



**AGROECOLOGY:
A FOOD AND FARMING
FRAMEWORK FOR
TRANSFORMATIVE CHANGE
– A SYNTHESIS REPORT –**



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About this paper

The Southern African Faith Communities' Environment Institute (SAFCEI) commissioned a series of research papers focused on agroecology in South Africa, Tanzania, Zimbabwe and Zambia. This paper provides an overview of the state of the agri-food system in these four countries and the potential that an agroecological framework for the system provides. The desktop research was supported by primary research in the form of eight case studies. A series of key findings are provided. SAFCEI aims to use this work to further deepen its understanding of the linkages between climate and food justice in Africa and to support the generation of advocacy material and practical recommendations it can offer to its members.

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LIST OF ACRONYMS

AFSA	Alliance for Food Sovereignty in Africa
FAO	Food and Agriculture Organization (United Nations)
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
GoZ	Government of Zambia
HLPE	High Level Panel of Experts
IPCC	Intergovernmental Panel on Climate Change
KATC	Kasisi Agriculture Training Centre
PGS	Participatory Guarantee System
RSA	Republic of South Africa
SAFCEI	Southern African Faith Communities' Environment Institute
SAT	Sustainable Agriculture Tanzania
SKI	Seed and Knowledge Initiative
TOAM	Tanzania Organic Agricultural Movement
URT	United Republic of Tanzania
ZIMSOFF	Zimbabwean Smallholder Organic Farmers Forum
ZOPPA	Zimbabwe Organic Producers and Processors Association

EXECUTIVE SUMMARY

Agroecology provides a holistic framework for food and farming systems that could help solve current challenges of inequality, hunger, poverty and climate change.

Many of these challenges result from the imposition of a worldview that prioritises the economy over people and planet and private capital over collective wellbeing.

The globalised agri-food system model epitomises this worldview. It is based on the industrial model of production with distribution, marketing and retail occurring within an increasingly uniform, single market that is significantly exposed to global shocks (Borsellino et al., 2020).

The liberalisation of global food markets has created an environment of competition, and the winners are those able to deploy economies of scale (Borsellino et al., 2020). It is an extractive model that has driven biodiversity loss, contributes significantly to greenhouse gas emissions and has displaced farmers from their traditional roles as guardians of the agrobiodiversity we are so dependent on.

It is recognised that we need a just and sustainable agri-food system. SAFCEI advocates for agroecology as an appropriate framework for just and sustainable food and farming systems.

SAFCEI understands such a system to be one that can produce a range of nutritious foods accessible and affordable to even the most vulnerable, that farms animals ethically, that empowers women, and that restores the health and diversity of life on Earth.

A few tweaks to the current system will not result in just and sustainable food and farming systems. We need to reconceptualise the agri-food system, which lies at the heart of our daily lives, and our survival. The International Forum for Agroecology notes that (Food Sovereignty, 2015):

"Agroecology is the answer to how to transform and repair our material reality in a food system and rural world that has been devastated by industrial food production and its so-called Green and Blue Revolutions."

This is because agroecology views the agri-food system holistically – it emphasises sustainable production techniques, it focuses on human and social values, it reorientates markets towards those that deliver wellbeing, and it supports the building of resilience at the farm and community level.

Agroecology also considers cross-cutting issues such as gender, youth, climate change, conflict and more.

This synthesis report provides key findings from the four country-level studies using case studies to explore eight initiatives that use agroecological principles to guide their work. Key findings relate to what is needed to scale agroecology across the continent. These are reorientating markets through collective organisation, co-creation and sharing of knowledge, networking and social movement building, and addressing cross-cutting challenges.

Key findings

- Government support in all four countries for the **industrial agri-food model is damaging human and ecological health**. Ecosystem degradation and biodiversity loss is escalating with land and water systems threatened. This is extremely concerning because low levels of ecosystem resilience reduce governments' ability to support community-level adaptation to climate change.
- The agri-food system in all four countries is characterised by **consolidated market share**. Input markets are dominated by multinational corporations, and increasingly retail markets are controlled by corporate players. The need to build agroecological markets is clear. Farmers need an enabling ecosystem. All the case studies across the four countries use participatory guarantee systems (PGS) to create local markets that generate multiple benefits.
- There are **very high levels of hunger and malnutrition** in the four countries, averaging more than 50% of the population in all four. The high levels of child stunting are of extreme concern.
- The eight case studies illustrate the **viability of agroecological production** to maintain agrobiodiversity, produce crop and thus nutrition diversity, build resilience to shocks (such as droughts) and maintain soil health.
- All the case studies illustrate the **emancipatory value of co-creating and sharing knowledge**. This includes through training, awareness-raising campaigns, educational curricula, research (both farmer-led and needs-based scientific and academic research) and innovative knowledge sharing platforms. The emphasis is on placing the farmer at the centre, included in research, decision making and dissemination of knowledge.
- **Networks and social movements are key to any transition** as they hold the political space and can advocate collectively for enabling policy or against harmful laws. Working from the bottom-up, they speak with the voices of farmers and consumers. They also play a role in preventing the co-option/narrowing of the agroecological approach.



1. INTRODUCTION

Africa is a continent characterised by diversity – in its peoples and cultures, landscapes, plants and wildlife, and in its food and farming systems. It is also home to a diversity of indigenous ways of being in and knowing of the world.

These ways of being and knowing focus on collective societal wellbeing supported by living ecosystems rather than on the notion of inequitable economic prosperity rendered through marginalising and extractive business practices.

Africa would appear to have everything needed to sustain life for all, but many countries face deepening challenges of hunger and malnutrition, radical biodiversity loss and soil degradation, social unrest and economic failure.

This results from historical and modern drivers that strip away ways of sustainable knowing and being, replacing them with false notions of progress and modernity built around a neo-liberal economic model that marginalises people and planet in search of profits.

This model is epitomised in the industrial food system that destroys ecosystems, diminishes biodiversity and marginalises farmers and consumers. It concentrates ownership of food and farming systems – from seed and food production through to marketing and retail – in the hands of a few, to the detriment of the many.

Countering this model and its negative impacts requires a holistic model. Agroecology provides such a framework, one that acts at the three touchpoints of social, environmental and economic health.

The International Forum for Agroecology states that “agroecology is the answer to how to transform and repair our material reality in a foodsystem and rural world that has been devastated by industrial food production and its so-called Green and Blue Revolutions” (Food Sovereignty, 2015).

SAFCEI understands a sustainable and just agri-foodsystem to be one that produces a range of nutritious foods that are accessible and affordable to even the most vulnerable, one that farms animals ethically, one that empowers women, and one that restores the health and diversity of life on Earth.

SAFCEI therefore supports agroecology as an appropriate framework for food and farming systems.

1.1 About this paper

SAFCEI undertook four country-level studies in South Africa, Tanzania, Zimbabwe and Zambia to better understand how agroecology could act as a transformative lever for transitioning towards a sustainable agri-food system. This work builds on SAFCEI studies undertaken in 2021 on the degree of integration of food system and climate change governance in the four countries, and hence their capacity

to combat hunger and malnutrition in a context of a changing climate.

This paper describes agroecology as a transformative framework for food and farming systems, and it uses the country-level studies to explore specific aspects that are necessary to enable a transition towards a sustainable and just agri-food system.

These aspects are collective organisation and access to appropriate markets, co-creation and sharing of knowledge, and networks and social movements. Two case studies were undertaken in each country.

- In South Africa, on Ocean View Organic Farmers Cooperative and Bafo and Busi Organic Farming Pty Ltd.
- In Tanzania, on Sustainable Agriculture Tanzania (SAT) and the Tanzania Organic Agriculture Movement (TOAM).
- In Zambia, on Loctaguna Organics and a Kasisi Agricultural Training Center (KATC) farming collective.
- In Zimbabwe, on the Zimbabwean Smallholder Organic Farmers Forum (ZIMSOF) and the Zimbabwe Organic Producers and Processors Association (ZOPPA) Trust.

This synthesis report outlines common characteristics and outcomes of the agri-food system in the four countries before exploring key elements needed for a transition towards a just and sustainable system. It uses evidence from the case studies to illustrate the multi-layered impact of agroecology.



2. COMMON CHARACTERISTICS OF AGRIFOOD SYSTEMS

South Africa, Tanzania, Zimbabwe and Zambia – despite different histories, geographies, politics and cultures – face many of the same challenges, brought about by the same causes. All four countries support the industrial agri-food model through national policy, subsidisation, research and extension services, and other direct and indirect support. This model is characterised by high levels of natural resource extraction, concentrated market power, intensive use of synthetic external inputs (and increasingly patented bioengineered products), and globalised distribution chains. At the global level, the outcomes of this model are growing

rural poverty, soil degradation, poor health and biodiversity loss (Wezel et al., 2020), deforestation at scale, water scarcity and high levels of greenhouse gas emissions, which are driving climate change (Food and Agriculture Organization [FAO], 2018).

These outcomes are found in all four of the countries studied.

2.1 A degraded base of production

In all four countries, the base of production is deteriorating. In South Africa, 60% of land is degraded (Mani et al., 2021) and 22% of ecosystem types are threatened (Republic of South Africa [RSA], 2021).

South Africa is likely to face a water deficit of 17% by 2030 (Roodboi, 2020), and the impacts of climate are already being felt.

Tanzania is one of 12 mega-diverse countries in the world (United Republic of Tanzania [URT], 2015), but this is rapidly being eroded. It had lost a third of its key ecosystems by 2015 and is likely to lose all its forests by 2080 if deforestation trends are not reversed (URT, 2015).

Zambia is losing 6% of its forests each year due to the expansion of agriculture and land is rapidly degrading due to the uptake of monocropping and synthetic agrochemicals (Mabeta, Mweemba & Mwitwa, 2018).

In Zimbabwe, wetlands are deteriorating and disappearing and about 330 000 hectares of forest cover is lost each year due to the expansion of agriculture, mining and infrastructure development (Government of Zimbabwe [GoZ], 2021). The Forestry Commission has warned that Zimbabwe will likely have to import timber by 2030 if deforestation is not stopped (The Zimbabwean, 2019).

In all four countries, the type of agriculture practised is noted as a primary driver of ecosystem degradation (URT, 2015; Mabeta, 2018; GoZ, 2021; RSA, 2021). The industrial agricultural model uses harmful agrochemicals, monocropping, intensive livestock production and heavy tilling – all of which degrade soils and pollute water bodies (Benton et al., 2021).

It also fragments or destroys the ecological corridors and habits necessary for species to survive, thrive and play their role in maintaining ecosystem health (URT, 2015). The promotion of hybrid seeds (normally for staple and cash crops) in this model is linked to a rapid decline in the use of indigenous and farmer seeds, and thus a rapid decline in overall seed diversity in a country (URT, 2015), which negatively impacts on opportunities for nutritional diversity.

This degradation also takes place within increasing corporate control of input supply and distribution, marketing and retail channels.

2.2 Concentrated power in agri-food systems

Control of the food system also results in control over what is produced, and how it is produced – and ultimately what we eat. At the global level, control of the agri-food system is concentrated in the hands of fewer and fewer multinational companies. These companies influence the frameworks related to the regulation of food trade and food safety, as examples. When supported by large donor organisations and funds from philanthropocalitalists, their profit-driven agenda is impressed on national-level policy related to food and farming systems, including research and extension services.

South Africa, Tanzania, Zambia and Zimbabwe are not exempt from the effects of increasing marketing consolidation within their food and farming systems.



The South African market is highly concentrated throughout the value chain. Two companies dominate the certified seed and germplasm market, four control the fertiliser market, three own the bulk of the animal feed market, five have majority shares in processing and manufacturing and four control the retail market (Greenberg, 2016).

About 80% of certified seed supply in Tanzania is from private companies; 85% of that is imported seed (AECF, 2016). Multinational Bayer-Monsanto, Pannar and Pioneer Hi-Bred hold roughly 25% each of the market (AECF, 2016). The fertiliser market is almost entirely owned by three multinational corporations and most agrichemicals used in the country are imported by private companies (AECF, 2016). And supermarkets are starting to gain market share in urban areas, according to the International Trade Administration, 2021.

The same is true in Zambia where foreign supermarket chains are gaining market traction in urban areas (Mwanamwenge & Harris, 2017). Zambia's input (seed and agrochemical) market is dominated by multinational corporations like Bayer-Monsanto (Minnaar, Duvenhage & de Villiers 2019). In Zimbabwe, it is mostly corporate companies that supply certified seed, fertilisers and agrochemicals, most of which are imported.

The result is that farmer-managed seed systems, which are still the dominant source of seed in African countries, are being undermined and marginalised. This is despite their proven ability to provide access to appropriate seed in desired quantities in a timely manner. In other words, they are affordable and accessible to small-scale farmers.

The rapid deterioration of the agricultural base of production is not unrelated to concentration of ownership of food and farming systems. It is the 'modernistic' framing of food that is at the heart of the many challenges faced by countries around the world.

In the industrial model, food is viewed as a commodity and not as an outcome of a synergistic relationship between farmers and the Earth bound within cultural, spiritual and material ways of being and knowing the world.

African food and farming systems have over the past few centuries been steadily dismantled by colonial-era (and in South Africa apartheid-era) policies (Mwanamwenge & Harris, 2017).

The perfect example is the introduction of maize to the continent, initially by slave traders who used it as a durable gain that was easily transportable and then by colonial administrators to feed workers in cities and mining areas (Mwanamwenge & Harris, 2017). Today, availability of maize is used as an indicator of food security at the national level in many African countries despite evidence that the focus on its production is directly related to lower nutritional diversity (Mwanamwenge & Harris, 2017).

Following independence, Tanzania, Zambia and Zimbabwe had structural adjustment programmes imposed on them as loan conditionalities by the World Bank and International Monetary Fund (Eskola, 2005).

Regulation of input and output prices was undone, public enterprises were restructured and government intervention in the agri-food sector limited to make way for private companies (Eskola, 2005). These programmes enabled the opening of markets to global trade and radically decreased public spending on public goods – like the food system. Combined with poor policy implementation and insufficient capacity and budget, the ability of countries' agri-food systems to provide nutritious food has declined over the past few decades.

The adoption of a liberal capitalistic economic model that places the private sector and the economy at the apex of concerns – instead of people and planet – has further diminished the capacity of farmers and of the Earth.



3.COMMON OUTCOMES OF THE INDUSTRIAL AGRI-FOOD SYSTEM

Expected outcomes of a 'healthy' agri-food system include sufficient, nutritious, affordable and accessible food. South Africa, Tanzania, Zambia and Zimbabwe's agri-food systems are not able to do this because they are 'captured' in the modernistic paradigm. There is therefore widespread hunger and malnutrition and low levels of resilience or adaptive capacity to climate change in all four countries.

3.1 Widespread hunger and malnutrition

In South Africa, almost 50% of South Africans were categorised as food insecure before Covid-19 (Pereira, 2014). In April/May 2021, the National Income Dynamics Study – Coronavirus Rapid Mobile Survey found that

2.3 million households (of about 17.6 million) reported child hunger with 620 000 households reporting that a child was hungry almost every day. Food security at the household level is to a large degree determined by the ability to buy food (Battersby, 2011).

About 56% of Tanzanian's are classified as moderately to severely food insecure with almost 30% of infants not consuming any fruits or vegetables (SAFCEI, 2021). About 30% of children under the age of five are stunted (SAFCEI, 2021) and malnutrition is responsible for 33% of deaths in this age category (Borgen Project, n.d.). In Zambia, dietary diversity has rapidly declined with 60% of poor households eating less than 5 of 12 food groups,

and about half of the population experiencing hunger at some point in the year; 40.1% of children under the age of five were stunted in 2017 (Mwanamwenge & Harris, 2017).

Zimbabwe is one of the world's top six countries experiencing a food crisis (Tinarwo, 2021), and, according to government reports, only 2.1% of children under the age of five eat a minimum acceptable diet (GoZ, 2022).

In all four countries, the agri-food system is exposed to external shocks from volatile global markets, including price shocks from commodity trading, disruptions to supply chains because of Covid-19 lockdowns, and escalating input prices, particularly of fertilisers.

The populations of all four countries are undergoing the nutrition transition away from foods high in fibre and nutrients to those with higher fat and protein content and that tend to be more highly processed and have more calories (Pereira, 2014). The transition is accompanied by an increase in obesity and overweightness that is linked to the growth in non-communicable diseases (Pereira, 2014).

Hunger results from an inability to buy food in many cases or an inability to access nutritious food. It is therefore clearly linked to economic poverty. Known drivers of poverty are limited access to education and livelihood opportunities, insecure work and low wages, and discrimination (historical and current) that excludes people from resources, such as land (GSDRC, 2016).

Market structures that entrench the distortion of benefits arising from natural resource use can entrench poverty (GSDRC, 2016). The World Bank (2006) notes that "economic, political and social inequalities tend to reproduce themselves over time and across generations, forming 'inequality traps'".

The negative impacts of climate change are being more frequently felt on the African continent, making the building of resilience and adaptive capacity a key priority for governments. Their challenge is how to do this in a context of poverty, hunger and a degraded resource base. All four countries have low levels of resilience, particularly at the community level, and yet continue to deploy the modernistic paradigm despite its known contribution to the current climate crisis.

3.2 Lowered resilience to climate change

The industrial agricultural model contributes significantly to climate change, while reducing farms and their surrounding ecosystems' ability to adapt to climate change.

About 75% of greenhouse gas emissions originate from the global agri-food system and 39% of that originates from the production and use of agrochemicals (FAO, 2021), like synthetic fertilisers, pesticides and herbicides. The balance is from changes in land use (38%) and distribution of food products (FAO, 2021). Healthy ecosystems are needed to adapt to climate change.

The International Panel on Climate Change (IPCC) noted in 2007 that agricultural productivity in sub-Saharan Africa would likely decline from 21% to 9% by 2080 (SAFCEI, 2021). It also noted that most communities do not have the necessary safety nets to adapt. In addition, the rapid loss of biodiversity in all four countries limits the ability to make new medicines and breed new crops and animals able to withstand new climatic conditions.

South Africa, with large swathes of land degraded and growing water scarcity, is particularly vulnerable (SAFCEI, 2021). Combined with high levels of poverty and unemployment, adaptation is critical. In Tanzania, annual rainfall is decreasing significantly, and average annual temperatures have increased by 1% since 1960 (SAFCEI, 2021).

Mean annual temperatures in Zambia have increased by 1.3 degrees Celsius since 1960 and the country has been affected by extended droughts and flooding (Food, Agriculture and Natural Resources Policy Analysis Network [FANRPAN], 2017). Zimbabwe was among the world's 10 countries most affected by climate change in 2019, according to the 2021 Global Climate Risk Index (Newsday, 2022).

The 2019 EAT-Lancet Commission noted that "food is the single strongest lever to optimise human health and environmental sustainability on Earth" (in Sulcas, 2022:1). It can only do this if it regains its rightful role as an outcome of a synergistic relationship between people and planet, as a cultural and spiritual expression and as a right and not something to be earned.



4. AGROECOLOGY AS A TRANSFORMATIVE RESPONSE

Agroecology is a transformative approach to farming and food systems in that it can deliver nutritious, safe and affordable food for all, without damaging the planet (Agroecology in Action, 2022). This approach is an innovative way of combining science, lived experience and local and traditional knowledge to “study, design, manage and evaluate agricultural systems that are productive but also resource conserving” (Agroecology in Action, 2022:1). For those that practice and/or advocate for agroecology, the approach also encompasses social and political aspects.

As a set of practices, agroecology uses natural processes to create beneficial biological interactions and synergies

that enhance farming productivity while minimising damage to the environment (Wezel et al., 2020). It also combats the effects of climate change by lowering greenhouse gas emissions (mitigation) and building more resilient farming systems (adaptation).

As a social movement, it works to make the agri-food system more equitable, inclusive and fair for both producers and consumers (Wezel et al., 2020).

There are 10 elements of the agroecological approach, decided on through a global multi-stakeholder consultation process undertaken by the FAO in 2014.

The elements of agroecology are diversity, co-creation of knowledge, synergies, efficiency, recycling, resilience, human and social values, culture and food traditions, responsible governance, and circular and solidarity economy (Wezel et al., 2020).

The 10 elements can be divided into contextual features (human and social values, culture and food traditions), characteristics of and practices within agroecological systems (diversity, synergies, efficiency, resilience, recycling, co-creation and sharing of knowledge), and enabling features (responsible governance, circular and solidarity economy) (FAO, 2018).

The FAO (n.d.:1) notes that:

“[Agroecology places an emphasis on the] aspirations and needs of those who produce, distribute and consume food at the heart of food systems”.

This means focusing on dignity, inclusion, equity and justice by building autonomy of farmers and communities, promoting the right to food and ensuring access to genetic resources (FAO, n.d.). There is a particular focus on creating opportunities for women and youth and ensuring that they are included in decision making (FAO, n.d.).

Elements of Agroecology



Efficiency - using innovative practices to produce more, using less external resources



Diversity - supporting diversification for food and nutrition security while protecting and enhancing natural resources



Co-creation of knowledge to create relevant and context-specific appropriate responses to local challenges



Synergies that enhance key functions across food systems



Culture and food traditions - supports health, diverse and culturally appropriate diets



Human and social value - improving rural livelihoods and social wellbeing



Builds resilience of communities and ecosystems



Recycling of inputs and resources that lowers costs and generates ecological benefits



Circular economies that connect producers and consumers to provide innovative solutions to living within planetary boundaries



Land and natural resource governance that is responsible and effective at all levels



4.1 What would a sustainable agri-food system look like?

The elements of agroecology provide a contextual, flexible framework for the agri-food system encompassing social, ecological and economic elements. In particular, a sustainable agri-food system needs to:

- Encourage and support the use of local and improved crop varieties and livestock breeds to **enhance genetic diversity**. This work must be done in collaboration with farmers to ensure alignment to their needs and to build resilience.
- **Eliminate agrochemicals** in production, along with other technologies that pose a risk to human and environmental health, such as genetically modified crops and insects.
- Focus on more **efficient use of resources** to make the most of what we have and ensure that resources are available to future generations, and to lower farmers' dependence on corporate inputs.
- Embrace practices that **conserve and enhance biodiversity, sequester carbon and ensure the availability of potable water**.
- **Acknowledge agricultural heritage systems** that foster social cohesion; this means recognising and actively applying Farmers' Rights and including farmers in co-production of knowledge.
- **Reduce the carbon footprint** of production, distribution and consumption, which will also reduce soil and water pollution.

- Actively **strengthen adaptive capacity** within communities to external shocks, including climate change.
- **Promote democratic governance of natural resources** to generate an equitable and inclusive system.

In addition, the High Level Panel of Experts on Food Security and Nutrition (HLPE) note that a large-scale transition towards a sustainable food system rests on several cross-cutting initiatives. It notes that these are (HLPE 2019):

- Inclusive and participatory forms of innovation governance.
- Information and knowledge co-production and sharing among communities and networks.
- Responsible innovation, such as open knowledge-sharing platforms, that steers innovation towards social issues.

4.2 Agroecology in South Africa, Tanzania, Zambia and Zimbabwe

There is significant civil society organisation support for agroecology in the four countries, but little policy support. Only in Tanzania was evidence found of government focusing on agroecology through a project in the Makete District focused on rehabilitating farmland using agroecological practices (Alliance for Food Security in Africa [AFSA], 2021). And the Tanzanian government has adopted the East African organic label Kilimohai to provide assurance of sustainable production (SwissAid, 2020).

Many agroecological projects, including research, are undertaken by non-governmental organisations or by networks. AFSA, a continental network organisation, actively campaigns for government support for agroecology. Its last campaign focused on “creating an understanding of existing climate change-related policies, plans, strategies, regulations and frameworks at national level” and identifying entry points for mainstreaming agroecology into policy frameworks (AFSA & Zambian Alliance for Agroecology and Biodiversity, 2021:1).

The Agroecology Fund is supporting the regional Seed and Knowledge Initiative (SKI) and South African-based Biowatch to work with local partners in Malawi, South Africa, Zambia and Zimbabwe on a project titled 'Collaborating towards landscape level agroecology in Southern Africa'.

There are also several organisations working on agroecological curriculums in the four countries. In Zambia, KATC offers accredited agroecology training, and there are examples throughout Africa of agroecology being accepted into curriculums. In Zimbabwe, the Fambidzanayi Centre of Permaculture offers an accredited Diploma in Agroecology course and the study of agroecology and of indigenous food crops is now part of the curriculum of agricultural colleges (AFSA, 2021). Zimbabwe is the only country that has adopted a food systems approach to climate change, although it lacks budget and implementation capacity to realise its vision.



5. KEY FINDINGS OF COUNTRY-LEVEL CASE STUDIES

This section provides an overview of key findings drawn from the eight case studies across four countries. These findings point to elements necessary for a transition towards a just and sustainable food system.

5.1 Building agroecological markets

The global agri-food system is based on the industrial model of production with distribution, marketing and retail occurring within a neo-liberal economic framework in pursuit of profit.

Access to this market is very dependent on organisations having strong physical, economic and intellectual capital (Borsellino et al., 2020) and smallholder farmers struggle to gain access.

Reasons include distance from market (and lack of transport and adequate storage), lack of knowledge about markets and market pricing, and bottlenecks to entering formal food retail value chains.

What is needed is a reconceptualisation of markets to support a transition to a just and sustainable food system.

Several agroecological principles speak to markets – in particular, the elements of circular and solidarity economies, human and social values and culture and food traditions (FAO, 2018; Wezel et al., 2020). There is the need to encourage social organisation and greater participation in decision-making

by producers and consumers to support decentralised governance and local adaptive management of agricultural food systems (Wezel et al., 2020). This includes ensuring fair, short and cleaner value chains for localised food economies.

Food systems must be based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonal and culturally appropriate diets (Wezel et al., 2020). And they must support dignified and robust livelihoods for all food system actors, particularly smallholder producers (Wezel et al., 2020).

Markets are mechanisms that determine what is produced and what value the product demands (Borsellino et al., 2020). A set of 'rules' apply to market exchanges – these are set by government regulations, private contracts, cultural customs or public norms (Borsellino et al., 2020). Markets therefore have social and political dimensions. There are both existing and emerging market spaces for agroecological farmers.

AFSA (2020) notes that African 'mass markets' are a legitimate avenue for agroecological farmers. These markets – typically offering vegetables, fruits, and meat – are inclusive spaces that attract a diversity of people from different socioeconomic brackets, classes and cultures (AFSA, 2020). These market spaces tend to embrace indigenous commerce principles that

focus on knowledge exchange and wellbeing, along with the selling of food for money (AFSA, 2020).

Mass markets tend to be in places of confluence – alongside roads and at borders (AFSA, 2020). The Participatory Guarantee System (PGS) is an emerging market mechanism that is gaining traction across Africa. All the case study organisations across the four countries use PGS to support collective organisation and market access for smallholder farmers to varying degrees.

In Tanzania, SAT has certified more than 1 000 farmers against the East African Organic Product Standards and TOAM provides PGS training and is working on developing a regional market for PGS accredited products. In Zambia, there is a re-emergence of PGS with the establishment of the urban Ubumi PGS aligned to the Zambian organic standards and KATC has several of its crop ranges produced under PGS. In Zimbabwe, the ZOPPA Trust has empowered more than 3 000 farmers to gain market access through PGS.

In the spirit of agroecology, PGS delivers more than market access. It is a democratic, transparent and inclusive structure that:

- Supports collective organisation.
- Is inclusive of all food system stakeholders.
- Serves as a cohesive hub for raising awareness of the need for and benefits of agroecology and the co-creation and sharing of knowledge.



Importantly, this system actively includes consumers in the process, which both educates about agroecology, shortens food supply chains and raises awareness of the need to farm in a way that does not harm the planet. More consumer involvement in systems such as PGS could lead to a change in consumption patterns that would reshape the system from the bottom-up in an inclusive manner.

A good example of PGS mobilisation can be found in South Africa from the PGS South Africa's Pollinator Programme.

PGS SA's Pollinator Programme

PGS South Africa in partnership with the South African Organic Sector Organisation and funded by the Knowledge Hub for Organic Agriculture in Southern Africa launched its Pollinator Programme in 2020.

The programme is training 20 multipliers/Pollinators (lead farmers) in how to set up and maintain PGS groups across nine South African provinces. The aim is for Pollinators to support others in establishing PGS to meet an overall objective of building a more connected local and short-chain food system, provide assurance of organic production to consumers and support organic growers in sharing knowledge.

The Pollinators are supported with training on record keeping, farm inspections, organic practices and principles, and use of collaborative platforms. PGS also provides a platform for collective bargaining with suppliers and aggregation of produce to meet market demand.

5.2 Supporting and scaling co-creation and sharing of knowledge

The element of co-creation and sharing of knowledge encompasses training, education and research.

Agroecology acknowledges multiple ways of knowing the world – lived experience, indigenous knowledge and scientific/academic knowledge. It endorses a range of research approaches if they are needs-based and include farmers as co-creators. Examples are farmer-led participatory research, farmer field schools and farmer-to-farmer exchange.

Agroecological training extends beyond production to also encompass political and social movement building. La Via Campesina (n.d.:1), an international peasant farmers' organisation, notes the importance of technical and political training because the "strength of change lies in the peoples' level of awareness and degree of organisation". The organisation notes that agroecology must 'permeate' the agri-food system's value chain to enable outcomes of "solidary, autonomy, popular agrarian reform, work, income and thus food sovereignty" (La Via Campesina, n.d.:1).

Transformational responses to current challenges are framed as seed, nutritional and food sovereignty – the right for a person/community to determine what they eat, and how it is produced, marketed and exchanged.

The FAO (n.d.) notes that agroecology education is critical for policymakers, consumers, researchers and farmers. Consumers are key to the transition towards a sustainable agri-food system as their choices in the market determine the 'value' placed on outputs from different production systems.

Co-creation and sharing of knowledge are evident across all eight case studies, to varying degrees. In South Africa, OV Organics and Batho and Busi Organic Farm provide training; in Zambia, KATC is a dedicated training centre that offers training both on- and off-site to a range of food system stakeholders from smallholder farmers to policymakers and educational institutes. In Tanzania, SAT and TOAM provide extensive training for stakeholders ranging from farmers to policymakers.

In Zimbabwe, ZIMSOF facilitates farmer-led trainings, demonstration sites and peer-to-peer knowledge exchange, as well as undertaking policy advocacy work. The ZOPPA Trust focuses more attention on the broader ecosystem needed to support an agroecological transition.

Good examples of co-creation and knowledge sharing are the Innovation Platform in Tanzania and ShaShe Agroecology Village in Zimbabwe.



SAT's Innovation Platform

SAT in Tanzania collaborates on an Innovation Platform that shares indigenous, local and scientific knowledge that is generated through a core network of 70 groups drawn from 50 villages. The knowledge is refined and made accessible to a more than 50 000 farmers as well as public and private stakeholders.

The organisation also works with the Ministry of Agriculture to support appropriate curriculum development for extension officers, and it emphasises face-to-face training, use of lead farmers (or knowledge multipliers) for further dissemination and production of knowledge products.

This includes a magazine produced in the local language, a weekly and quarterly newsletter, a series of fact

sheets on the benefits of biodiversity, agroforestry and how to make natural pesticides. These are available in English and Kiswahili. It also generates policy briefs on relevant issues for dissemination to policymakers and the broader public.

ShaShe Agroecology Village

ZIMSOFF in Zimbabwe supports the ShaShe Agroecology Village. Located in Masvingo Province, the village is home to hundreds of families that were beneficiaries of government's Fast Track Land Reform Programme (Monjane, Bruna & Gilolomo, 2019).

Shared farming and grazing land sustain the production of a wide diversity of food crops, medicinal plants, roots and livestock (Monjane et al., 2019).

Surplus is exchanged locally or sold in the nearby town (Monjane et al., 2019). ZIMSOFF is driving an 'agroecological revolution' in this region. The national ZIMSOFF coordinator Nelson Mundzingwa notes that the initiative is deeply emancipatory in design and challenges dominant farming and food models (Monjane et al., 2019).

The success of this model perhaps lies in the extensive understanding of members of the need to conserve land and the importance of indigenous knowledge and cultural traditions (Monjane et al., 2019). Many had this interest before moving here.

There is also a focus on spiritual and traditional understandings of development and wellbeing (Monjane et al., 2019).

The Shashe Ecovillage hosted the first meeting of agroecology trainers in Africa in 2011. From this, a training mechanism focused on lead farmers has been implemented with funding from the New Field Foundation.

A school was established that offers agroecology training, integrated land use design and participatory methodologies (Via Campesina, 2013). The base of the syllabus was designed by PELUM and it focuses on building resilience to severe climate events, such as droughts and floods, using practices that enable adaptivity to a warming climate (Via Campesina, 2013). The facilitators work closely with government extension officers in attempts to influence policymakers (Via Campesina, 2013).

5.3 Building networks and movements

Networks and social movements have a critical role to play in supporting the adoption of agroecology as an appropriate and sustainable framework for Africa's food and farming systems.

They play a key role in preventing the co-option of agroecology by commercial interests and those who view it as only a production method. Networks and social movements help to build collective consensus from the bottom up – from farmers and consumers. Bottom-up formations help to ensure that systems remain inclusive, participatory, democratic and equitable.

They are vibrant spaces of knowledge exchange on all aspects of the system, including political and social aspects. Collective organisation can elevate the voices of those marginalised from decision-making spaces and can play an awareness-raising role among consumers and policymakers.



The Nyéléni Declaration notes that agroecology is key to the construction of food sovereignty and those supporting it must 'challenge and transform structures of power in society' (Anderson et al., 2015). This requires the development of a critical understanding of current structures and how to change them. Networks and social movements support this.

A review of literature on agroecological social movements highlights the need for sharing of information beyond production techniques. In fact, La Via Campesina – one of the most successful agricultural movements – notes that agroecological social movements are more successful when they educate or support learning in soft skills – communication, presentation, organising field trips or demonstrations (Anderson et al., 2015).

They also emphasise the importance of leaders of the movement being farmers themselves. The goal is to build "social and ecological synergies that can create resilience in local and national food systems" (Anderson et al., 2015).

All the case study organisations are active in networks. In South Africa, the farmers of both case studies are part of broader networks. In Zambia, there is less integration into regional networks but both organisations are members of a national agroecology network. In Zimbabwe, both ZIMSOFF and ZOPPA are network organisations. ZOPPA is a member of International Federation of Organic Agricultural Movements (IFOAM)-Organics International, the Africa Organic Network and IFOAM Southern Africa Network and works in partnership with others to scale agroecological networks in the region.

In Tanzania, TOAM is a network organisation, known for its work, through the Organic Agriculture Climate Change Intervention for Empowering of Smallholder Farmers project funded by Organic Denmark, for strengthening the capacity of 200 smallholder farming families to advocate for themselves with government. SAT works extensively through the value chain to bring together stakeholders and to share the experiences of farmers at national and international conferences.

Zimbabwe Smallholder Organic Farmers Forum

In Zimbabwe, ZIMSOF is part of broader networks, namely the East and Southern Africa Small-scale Farmers' Forum and La Via Campesina (FAO, n.d.a). It is a founding partner of the Zimbabwe Seed Sovereignty Programme (FAO, n.d.a) and a member of SKI and active member AFSA.

It works in Zimbabwe's rural areas through regional clusters of local farmer organisations – households are organised into a group or 'club', these clubs come together to form a smallholder farmer organisation, and then a number of these form a cluster. It works with four clusters comprising more than 15 000 members. The farmer remains at the centre. All leadership and training positions are held by farmers (Via Campesina, 2013). ZIMSOF has been repeatedly recognised for the calibre of its work. In 2017, it was awarded the United States Food Sovereignty Prize for its role in supporting seed and food sovereignty in the country (FAO, n.d.a).

In 2019, it was awarded the Spring Prize for being the "voice of peasants struggling for social justice in Zimbabwe" (Spring Prize, 2019:1).

5.4 Cross-cutting issues

It is critical that agroecology practitioners also focus on cross-cutting issues of gender, climate change, technology and conflict, among others. These cross-cutting issues relate primarily to the agroecological elements of human and social values that speak to 'fairness' and to resilience within the agro-food system, with an emphasis on climate change resilience and adaptive capacity. To varying degrees, all the case study organisations focus on multiple aspects in their work. A good example of cross-cutting work is from SAT in Tanzania.

Farmers & Pastoralists Collaboration

SAT in Tanzania partners in the Farmers & Pastoralists Collaboration. The goal is to help farmers and pastoralists create thriving circular economies that benefit both groups and reduce conflicts driven by competition over land – for crop production or livestock grazing. Farmers are trained on organic cultivation and pastoralists on sustainable livestock keeping. Farmers submit their harvests to the Farmer Training Centre where produce is processed and sold, with residues offered to the pastoralists for animal feed. In turn, pastoralists can offer manure for composting by the farmers. Better fertilised plots support higher yields, which, provides for more animal feed. This can boost milk production generating higher income.



6. CONCLUSION

It is evident that adopting agroecology as a framework for food and farming systems provides multiple benefits.

- It addresses production aspects thus enabling a healthier relationship with the Earth.
- It focuses on social and economic justice through collective organisation and emphasis on the inclusion of women and youth and on building circular and solidarity economies.
- It works to create equitable market access and new market spaces that are value-led.
- It builds resilience to climate change at the farm and community level.

The case studies provide on-the-ground evidence that agroecology is and can make a significant contribution to a transition towards a just and sustainable food system.

It does this by mandating bottom-up processes that put the farmer first, by encouraging the co-creation and sharing of knowledge, by embedding principles of inclusiveness and transparency in market access mechanisms such as PGS, and by addressing cross-cutting issues of gender, conflict and climate change, among others.

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