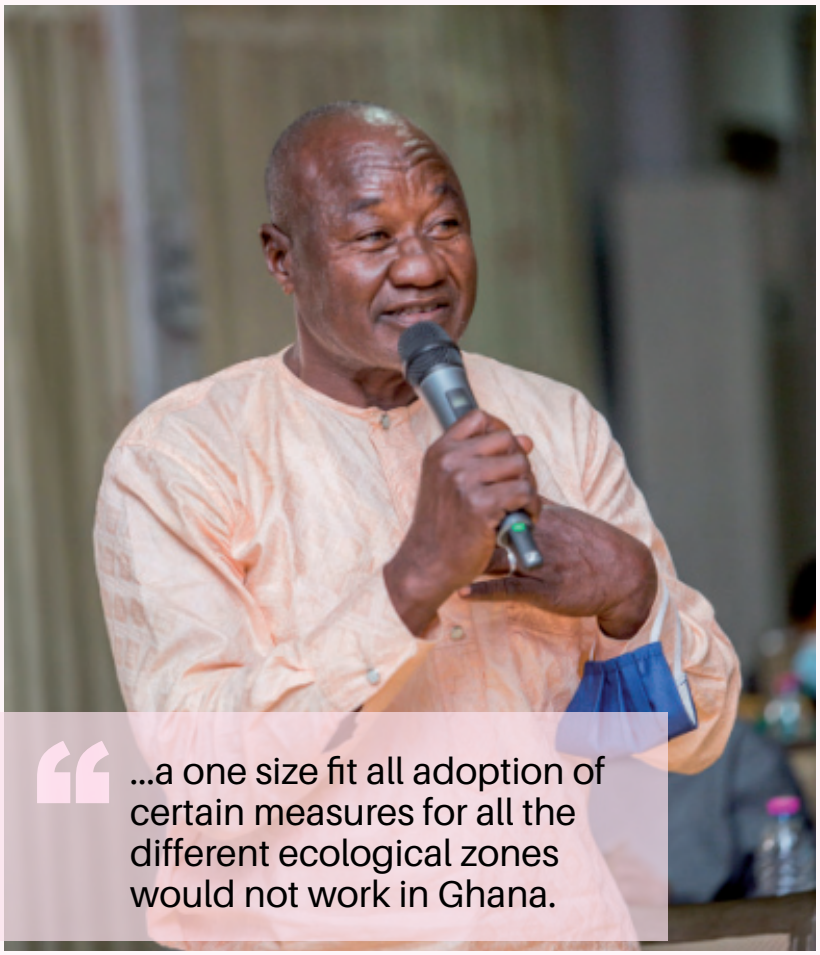
Some organisations, including CIKOD and Peasant Farmers Association of Ghana (PFAG), have started educating stakeholders, especially farmers, on eco-friendly farming techniques like agroecology.

Agroecology is a farming system that works in harmony with nature, using cultivation techniques and breeding programs that do not rely on chemical fertilisers, pesticides, or artificial genetic modification.

The organisations recently ran a workshop on agroecology and climate change, hoping that it would convince more farmers to support the adoption of agroecology.

Reflecting on the event, CIKOD's Executive Director Bern Guri was delighted by the geographical diversity of the stakeholders taking part in the workshop and hopes it will spawn greater national collaboration.

Over **45%** of Ghana's 30 million citizens are employed in agriculture.



> ...a one size fit all adoption of certain measures for all the different ecological zones would not work in Ghana.

Charles Kwowe Nyaabaat the PFAG agroecology conference earlier this year.

"This workshop is the first time we had so many agroecology practitioners coming from all the regions. We had many farmers, agricultural directors, extension officers, and the media trying to develop a common vision of how to publicise agroecology and climate change and integrate the concept into our development plan" says Guri.

"This day was very interesting, very successful and very positive because of this national vision and because of this possibility to think about public policies to support the development of agroecology," he adds.

This view was echoed by Charles Kwowe Nyaaba, Head of Programmes and Advocacy at PFAG, who presented the framework for movement building among organisations promoting agroecology.

He says: "We had a great room of experts with a tremendous knowledge of agroecology. For me the key thing was to adapt concepts to location in order not to succeed - a one size fit all adoption of certain measures for all the different ecological zones would not work in Ghana."

...ensuring more vulnerable demographics, such as women, access to resources, equipment, and the leadership opportunities they need to grow their livelihoods.

Nyaaba says it is important to avoid alienating any stakeholders.

"We agree that agroecology has a lot of practical merit and a much lower environmental impact but we must do it in such a way that it will not discourage farmers from adopting it."

William Late, Deputy Director at CIKOD, adds: "Farmers must support the fight against the industrialisation of agriculture. They must appreciate the concept of agroecology as they examine how they could scientifically modify the old farming practices for healthy food production."

... avoid alienating any stakeholders.

The government's role in ensuring that agriculture remains profitable is even more critical at this moment. This can be done by strengthening farmer organisations such as CIKOD and PFAG and ensuring more vulnerable demographics, such as women, access to resources, equipment, and the leadership opportunities they need to grow their livelihoods.

Local farmers practicing agroecology call on the government to get behind the initiative

Kazigu Pe Paarekuri Asangechere Aluah is the Chief of Kazigu. He doubles as a farmer. He believes that the government is doing its best to help farmers increase food production and become self-sufficient. However, they can do more to mainstream sustainable agriculture and food production at all levels. To change the narrative, agroecology must feature prominently in all government policies, he says.

Kazigu Pe Paarekuri Asangechere Aluah, Chief of Kazigu

Henry Coffie Fordi, another agroecology farmer from Aburi, advocates creating a sustainable food business and combatting climate change in Sub-Saharan Africa.

“On our farm, we practice regenerative and agroecological farming that eliminates chemical fertilisers and pesticides by replacing such external inputs with locally made natural concoction like cow dung and dead foliage.”

Fordi farms over fifteen crops across his land and is slowly developing a food forest. It allows him to harvest crops continuously throughout the year as they mature. Most importantly, the diversity of crops means that his farm is far more resilient to climatic hazards: if one crop fails in a drought or heavy rainfall, others will survive.

He has seen a real improvement in his soil, and the local biodiversity as small wildlife has returned to his land after some absence.

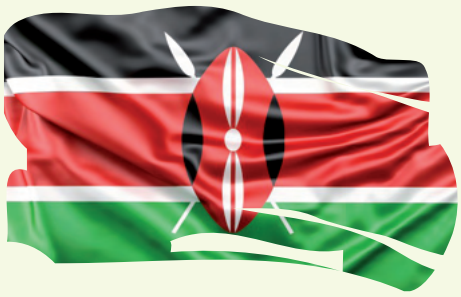
While Fordi and his colleagues can see the benefits, he understands that most farmers are not convinced enough to step away from mono-cropping and chemical inputs. He believes that the government should show more enthusiasm for the scheme and provide more financial incentives to farm using agroecology. He agrees with Aluah and says that training in agroecology should be taught strategically, so the correct techniques are being used in the right ecological zones.

... most farmers are not convinced enough to step away from mono-cropping and chemical inputs.

"This is how we can protect our arable land and produce healthy food locally for our people," says Victoria Adongo, the Executive Director of PFAG.

It must become the foundation of sustainable agriculture in Ghana to weather an uncertain future.

Victoria Ndongo advocates for agroecology and smallholder farmers.



Kenya

Lack of public funding means Kenya's small-scale farmers are struggling in the fight against climate change

BY ALLAN ODHIAMBO

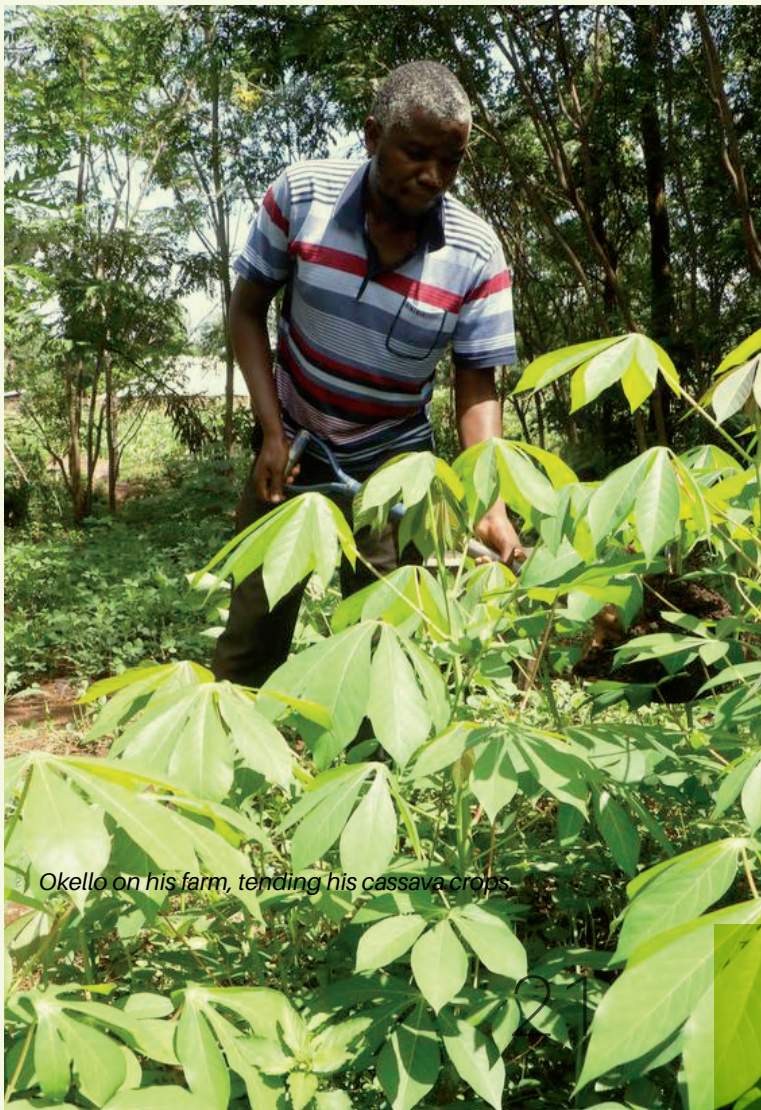
Farmers in Kisumu county, western Kenya, have been using agroecology to combat variable weather conditions.

Every three days, James Odhiambo Okello dutifully collects dung from a cowshed behind his house and carts it away to a shallow pit at the edge of his small compound in lower Kawango.

With the primary planting season coming up in March, Okello is determined to stock up enough cow dung over the next three months to use on his one-acre farm, which is about a kilometre away from his compound.

"I keep six cows which come in handy in providing manure for my crop of maize. I stock up as much cow dung as possible because it means better crop yields and at a comparatively lower cost than other farmers who have to buy expensive artificial fertiliser," he explains.

Spooked by increasingly erratic climatic conditions, Okello also routinely practices crop



Okello on his farm, tending his cassava crops

rotation on his farm — switching between maize, groundnuts, and cassava depending on the season to maximise yields.

"From my experience over the years, I know when to plant which crop. I do maize to coincide with the main March-April-May rainy season then plant ground nuts and cassava during the shorter rain between August and October. Maize does best with good rains while ground nuts and cassava are drought-tolerant and cope well with the short rains," he says.

"From my experience over the years, I know when to plant which crop.

But that is not all. Okello also routinely collects all the stalks after the harvest of his maize crop to use as supplemental fodder for his cows, owing to its high protein and energy content.

"Not even the extremely dry maize stalks are thrown away — my wife uses them for firewood, which saves us from cutting down trees," he adds.

A stone's throw away from Okello's home, another resident of Kawango, Dorothy Atieno, has recently installed a 5000-litre tank in her compound to harvest water from her iron-sheet roofed house.

With heavy rains currently being registered in western Kenya since September, the tank is already full, much to Atieno's delight.

"It cost me about 16,000 Kenya shillings from personal savings to buy this tank but I believe there will be many benefits going forward," she explains. "I am not worried about the traditional dry spell between January and February because I will have water for household use and even to feed my two cows," she adds. The harvested water will also help her sustain the vegetable crop in her kitchen garden when the dry spell sets in towards January.

Besides the new water tank, Atieno — who has over the years had to trek long distances over the dry season in search of clean water for her animals and household use — has also dug up a shallow well in her homestead.

"I have had challenges with water scarcity but with the well and tank I am now better prepared to sustain my crops and livestock through the dry season," she says.

For Geoffrey Oyalo, another smallholder farmer in Kombewa, about 25 kilometres west of Kisumu town, inter-cropping trees with fruits and vegetables has helped improve his farming.

He intercrops bananas, pumpkins, sweet potatoes, collards, and fodder shrubs, providing protein-rich food to his small herd of cows.

"The shrubs also provides shade to the farm and controls excess water loss during the dry times and I am guaranteed of harvests ...

"The shrubs also provides shade to the farm and controls excess water loss during the dry times and I am guaranteed of harvests unlike before when the hot sun would make my crops wilt," he explains.

Official data record low rains in the area, but still, local authorities are slow to act

Like thousands of others across the country, the peasant farmers of Kisumu are keen to adapt to the vagaries of climate change and sustain their livelihoods and food security.

Though adaptation strategies may differ from one farmer to another, the underlying objective is common—to reduce their vulnerability to a changing environment.

Data by the Kenya Meteorological Department (KMD) shows that though rainfall is the single most crucial climatic parameter in the country, there is a noticeable reduction in the amount of downpour recorded across key agricultural zones since the 1960s. Temperatures have also become warmer-adding to the challenges facing Kenya's climate-sensitive, rain-fed agriculture.

But lack of support in agricultural extension services and access to affordable finance has left the peasant farmers frustrated in their quest to adapt to the pressure of climate change.

Agricultural extension services, which used to be offered by the government for free in Kenya, collapsed many years back, dealing a blow to those who cannot afford the expensive alternatives from the private sector.

"Most farmers including myself lack the professional understanding, we just experiment with different ideas we may have seen or heard about elsewhere," says Okello.

Compounding the problem: peasant farmers are not eligible for financial loans

Access to credit also remains problematic to farmers in Kenya since many lenders prefer to reserve their money for high-return sectors such as manufacturing and real estate to limit their risks of non-performing loans.

"I wish the government would lend support in areas such as water harvesting because it is a fact that rainfall is no longer reliable and we must store water as a contingency measure. Most farmers cannot afford water tanks or build water pans and they need help with that," Atieno says.

However, the Kenyan government claims support for farming remains a priority, and numerous initiatives have been rolled out towards this cause.

But **lack of support in agricultural extension services and access to affordable finance** has left the peasant farmers frustrated in their quest to adapt to the pressure of climate change.

"We are gradually addressing the same issues as [the agroecology sector] through various individual initiatives. Agriculture has to get smart to survive the threats of climate change," Hamadi Boga, the Principal Secretary, State Department for Crop Development and Agricultural Research, says.

The government agrees it is time to "get smart" about addressing climate change

To combat climate change threats in its agricultural sector, Kenya is currently implementing a 10-year "smart agriculture" strategy that focuses on adaptation and resilience against climate change.

Key in the strategy is the provision of modern weather analytics, a policy to promote the adoption of crop varieties and livestock that are adapted to varied weather conditions and tolerant to pests and diseases, and the diversification of farming enterprises and livelihoods.

Further, the strategy seeks to enhance the productivity and profitability of agricultural enterprises through improved technologies and post-harvest approaches such as better storage and distribution of agricultural products.

According to the Agriculture Ministry, weak governmental infrastructure and poor collaboration between stakeholders has made Kenya's agricultural sector intensely vulnerable.

"The country requires transformation of its agricultural systems to make them more productive and resilient while minimising greenhouse gas emissions under a changing climate," the Ministry announced. They promised to unite under a common agenda of sustainable development to confront and overcome food insecurity and climate change.

Cameroon

Soil cultivation and agroecology lead the fight in combating the effects of climate change in Cameroon

...the issue of soil is crucial for the future.

BY LEGER NTIGA

The Sahelian part of Cameroon — the three northern regions (the Far North, North, and Adamaoua) — is again faced with flooding this year. In the region, only two months of rainfall are anticipated all year, but when it arrives, the River Mayo frequently bursts its banks. The result is often devastating to the dwellings and farmland along the water's edge.

The National Observatory on Climate Change (ONACC) notes that Cameroon is increasingly vulnerable to climate change. So they have introduced seasonal forecasts — as opposed to forecasts which only stretch ten days into the future — with the hope of managing the problem.

The use of fertilisers in Cameroon is less than elsewhere in Africa but we are still paying the price.

... we are encouraging producers to plant food crops that can be used as fertiliser at the same time.

There is a need to combine a double adaptation: good organic soil nutrition and crop diversification.

For the past three years, the agricultural monitors assigned by the Ministry of Agriculture and Rural Development have been providing advice to the population dealing with famine, malnutrition, and undernourishment due to the disruptions caused by climate change.

"We want to reconstitute the production basins that have been so violently affected in recent years by drought. Otherwise, the situation will be more serious, especially during the lean season. With this in mind, we are encouraging producers to plant food crops that can be used as fertiliser at the same time. In this way, they help to combat global warming, preserve the soil and feed people," explains agricultural engineer Anaclet Monglo.

A PhD in agricultural sciences and a member of the International Panel of Experts on Sustainable Food Systems, Mr Monglo stresses that the issue of soil is crucial for the future.

"In the past, little attention has been paid to soil health and soil biology. Soil has been treated as a substrate for plants, even though it is full of living organisms, able to dig deep and make nutrients available to plants through microbes, fungi, bacteria and other earthworms," says Anaclet Monglo, for whom soil is a living thing.

According to a recent study by the Cameroonian Institute of Agricultural Research for Development (IRAD) with the support of the Centre for International Cooperation in Agronomic Research for Development (CIRAD), there will be a four-degree increase in temperature over the next 60 years, which will cause a 14 per cent drop in maize yield without fertiliser.

Indeed, maize is one of the most widely grown cereals in northern Cameroon, but it is also one of the most sensitive to thermal and hydric stress. To meet food production requirements, the pool of experts at the Cameroon Climate Change Adaptation Programme recommends other cereals and even vegetables such as pepper.

It is now very much a question of getting out of a vicious circle.

"Chemical nitrogen fertilisers, used to increase already low yields, release nitrous oxide through plants and soils, which further accentuates global warming," says ONACC's director general and climatologist, Joseph Armathe Amougou. There is a need to combine a double adaptation: good organic soil nutrition and crop diversification that does not impoverish or dry up the land.

"This role of living soil has been completely neglected by the industrial agriculture of the last sixty years," says agroecologist Jean Aimé Hemtcheu. "The use of fertilisers in Cameroon is less than elsewhere in Africa but we are still paying the price. As elsewhere in Africa, Cameroonian soils are very old, very fragile and deteriorated by monocultures and the loss of varietal diversity. It is important today, in view of climate change, to bring organic matter into the soil through crop diversification and the choice of plants that require less water than maize and rice."

To this end, Bogo, Kaélé, Yagoua, Maga, and Mokolo have been selected to be part of the pilot programme to adapt and replace commercial crops with food crops better adapted to climate change. They are more resistant to high temperatures and need little water. Further is the implementation of efficient intercropping with legumes such as beans (cowpeas), root vegetables such as sweet potato, rich in beta-carotene, and green vegetables. They provide a much more balanced diet rich in locally produced micronutrients. Here, as in the neighbouring localities, people are involved in selecting the most resistant varieties. They alternate long and short cycles, cereals, and market gardening.

“On the contrary, continuing to bet on the cultivation and consumption of large cereals, maize, wheat and rice, which require a lot of water, is inappropriate and risky,” says the eco-anthropologist and leader of the Green Party, Jean Nke Ndih.

It is a question of providing sustainable responses to the forecasts and mitigating against any potential losses to cereal yield.

“In the Kousseri zone, we could lose around 15-20% of production, it is a quite plausible hypothesis based on a warming between 1.1°C and 2°C by 2050,” says Benjamin Sultan, a climatologist at the Institute of Research for Development (IRD). The models predict an increase in rainfall and flooding further north while the climate in the western Sahel will be warmer and drier.

To carry out this implementation, the experts are trying to reproduce a model that has already been successful in the Centre and Littoral regions where they have been working on the empowerment of family farms. The aim is to support 30 families from ten villages in nearby localities. Each farming family determines its short and medium-term development objectives, then designs an integrated system. The three main components are agriculture, breeding, and forestry. The waste generated by each production unit becomes the raw material for another production unit. The family farm also includes setting up artisanal earthworm breeding to produce organic fertilisers and maintain soil fertility.

There is also a small garden adapted to the nutritional needs of the family, as well as market gardening nurseries and units for the rearing of hens and rabbits. However, the adaptation of farming methods and techniques needs to be followed by more monitoring of climatic disturbances.

In order to anticipate the occurrence of these natural disasters in the future, Amougou and his team have listed the impacts on the various sectors and the actions to be taken to limit these impacts. In the agriculture sector, there is the risk of developing certain diseases of cultivated plants, the delay in crop growth, and the risk of crop loss. Amougou, therefore, prescribes the adjustment of the agricultural calendar. On the issue of means and funding, the Director-General of ONACC recommends that elected officials (deputies and senators) address agrarian practices, including agroecology. For him, a better appropriation should lead to a debate in Parliament, to involve stakeholders at all levels in the fight for food security in the face of climate change.

Côte d'Ivoire

Challenges and opportunities for agroecology in the face of climate change

BY DEIDRI MANFEI ANDERSON

In Côte d'Ivoire, agroecological initiatives do exist, but the real challenge remains scaling up.

The Agricultural Orientation Law adopted in July 2015 aims to specify "actions for the optimal valorisation of the country's agroecological potential and agricultural know-how." However, no specific policy to promote agroecology has been developed.

...the real challenge remains scaling up localised initiatives to national levels.

The Ministry of Agriculture and Rural Development states that "agroecology is a notion or concept that is at a 'primary' extension phase in the Ivorian agricultural sector. National initiatives may or do exist, but the current strategy of the Ministry in charge of Agriculture (MINADER) does not really emphasise this practice".

Agroecology less valued.

Agroecology is a farming practice that emphasises preserving biodiversity and the environment by using the age-old endogenous knowledge of small-scale farmers, unlike industrial agriculture that uses synthetic chemicals. Unfortunately, it is a practice that remains little valued, particularly in strategies to combat climate change in Côte d'Ivoire. The National Investment Programme for Agricultural (NIPA) 2018-2025, currently in place, is an initiative to "improve resilience, develop agroecological approaches, improve technological production and promote women's access to land."

This NIPA includes developing nine agro-poles on the national

territory for agricultural production, based on research and agrarian advice; establishing a system of production and dissemination of improved inputs for all sectors; and the strengthening of agro-industry. The programme focuses on industrial or conventional agriculture and will require a total investment of CFAF 12,361 billion, of which 65% is financed by the private sector.

Agroecology, however, remains less valued in agricultural policy. Pauline Zei, Director of Inades Formation Côte d'Ivoire, a civil society organisation that promotes family farming and supports small producers, is critical of the lack of political will to drive agroecology into the mainstream.

"In Côte d'Ivoire, there really are a lot of agroecological initiatives, a lot of NGOs are involved, but these are small-scale operations. I think there really needs to be political push to scale up the practice," she says.

For Zéi, agroecology presents itself as a resilient production system and a means of adapting to the effects of climate change. It has many advantages: it preserves biodiversity, improves yields, and promotes food security.

Agroecology preserves biodiversity, improves yields, and promotes food security.

Inades Formation Côte d'Ivoire has carried out a pilot project over the past two years with 60 producers from seven cooperatives with some successful results. It involves the use of bio-compost in maize production, which was tested in three localities in the centre and north of the country.

"In Bouaflé and Bouaké, we have had palpable results. The first year of experimentation in Bouaflé, we had yield improvements of around 50% on the test plots. In Bouaké, it was around 25%," explains Zéi. Some maize farmers say that the 'tôh' [local dish made from maize flour] that they make with maize from the bio-compost plots tastes better and keeps longer than the 'tôh' from the maize plots treated with chemicals. So these are testimonies that confirm that agroecology is the answer to quantity and quality.

...maize from the bio-compost plots tastes better and keeps longer than the 'tôh' from the maize plots treated with chemicals.

Since the national rate of undernourishment sits at 14.5%, agroecology seems like the obvious answer in the quest for food security. However, as observed by experts, today's challenge remains to scale up localised initiatives to national levels.

Jean Claude Gnogbo, a farmer in Zaguiguia (Daloa) in the south-west of the country, agrees.

If Africa gets into this [agroecology] programme, we will import less of everything which is cheaper — and healthier because what we import is produced with chemical fertilisers.

Achieving results requires a paradigm shift. Raising awareness through concrete cases is essential to getting large numbers of producers to adopt agroecology. The state's role is crucial in enhancing and promoting the opportunities offered by this agricultural practice, especially since agroecology has the potential to generate income and employment, particularly for young people and women. All that is needed is to structure this climate-resilient production system to create a circular economy to benefit rural actors and ensure food security.

Lesotho

Lesotho's Climate Change Policy – a useful tool for agroecology

BY FRANCIS MUKUZUNGA

A farmer stands by her dry farmland, ravaged by drought.

> "... focus on activities which increase the country's resilience and adaptive capacity to the impacts of climate change.

When the government of Lesotho launched the National Climate Change Policy in December 2017, the document was seen as an effort to realise the country's pledge to environmentalism that begun in 2007.

According to Hon. Francis Mokoto Hloaele, who was the Minister of Energy and Meteorology at the time, the main reason for formulating the policy was to "focus on activities which increase the country's resilience and adaptive capacity to the impacts of climate change."

Mr Hloaele acknowledged that Lesotho is prone to adverse climatic conditions such as droughts and floods that severely affect the country's food security. Therefore, he called for the implementation of "climate smart agricultural" principles to ensure food security and reduce greenhouse gas (GHG) emissions primarily seen as the precipitation agents of global warming.

The Ministry of Energy and Meteorology coordinated implementing the policy through the Lesotho Meteorological Services (LMS). The LMS has records that indicate that Lesotho's weather conditions have been affected by climate

Farmers gather after harvest.

change over the past few decades.

According to Mr France, the former head of Ozone and Climate Change of LMS, farmers need to engage in acceptable agricultural practices that are not harmful to the environment even under the current changing climatic conditions. He continues that several adaptive and mitigation measures against climate change have been recommended to the government by LMS to promote food security in Lesotho.

On the other hand, he says, certain agricultural practices contribute to climate change through the emission of hazardous gases and therefore urged the farmers to guard against that through agroecology.

Methane gas is seen as one of the most significant contributors to global warming. He suggests avoiding nitrate fertilisers and encouraging livestock to eat natural vegetation rather than processed, nitrate-filled food which would mean far less methane is released into the atmosphere.

Mr France, however, says he is glad that many small-scale and indigenous farmers in Lesotho were following this initiative but urged government and other stakeholders to encourage such farming methods on an even larger scale.

His wish for the future is that farmers are taught more about water harvesting and strategic planting, making use of short-term maturity and drought-resistant crops such as sorghum for cereals as opposed to maize.

LMS says adaptation in agriculture must be the priority in Lesotho and across Africa. Therefore all mitigation measures, such as water harvesting, planting drought-resistant crops that have early maturity, and raising animals resistant to the extreme weather conditions in Lesotho, help the farmers adapt accordingly.

Farmers using traditional tilling methods with oxen.

LENAFU Programme Manager Khotso Lepheana agrees but points out that while the small-scale farmers in Lesotho want to practice sound agroecological principles to minimise their impact on climate change, lack of finance and support from the government and other players is still a problem.

> “... farmers fail to acquire loan advances from the banks due to lack of insurance covering lost harvests.

Mr Lepheana says the government, through the Ministry of Agriculture and Food Security and the NGO sector, has promised to assist small-scale farmers through various means such as subsidiaries on agricultural inputs, access to finance, and knowledge on effective methods of reducing climate change.

However, policymakers still need to make significant changes to provide this assistance. There are still considerable barriers, such as the fact that most banks’ lending structure is not open to small farming businesses.

“Farmers have always struggled to get loan advancement to better their agricultural enterprises,” explains Lepheana. “The main reason is that the banks in Lesotho do not have a specific agricultural financing model. Supplementary to this, farmers fail to acquire loan advances from the banks due to lack of insurance covering lost harvests,” he adds.

Mr Lepheana also says mechanisation and storage facilities are factors hindering the development of the small-scale agricultural sector in Lesotho. The government has promised to step in, but only when this is actioned will farmers see a tangible benefit.

Mr Lepheana, however, says the farmers needed more knowledge on how they can effectively reduce climate change through their farming activities. He called on the LMS and the donor community to pass on more information regarding agriculture and climate change.

The marketplace at Maputo

Mozambique

Mozambique's youth finds solace in agroecology

BY CHARLES MANGWIRO

Ngulule Stelio's dream of becoming a broadcaster began to drift away after two years of job searching in the media industry. After losing hope, he took an unexpected turn towards horticulture in Maputo's green belt.

"I left that college three years ago and spent months searching for a job so I turned to urban agriculture," he tells us. His abrupt career change provoked some joking amongst other farmers in the area, who call him Mr Microphone, a nod to his thunderous radio broadcasting voice.

"I decided to focus on agriculture because I could see it was a lucrative business. I use my own ideas to improve my seed quality by adopting traditional methods and I see the opportunity to expand my business," he explains.

Maputo's greenbelt is home to 10,000 small-scale farmers. It was fundamental to the survival of the

population isolated by Mozambique's 16-year crippling war, which ended in 1992. It later played an essential role in feeding the community during the 2020 COVID-19 lockdown. Ngulele has found both enjoyment and success in building a business here.

"I produce organic seeds for local farmers," he says. Seeds are available in the shops, but most of them are genetically modified. Ngulele's seeds are cheaper for the farmers, and although he spends a lot of time growing them, he does not spend a lot of money doing so, as it is a low-cost venture.

"The truth is that agroecology farming systems are efficient and productive," he explains. "Yes, initially yield levels are a bit lower, but costs are also significantly lower. And soil fertility is improved and the quality of produce is better."

Ngulele produces various seeds, including cabbage, lettuce, parsley, cilantro, basil, arugula, green bean, and pepper. He is one of the Association for Sustainable Development's (ABIODES) real success stories as they work with local farming initiatives to focus on sustainable development.

ABIODES aims to improve socio-economic development as well as the integration of environmental protection, conservation, and protection of natural resources.

"Currently, one of the great challenges is to ensure that more people acquire natural products, in order to encourage this type of production," said Alberto Luis, the head of the Agriculture and Food Security Program at ABIODES.

ABIODES' current focus is working with Maputo's greenbelt farmers to integrate sustainable and inclusive development and rational use of natural resources in the face of climate change.

Maputo faces severe food insecurity, with 70% of the city's 3.5 million population considered food insecure. The capital is highly dependant on food imports, which fuels its vulnerability.

"Currently, one of the great challenges is to ensure that more people acquire natural products, in order to encourage this type of production," said Alberto

"Our goal is to make peri-urban agriculture the most wise and promising way to alleviate poverty in Maputo," says Luis.

ABIODES is planning a seven-year pilot project, which is being implemented by Maputo City Directorate of Agriculture, to enable farmers to increase their agricultural output and reduce the use of pesticides. It further aims to enable vulnerable young people to embark on viable farming activities.

"It will help producer associations build capacity, offer their members relevant services, and represent them effectively in their interaction with public institutions," the Maputo City Director of Agriculture and Food Security, Lucia Luciano, explains.

According to the official, this new project will enable the recently launched agroecological farming sector to become sustainable. Activity will be scaled up through the institutionalisation of agroecology in Mozambique.

"The specific objective is to develop and ensure the sustainability of an agroecological urban farming sector and the 1000 farmers [selected for the project]," he says. He emphasises the importance of all stakeholders, from public authorities to traders and consumers, playing their part and holding the initiative accountable.

The project aims to benefit all the farmers in Maputo and their households, who will gradually become familiar with agroecological production methods. Most importantly, it will give the inhabitants of Maputo easier access to high quality, locally produced foodstuffs at affordable prices.

Seed producers like Stelio Ngulele will be instrumental in driving change.

"My dream is to see each resident in Maputo city as a farmer," he says with a smile, "even if they plant at the back of their yards. And I will always be there to provide them organic seeds that will yield quality food and help our city thrive."

He emphasises the importance of all stakeholders, from public authorities to traders and consumers, playing their part and holding the initiative accountable.

... even if they plant at the back of their yards. And I will always be there to provide them organic seeds that will yield quality food and help our city thrive.

Nigeria

Agroecology: Nigeria's Solution to Climate Change

BY RUTH TENE NATSA

Nigeria is currently undergoing its worst recession since 1987. With prices of food commodities at the extreme and little resources to combat the emerging threat, the nation faces critical food insecurity.

This recession is preceded by climatic hazards, which have led to severe devastation of agricultural produce, flooding, erosion, and the displacement of citizens in several communities across different states.

... four fundamental principles: focusing on food security, import substitution; job creation; and economic diversification.

Before this, the global COVID-19 pandemic, the National EndSARS protest, and a host of other issues, including increased crime rates, particularly in the north of the country, had generally exacerbated farmers' apathy to farming, leading to a decline in the nation's agricultural and economic activities.

Insecurity took a new dimension when bandits began holding farmers to ransom and demanding they pay between $700-$2,000 to plant or harvest their farms. Currently, Nigeria is selling and buying foods staples, especially rice, at one of the highest cost of between $70 -$100.

All the above have led to a declining agrarian practice, which requires urgent interventions to avert an already critical situation.

In 2015, following the ascension of the Buhari-led administration, the Ministry of Agriculture and Rural Development came up with a National Adaptation Plan (NAP) tagged 'Agriculture Promotion Policy (APP) 2016-2020' also known as the 'Green Revolution.'

The Green Revolution has four fundamental principles: focusing on food security, import substitution; job creation; and economic diversification.

The policy mainly targets prioritising crops by focusing policy on improving

domestic food security and boosting export earnings. The initial focus was to expand rice, wheat, maize, soya beans, and tomato production for domestic crops. In addition, environmental sustainability was of key interest. The policy required adapting the use of natural resources more mindfully and economically.

So far, there is little progress, as the nation has faced massive flooding, with farmers losing millions of naira worth of farm produce over the past five years.

Worse, Nigeria — known for its suspension of policies following any change in government — has also neglected the implementation of the Green Revolution, following the change of the Minister of Agriculture and Rural Development in the current administration's second term.

Meanwhile, President All Farmers Association of Nigeria, Kabir Ibrahim, believes that "the production of food using the system of agroecology which is largely predicated on traditional methodology is immensely beneficial and preserves the organic nature of the entire food system sustainably. It ensures livelihood and wellness of the producers and consumers of food sustainably."

"...the production of food using the system of agroecology which is largely predicated on traditional methodology is immensely beneficial and preserves the organic nature of the entire food system sustainably.

Ibrahim notes that farmers in Nigeria are beginning to develop an awareness of the All Farmers Association as they continue to teach farmers at all levels to incorporate agroecology as a means for more prosperous production and preservation of the environment.

Meanwhile, a farmer and a member of the Nigerians Farmers Group and Cooperative Society (NFGCS) tells how he practices agroecology in his systems.

"There is a new innovation in farming currently taking over the usual dominant industrial farming method — which is not only capital intensive but no longer safe — to feed the growing world population, particularly in Africa."

He says that more farmers today are abandoning single-crop farming and embracing production methods based on diversity and local inputs.

"The practice ensures the combination of local and scientific knowledge to grow a wide range of different crops and even animals."

He is pleased with the benefits and is keen to talk about improving soil fertility using chemical-free organic inputs made from cow and poultry droppings.

"We grow maize, sorghum or mango trees together with other flowering plants, which serve as pest repellants. Although we are still learning, our practice is a response to most of the challenges facing agriculture in every part of the world today."

Agroecology is undoubtedly new in Nigeria, but farmers are indeed coming around to embracing the latest practices. However, there still remains a serious need for experts and international support to import this knowledge to this African nation of farmers.

Senegal

Adaptation to climate change: Senegalese agriculture, a sector under stress

BY FAYDY DRAME

Adaptation to climate change is a priority in all spheres of government. However, the sector of healthy and sustainable agriculture is only supported by farmers' organisations and their support to restore the soil and respond to the rainfall deficit.

65%
of arable land degraded

In one of her rice fields in Ndiama — 350 km from Dakar — Mrs Siré Dabo has only a small portion of arable land left. Two-thirds of its perimeter has suffered from erosion caused by rainwater.

"We are suffering from the silting up of our rice fields. The belt of palm forests that held the sand back after the heavy rains has disappeared. As a result, the runoffs have drained the sand that occupies more than half of my rice field," says the farmer. As a result, Dabo and her neighbours have begun growing their crops on land that is more than six kilometres away. A journey that they will make on foot until the harvest is complete.

The phenomenon of silting up and the erosion of arable land is a reality across large parts of Senegal. According to a study on Senegal's land situation by LADA (Land Degradation Assessment in Drylands), 65% of arable land is now considered "degraded".

Soil degradation has precipitated the decline or even complete cessation of agriculture on some lands. In Landou, in the Niayes area, the drought of the 1970s and 1980s had a long-standing impact on the fertility of the land. The heavy rains of the 2000s exacerbated this critical situation. The consequence: erosion in some places, salinisation and silting up in others and mass urban migration of young people leaving the countryside.

In response to these natural disasters, Abdoulaye Pouye, Coordinator of the Woobin Federation, is fighting to restore soil fertility in local villages using Soil Defence and Restoration techniques (DRS) taught to farmers by the NGO Enda Pronat.

"Enda's objective was to help us practice agroecology. But how to do this with infertile land? So we started with the restoration techniques to reclaim our land — and it works," explains Aïssatou Sène, a member of the same federation.

"Little by little we are returning to cultivate plots that have been abandoned for years," rejoices Daouda Diouf, the village chief of Landou.

In Kaffrine, another vulnerable area, farmers are suffering too from soil degradation and a scarcity of rainfall but have been using technology to adapt.

"In recent years we have been using meteorological information to adapt to the hazards imposed by unstable rainfall," says Ms Fily Traoré of the Kaffrine Federation of Women Foresters.

The use of meteorological information was one of the axes of the "Decentralisation of Climate Funds" (DFC) programme carried out across the Kaffrine region by the NGO Innovation Environnement Développement en Afrique (IED Afrique) between 2014 and 2018.

"The DFC programme signed a partnership protocol with the National Agency for Civil Aviation and Meteorology (Anacim) to intervene on behalf of the entire Kaffrine region through a forum on weather forecasts and warnings," explains Momath Talla Ndao, former coordinator of the programme. "In order to persuade and engage farmers in the use of weather information, DFC has set up test fields in various local authorities in the Kaffrine region," he adds.

Diabel Cissé, a farmer in the village of Ndiama Gadio, is complimentary of the technology. "The weather information and alerts have allowed us to know whether to use short or long cycle seeds, when to start weeding, harvesting or when to take the crops out of the field to avoid the last rains spoiling them."

Mrs Satou Diagne from the same village adds that the NGO Agrécol has taught them the techniques of assisted natural regeneration. "We have adopted them into our organic market gardening fields. We have actually realised that it is a very simple practice that does not require the support of partners or inputs to do it," she says.

"Little by little we are returning to cultivate plots that have been abandoned for years," rejoices Daouda Diouf, the village chief of Landou.

Degraded land

20,000
hectares

Fertiliser needed

600,000
tonnes

Senegal's 2015 National Scheduled Fixed Contribution Document (CDPN) notes that "the expected reduction in the area of agricultural land will result in a 30% drop in cereal production by 2025." The impacts of this tragedy will also be felt in the livestock sector. And all of this "will encourage conflicts between breeders and farmers over access to resources", warns the same source.

"It is therefore necessary to act quickly to restore these lands with organic fertilisers," says Malal Ndiaye, Commercial Director of Green Elephant Senegal, which has been marketing bio-inputs since 2016.

For its part, Green Elephant says that in 2019 it will have marketed 5,000 tonnes of bio-inputs, 70% of which will be in the Niayes area. However, this is just a drop in the ocean compared to what is needed to regenerate the country's leached soils.

According to Green Elephant's sales manager, Senegal's fertiliser needs are estimated at 600,000 tonnes per year. Even if 2% (12,000 tonnes) of this quantity is subsidised, the state has greatly facilitated access to organic fertilisers. If Senegal subsidises even 10% of the 600,000 tonnes of organic fertiliser needs, producers will have 60,000 tonnes of organic fertiliser which will help correct 20,000 hectares of degraded land.

The state of Senegal has injected substantial agricultural input subsidies in 2018, 2019 and 2020 but for 2020 only 10% has been devoted to agroecology or sustainable agriculture. Proving that the state is taking steps in the right direction but it has a long way to go in helping family farms cope with climate change.

Tanzania

Tanzania farmers struggle to bring food to the table amid climate change

BY ZUWENA SHAME

Sometimes, it doesn't rain for an entire season, leaving farmers, pastoralists, and the whole community facing a food security dilemma. Many are left struggling to bring food to the table and meet daily expenditures.

Agriculture is the backbone of Tanzania and provides a livelihood to more than three-quarters of the population, mostly small-scale farmers.

Joram Mwangomole is a maize farmer in Kilosa District, Morogoro, who says that five years ago, he failed to harvest a single bag of maize—the staple food of Tanzania.

"It was caused by limited rains in the area, something that affected my life as I depend on farming. I had nothing to feed my family and no income either," Mwangomole says.

Things started to get better after being trained on conservation agriculture—a farming system that promotes minimum soil disturbance (no-tillage), maintenance of permanent soil cover, and diversification of plant species.

"The result was very promising and it encouraged me to follow all the expert's instructions. I harvested 18 bags per acre, something which was unusual. This also encouraged my fellow farmers, who were also getting more yields," he tells us.

Peer to peer learning spreads success

Father-of-six, Jumanne Kalanga, commends experts from Tanzania Agricultural Research Institute (TARI)-Ilonga for imparting knowledge and skills on new maize farming technology, which made him a breadwinner for his family again. Through the unique skills, he now sends his children to good schools and meets daily household outgoings.

"It was not an easy life for a small-scale farmer like me to lose everything because of unreliable rainfall," he says.

Twenty years ago, Kalanga, who is from the Nzega district, and other local villagers used to rely on good harvests of different food crops and even cash crops such as cotton, but things slowly deteriorated.

"Five years ago, I couldn't harvest anything at all because of prolonged drought. I couldn't feed my family," says Kalanga, explaining that the rainfall pattern has grown more erratic with each passing season.

After struggling for several harvests, Kalanga admits that he swallowed his pride and travelled the long distance to successful farmers in Kitete village, in eastern Tanzania. He had heard that these farmers were no longer talking of rain-fed farming as they are engaging rainwater harvesting technology.

The farmers of Kitete were digging water pans to harvest rainwater during the rainy season and using the collected water for irrigation throughout the year. Gathering this runoff and storing it made it possible to use for domestic/livestock and small-scale irrigation.

"I borrowed the technology and took it home to Malolo village," Kalanga recounts, as he loads great, juicy watermelons, grown using the same techniques, into a truck ready for market.

Government programs step up to more sustainable practices

Mary Majule, Principal Agriculture Officer of the Ministry of Agriculture, Livestock, and Fisheries, says that the government has embarked on promoting a new farming system. Dubbed the System of Rice Intensification (SRI), it is designed to fight the impact of climate change and ensure food security in the East African nation.

The new rice farming system, according to an expert, creates a triple-win situation for agriculture, climate security, and food security because it sustainably increases rice production by addressing the reckless use of water during farming.

With the new system, small-scale farmers in the irrigation schemes are encouraged to adopt SRI to reap more benefits that range from food security to climate change adaptation.

Water-harvesting is truly the answer to combating poverty

In Tanzania, data shows that small-scale irrigation development through water harvesting technology supports local farmers like Kalanga to improve agricultural productivity, ensure food security, and reduce poverty.

Water harvesting enables farmers to collect rainwater and utilise it in small-scale irrigation systems such as drip irrigation, where water is supplied

slowly and directly to the plants' roots.

The Food and Agriculture Organisation (FAO) and the International Programme for Technology and Research in Irrigation and Drainage (IPTRID) have found that lower-cost, more water-efficient irrigation technologies can expand significantly small-scale irrigation in East and Southern Africa.

Irrigation proven to boost crop production three to four times more than that of rain-fed agriculture

Former Minister of Agriculture, Japhet Hasunga, admits that climate change needs practical actions. It comes as the Tanzanian government has rolled out a plan to adopt and establish small-scale irrigation systems to boost crop production for small-scale farmers in rural areas of the country.

The model irrigation schemes, Hasunga says, will be developed across the country to show local farmers how they can adopt such technologies to improve their agricultural productivity.

The ministry is also reviewing the National Irrigation Commission (NIRC) to create a new system that will facilitate the management of irrigation schemes at the district level as well as help farmers build resilience to climate change.

Some of the practices employed by the scheme are rainwater harvesting and storage structures, chololo pits, ridging, tie ridging, water retention/ harvesting pits, fanya juu and fanya chini terraces, bench terraces, cover cropping, mulching, minimum/zero tillage, crop rotation, intercropping and crop residue management.

Other methods include the use of drought-tolerant crops, which are flood-tolerant, and disease tolerant too.

Keeping emissions down and committing to sustainability, from small-scale farmers to government leaders

Francis Modaha, a senior research officer at the Tanzanian Food and Nutrition Centre, worries about the vicious circle caused by climate change and farmers' reliance on chemical inputs. The more a farmer struggles with extreme weather conditions, the more they turn to pesticides, further degrading their soil and making their crops less resilient. The cycle continues.

He suggests that farmers switch to SRI. It largely eliminates the methane produced by anaerobic decomposition in flooded paddies that alone contributes significantly to global greenhouse gas emissions.

George Simbachawene, former Minister of State in the Vice President

Office, admits that Tanzania has a National Adaptation Programme of Action to identify and promote activities that address urgent and immediate needs for adapting to the adverse impacts of climate change.

The more a farmer struggles with extreme weather conditions, the more they turn to pesticides ... The cycle continues.

The document focuses on adaptation needs in the agriculture, water, energy, health, and forestry sectors.

He says: "As a country, we've agreed to assist coordination of enhancing proper coordination among actors on climate change, advocating for resource allocation for infrastructure, technology, and research on climate resilience and adaptation."

Now it is time for the Tanzanian government to step up

Food and agriculture both lie at the heart of the 2030 Agenda for Sustainable Development adopted by the United Nations in 2015. It focuses on ending poverty and hunger as well as responding to climate change and sustaining the Earth's natural resources.

There is a call for the world to double the agricultural productivity and the incomes of small-scale food producers by 2030, particularly women, indigenous people, family farmers, pastoralists, and fisherfolk.

Experts agree but state that it can only be achieved through secure and equal access to land and resources, financial support, open markets, and value addition opportunities.

The Tanzanian government has a critical role in creating and enabling an environment for technological development and agroecological practices that achieve this goal and sustain the livelihoods, health, and nutrition of its people.

Togo

Climate Change and Agroecology in Togo

BY DJAHLIN TELE AYAWAVI

Agroecology is an integrated approach that applies ecological and social concepts and principles concomitantly to the design and management of agricultural food systems. It aims to optimise the interactions between plants, animals, humans, and the environment, taking into account the social aspects for a food system to be sustainable and equitable.

Agroecology allows the best use to be made of the functionalities offered by nature, while at the same time ensuring its capacity for renewal. The farmer must encourage interactions between the natural organisms present and use what nature offers to optimise his crops, while optimising resources. Most importantly, in this way, they pollute less, minimise their losses, and can adapt quicker and more efficiently in the face of climate change.

Generic statistics on the devastating effects of climate change in Togo

The consequences of climate change for Africa are devastating. They threaten to plunge millions of people into extreme poverty by 2030, mainly due to lower agricultural yields, higher food prices, and the adverse effects on health.

Consequently, Togo's food security and resilience programme contributes to the Togolese action plan for nutrition, which is part of the national agricultural policy.

In terms of the initial situation, maize is the primary staple food in Togo and is produced and consumed in large quantities. Nevertheless, many people, in particular, and children, suffer from undernourishment or malnutrition. This is due to the insufficient diversity in food supplies because farmers can't or don't grow food for themselves.

In addition, there is limited access to safe drinking water, poor hygiene practices (lack of hand washing, low quality of and difficult access to public health services and other institutions). As a result, women of childbearing age and young children under the age of two are significantly affected by undernourishment and malnutrition.

For many people, the food situation in Togo is precarious. The population is proliferating so that the food situation is facing enormous challenges, especially as agricultural land has barely expanded in recent decades.

Climate change's contribution to food insecurity

Climate change is defined as changes in climate attributed directly or indirectly to human activity, altering the composition of the global atmosphere and which are in addition to the natural variability of climate. Agricultural producers are, therefore, one of the first victims of these adverse effects of climate change. As they can no longer predict the cycles of the seasons, agricultural yields are falling with the irregularity of rainfall. With these phenomena, rainfall patterns are being altered, with some regions becoming drier, destroying crops and creating food insecurity.

The impacts of climate change on farmers, fishermen, pastoralists, food sellers, traders, etc.

Climate change impacts human activities. This can be seen in food production systems. Irregular rainfall leads to drought directly affecting crops, forcing farmers to use chemical fertilisers, resulting in soil impoverishment and increased disease.

Lack of grazing opportunities either due to droughts or flooding also causes livestock to die and discourages local wildlife integral to the local biodiversity.

In the fishing sector, climate change is causing the water to warm up, creating conditions that are not favourable to the development of plankton used as food for certain fish. In the long term, this leads to the disappearance of certain species. The heat also causes the migration of certain species, which reduces fishing yields.

Encouraging Civil Society Organisation initiatives to introduce the role of agroecology in climate resilience strategy

According to a programme officer at SECCAR, a three-year pilot programme (2013-2015) to promote food security was undertaken in Togo and Benin. The evaluation of this programme has shown significant progress in promoting food security. However, it was noted that the achievements of this first phase needed to be reinforced to move further towards sustainability of food systems.

A new pilot programme to promote food sovereignty and create a network of agroecological farms was developed to support development initiatives and programmes from a holistic perspective. The idea is to get producers to organise the production and distribution of their products through micro-farms that implement agroecological practices.

The producers involved in this programme are trained, monitored, and encouraged to implement these good practices for three years (2016-2018) and, above all, to promote their implementation amongst other producers in their area.

The aim is to promote a balanced ecosystem, the inclusion of women and young people, and remunerative prices for products through appropriate sales strategies.

JVE: Young Volunteers for the Environment

JVE organises a lot of capacity building for farmers. JVE also has a centre for education and training in agroecology (CEFA), which carries out experiments. To this end, it has carried out a study for integrating agroecology into national policy documents. Beyond these activities, JVE has also organised a policy dialogue bringing together all stakeholders (local authorities, ministry representatives, FAO, ECOWAS, Miss Togo 2019, civil society actors, etc.) to discuss the agroecological transition.

The Executive Director of the Action Centre for Rural Development (CADR) stated that the agrosystem in his area of intervention is characterised by very poor soils with low organic matter content. Poor cultivation practices and soil erosion have resulted in no minerals due to bad weather. All this is aggravated by the consequences of climate change, one of the manifestations of the irregularity of rainfall and seasons.

Agroecology seems to be the most appropriate way to increase communities' resilience to the dramatic effects of climate change. To this end, the CADR has initiated several initiatives in favour of the populations through setting up an agroecological experimentation and demonstration site where producers are trained in crop rotation, bio-fertilisers, B2C commercial strategy, amongst other practices.

There is hope that the evident success of these projects will encourage agricultural stakeholders in Togo. These initiatives prove that climate change does not have to be the end of environmental sustainability and the goal of food security. If acted upon swiftly and with full commitment, agroecology holds the answer.

Uganda

"Climate change is real, it's not political propaganda, it's affecting food security": reluctant government hinders agroecology processes in Uganda.

BY POLYCAP KALOKWERA

11th November 2020 will remain a traumatising date for Mr Albert Mangwi, as it was the day he lost ten acres of crops and livestock to flooding.

"The ground started vibrating at midnight and within 30 minutes my entire

Locals in Adjumani hitch their skirts to avoid the flood water.

house was flooded with water. We fled for our lives leaving everything inside the house and the animals in our backyards," he recounts.

Mangwi, 40, a resident of Oriangwa village in the Adjumani district, says he has lost both his food store and the market garden, so his family now survives at the mercy of neighbours.

"The mayhem of the flood has wrecked our community. The elders told us that the last time they experienced this was in 1960 and it was mild compared to what has happened to us this year," he says.

Government aid gives them an essential supply of beans and maize flour per household as they go into the dry season. However Mangwi fears for his family next yearm as his farmland has been thoroughly washed away with little hope of being ready for the next harvest. He is just one of many affected by the flooding.

Chief Accounting Officer for Adjumani District, Jack Byaruhanga, states that the floods have significantly impacted the region's infrastructures. Small-scale farmers cannot use the roads and bridges to access their land or transport their produce to the market.

"When we talk of climate change now, it is real — unlike when we thought it was political propaganda — and the greatest effect is being felt on agriculture and food security," says Byaruhanga. "Right now we have to lobby for what and how to feed the affected families in the short term."

The impact of the flood is likely to continue for some time as the problem is not about to go away. Like Albert Mangwi, most farmers are not just concerned about today, they are worried about the future. Byaruhanga is aware of the effects of lost crops on the district, but he's at a loss.

"The district doesn't have the capacity to help them since

1960

Last time when a similar disaster was experienced

Most farmers are not just concerned about today, they are worried about the future.

Locals switch from farming to fishing as the water levels rise.

disaster respond is in the hands of central government," he says.

Data from the Adjumani District disaster management committee indicates that Okusijoni and Arinyapi sub-counties were the worst hit. In similar fashion, over 7,000 residents in Pakele and Dzaipi sub-counties struggle to cope with floods after the Tete River burst its banks too.

Climate change and Environmental specialist Descimon Anywar attributes climate changes to the crisis. Claiming that environmental injustices and industrial farming practices have negatively affected the environment, exacerbating the problem.

"We are currently receiving heavy rainfall across the country be it in the hilly, lower lands and in the mountainous areas. In the wetland areas, land has been poorly managed and many people have encroached on the wetland tempering with mother nature," he observes.

He adds that, like many other parts of the country, the current floods in Adjumani result from human activity due to wetland degradation.

"It is just the beginning," he warns, "we are about to experience more of this."

Environmental Activist William Leslie Amanzuru is concerned that the government's agricultural systems are causing more harm to the environment than saving it from the effect of climate change. He urges farmers and policy makers to consider more ecological way of farming to protect the environment and local people.

"The use of chemical fertilisers causes severe water quality problems in rivers, lakes, and the ocean, as well as soil infertility and biodiversity loss," he explains. "In order to avert the effects of climate change, more focus, public funds, and policy measures should be devoted to the agricultural practices that embraces ecosystems in order to avoid these negative environmental impacts."

Small-scale farmer Samuel Nyanzi can testify first hand the benefits of agroecology. He has been practicing sustainable farming in his 16-acre Rural Community Development farm based in Mityana District. He says he embraced agroecology since it allows food production that makes the best use of nature without destroying the same resources.

Nyanzi has since grown a social movement of healthy lifestyle and food choices and increasingly leaning towards producing solely organic foods. His life has changed, and his crops— primarily bananas — are generating higher yields while not using any chemical fertilisers.

Before he embraced agroecology, Nyanzi says he would battle with pests affecting his crops, forcing him to spray pesticides continually, thus harming the environment.

"There was a lot of spraying and we could not grow some crops like cabbages," he says, adding: "Now I don't use them at all because our farm has diversity so there is interaction of microbes which control pests. You can look at our bananas; they are healthy but we don't do much apart from applying bio-fertilisers."

The Commissioner for Water Resources Planning and Regulation Ministry of Water and Environment, Dr Callist Tindimugaya, says the ministry has adopted natural climate solutions of conservation, restoration, and improved land management to prevent further effects of climate change and greenhouse gas emissions.

However, Bagaga Ronald from Eastern and Southern Africa Small Scale Farmers' Forum (ESAFF) is sceptical. He doesn't think the government has the political will to mainstream advocacy of agroecological systems in the media since they prefer marketing hybrid inputs and its practices over agroecological inputs and practices.

"Uganda is a party to United Nations Declaration on the Rights of Peasants 2018 which aims to better protect the rights of all rural populations. However, they have failed to developed the roadmap of implementing the declaration," he says.

He is worried about the limited finance and subsidiaries available to the sector to access the relevant technologies.

"There is a big problem of leadership coupled with no desire to budget and effectively implement policies that is why there is environmental injustices everywhere in the country and food insecurity is sky high" Bagaga adds.

Zambia

Agroecology for Climate Action: situations from the ground

BY TIMOTHY KAMUZU PHIRI

Like many countries around the world, Zambia has not been spared the negative impacts of climate change. Of those most affected, the poor and marginalised communities have been the worst hit and small-scale farmers make up a critical percentage of that demographic.

This article presents three stories of a farmer and advocates who have struggled and helped communities to adapt to climatic hazards.

The Local Climate Change Activist: Lydia Chibambo

Lydia Chibambo is the programme officer at the Zambia Climate Change Network (ZCCN).

When asked whether Agroecology is covered in the Ministry of Agriculture National Adaptation Plan, Lydia explains that it is less explicitly referred to as 'conservation farming', 'organic farming' and 'Climate-Smart Agriculture'.

"Though these terms are indicative of [the government's] acknowledgement of sustainable agriculture, we still need to be clear about what exactly they mean and represent," she says. "If the use of chemicals is allowed and hybrid seeds are classified as 'climate

Lydia in her garden

Lydia conducting raining for local farmers in Shibuyunji District

0.8%
national budget allocation to environmental protection

smart' technologies because they help with combating droughts, then we still have a lot of safety issues to look into."

Lydia explains that if hybrid seeds, artificial chemicals and fertilisers — which alter the nature of the soil and the environment in general — are permissible then we should be concerned about whether the policy truly protects the welfare of the environment and farmers.

In response to whether she believes the government caters for small-scale farmers, Lydia explains the NAP seeks to reach 700,000 small-scale farmers by the year 2025.

"With a national budget allocation of 0.8 % to environmental protection, it is the Ministry of Agriculture NAP and eventually the NACC that is required to speak for the small-scale farmers and highlight their need for more support from the government and other stakeholders," she says.

Lydia is concerned about how many farmers are facing food insecurity after a challenging couple of harvests. Evidence shows that two of the three agricultural regions in Zambia (covering the southwest central and eastern regions) had food security challenges due to poor rainfall and over-reliance on single crop cultivation — maize in particular.

She believes that small-scale farmers are often conflicted and can't fully embrace organic farming.

"The small-scale farmer finds himself/herself in a precarious position. They must grow from local seeds for their own consumption while growing from hybrid seeds for selling, as the Food Reserve Agency will only buy white maize and not coloured maize. When their local maize for consumption runs out they have no choice but to fall on the hybrid maize for food," she states.

... small-scale farmers are often conflicted and can't fully embrace organic farming... They must grow from local seeds for their own consumption ... hybrid seeds for selling, as the Food Reserve Agency will only buy white maize and not coloured maize.

Even the food aid given out by the Ministry of Community Development and Social Services to assist farmers comprises of hybrid seeds and artificial fertilisers. Proof that there is still a long way for agroecological experts and advocates to go to gain a foothold in conventional agriculture and hybrid maize production.

The Pastoralist: Rolf Shenton

Rolf Shenton is the co-founder of Grassroots Trust, a community-led natural resources management organisation established in 2012 that works towards regeneration of the social, economic, environmental is a holistic manner.

"We see climate change as a symptom of biodiversity loss, desertification and fossil fuel use, but in time, as temperatures rise, climate change will become a driver itself in a feedback loop."

Rolf conducts orientation on a field visit

Climate change is given more credit than it deserves instead of focusing on what the real problem is.... What has changed is the farming methods used by small-scale farmers who have abandoned their ancestral and traditional farming practices and replaced them with conventional farming practices which are bad for the soil and environment.

He explains that the soil has 20 times more life forms than the area above the ground. If adequately managed, the soil has a great capacity to hold vital sources of carbon and water.

Rolf applying manure to a field

In fact, it is the combination of carbon and water loss to the atmosphere that collectively brings about global warming. It has led to numerous initiatives to sequester carbon back into the soils through agriculture and forestry, and this is where agroecology and the holistic management of natural resources come in.

Asked about the impact of climate change on agriculture and small-scale farmers, Rolf explains that in certain areas it is poor soil management and grazing systems that are causing low productivity for farmers more than it is climate change.

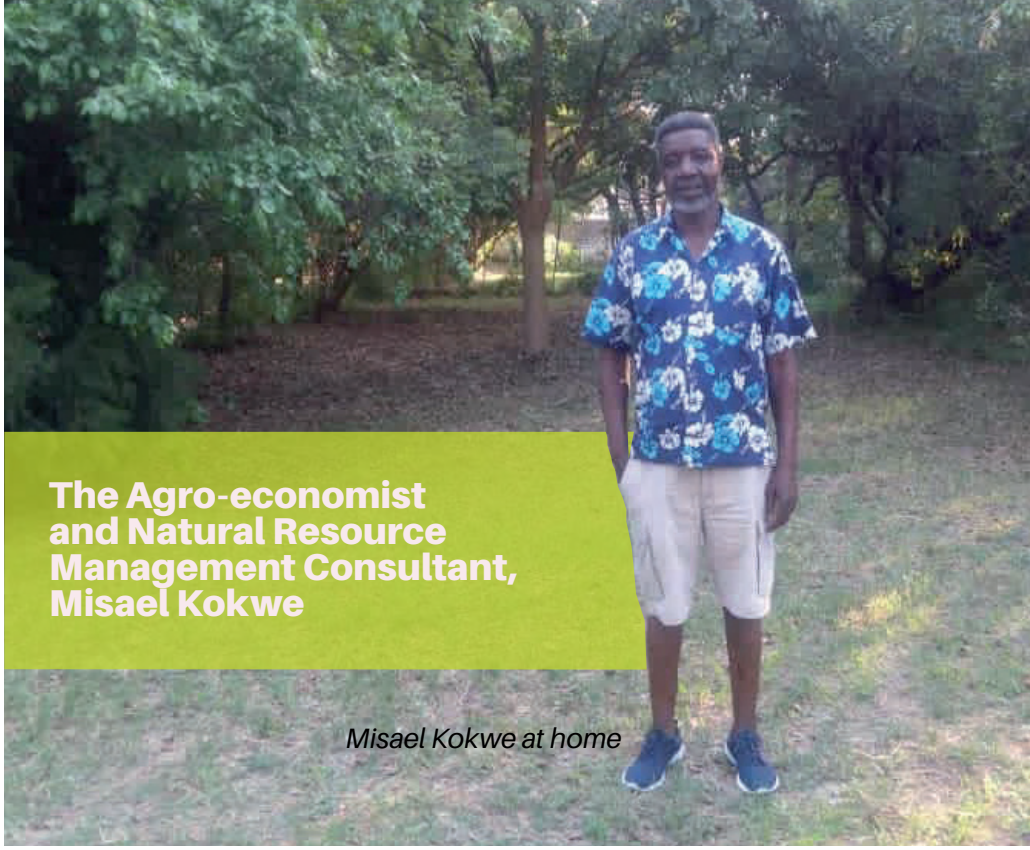
"Climate change is given more credit than it deserves instead of focusing on what the real problem is," he says. "Studies indicate that rainfall patterns in parts of Zambia over the last 80 years have largely remained constant. What has changed is the farming methods used by small-

scale farmers who have abandoned their ancestral and traditional farming practices and replaced them with conventional farming practices which are bad for the soil and environment."

Rolf points out evidence of areas where insufficient rainfall (as a result of climate change) has impacted agriculture, but farmers have maintained relatively high yields due to efficient agroecological practises.

He then points out several incidents where low yields are related to bad farming practices, which in turn are tied to government policy. The Farmer Input Support Programme (FISP) which focus on subsidising artificial fertilisers and hybrid seeds for farmers has contributed to the devastation of soil. Then the Forestry department's bush burning policy has also contributed to poor soil and water management by farmers.

"Why use fire when you have a shortage of water? How do you get more water by using fires?" Rolf asks. "We must replace the burning with hooves and mouths from large herding ungulates, which is the solution to the problem."



The Agro-economist and Natural Resource Management Consultant, Misael Kokwe

Misael Kokwe at home

Misael works for the Ministry of Agriculture and worked on the National Adaptation Plans for Zambia.

The Ministry of Agriculture will soon launch the Low Emission, Climate Resilient Agricultural Development Pathway for Zambia of 2020, and this document will add to the efforts of the NAPs.

"While the NAPs only say what should be done in case of climate variability and change," he says, "the policy will go a step further and show what will happen to the current situation and what can be done to avoid the negative impacts of climate change."

Asked whether the Ministry of Agriculture NAP incorporates agroecology, Misael explains that it does. However, the extent is dependent on which of the two schools of thought you belong to.

"There are two schools of thought in agroecology; those that believe that the switch to sustainable agriculture should be with immediate effect, here and now! Then you have the other school of thought, which I belong to, which believes that the change from conventional farming methods should be a transition. It shouldn't be immediate since there are socio-economic issues related to poor farmers that need to be considered in the process, it is not just about pure science," he explains.

When a poor farmer changes from the use of conventional methods to organic methods, the process is not easy.

"The switch from the use of artificial fertilisers to organic fertilisers comes with a lag time of up to 3 years before the soils can adjust and regain their natural humus composition capable of supporting good yields," he says. "If the government would come in to subsidise the

efforts of small-scale farmers that would be excellent and the switch to agroecology could be immediate."

He is cautious and critical of the Western world and their donors who are sceptical of subsidiaries given to more impoverished farming communities.

"They will be the first to label any aid as 'unsustainable', forgetting that their own farmers are heavily subsidised to help them stand on their own feet. The European Union's annual budget heavily subsidises its farmers, but to do that here for our poor farmers is seen as a problem."

He is dubious about the government's capacity to provide any aid to the small-scale farming sector but believes that setting up credit schemes to encourage farmers to adapt to agroecology would be beneficial.

"Farmers can grow nitrogen-fixing and carbon-sequestering agroforestry trees in their fields and then get paid for the carbon they put into the soil to improve it — that's how you support farmers if you want a quick transition to agroecology! It shouldn't be all talk, it should be more about action from all stakeholders including those pushing for agroecology."

He also believes that the government can help farmers by not politicising the Farmer Input Support Programme (FISP). Instead, it should enable farmers to go organic and use organic manure and bio-pesticides.

"The Musekera Research Institute in Chipata has conducted research and proven Ububa is safe for the soils and environment while remaining effective against aphids and most insect pests, why not support farmers with a project like that?" asks Misael.

... the policy will go a step further and show what will happen to the current situation and what can be done to avoid the negative impacts of climate change.

... the change from conventional farming methods should be a transition.

"The switch from the use of artificial fertilisers to organic fertilisers comes with a lag time of up to 3 years before the soils can adjust and regain their natural humus composition capable of supporting good yields," he says. "If the government would come in to subsidise the efforts of small-scale farmers that would be excellent and the switch to agroecology could be immediate."

Zimbabwe

How Agroecology could Help Smallholder Farmers in Zimbabwe Adapt to Climate Change

BY JEFFREY GOGO

70%
yield decline by drought

Honeyland, the conservation-themed film, which was up for an Oscar this year, places smallholder farmers at the centre of the fight to save nature from unsustainable market forces. Village-driven conservation gels well with Zimbabwe, an agro-based economy where 60% of the population lives in rural areas, mostly employed as smallholder farmers. With seven million Zimbabweans currently in need of food aid, rural farmers must take up climate adaptation initiatives and partner with government and civil society in order to turn the situation around.

Zimbabwean farmers are contending with a number of climatic challenges. In the last hundred years, the country has seen a rise in average temperature, a significant variation in rainfall patterns, and more frequent droughts and heavy rainfall events. In fact, in some areas, droughts have become commonplace, sometimes happening in back-to-back seasons.

Droughts have become commonplace, sometimes happening in back-to-back seasons.

Drought is responsible for yields declining by 70% among smallholder farmers, says climate expert and Oxfam Zimbabwe programme manager, Dr Leonard Unganai.

"Future climate projections suggest that the country is likely to warm up even more and the southern half of the country is likely to experience reduced rainfall, which could worsen food insecurity in the country," he says.

Deforestation and a return to sustainable land management is protecting a community in Chatsworth

Faced with these conditions, smallholder farmers in Southdale near Chatsworth, about 240km south-east of the capital Harare, have united in discouraging short-term income-generating activities that destroy the environment.

Piniel Chekure (60) shared some of the community-driven projects.

"We team up to campaign against deforestation as well as allocating each other duties to fill up dongas. Ploughing on areas that wash away the soil is discouraged. People had previously shunned the digging of contour ridges as a colonial whip, but we have started doing this again to preserve water and conserve the soil for better yield," he explained.

There is still a mixed application of synthetic and organic fertilisers in Southdale and most parts of Zimbabwe. "We fetch humus and put in cattle pens where it mixes with cattle dung before use," said Chekure. "Collecting humus from the forests helps increase the yield," he observed.

Tackling the extremes of cyclones and droughts in Chimanimani

In Chimanimani, a rural community in the country's east, Towards Sustainable Use of Resources Organisation (TSURO) helps small-scale farmers regain their livelihoods following the devastation caused by tropical Cyclone Idai in 2019. Tsuro Trust splits farmers into groups of 20 to 30, focusing on areas such as seed study and climate change action.

"We have various trainings covering aspects such as climate change and watershed management; agroecology; seed production; holistic land and livestock management; bee keeping; small livestock production and many others," said Solomon Mwacheza, the programmes coordinator.

TSURO Trust's agroecology sessions convene traditional leaders, agriculture extension workers, youths, and smallholder farmers who further spread the information. In-between weekly to fortnightly study groups, participants dig pits and swales to harvest water and stop soil erosion.

"This enables farmers to utilise most of the little rainfall. They also protect fields in the face of extreme weather events such as cyclones or heavy thunderstorms," Mwacheza elaborated.

"The integration of livestock and plant production is also indispensable. Animals provide fresh dung, urine and milk to make these fermented fertilisers. Without livestock it becomes very difficult to make bio-fertlisers that require

...participants dig pits and swales to harvest water and stop soil erosion.

"This enables farmers to utilise most of the little rainfall. They also protect fields in the face of extreme weather events such as cyclones or heavy thunderstorms,"

large volumes of manure for the fermentation to take place," he added.

Migration for work is discouraging farmers from investing in their smallholdings

Zimbabwe's government has long emphasised an agroecological response to climate change in policy documents going back at least six years. In Zimbabwe's National Climate Response Strategy (2014), the Ministry of Environment, Water and Climate acknowledge indigenous knowledge systems as indispensable for maintaining biodiversity and places conservation agriculture at the centre of its adaptive strategy. Also, there is a focus on expanding small grain production, which suits a warmer climate, rearing of small livestock, and massive afforestation.

The country's demographic distribution, however, does not always favour the implementation of agroecological methods. Rural-to-urban migration and the trek for jobs to neighbouring South Africa usually take men out of the village, leaving women in charge of the land and the family. Instead of having extra income to outsource labour, some of these women survive on maricho to spend less time in their fields.

Labour intensive conservation without support has caused controversy in local communities

Civil society-driven agroecological initiatives that require more labour are adopted for the inputs and food handouts attached to them but discontinued as soon as the organisation leaves. For example, Pfumvudza, a new conservation practice, modified another initiative known as Dhiga Udye (Dig and Live). The practice involved digging holes, rather than ploughing, to preserve the little moisture available for the plants. However, some village farmers changed the code name to Dhiga Ufe (Dig and Die) in protest of the labour involved.

"Conservation agriculture has been criticised for being too labour intensive for vulnerable groups especially women, the sick, the elderly and the disabled. Small grain and small livestock production as well as afforestation projects have all targeted women, but without the necessary support system," notes Zimbabwe's National Climate Response Strategy.

However, government-subsidised mechanisation has exclusively targeted commercial farmers, with recurring outcries of corruption. In subsequent smallholder initiatives like Pfumvudza, there has been an emphasis on lessening the labour involved.

Policymakers and CSOs still argue that indigenous knowledge of the elderly is key to the future of agriculture

The policy document acknowledges the advanced age and home confinement that excludes the elderly – another dominant demographic in the running of the village household – from participating in development initiatives. However, it stresses that their indigenous knowledge and handed-down coping strategies, married to conventional technologies, will be critical for surviving a warmer climate.

Deputy director of Climate Change Management in the Ministry of Environment, Kudzai Ndidzano, says a forthcoming policy would be used to mobilise resources from various climate financing architectures.

"The country is in the process of developing its National Adaptation Plan to facilitate climate change mainstreaming and reducing vulnerability to the impacts of climate change," he said.

Zimbabwe's ratification of all United Nations Framework Convention on Climate Change (UNFCCC) instruments has qualified the country for climate-related funding, including a recent US$26 million boost from the Green Climate Fund. The message is a heavy role for smallholder farmers, gender mainstreaming, and low-carbon development.

In the coming weeks, the government will launch the Climate Change Mainstreaming Communication Strategy.

"The strategy seeks to strengthen the whole government approach to communicating and raising awareness of climate change issues towards building resilience, climate proofing communities and livelihoods as well as vulnerable socio-economic sectors," Ndidzano explained. "The strategy aims to foster behavioural change critical in advancing the climate change agenda along the lines of adopting and innovating green interventions and technologies, adaptation and exploring mitigation options."

An open mind by all Zimbabwean stakeholders to combat climate change through agroecology sparks hope

Gertrude Pswarayi-Jabson, country director at Participatory Ecological Land Management (Pelum Zimbabwe), said that a recent joint study conducted with the participation of AFSA on the opportunities to roll out a national campaign on agroecology for climate action made exciting observations.

"The study revealed that Zimbabwe's operating context and existing policies present a conducive environment for a multi-stakeholder approach to advance agroecology as the national strategy for climate change adaptation as well as the guiding vision to achieve national food security and nutrition targets."

She said her organisation has been working with farmers all around Zimbabwe to produce food in a

sustainable way. Farmers have been trained on how to enrich their soils, retain soil moisture, save seed, and make bio-fertilisers, among other practices.

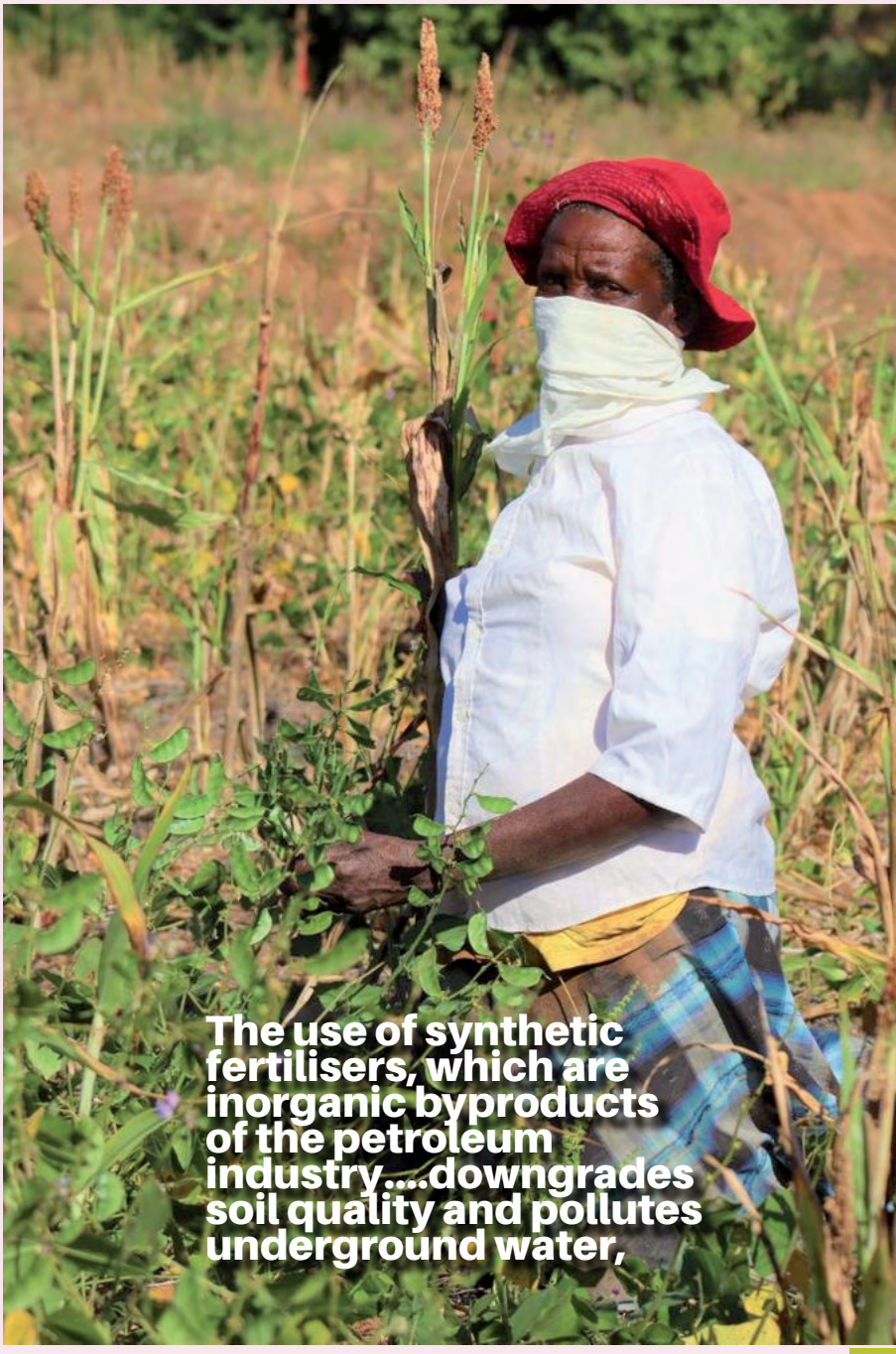
Pfumvudza to end food insecurity

The climate-proofed Presidential Inputs Scheme, code-named Pfumvudza, aims to lift half the country out of chronic food insecurity and monetise rural production. Named after the Shona word for "spring", Pfumvudza was first proposed by conservation agriculture researchers, Foundations for Farming.

Under the scheme, farmers dig planting stations over an unploughed 1/16 hectare, with a view of preserving nutrients and water over a smaller area and eliminating the extensive labour that usually discourages conversation agriculture. An optimal plant population of 44,000 from this area is expected to feed a family of six throughout the year and leave more maize and soya beans for the market.

The government will provide seed and fertilisers needed by the farmers. Beyond meeting the family's nutritional requirements in a country where 20% of children are undernourished with life-long implications, the yield can also diversify rural production with chicken feed, for example, made out of the surplus. According to FAO and UNICEF, higher yields and market synergies will sustainably empower the 4.3 million villagers who urgently need food aid.

"The innovation that Pfumvudza brings is the intensification of production over a small area which could be beneficial to resource constrained households in terms of draught power, labour and inputs," explained Dr Unganai, the Oxfam Zimbabwe programme manager. "The Pfumvudza idea resonates with adaptation strategies already being promoted among smallholder farmers. When it rains, all the water is not lost," he said.



The use of synthetic fertilisers, which are inorganic byproducts of the petroleum industry....downgrades soil quality and pollutes underground water,

Experts advise government on "context-specific adaptation" to ensure success.

Dr Unganai, whose organisation has worked with small-scale farmers

throughout Zimbabwe, emphasises the need for context-specific adaptation beyond national programmes like Pfumvudza. "The rural context is not homogeneous, and that diversity should be reflected in our adaptation policy making," he opined.

We need to understand the climate and soils of a place so that we implement appropriate systems.

One initiative that will help the government avoid maladaptation by homogenisation is the remapping of agroecological zones: a classification of Zimbabwe's farming regions based on soil fertility and rainfall activity. There are five such regions, with region one being the best suited for agriculture and region five the worst. With climate change itself having shifted the zones over time, noted Dr Lazarus Chapungu, an environmental lecturer at Great Zimbabwe University.

"We need to understand the climate and soils of a place so that we implement appropriate systems. For example, it doesn't make sense to continue to grow maize in dry lands. Smallholder farmers have continuously done this and the crop has failed. With new maps in place, areas of 650mm of rain will need to grow traditional grains and government should stop giving unsuitable inputs to dry areas," he said.

Climate change has .... left a trail of destruction. The effects extend to health, ... This incapacitates farmers as they turn to health issues rather than productivity. The most sustainable policy strategies will have to develop from the bottom up.

However, Pfumvudza's downside is its essential use of synthetic fertilisers. "The use of synthetic fertilisers, which are inorganic byproducts of the petroleum industry, has a plethora of long-term effects on the environment as it downgrades soil quality and pollutes underground water," Dr Chapungu stated.

Dr Unganai referred to a global push against increased use of synthetic fertilisers and chemicals in agriculture to respond to health and environmental concerns.

Climate change has been most adversely felt in the rural areas. Frequent extreme events such as drought, flash flooding, and tropical cyclones have left a trail of destruction. The effects extend to health, with malaria, for example, becoming more widespread. This incapacitates farmers as they turn to health issues rather than productivity. The most sustainable policy strategies will have to develop from the bottom up.