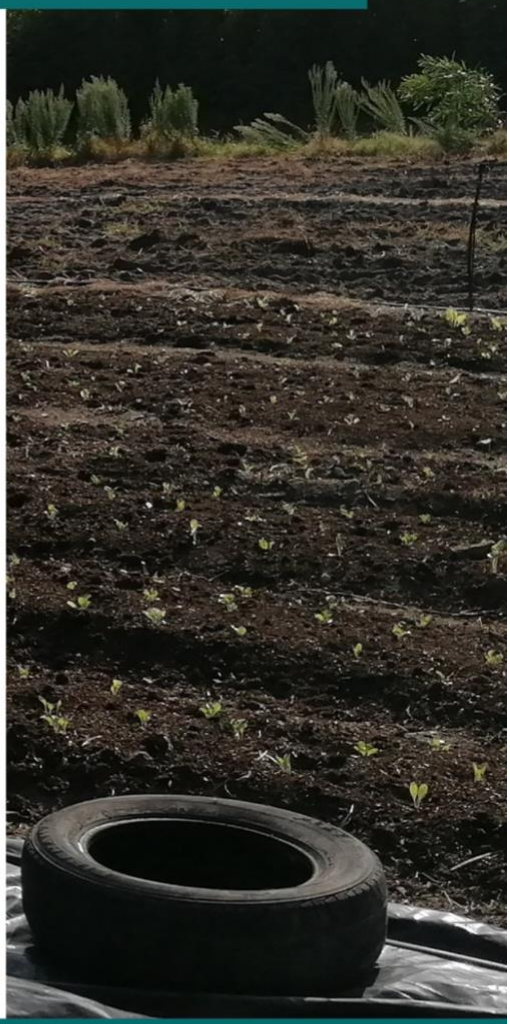
Phase 1

The state of the debate on agroecology in South Africa

A scan of actors, discourses and policies

Final report



July 2021

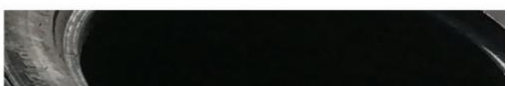
TAFS AGROECOLOGICAL TRANSITIONS FOR SUSTAINABLE FOOD SYSTEMS

PP&G

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

DSI-NRF Centre of Excellence in Food Security

SOUTHERN AFRICA FOOD LAB



Transitions to Agroecological Food Systems (TAFS) is a multi-country research project launched in 2020. Its main objective is to provide convincing arguments to decision-makers to support agroecological transitions. The arguments will be based on scientific evidence, field data and concrete experiences and will address the three key issues for a successful agroecological transition: (i) the year-round supply of sufficient, affordable, diverse, nutritious and healthy food for the rural and urban population; (ii) the generation of decent jobs and incomes for farmers and their families and; (iii) the sound management of natural resources in the context of climate change.

The project draws on this knowledge to lead a collective reflection on public policy instruments and to co-construct, with policy-makers and food system stakeholders, a strategic vision of transition towards sustainable food systems based on agroecological practices.

TAFS is coordinated by CIRAD (the French agricultural research and international cooperation organization) with five partnership research platforms in three continents:

- In Africa: ISA (*Information pour la Sécurité Alimentaire*), PP&G (*Public Policies and Governance*), and SPAD (*Systèmes de Production d'Altitude et Durabilité à Madagascar*);
- In South East Asia: Malica (*Markets and Agriculture Linkages for Cities*);
- In Latin America: PP-AL (*Red Políticas Publicas and Desarrollo Rural*).

TAFS collaborates to the Transformative Partnership Platform on agroecology (TPP) initiated by France and the CGIAR (Consortium of International Agricultural Research Centres) where it contributes to the policy component.

The project is implemented in nine countries: Burkina Faso, Mali, Madagascar and South Africa; Laos and Vietnam; Argentina, Brazil, and Colombia.

In South Africa, TAFS' partner is the DSI (Department of Science and Innovation)-NRF (National Research Foundation) Centre of Excellence in Food Security (CoE-FS) hosted by the University of the Western Cape and the University of Pretoria. The activities are developed in collaboration with the Southern Africa Food Lab (SAFL).

This report on *The state of the debate on agroecology in South Africa* was drafted by Stephen Greenberg and Scott Drimie (Southern Africa Food Lab).

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Acronyms

ACB	African Centre for Biodiversity
AESA	Agroecology South Africa
ALV	African leafy vegetable
APAP	Agricultural Policy Action Plan
ARC	Agricultural Research Council
AU	African Union
AWARD	Association for Water and Rural Development
BDAASA	Biodynamic Agricultural Association of Southern Africa
BMGF	Bill and Melinda Gates Foundation
CA	Conservation agriculture
CAADP	Comprehensive Africa Agriculture Development Programme (African Union)
CASP	Comprehensive Producer Support Programme
CIRAD	Centre de coopération Internationale en Recherche Agronomique pour le Développement (French Research Centre for International Cooperation in Agriculture and Development)
CGIAR	Consortium of International Agricultural Research Centres
CoE-FS	DSI-NRF Centre of Excellence in Food Security
COGTA	Department of Cooperative Governance and Traditional Affairs
COPAC	Co-operative and Policy Alternative Centre
CPDS	National Policy on Comprehensive Producer Development Support
CSA	Climate smart agriculture
CSIR	Council for Scientific and Industrial Research
CSO	Civil society organisation
CWP	Community Works Programme
DAFF	Department of Agriculture, Forestry and Fisheries (now DALRRD)
DALRRD	Department of Agriculture, Land Reform and Rural Development
DDM	District Development Model
DFFE	Department of Forestry, Fisheries and Environment (formerly DEA, DEFF)
DM	District Municipality
DPWI	Department of Public Works and Infrastructure
DSD	Department of Social Development
DSI	Department of Science and Innovation (formerly DST)
DST	Department of Science and Technology (now DSI)
DTIC	Department of Trade, Industry and Competition (formerly DTI)
DWS	Department of Water and Sanitation
ECARP	East Cape Agricultural Research Project
EMG	Environmental Monitoring Group
EOA	Ecological organic agriculture
EOA-I	Ecological Organic Agriculture Initiative (African Union)
EPWP	Expanded Public Works Programme
F4T	Food4Thought
FAO	UN Food and Agriculture Organisation
FFS	Farmer field schools
FNSP	Food and Nutrition Security Plan
FPM	Fresh produce market
FRIDGE	Fund for Research into Industrial Development, Growth and Equity
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation)

GMO	Genetically modified organism
HLPE	High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security
HSRC	Human Sciences Research Council
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
IDP	Integrated Development Plan
IFOAM	International Federation of Organic Agricultural Movements
IP	Intellectual property
IPAP	Industrial Policy Action Plan
ITP	Indigenous and traditional plants
KHSA	Knowledge Hub for Organic Agriculture in Southern Africa
KZN	KwaZulu-Natal
LED	Local economic development
LRC	Local Representative Committee
MAGIC	Municipal Applied and Green Initiatives and Concepts
MTSF	Medium Term Strategic Framework
NAMC	National Agricultural Marketing Council
NCCRP	National Climate Change Response Policy
NDP	National Development Plan
NEMA	National Environmental Management Act
NEPAD	New Partnership for Africa's Development (African Union)
NGO	Non-government organisation
NRM	Natural resource management
NSDF	National Spatial Development Framework
NWRS	National Water Resource Strategy
OSSIC	Organic Sector Strategy Implementation Committee
PBI	Place-based initiative
PBRA	Plant Breeders' Rights Act
PDA	Provincial department of agriculture
PGR	Plant genetic resources
PGS	Participatory Guarantee System
PGS-SA	Participatory Guarantee System-South Africa
PIA	Plant Improvement Act
PLAS	Proactive Land Acquisition Strategy
R&D	Research and development
RASET	Radical Agrarian Socio-Economic Transformation
RWA	Rural Women's Assembly
SAFL	Southern Africa Food Lab
SAFSC	South African Food Sovereignty Campaign
SAOSO	South African Organic Sector Organisation
SDF	Spatial development framework
SETA	Sector Education and Training Authority
SKI	Seed and Knowledge Initiative
SMME	Small, micro or medium enterprise
SPLUMA	Spatial Planning and Land Use Management Act
SPP	Surplus People Project
TAFS	Transitions to Agroecological Food Systems
TPP	Transformative Partnership Platform
UN	United Nations

WRC	Water Research Commission
WWF	Worldwide Fund for Nature

Acknowledgments

In South Africa, the research project *Transitions to Agroecological Food Systems* is coordinated by Julian May (CoE-FS, University of the Western Cape) and Bruno Losch (CoE-FS, University of the Western Cape, and CIRAD).

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They also thank the contributions of those who participated in the NetMap sessions facilitated by Luke Metelerkamp (Environmental Learning Research Centre, Rhodes University).

Executive Summary

This study was conducted under the auspices of the Transitions to Agroecological Food Systems project. Its main objective is to provide policy makers and stakeholders with convincing arguments about the importance and adapted ways of promoting agroecological transitions in order to address current and coming sustainability challenges.

Specific initiatives and current policies related to agroecological transitions at the national level are identified with different stakeholders. Several questions are addressed such as: what are the visions and narratives of agroecological transitions and related food systems? How sustainability challenges and agroecological transitions are framed. What are the social forces promoting and opposing agroecological transitions? What kind of public action supporting agroecological transitions has already been implemented?

Given the reality of agricultural practice in South Africa, the wide range of existing definitions of agroecology can be considered as aspirational. As such, the accent is placed on diverse ecological production techniques and their integration at farm and landscape levels. We propose these be considered as a continuum of practices, with "entry level" requirements for stepping onto the path of agroecology as no use of genetically modified (GM) seeds, synthetic fertilisers or pesticides that are toxic to humans, animals and the soil. The list of practices offers a range of opportunities for building change practically from the "grassroots" level. Recognising agroecology as a movement, we also propose the integration of participatory methods of dialogue, research, experimentation and learning as defining features of agroecological practice.

In terms of recent historical context, a number of initiatives on agroecology have unfolded, underpinned by a base of diverse practitioners who are connected in networks of variable coherence and scale. These networks have come closer to each other in response to deepening social and ecological crises, especially after the emergence of the ongoing Covid-19 pandemic in 2020. It is also held that government framing in the past 5 years is not overtly hostile to the idea of agroecology and many elements are included in policies and plans. There are, however, serious questions about government commitment to realise these elements in practice.

Visions and discourses around agroecology can be categorised along a continuum of views, from neoliberal and reformist approaches within the corporate food regime, to progressive and food sovereignty approaches in food movements. In mainstream and specialist media, agroecology is still hardly known. Organics tends to be the most well-known term. On the one hand, mainstream views are mixed. By and large, agroecology or organic production is considered irrelevant or a side issue, with some acknowledgement of organic production for premium niche markets. Agroecology tends to be conflated with subsistence or welfare production. On the other hand, within the food movement, agroecology is gaining ground as a radical alternative to large scale corporate-industrial agriculture, with deep ecological, social and health benefits.

Four major actor clusters were identified: the private sector; research, education and training; state entities; and civil society organisations. The private sector is mainly rooted in the dominant conventional and Green Revolution agricultural paradigm, underpinned by what

could be termed the agrochemical complex. The private sector has a strong influence on the government, in particular in those agencies and departments holding financial resources. There are a few private sector philanthropies supporting agroecological transitions and food sovereignty, and there are a few tentative moves towards organic production amongst producers and retailers although still heavily within the dominant corporate model.

Research and training tend to follow the dominant ideological orientation, with very few openings even simply for agroecological experimentation. State entities and policies are contradictory, with a policy hierarchy dominated by the economic and financial departments. State entities are a mirror of the wider society with a dominant combination of neoliberalism and reformism, but also a few opportunities for support for agroecological practices. Civil society organisations have developed a fairly coherent narrative and also engaged in practices ranging from movement towards more ecological practices by large commercial grain farmers through to NGO-supported backyard garden initiatives in townships and informal settlements. There is significant knowledge and development of good practices but these are still quite fragmented and initiatives tend to operate in isolation from one another.

Policies and plans were categorised into the overall national planning framework, policies aligned with neoliberalism that in practice hinder agroecological transitions, and policies that have elements that open the way for agroecological transitions even if unevenly and sometimes in contradiction with other policy elements. The overall framework is contradictory, reflecting the ongoing contestations at the heart of South African society. For food and agriculture, the dominant voice is of large scale commercial agriculture and big business in the discourse of global competitiveness, export orientation, commercial value chains and finance. However, within the policy mix there are also relatively consistent voices on environment and climate, and also a (more muted and fragmented) voice in favour of ecologically sound, mass based and socially just transformation. These voices contest and contradict each other.

Agricultural policies tend towards a Green Revolution and commercial value chain approach to smallholder farmer support. The trade regime, seed and agrochemical laws pose large obstacles in the way of agroecological transition. On the other hand, there are numerous policies, plans and programmes that have elements that can be consolidated to underpin an agroecology strategy for South Africa. There is significant convergence in agricultural and environmental policies especially around climate change, biodiversity and natural resource management that orient towards more ecologically sustainable production practices. Food and nutrition security plans offer pathways to agroecological transitions in theory. Two overarching draft policies – the Organic Policy and the Agroecology Strategy – are currently dormant but could be revived in a push for an overall policy or strategy.

A number of strategic opportunities for work on agroecological transitions are identified. These include drawing on the People's Food Sovereignty Act in reviving efforts to develop a national agroecology policy or strategy. This will require civil society organisations to unite and present a common front, and to identify the appropriate entry points in government to restart these discussions. Another related approach is to adopt "applied policy" where a specific set of sites is identified for work on transitions together with local actors, and then the policy obstacles or opportunities identified and approaches developed arising from those specific localities and experiences.

A few relevant initiatives are identified at the local level as possible place-based initiatives, which could help to provide more evidence on South African experiences in agroecology and contribute to the implementation of the next steps of the project. It seeks to map local actors and dynamics, convene multi-actor dialogues to identify opportunities for building agroecological practice and local food systems agency, prioritise, and develop actions to realise these opportunities in practice.

1. Introduction

1.1 Objectives

This study was conducted under the auspices of the Transitions to Agroecological Food Systems (TAFS) project. Its main objective is to provide policy makers and stakeholders with convincing arguments about the importance and adapted ways of promoting agroecological transitions in order to address current and coming sustainability challenges. The study aims to produce and share knowledge on the contribution of agroecological food systems across three dimensions: a) the supply of sufficient, affordable, nutritious and healthy food; b) the generation of decent labour and incomes for households and c) the sound management of natural resources at the territorial level in the context of climate change.

This report is the first step of a process that includes national agroecological transition diagnosis; characterising territorial agroecological food systems; building scenarios; analysing performance of agroecological food systems; identifying gaps and comparison between desirable and current food system performance; and policy dialogue. The objectives of the first step are to document what agroecology means and its degree of institutionalisation in every country participating in the project.

Specific initiatives and current policies related to agroecological transitions at the national level are identified with different stakeholders (e.g. government and civil society representatives, and farmers and their organisations). Several questions are addressed such as: what are the visions and narratives of agroecological transitions and related food systems? How sustainability challenges and agroecological transitions are framed. What are the social forces promoting and opposing agroecological transitions? What kind of public action supporting agroecological transitions has already been implemented?

The outcomes of this first step are: a baseline characterising the different visions of agroecological transitions, key actors, supporting groups and opponents; the nature of sustainability challenges; existing initiatives and policies; and the types of agroecological practices and associated food systems. Recommendations on potential territories as research sites for the following steps are included in Annex 7.

1.2 Methods and analytical framework

1.2.1 Methods

The first step in the stocktaking exercise was gathering and reviewing existing policies, strategies, plans, programmes etc. related to agroecological transitions. The table in Annex 1 indicates the key policies and programmes reviewed, although the list is not exhaustive. In South Africa there is no overarching policy on agroecology, but there are elements of agroecological practice and motivations for them scattered throughout the policy landscape especially on social, nutrition, and ecological grounds.

Selection of relevant policies was based on a framework for investigation offered in the Transformative Partnership Platform (TPP) on agroecology to which the TAFS project contributes. This framework proposed three broad categories of policies: overarching, those with elements of support for agroecology, and those that hinder the development of agroecological practices. The elements of agroecology for consideration in the TPP process

are loosely based on a combination of the United Nations (UN) Food and Agriculture Organisation (FAO)'s 10 elements and the 13 principles of the High Level Panel of Experts on Food Security and Nutrition (HLPE) of the Committee on World Food Security (FAO 2018; HLPE 2019; and Wezel et al. 2020 for integration – see Annex 2). The policy selection approach coincides with a parallel and related policy discussion in the Agroecology South Africa (AESA) policy team which also emphasised that a scan must go beyond agricultural policies to encompass other sectors with influence on agroecological practice.

To assist in identifying key policies and other actors, as well as important relationships, opportunities and obstacles for agroecological practice, we conducted a series of participatory sessions using the NetMap methodology[1] adapted for online engagement. We convened 8 sessions of 3-6 people each in the first quarter of 2021. The sessions followed the same format, with participants identifying key actors influencing agroecological practice in South Africa, and then sharing some key relationships that either act as obstacles or as opportunities for agroecological practice. Participants were primarily drawn from the AESA policy team with a total of 27 participants, mainly from non-government organisations (NGOs) / civil society networks, also academics, Agricultural Research Council (ARC), three Directorates in the Department of Agriculture, Land Reform and Rural Development (DALRRD) and GrainSA. Annex 3 provides an example of the map from one of the sessions. The report is informed by inputs to the NetMap process and the results will therefore be skewed towards the views of the participants. The report will be shared in civil society networks for further discussion to inform follow up planning and advocacy. It is not comprehensive, but is rather indicative of the terrain, obstacles and opportunities to advancing agroecological practice in South Africa and provides a basis for practical work.

1.2.2 Analytical framework and definitions

There are as many definitions of agroecology as there are proponents. The HLPE/FAO definitions (Annex 2) offer a useful framing. However these have been criticised as being too academic and abstract, and of not taking into consideration the real, lived experiences of practitioners who implement agroecology in very diverse contexts and sets of constraints. More generally, adherents have defined agroecology as "the integrative study of the ecology of the entire food system; a science, practice and movement; an approach to farming that maximizes ecological processes and does not degrade the natural resource base" (Carlile et al. 2021:10).

Given the reality of agricultural practice in South Africa, these definitions can be considered as aspirational. There would be almost no agroecology in existence in South Africa if we took a "maximalist" position of saying producers need to be operating across all of these elements before they could be considered to be agroecological.

Therefore, for the purposes of this paper, we place the accent on diverse ecological production techniques and their integration at farm and landscape levels. We propose that these be considered as a continuum of practices, with "entry level" requirements for stepping onto the path of agroecology as no use of genetically modified (GM) seeds, synthetic fertilisers or pesticides that are toxic to humans, animals and the soil. Within the wider agroecology and organic movements in South Africa these are generally accepted as non-negotiable base requirements for production to be considered agroecological. In this

[1] https://netmap.wordpress.com/about/

"minimum requirements" sense, labels (e.g. organic, agroecological, conservation agriculture etc) are less important than the actual practices (or more accurately, prohibited practices).

Agroecological practice is thus taken in a broad sense to refer to related and overlapping approaches such as organic, permaculture, biodynamic, ecological organic agriculture (EOA), natural farming, "Farming God's Way" and regenerative agriculture amongst others. Practitioners and adherents have arrived at these processes through many different pathways and often chosen terminology and definitions will be a product more of these diverse histories than any specific ideological disagreement.

Beyond the 'negative' definition of agroecology, there is a large and open-ended set of practices that 'positively' define agroecological practice. The flipside of the prohibited practices identified above is the use of farmer-managed open-pollinated varieties (OPVs), local and indigenous seed; organic/natural soil fertility including compost, manure, vermiculture, mulching etc; and organic/biological pest management. Beyond these baseline practices are many other techniques that may be deployed and which deepen agroecological practice (see Annex 4 for some examples). The continuum then moves from these small sets of minimum practices to systemic landscape- and territorial-scale multi-actor activities. On markets and distribution there is a tendency to favour 'alternative' market channels, i.e. not corporate supermarkets, with the promotion of fair and short distribution networks and re-embedding food systems into local economies as indicated in HLPE/FAO principles.

Recognising agroecology as a movement, we also propose the integration of participatory methods of dialogue, research, experimentation and learning as defining features of agroecological practice. The list of practices offers a range of opportunities for building change practically from the "grassroots" level.

For our purposes, food sovereignty is defined in turn as the organisation and radical political orientation of these activities towards social and ecological justice. Agroecology as a concept has been popularised in large part by the food sovereignty movement in South Africa and globally. Food sovereignty encompasses agroecological practice as its material form of production. However agroecological practices go beyond food sovereignty, since there are many practitioners who adopt the core/entry level practices and beyond but who may be doing this on their own farms without necessarily being part of wider networks for social justice. This may simply be because practitioners have not been exposed to the ideas arising from organised networks for social and ecological justice and food sovereignty.

As we propose in section 3 on discourses, some approaches such as conservation agriculture (CA) and climate smart agriculture (CSA), diverge in important aspects from agroecology. While they have incorporated some agroecological practices, specifically minimum soil disturbance, permanent ground cover, crop rotation/intercropping, these may be combined with more mainstream technologies of industrial farming (Pimbert 2015). CSA, along with "environmentally-friendly" agroforestry and intercropping practices, does not exclude practices and technologies that are incompatible with the entry level agroecological practices. These are not necessary components of CA/CSA, although many proponents do embrace and promote a mix of herbicide-tolerant crops, toxic insecticides and fungicides, genetically modified seeds and genetically engineered livestock and fish, proprietary technologies and patents on seeds, as well as energy-intensive livestock factory farming, large-scale industrial monocultures and biofuel plantations (Pimbert 2015). We propose that CA/CSA approaches

can be defined as being on the agroecological continuum to the extent that they comply with the core/entry level requirements as indicated above.

2. Context

2.1. Insights about the political economy of South Africa's agri-food system

A fundamental characteristic of the food system, in South Africa and in the entire southern African region, is a history of dispossession and migrant labour, in the context of a deliberate engineering of a 'dualistic' agrarian structure in the interests of mining, industrial and agricultural capital (Cousins and Scoones 2010; O'Laughlin et al. 2013). Since 1994, the redistribution of agricultural wealth to previously disadvantaged citizens has been pursued through a liberalisation and deregulation agenda. This neoliberal economic policy has led to increased vertical integration and elaborate value chains at the expense of addressing the needs of the poor and the landless (Hall 2009; McLachlan and Landman 2013). One result has been the constrained entrance of new farmers and entrepreneurs into the system along the entire food value chain with little achieved in redistributing agricultural wealth (Hall 2009; Satgar 2011). The resulting inequalities are evident in the productivity of a well-developed group of large-scale commercial farmers (approximately 37 000 and predominately white) as compared to that of the broad base of more than 2 million smallholder and emerging farmers (von Bormann 2019). Smallholder farmers are highly diverse, socially differentiated, and display a wide variety of production objectives, farming scales, farming systems and kinds of market orientation (Cousins and Chikazunga 2013). There are high barriers to entry for small farmers, manufacturers and retail outlets to be a part of the increasingly competitive and commercial formal food system in South Africa. The ongoing consolidation of agribusiness throughout the system has further exacerbated the deep inequities and exploitation throughout the food system (Greenberg 2013). Put simply, the old agrarian and land system have largely been left in place since the end of apartheid.

The social injustice is entwined with negative environmental impacts associated with food production, amplified by commercial agricultural practices (von Bormann 2019). These practices are typically intensively output-oriented, involve extensive tilling and mono-cropping or concentrated animal feeding, requiring heavy machinery, large-scale irrigation and external inputs of fuels, chemicals, conventional seed and feed. The scale of the larger farms, together with direct marketing from chemical companies, incentivise greater use of chemicals, pharmaceuticals and fertilisers in production. The impact on the ecological basis of the food system – and indeed the entire life system – is deeply affected by industrial-scale production, which is "locked in" by the pursuit of profit ostensibly touted as needed to provision the burgeoning urban population of South Africa.

The increasingly industrialised and concentrated food system has spawned an array of food-related health risks, as highly processed, nutritionally poor, energy-dense foods have become readily available, affordable and socially acceptable (Thow et al. 2018). The dominance of these foods in the market is having a further negative impact on small food producers and the informal market, undermining healthier, more diverse rural and local food networks and their associated shorter value chains (von Bormann 2019).

2.2. A brief recent history of agroecology in South Africa

A number of separate initiatives on agroecology have developed over the years in South Africa, underpinned by a base of diverse practitioners who are connected in networks of variable coherence and scale. These networks have come closer to each other in response to

deepening social and ecological crises, especially after the emergence of the ongoing Covid 19 pandemic in 2020. Some of the more visible initiatives are summarised in this section.

African farmers in South Africa have *de facto* adopted ecological production practices since prior to colonisation. This is partly rooted in traditional practices that evolved over time to accommodate dynamic environmental conditions but later it was also partly a result of the neglect and deliberate undermining of African farming in South Africa under colonialism and apartheid. This latter led to the imperative to use what was available and to reduce costly inputs which by default often led to more ecologically friendly production methods. At a (white) commercial farming level, there is also a history of involvement in organic farming, with a number of organic producers and associations in existence since the 1970s with some prominence held by the *Organic Soil Association of South Africa* and the *Biodynamic Agricultural Association of Southern Africa* (BDAASA). South African organic producers were amongst founders of the International Federation of Organic Agricultural Movements (IFOAM) in 1972. Certified organic farmers, producing mostly for export, later formed Organic South Africa (Auerbach 2020).

More recently, in 2002, an enterprise called Diverse Pty Ltd was formed by a group of activists working on mining, cooperative and waste management with an orientation towards partnerships with government. In 2006 Diverse, together with the National African Farmers' Union (NAFU) and BDAASA requested the then Department of Trade and Industry (DTI, now DTIC) to commission a study on organic agriculture (MAGIC 2018).

Consequently, in 2008, the Trade and Industry Chamber's *Fund for Research into Industrial Development, Growth and Equity* (FRIDGE) report, conducted by the Institute for Natural Resources (INR), was released. It contains a detailed discussion of the need for an organic policy and local organic standards in South Africa (Kelly and Metelerkamp 2015). The report is an extensive, once-off national survey of organic producers and processors. It elicited responses from 60 commercial certified producers, with a total area under organic management of 8,437ha.

The report led to the formation of the *South African Organic Sector Organisation* (SAOSO) to represent the sector. A draft organic policy, developed over a decade and a half by the organic sector with the national government, was developed in 2010 (see below for more detail), and discussed at length in the multi-stakeholder *Organic Sector Strategy Implementation Committee* (OSSIC), but after several years of discussion, OSSIC ceased to exist. SAOSO[2] has continued to lobby government, organising training, developed organic standards, and is active in research, training, marketing and sector development. The development of organic standards was obstructed by vested interests in agribusiness, which eventually forced SAOSO to develop a local voluntary standard accredited by through the IFOAM Family of Standards[3]. More recently SAOSO has established PGS-SA (Participatory Guarantee System-South Africa) and the PGS Pollinators' Programme aiming to seed PGS groups and networks around the country. The development of the PGS system, short value chains and sustainable community investment programmes have helped farmer groups to realise better prices, and to build solidarity with local consumers (Trooster et al. 2020).

[2] www.saoso.org
[3] https://www.ifoam.bio

Giving impetus to SAOSO and PGS-SA, the *Knowledge Hub for Organic Agriculture in Southern Africa* (KHSA) was launched in 2019 as part of a continent-wide Knowledge Centre for Organic Agriculture in Africa project, a collaborative country-led partnership funded by the German Federal Ministry of Economic Cooperation and Development (BMZ) and implemented by the GIZ. The Knowledge Hub Southern Africa is coordinated by the Sustainability Institute (SI) in South Africa, which works in cooperation with in-country partners: PELUM in Zambia, the Namibia Nature Foundation (NNF) in partnership with the Namibia Organic Association (NOA) in Namibia, SAOSO in partnership with PGS-SA in South Africa with an emerging presence in Malawi. The project funds the PGS Pollinators Programme, which is training 20 people to set up PGSs throughout South Africa that will help build more connected local food systems, provide organic assurance for consumers and support organic growers in sharing knowledge. The pollinators, trained in ecological organic agricultural practices, will subsequently establish a new PGS group and train stakeholders in their areas to replicate the system across South Africa.

Another key development in the history of organic agriculture in South Africa is the Nelson Mandela long-term comparative organic farming systems research trials (the Mandela Trials), established in 2014 with peer review from sites in Switzerland, Denmark and Pennsylvania in the United States of America where organic comparative research has been ongoing for the past 20–30 years (Auerbach 2020). These trials enabled various researchers to cover many dimensions of organic agriculture including agronomy, microbiology and pest and disease control, which have provided scientific impetus about its benefits relative to conventional systems. The Mandela Trials, described in detail in chapters 18 to 22 in Auerbach (2020), give impetus to the argument that well-managed organic systems can out-yield conventional systems with significant potential to improve soil quality in the long term, through improved biodiversity and higher organic matter content.

In the meantime, following some disagreements about orientation after 2010, Diverse had taken a different route and started working with the Department of Cooperative Governance and Traditional Affairs (COGTA) on sustainable development at municipal level. A methodology called *Municipal Applied and Green Initiatives and Concepts* (MAGIC) was drafted in 2011-2012. A cooperative was formed on the basis of deploying this methodology, and has subsequently developed cooperation protocols with the Gauteng and Western Cape Provincial governments. This has led to practical activities with Local Economic Development (LED) offices in a number of municipalities in these two provinces (MAGIC 2018). Agroecology is one of eight development sectors the initiative is working on.

In the food sovereignty movement, there are some notable developments. In 2009, the *International Assessment of Agricultural Knowledge, Science and Technology for Development* (IAASTD) report (McIntyre et al. 2009) was released. It was a high level global report that recommended the adoption of agroecology on a wide scale. Following this, Surplus People Project (SPP) initiated a dialogue with civil society and the then Department of Agriculture, Forestry and Fisheries (DAFF) on the report and its application in South Africa. This led to the formation of the Food Sovereignty Campaign for Land and Agrarian Reform (based in the Western and Northern Cape) and the drafting of a National Agroecology Strategy, which, however, has not been finalised or implemented since it was drafted in 2013 (see below for more detail).

Also in 2013, the Foundation for Human Rights (FHR) launched a programme on job creation, the right to food and climate change. Amongst support to agroecology activities was

a right to food dialogues process. The Co-operative and Policy Alternative Centre (COPAC), the African Centre for Biodiversity (ACB) and the East Cape Agricultural Research Project (ECARP) were selected to organise meetings of provincial clusters, culminating in a national dialogue in 2014. The results of these dialogues fed into a food sovereignty assembly convened by COPAC in 2015 with more than 50 organisations, initiating the *South African Food Sovereignty Campaign* (SAFSC) to "break the power of food corporations, establish a constitutional right to food, build food sovereignty from below, based on small-scale farming and agroecology, not industrial agriculture" (SAFSC 2015).

SAFSC embarked on a countrywide consultation which culminated in the launch of the People's Food Sovereignty Act at a gathering in 2016 and which was presented to relevant government departments. The document offers a comprehensive blueprint for legislation covering food sovereignty and agroecology (SAFSC 2018). It stresses the importance of agency, and that food sovereignty is not something to leave to government alone. The campaign continues to operate around the country and is developing a grassroots food sovereignty hubs programme. The Act has not been taken up by government to date, reinforcing the view that there is no strong champion for agroecology in government, but also the relative weakness of civil society formations to influence government policy. Nevertheless, the document offers a solid basis for practical action as well as further engagement with government on developing a comprehensive policy on agroecology.

In January 2019, Biowatch and the Seed and Knowledge Initiative (SKI) convened the "Agroecology in the 21st Century" conference in Cape Town, which led to a process of civil society consultations and the development of a fledgling agroecology platform for sharing experiences and consolidating work towards policy change. In 2020, this process coincided with civil society mobilisations in response to the Covid 19 pandemic and the deepening social, political and ecological crises. A wide network of organisations and individuals, led in particular by the Land Network National Engagement Strategy (LandNNES), successfully persuaded the government to open Covid relief packages to include smaller and homestead producers and ecological inputs. Building on these processes, the Biowatch-convened AESA platform has created a space for interactions between different organisations and groups. During this time a civil society network calling itself Unpoison[4] has emerged from the agroecology movement around the phasing out of pesticide use in South African agriculture.

Throughout this period, there have been multiple local initiatives and networks of varying reach and formality. Government framing in the past 5 years is not hostile to the idea of agroecology and many elements are included in policies and plans, as indicated below, although there are serious questions about government commitment to realise these elements in practice.

[4] https://unpoison.org/

3. Discourses and actors in the agroecology debate in South Africa

3.1 Discourses: international narratives and South African development

Discourses / narratives are divided into four broad categories, loosely based on Holt-Gimenez and Shattuck (2011) and Murphy (2012) with adaptations in particular to the definition of the 'progressive' category as indicated. Table 1 summarises these categories with Annex 4 providing a more detailed overview of these discourses. As shown, the incumbent 'corporate food regime' encompasses explicit neoliberal and reformist approaches with 'food movements' alternatives including progressive (agroecological practice) and radical (food sovereignty) categories.

Table 1: Discourse matrix

Corporate food regime		**Food movements**	
Neoliberal	***Reformist***	***Progressive***	***Radical***
Food enterprise	***Food security***	***Agroecological practice***	***Food sovereignty***
Core approach based on food coming from corporate-industrial producers. Key strategies include increased corporate-led industrial production; Green Revolution; high levels of external inputs such as fertilisers and agro-chemicals; expansion of GMOs; public-private partnerships; market access (especially export markets). Small scale producers (especially those using natural techniques) are seen as an anachronism, otherwise as cheap labour and land for production of mass commodity crops.	Large-scale commercial agriculture still at the base of food production and distribution, but some role for smallholder producers through value chain integration, some recognition of environmental limits and constraints, especially water and soil. Environmental modernisation / sustainable intensification within a capitalist market context (e.g. CA/CSA). Diverse views on agroecology/organic production from within the reformist group: i) Organics as a premium niche market ii) Natural farming as a hobby but not for bulk production iii) Agroecology is equated with subsistence production / 'traditional' / backyard agriculture or homestead gardening with a welfare and poverty relief emphasis.	Core approach based on food coming from an open set of dynamic and interconnected practices on a continuum from a set of "entry level" practices to integrated systems at farm, landscape and territorial levels. Core/entry level practices are no GM seeds; use of only organic/natural soil fertility methods; and use of only organic/biological pest management and controls. Key role for smallholder production and small enterprises throughout supply systems. Sustainable food systems, fair and short distribution networks, food systems embedded in local economies. Social and ecological integration, popular and indigenous knowledge, key role for women, right to food. Collective and participatory practices.	Core approach sees food coming from agroecological practice based on organised collective agency and democratic control of food systems. Radical nature of approach characterised by radical redistribution of land and other resources, active organised resistance to corporate and other extractive encroachment / occupation of agricultural, food and wider systems.

Discourses in the corporate food regime are based on the core idea that industrial agriculture organised on capitalist principles is necessary to feed the world. They question the viability

of diverse and integrated ecological agriculture as a mainstream strategy. Key concepts in the dominant narrative are productivity, growth, commercial value chains and markets, economies of scale, global competitiveness, export orientation, new technology and the fourth industrial revolution, precision agriculture, food production and distribution as a business, with a belief that science and technology can solve natural resource limits (Sihlobo 2021).

There is a continuum within the discourses of the corporate food regime. Aggressive neoliberalism, underpinned by global finance capital, seeks the ever-expanding commodification and financialisation of natural and social resources in the pursuit of profit. Survival of the fittest (Social Darwinism) lies at the heart of social policy. The neoliberal attitude towards agroecology is either that it is irrelevant or that it is a dangerous delusion. Generally, small scale production is viewed as an anachronism except possibly in a few niche high value markets, or otherwise as a source of cheap outsourced labour and land for mass commodity production.

Reformism incorporates a range of different approaches. Generally, the view is that large scale commercial farming underpins the food system, but there is stronger recognition of the (potential or actual) role of smallholder production. In the South African context, there is a strong political imperative to embrace smallholder production, but this mainly takes the approach of integration into commercial value chains as the only viable approach. Food security is viewed from a "productivist" base (how much food is being produced). There is a strong element of linear modernisation, where the basic assumption is that, with appropriate support, small scale producers can and must 'graduate' to larger scales and more commercial production over time. This notion is entrenched in South African policy and underpins the government's approach to smallholder farmer support, well-captured in the 'emerging farmer' discourse.

In contrast to the "ecocide of neoliberalism" (White 2018), the reformist category incorporates recognition of at least some of the environmental limits of contemporary industrial agriculture and food systems. This leads to diverse responses, of which the most mainstream are conservation agriculture (CA), climate smart agriculture (CSA) and other narrowly defined "sustainable intensification" approaches (e.g. water use efficiency, waste management) which can operate comfortably in large-scale commercial farming and export-oriented contexts (Mahon et al. 2017). A number of different views are taken from within the reformist category on the role and potential of agroecology or organic production. One view considers organic to have a place in mainstream or premium niche markets based on commercial standards, regulations and certification. Another approach sees organic or agroecological production as a nice hobby but not realistic for mainstream production of food. A fairly widely held approach is an association of agroecology with subsistence / 'traditional' /backyard or homestead gardening, as a welfare intervention at best.

The NetMap sessions indicated a strong emphasis on the crucial role of media especially social media in carrying forward narratives on agriculture, food, agroecology, environment and related issues. A cursory scan of the media indicates that agroecology currently has almost no public presence and the media is saturated with corporate advertising extolling the benefits of the concentrated food system. The media tends to reproduce the dominant narratives of the corporate food regime. Most discussion focuses on organic as the most well-known and well-used term with the longest history in South Africa. Agroecology as a specific term hardly features in public discourse at present. Mainstream media in South Africa is

almost devoid of any discussion on ecological production, with most of the relatively limited conversations happening in specialised agricultural publications such as *Farmers' Weekly* and various online sites. More recently there are attempts to establish regenerative agriculture as another approach to sustainable agriculture.

At worst, organic / agroecology is viewed as an ideologically-driven, unscientific and dangerous distraction from the real imperatives of farming. There are occasional direct attacks (e.g. Vegter 2018; Njoroge 2020; Nshimiyimana 2021) but these are generally marginal; and the dominant view is that organic or agroecological production is essentially irrelevant – or niche at best. There is some recognition in the media of the environmental limits of conventional agriculture as practiced in South Africa and responses on a range of topics including integrated pest management (IPM), soil health and fertility, water use efficiency, climate change, CA/CSA as a central element in field crops, and consumer and health dimensions. Otherwise, ecological production tends to be narrowly defined in terms of commercial organic production for niche markets. There is some media presence from this angle, with intermittent articles carrying positive examples of commercial success in organic production across a wide range of products. Social redress and transformation are unevenly considered in media representations of ecological production, with some stories highlighting commercial black smallholder producers.

A number of media articles discuss the pros and cons of organic vs 'conventional' production (e.g. Agri News Net 2021; Janion-Scheepers 2020; Phillips 2015). Overall there is some scepticism of claims but recognition of the impulse to sustainability and environmentally friendly approaches. Some specific cons of organic / ecological production raised in the media are lower yields / low productivity, lack of scientific rigour or evidence base, higher consumer prices (in the context of widespread food insecurity), and questionable claims about environmental and nutritional benefits of organic production. One example from Agri News Net (2020) will suffice to illustrate the point:

> "Much research has been published by organizations that are vested in organically grown foods touting their superiority over conventionally grown foods in terms of nutrients contained. However, most of this research is of questionable quality. Other research investigating numerous studies has concluded there is not a significant difference in nutrient content between organically grown and conventionally grown foods."

Food movements are placed into progressive and radical categories. Holt Gimenez and Shattuck (2011) indicate 'food justice' as their progressive category. For our purposes, food justice has been incorporated into the radical category under food sovereignty. We have defined the progressive category as agroecological practice based on the proposition that the adoption of a combination of practices in ecological production and participatory methods and their integration at farm and landscape levels within broader sustainable food systems indicates an inherently progressive orientation. The radical category / food sovereignty movements take this a step forward through organisation and elaborating an explicit radical anti-capitalist, anti-racist and feminist political analysis and critique (Satgar 2013).

The progressive category is based on a discourse of the ecological and social (economic, justice, health, wellbeing) benefits of an open-ended list of diverse agroecological production practices and participatory methods using popular and indigenous knowledge as indicated in Annex 4. This is viewed as a continuum, ranging from the core/entry level practices to

integrated systems at farm, landscape and territorial levels, with social and ecological integration.

The radical category is based on food sovereignty and a radical and explicit critique of the dominant industrial-corporate food system. For current purposes, food sovereignty is defined as incorporating the progressive / agroecological practice discourses and activities plus organised collective agency and democratic control of food systems which may not be explicit in the progressive category. Food sovereignty incorporates the cooperative organisation of food systems; racial redress and black African leadership (specifically in the South African context); gender equity and feminism; radical and rapid redistribution of land and other resources; and active organised resistance to corporate and other extractive encroachment / occupation of agricultural, food and wider systems. It embraces the spiritual, earth, culture, lived experience, seed and indigenous knowledge as core components of agroecology and food sovereignty in practice (Ngcoya and Kumarakulasingam 2016).

A trend in the food movement is towards practice "in the shadow of policy" (Hebinck and Cousins 2013) with efforts to work 'beyond' the state in the context of state capture and lack of responsiveness. Recent literature details how embedded this form of corruption facilitated by powerful figures within the state has been (Chipkin and Swilling 2018) and how state capture has exacerbated institutional decay (Jonas 2019). State capture has undermined the social contract that was intended at the advent of democracy in 1994.

3.2 Actors in the South African debate

Four major actor clusters are identified from the NetMap discussions undertaken by the project. These are actors who either are important in the agricultural space and may act as an obstacle to the development of agroecological approaches in South Africa, or actors who are pushing for agroecological transitions (Annex 5). In the NetMap sessions, actors were defined in broad terms to include people, organisations, institutions, documents, narratives or anything else that exerts an independent influence on the adoption of agroecological practices in South Africa. Actors are obviously inter-connected, producing dense networks of relations. For coherence, documents and narratives have their own sections in the report.

3.2.1. Private sector

The private sector cluster incorporates the dominant agro-industrial complex consisting of key industry bodies and relationships throughout the food system. The Agricultural Business Chamber (AgBiz) is a key umbrella organisation. Within this dominant complex, the agrochemical complex has been identified as a very powerful group and as the main bulwark against adoption of agroecological practices. Multinational GMO/seed/chemical companies (Bayer-Monsanto, ChemChina-Syngenta, Corteva, BASF and other smaller actors) with CropLife as the lobbying/public relations arm, and the Fertiliser Society of South Africa anchor the agrochemical complex. Agroecology is in opposition to the core business model of the seed and agrochemical companies, who favour private intellectual property (IP) rights and expansion of Green Revolution technologies. Other private sector entities that form part of the dominant agricultural complex are organised throughout the value chain embedded in the food system. This includes AgriSA and commodity organisations in agricultural production, the Consumer Goods Council of SA (CGCSA) for manufacturing, retail and wholesale, the Beverage Association of SA, and a network of technical organisations such as the South African Association for Food Science and Technology (SAAFoST).

Private sector financial entities also predominantly reinforce and even drive the dominant approach. For smallholder production, the emphasis is on the Green Revolution. There is an increasing role for 'philanthro-capital', with the Bill and Melinda Gates Foundation (BMGF) pushing this agenda particularly strongly through the Alliance for a Green Revolution in Africa (AGRA) and associated initiatives (although AGRA does not have a direct presence in South Africa). The BMGF has gone a long way in capturing and channelling the flow of public sector resources towards supporting Green Revolution approaches, reflected in policies and programmes from the African Union (AU) down to individual countries.

However, there is some differentiation, with some private sector philanthropies explicitly supporting agroecological practices and even food sovereignty activities (e.g. the multi-donor global Agroecology Fund[5]). Domestic corporate social investment more or less follows global lines, with the focus on value chain integration, adoption of new technologies and so on, but also a reformist strand that seeks to support innovations around environment and food security.

Market and supply chain actors are an important category within the private sector. These actors are diverse, though they tend to accept the neoliberal orthodoxy with some reformist measures. The food retailers are significant actors as buyer-driven value chains characterise the agro-food system. The big supermarkets have a lot of power to shape food choices. Together with fast food outlets they drive demand for cheap, ultra-processed foods. However, they are also coming under some pressure to support more environmentally friendly production and distribution systems as consumers become more aware and more demanding around health and diets in particular. The National Fresh Produce Markets have been corporatised and primarily adopt a neoliberal orientation. However, there are also more local fresh produce markets and the idea of decentralised, community-based markets is gaining traction. These are more reformist in orientation, in particular encouraging smallholder production. These have potential to move into the progressive realm around support for fresh and healthy local agroecological produce. Nonetheless, practical application of these ideas is still in early stages. New technologies and enterprise models refer to 'green' business that may be forms of 'greenwashing' or may go beyond business as usual to look for market-based solutions to ecological and social challenges. An example might be waste recycling and reuse.

Neoliberal ideology is taken for granted amongst many private sector actors, although there is often also a reformist orientation, for example the inclusion of smallholders into commercial value chains and some recognition of the environmental limits of dominant production and distribution practices.

The dominant complex has a very strong influence on government's orientation, in particular the Presidency, the Department of Finance, Treasury, the Department of Trade, Industry and Competition (DTIC), the Department of Science and Innovation (DSI, formerly Science and Technology) and, to a large extent, the DALRRD as well (although this is uneven, with some pockets of a more progressive orientation in the latter). This is reflected in policies as indicated below.

[5] https://www.agroecologyfund.org/

There are some openings for agroecological practice in the private sector, including actual practice by producers, and some sporadic interest in organic fresh produce by retailers, food service and informal traders. Private sector donors, media, and technological and enterprise innovations also offer initial opportunities to support agroecological transitions that could be expanded.

3.2.2. Academia, research, education and training

This category cuts across public and private. The dominant institutions follow a similar pattern of the predominance of neoliberal discourse, with some reformism and beachheads for support to agroecological practices.

Key institutions are the universities, especially those with Agriculture, Veterinary and increasingly Micro-Biology Departments, international research partnerships especially with universities in China, European Union, India and the United States, and the public organisations like ARC, National Agricultural Marketing Council (NAMC), and agricultural colleges. In 2021 the Academy of Science of South Africa endorsed the establishment of a multi-actor Forum on Just Transition[6] which could potentially offer an avenue to advance agroecological practices.

The research councils, in particular ARC, have historically supported the dominant paradigm. The other councils, such as the Council for Scientific and Industrial Research (CSIR), the Human Sciences Research Council (HSRC) and the Water Research Commission (WRC) are not mandated to focus specifically on agriculture. Related research has also been influenced by the dominant paradigm although pockets of research have been sympathetic to alternative paradigms emphasising "sustainable development".

In 2020, ARC declared their commitment to sustainable management of natural resources, production of safe and nutritious food and biodiversity conservation with appropriate research strategies under consideration (Auerbach et al. 2021). ARC's mission and legislative mandate refer explicitly to sustainable agriculture and natural resource conservation, which opens the door for agroecological approaches[7]. The appointment of new Board members (see below) with commitment to and practical experience with agroecology has done much to galvanise this change. However, proponents of agroecology still face heavy resistance from embedded interests within ARC. The ARC parliamentary grant has been dwindling over the years, and ARC has been instructed to source private sector funding and become "more sustainable" (financially independent). This makes it increasingly difficult for the ARC to undertake "public good" research. Directly engaging with ARC structures in the provinces, which are aligned with provincial agricultural structures, is a promising opportunity.

The WRC has emphasised research related to agroecology although this is not explicit. For example some of its strategic pillars have focused on 'water utilisation in agriculture' and 'water-linked ecosystems' including ecosystem processes, ecosystem management and utilisation, and ecosystem rehabilitation (Bonthuys 2021). On-going research resonates with some aspects of agroecology. Research has included the use of water by smallholder farmers and water allocation reform; wise use of water aiming to support reductions in irrigation

[6] https://www.assaf.org.za/index.php/about-assaf/council-members/2-uncategorised/765-assaf-forum-on-just-transition
[7] https://www.arc.agric.za/Pages/About Us/

water demand; improved productivity and quality (nutritional value) of food and homestead gardens; and use of rainwater harvesting.

The academic research community can be differentiated into those who focus on scientific and technological solutions to questions of food security, in particular agricultural production and food science (processing), that often have a strong link to the private sector seeking innovation for products, those that focus on food sovereignty with strong links to civil society organisations, and those in-between with a large spectrum of research from food safety and microbiology to political economy which straddle funding sources in an increasingly austere funding environment (e.g. the CoE-FS at the University of Western Cape and the University of Pretoria).

Extension services and training is more firmly in the reformist category as the focus is explicitly on commercialising smallholders, with some potential opening towards agroecology. The Agricultural Sector Education and Training Authority (Agri SETA)'s Primary Agriculture course has space for permaculture/organic production training. New curricula and methods, including for participatory methodologies in extension training/reskilling, open important channels for engagement around support agroecological practices. Many civil society organisations and individuals offer diverse training and learning, but these are not yet consolidated. This includes some private training institutions (e.g. Hermanus Varsity Trust). A number of civil society organisations (CSOs) are working on developing a framework process for agroecology curriculum development through the Quality Council for Trades and Occupations (QCTO).

3.2.3. State entities

Departments are key state entities, in particular DALRRD across numerous directorates, provincial departments of agriculture (PDAs) and Department of Forestry, Fisheries and Environment (DFFE). For DALRRD, although all directorates are relevant, there are current civil society links on agroecology to Plant Production, Genetic Resources, Subsistence Farming and Extension Reform. Other important departments are the Department of Health and Department of Social Development (DSD).

These line departments are generally subordinate to The Presidency, Department of Finance and National Treasury, and the politically powerful DTIC and DSI which are more oriented towards neoliberal approaches, with some reformist elements. This dominant state cluster does not allow much room for agroecological practice and experimentation. Budgets of line departments reflect priorities set at the higher level, in particular through the Medium Term Strategic Framework (MTSF), the implementation plan for the National Development Plan (NDP) and the Food and Nutrition Security Plan (FNSP) Technical Coordinating Committee (see policies below).

Even if their mandates related to food and agriculture are limited, local governments and metros have some room for manoeuvre (de Visser 2019; Kroll 2021) and a critical role to play, in particular on legislation / health and safety regulation on processed foods and to create an opening in the market for agroecological produce, preferential procurement, spatial and land use planning and zoning, urban agriculture as a local response to food security in cities (direct promotion of agroecological practices), management of fresh produce markets, and subdivision of land for small-scale producers. Details are not reviewed in the policy section below because this will be context specific.

As with the private sector, public sector financing tends to support the dominant approach but with some openings for explicitly agroecological support, especially the German, Swiss and French governments, the European Commission, development agencies and the Global Environmental Fund (GEF).

Essentially state entities are a mirror of the wider society with a combination of neoliberalism and reformism as the dominant discourses and approaches, and some opportunities for support for agroecological practices.

3.2.4. Civil society organisations (CSOs)

'Civil society' is used loosely here to refer broadly to farmer organisations and other community-based organisations, non-profit organisations and NGOs, activists, movements and practitioners / producers working on agroecology. CSOs can be placed on a continuum from those supporting gradual shifts in commercial agricultural practice, to the organic sector, to food sovereignty on the radical end. Academics are also considered part of civil society but are discussed in the section on education above.

On the commercial side the main focus is on environmental reform, linked to innovating large and medium scale commercial farmers and the private sector. CA is a core element, mainly in grains with extensive uptake in wheat in the Western Cape, for example, in response to widespread soil degradation. According to the draft CA Policy "commercial farmers across the country have to some extent embraced the principle of minimum soil disturbance through various forms of reduced tillage practices (such as stubble mulching) but have mostly not moved to no-till or complete CA systems. On average, South Africa's CA adoption rate among grain producers is estimated between 20 and 30%, with the highest proportion of farmers (>70%) registered in the Western Cape Province. The adoption rate among grain producers in KwaZulu–Natal is estimated at between 50 and 60%, while it ranges between 10 and 40% in the Free State, Mpumalanga, Gauteng and North West Provinces." (DAFF 2017:8).

A group of organisations and individuals are associated with this shift. Farmer Innovation Platforms have been established in multiple sites of practice, including KwaZulu-Natal (KZN) no-till clubs, Western Cape CA, the Ottosdal study group in the North West, the Reitz study group, ASSET in Vrede in the Free State, and more recently the Maluti study group in the Eastern Free State, and the Mpumalanga Highveld study group. This could simply be greenwashing or sustainable intensification, but could also go beyond it as the following quote from Professor James Blignaut (University of Stellenbosch), one of the key proponents of CA, indicates:

> "When the farm is managed in a way that revitalises soil life, then that life will be transmitted to the plant and to the food, and to us … Such management practises include permaculture, silvopasture and conservation agriculture. Farming practises such as no-tillage, cover crops, crop rotation, intercropping, composting, livestock integration, mobile animal shelters and pasture cropping, among others. It is a system-wide approach whereby the external inputs, such as pesticides, fertilisers and fossil fuel use are minimised, while reducing and recycling waste and integrating biodiversity into the farm production system … Heal the land, heal the people. This is more than a catchy phrase. It is our life.

> It is our future. There is much food for thought about how we produce, distribute, process, prepare and enjoy our food. The closer we are to the source of the food, the closer we are to the farm and the more regenerative the farming practice is, the healthier we are … While the land and its people are being healed through regenerative processes, so is the resilience and robustness of the social-ecological ecosystem strengthened. The social-ecological ecosystem is this interaction between people and nature, and among people and nature-based organisms that make life possible." (Blignaut 2020)

The important aspect of CA/CSA is that it is the first systematic attempt to start moving commercial agriculture in South Africa towards more sustainable environmental practices, and which has some traction amongst producers. Wilson (2008) makes a strong case that "large economically buoyant farms" have the greatest "transitional potential", with good opportunities to adopt strong multifunctionality pathways. Although they may be strongly profit-oriented, they have a wider range of options available to them to embark on non-productivist decision-making pathways. In contrast, smaller producers may have fewer options and be more dependent on agricultural production for immediate survival, which could constrain their choices. Since large-scale commercial agriculture is dominant in South Africa, it is not possible (barring rapid and large-scale land redistribution, which is highly unlikely at this time) to talk of an agroecological transition without thinking about how this segment of the farming population is going to move towards more environmentally sound practices.

Moving from the commercial side along the continuum, there are some intermediary type organisations that have been working at building bridges through facilitated dialogue between the private sector, government and civil society on food, agriculture and environment with links to academia in some instances. Examples of these mentioned by participants in the mapping process are Worldwide Fund for Nature (WWF) and Southern Africa Food Lab (SAFL).

The organic movement is a significant civil society actor, organised by SAOSO and PGS SA described in the history above. The organic movement is not monolithic, and ranges from niche premium export markets and smallholder value chain integration through to more integrated and food sovereignty approaches. There are key individuals connecting civil society networks to formal education and training and the ARC, some of whom sit on the ARC Board and are making efforts to introduce ecological organic agriculture into ARC.

On the radical end are fairly robust food sovereignty networks. Numerous organisations and individuals were identified in the mapping process. There are large, multiple overlapping networks of variable extent, history and formality. There are some different emphases but general agreement on ecological sustainability and harmony and social justice and redress across a wide spectrum of understanding. There was rapid integration in response to the Covid 19 pandemic incorporating these interconnected networks, organisations and individuals e.g. Trust for Community Outreach and Education (TCOE), Inyanda National Land Movement, Rural Women's Assembly (RWA), COPAC, SAFSC, AESA, Right to Agrarian Reform and Food Sovereignty Campaign, SPP, SAOSO, ACB, Biowatch, ECARP, Association for Water and Rural Development (AWARD), Environmental Monitoring Group (EMG), Siyavuna, Ukuvuna, Mahlathini Development Foundation, Abalimi Bezekhaya, Ntinga Ntaba ka Ndoda amongst many others. There are also many more localised networks, with multiple provincial and inter-provincial links, and hundreds or thousands of individual

organisations, local initiatives, producers' organisations and cooperatives. Since the start of the pandemic, there have been notable fresh interactions between land, agroecology, food sovereignty, organic, food systems, climate, water and environmental networks.

South African CSOs participate in a number of regional and continental networks and initiatives such as the Alliance for Food Sovereignty in Africa (AFSA), the AU's Ecological Organic Agriculture Initiative (EOA-I), La Via Campesina (LVC), SKI, Organic Knowledge Initiative and RWA.

The trade unions constitute another component of civil society that is under-represented in food sovereignty movements to date. Unions have shown some interest in agroecology and sustainable food systems. However, they are currently siloed from the wider food sovereignty movement. A bridge has been formed between Cosatu/Naledi and Biowatch which could bring the unions and the food sovereignty movement closer. To date farmworker unions and support organisations have not engaged strongly on agroecology. This is an important constituency that should be included.

There are a number of more localised small scale producer networks, associations and individuals (farmers and fishers) including innovators that are more or less aligned with the broad principles of agroecology (ecological sustainability, social justice and equity). The African Farmers' Association of South Africa (AFASA) tends to follow a reformist approach, with exploration of links to progressive and radical movements to date mainly around land access.

For agroecological practice (progressive) and food sovereignty many opportunities present themselves. There is a diverse base of practitioners in civil society, and amongst individual producers and small enterprises in the private sector. Practice, research, learning/training and facilitation do exist and are enduring but fragmented, offering opportunities for consolidation and strengthening across groups.

4. The policy environment affecting agroecological practice

4.1 Introduction

Policies and plans can be divided into broad categories. The first is the overall national planning framework. In the context of the Constitution, which theoretically guarantees a range of social and environmental rights, the NDP 2030 is the overall framework, although it is highly contested. A series of plans flows from this including the MTSF, the National Spatial Development Framework (NSDF), the Industrial Policy Action Plan (IPAP) and the Agricultural Policy Action Plan (APAP). The latter is the most important for any efforts at agroecological transitions, although it has not been updated since the previous administration (see below).

The second category are those policies that align with a more neo-liberal approach and that actively hinder the development of agroecological transitions and practices. The general framework is a mix of neo-liberal and reformist approaches, with large scale commercial agriculture understood as the unquestioned base of production, and smallholder integration into commercial value chains on the edges. Some policies and laws date back to the apartheid era while others have been revised in the context of agricultural deregulation and trade liberalisation over the period of democratisation. Some key policies are firmly neoliberal, notably on trade, seed and agrochemicals.

A third category of policies are those that open space for agroecological practices even if unevenly and sometimes in contradiction with other policy elements in the same or other policies. Two attempts have been made to develop overarching policies: the draft National Organic Policy from 2010, and the draft National Agroecology Strategy from 2013. However, these have essentially been shelved. Some CSOs have tried to keep them moving over the decade since then, with limited success. This leads to existing policies that may allow an agroecological strategy or programme to be pieced together from various existing policy statements, plans, strategies and programmes. In this regard, agricultural and environmental policies are best considered together, with significant convergence, especially around climate change, biodiversity and natural resource management (NRM).

Here the policies can be sub-divided into those dealing with producer support, and those on climate, NRM and biodiversity. Under producer support notable policies are the draft National Policy on Comprehensive Producer Development Support (CPDS) from 2019 (currently going through approval processes), the Extension and Advisory Services Policy of 2016, and the (approved but not implemented) National Pesticide Management Policy of 2010 which seeks to revise outdated chemicals laws with greater transparency and consideration of environmental and health impacts and responses. The National Food and Nutrition Security Plan includes a strong theoretical framework in support of ecological production of healthy food. Producer support programmes are multi-dimensional but do offer potential for a range of agroecological practices.

Climate change policies and plans, CA and CSA, NRM, biodiversity, land reform and spatial planning policies, frameworks and plans all offer openings for ecologically sustainable and socially transformative agricultural and food practices. All of these tend towards reformist and to a lesser extent progressive approaches but are not always given adequate resources or support for their actual implementation. These and others are elaborated in more detail in the section on policy below.

4.2 National policy framework

The agricultural and food system policy framework is informed by the Constitution, in particular the Bill of Rights sections on environmental protection and environmentally sustainable development; land reform; and the right to sufficient food and water, as well as the broad framing of redress and participation to overcome the legacy of apartheid. However, there is significant contestation around how these goals are best achieved and in practice these progressive elements have not materialised in any systematic way.

The *National Development Plan 2030* (NDP) is the overall plan to guide national policies and programmes, although it is contested and as a result has not been implemented with unity of purpose or effectively to date. Under President Ramaphosa efforts are being made to revive the NDP, especially using the Master Plan approach. In relation to agroecology, the NDP calls for "significant investments in new adaptive technologies and techniques in the water, biodiversity, fisheries, forestry and agricultural sectors" and in "conserving, rehabilitating and restoring natural ecosystems to improve resilience". It aims for 1 million direct and indirect jobs in agriculture by 2030; the highest potential area of job creation is seen as small-scale farmers with 0.5-5ha of land and irrigated labour-intensive (commercial) smallholder production. The NDP does not support agroecology explicitly.

The NDP has a differentiated rural development strategy with agricultural development "based on successful land reform, employment creation and strong environmental safeguards". "The consequences of industrialised agriculture and the country's unique ecosystems also demand that serious attention is paid to sustainable agriculture. This includes greater attention to alternative energy, soil quality, minimum tillage and other forms of conservation farming". However, there is a strong emphasis on export markets. Alternative market channels are rejected, with an emphasis on smallholder integration into large scale commercial value chains. The NDP adopts a commodity approach, with a focus on fruit, vegetables and nuts for smallholders. There is also a focus on grain and livestock including poultry, but these are considered in the context of large scale commercial (conventional) production. Products of the NDP include the MTSF 2019-24, the draft NSDF 2019, IPAP and APAP.

The *Medium Term Strategic Framework* (MTSF) is the 5-year implementation plan for the NDP. For agriculture, the latest MTSF says no more than that it will carry forward the goals of the NDP. Localisation and import substitution plans include small, micro and medium enterprises (SMMEs) in agriculture and agro-processing. The Department of Health and DALRRD are to coordinate on responding to food insecurity. The Framework speaks of transitioning South Africa to a development path that actively pursues environmental sustainability as a core value with a "just transition to a low carbon economy". The MTSF places emphasis on "rapid and sustainable land reform and agrarian transformation" and proposes building capacity for climate change programmes at municipal level, promotion of smallholder farmers, conservation agriculture, and smallholder access to fresh produce markets (FPMs). Overall, it is geared towards commercialisation through existing commodity organisations. Reference is made to farmer associations but no other civil society formations are mentioned.

The draft *National Spatial Development Framework* (NSDF) follows from the NDP with an emphasis on commercialisation of smallholders and export orientation. There is some

recognition of ecological sustainability and social justice, including new acknowledgement (in contrast to the Mbeki-era National Spatial Development Perspective of 2006) of the enduring importance of rural areas and the need for sustainable investments in diverse agricultural production. The NSDF contains elements that are relatively neutral in terms of agricultural production, but which do open the space for agroecological activities. These include rapid land reform for redress, recognition of the need for economic diversification, protection of 'ecological infrastructure' (water catchments, wetlands, etc.) and maintaining national biodiversity and ecosystem integrity. The draft Framework states that "new agriculture support entities, cooperatives, equipment, fertilizer, market support, funding and research will need to be introduced in towns in rural areas to support a new type of farmer" (p.53), though nothing further is provided on the character of these new farmers. It proposes the pursuit of intra-rural trade to enable local food flows beyond the dominant formal retail system, and "transforming the current highly financialised commercial farming agricultural sector into a mixed system, including hundreds of thousands of small and medium-sized producers, and optimising the economic dividends from the research, marketing, financing and equipment development opportunities that this transition will create in both urban and rural South Africa" (p.81).

The *Agricultural Policy Action Plan* (APAP) is the NDP guide for the agricultural sector. It is somewhat dated as it was the plan for the Zuma administration from 2014-19. Following from the NDP, the emphasis is on niche markets, exports and global competitiveness, with smallholder integration into commercial value chains as the primary logic. However, there is recognition of the high cost of imported inputs especially fertiliser, diesel and machinery. APAP strongly promotes a shift from conventional high-input agriculture to CA/CSA for the commercial sector on the basis of environmental sustainability, reduced production risk and reduced input costs. CA and CSA have diverse interpretations, including contradictory definitions within different policies (see CA and CSA frameworks below).

APAP emphasises support for smallholder production on underutilised land and in peri-urban and urban areas with a focus on vegetable production for local markets. It raises concerns about the high levels of concentration in agro-processing. Further emphasis is placed on FPMs and agro-processing infrastructure. The plan is essentially neutral on production methods, favouring Green Revolution approaches, but not excluding agroecology.

The first APAP 2014-2019 has not yet been updated for the next 5 years. It appears that “22 sectors have been at work on their own plans since President Cyril Ramaphosa’s State of the Nation Address in 2018, during which he invited various economic sectors to create plans for inclusive growth through public–private growth initiatives” (Arnoldi, 2019), with AgBiz drafting an Agricultural Sector Plan. There is no public evidence of this plan to date, or of the relationship between these plans and APAP. This leaves a hiatus with regard to NDP future plans for agriculture.

The IPAP (2018/19-2020/21) focuses less on agriculture though it does include agro-processing and commercialisation of underdeveloped crops with an emphasis on “opening opportunities for emerging new entrants and SMMEs to enter the formal market, supplying value-added niche processed products” for export markets (pp.129-130).

The DALRRD Strategic Plan for 2020-25 says “it is worth noting that subsistence agriculture plays an important role in meeting the needs of residents in rural areas”. It recognises the "growing discourse and attention being paid to in terms of impacts on health and wellbeing,

nutrition and the environment." It says, “over the next five years, various trends [will] affect the future of the agricultural sector in South Africa, a few of which are: social and economic development, environmental governance and focus on sustainable food production/practices”. It then says, “there are also several market opportunities in the sector, which could contribute positively to the revitalisation of agriculture in South Africa. These opportunities include sustainable agriculture, renewable energy for agriculture, alternative waste treatment, water usage efficiency” (p.48).

The 5-year plan says, “Large-scale changes from degenerative to regenerative farming systems and practices, during the next five years, [are] of crucial importance to minimise the negative impacts of global warming and climate change on natural agricultural resources while sustaining crop and livestock production.” It continues, “In February 2018, a Draft Conservation Agriculture Policy was released. It has been recognised that conventional farming mechanisms are not sustainable, and the policy aims to encourage and establish ecologically and financially sustainable systems to enhance food security” (p.42). “Participation should include stakeholders within the sector on initiatives and interventions to increase production within the subsistence, smallholder and commercial environments” (p.64). The plan emphasises economic growth and commercialisation in a linear modernisation approach.

As an example of a provincial strategy taking its cue from national policy, the Western Cape *Smart Agriculture for Climate Resilience* (SmartAgri) Strategy reveals the influence of CA. The SmartAgri plan, launched during May 2016, identifies CA as one of the six key priority projects which will fast track climate change resilience of the agricultural sector. CA has been adopted for the sustainable production of rainfed grain and other field crops, but the underlying principles of sound integrated management of natural resources for the long-term sustainability of production apply equally to orchards and potato farming, with context-specific adjustments. The rooibos sector has also shown great interest in integrating CA into their farming practices[8]. The SmartAgri plan places considerable emphasis on action from government (national, provincial and local), commodity organisations and other organised agriculture and stakeholders, and on targeted research to fill major knowledge gaps that hinder more proactive action.

Overall policy is contradictory, reflecting the ongoing contestations at the heart of South African society. For food and agriculture, the dominant voice is of large scale commercial agriculture and big business in the discourse of global competitiveness, export orientation, commercial value chains and finance. However, within the policy mix there are also relatively consistent voices on environment and climate, and also a (more muted and fragmented) voice in favour of ecologically sound, mass based and socially just transformation. These voices contest and contradict each other in the texts.

This contradiction occasionally even manifests in policy critiques found in other policies. For example, the DAFF Agroprocessing Policy Framework (2016:1) critiques the DTIC and DSI’s approach to agro-processing:

[8] It should be noted that parts of the rooibos sector, including previously disadvantaged smallholder farmers, have been certified organic for many years. However, rather than learning from them, provincial governments have chosen to undermine them. (Discussions during Avaclim field visit to Heiveld Co-op, Nieuwoudville, Northern Cape, May 2021)

> "The intervention by the Department of Trade and Industry (the dti) and its subsidiary, the Industrial Development Corporation (IDC) including the Department of Science and Technology (DST) and its subsidiary, the Council for Science and Industrial Research (CSIR) mainly focuses on the downstream agro-processing activities of large-scale and established agro-processing industry. Therefore, the interventions are inadequate to meet the needs and challenges encountered by small and medium agro-processing enterprises particularly those located within the primary and secondary agro-processing segment at farm level and beyond the farm gate".

It is clear that a range of policies exist that have an indirect or direct bearing on agroecology. There are strong intersections with policies and plans in different sectors, for example sustainable agriculture, water resource management, environmental management, climate change, food security, the green economy and trade. All of these have the potential to influence agroecology positively or negatively. However, some policies or parts thereof are enacted and implemented and others left unimplemented. One way of looking at these is to consider that a "policy hierarchy" exists which requires careful analysis and understanding. The existence of this hierarchy implies that some policies enjoy greater attention and resourcing at the highest level, and that these can shift with political expediency.

A number of key national goals, such as economic growth, employment creation, food and nutrition security, rural development, and climate change mitigation and adaptation, are articulated within a broad range of policies at national level. These goals can and do work against each other if not carefully aligned to a coherent vision. Even within the NDP contradictions exist: the reduction of carbon emissions espoused in one chapter is offset by another that invites infrastructure development in support of the coal industry. The broad range of agriculture- and food-related policies also do not align coherently. This is partly because a clear vision of a future agrarian system and how to get there, is missing. A recent policy review found that South African agricultural policies do not actively promote food security and the lack of an enforceable food security policy makes it difficult to coordinate existing policies (Hendriks and Olivier 2015). This incoherence is largely derived from an ideological heterodoxy in government and the Cabinet (Calland 2015). In essence, policy coherence requires a more coordinated approach that has both political will and resourcing. The promotion of agroecology will only succeed with greater alignment in this multi-policy, multi-institutional and system-wide frame.

Depending on the emphasis placed on particular national goals, different policies can be situated within the policy hierarchy. For instance, an agriculture policy that focuses on creating one million new jobs will take precedence over a policy that places environmental sustainability before employment creation. Similarly, in debates about land reform, goals of social justice and sustaining food security (national food production) are often juxtaposed. This hierarchy therefore shifts according to the particular issue or goal, as well as who is promoting it. This has serious implications for future policies that promote agroecology. By understanding the array of key national goals, policies can be aligned and potential conflicts reduced. In that context, where does agroecology fit? How and where does it align to other policy objectives? If it emphasises one issue at the expense of another it will attract a particular response. As such the "policy hierarchy" allows clear strategic analysis.

Indeed, power lies with those who can implement their favoured elements of policy. Sometimes it only takes one or two lines with a lot of neutral language. Financial institutions

and corporations have a huge power advantage and have 'captured' the system and skewed it in their interests. From the NetMap sessions, across the board, the agrochemicals complex was identified at the heart of the agriculture power structure. This includes finance capital and multinational corporations in biotechnology, seed, agrochemicals, mining, synthetic fertiliser and machinery.

4.3 Policies hindering the transition to agroecology

Policies reflect the dominant power structure indicated above. Green Revolution solutions are the default for smallholder / small-scale producer support. As a result, producer support programmes such as the Comprehensive Agricultural Support Programme (CASP), Ilima/Letsema, Fetsa Tlala and others discussed below are premised on Green Revolution technologies including GMOs and hybrid seed, synthetic agrochemicals (pesticides and fertilisers) and mechanisation. Smallholder support is predominantly contained within a value chain integration approach, locked into commercialisation, competitiveness, 'bankable' business plans, export orientation and linear modernisation.

For most of these technologies, smallholders are required to conform to systems designed for large-scale commercial production and distribution. For seed, the Genetically Modified Organisms Act of 1997, the Plant Breeders' Rights Act (PBRA) and Plant Improvement Act (PIA) (both updated in 2018) establish the commercial framework, promoting private IP rights, commercial standards and certification processes based on global benchmarks, and accommodation of GM and hybrid seeds at the expense of locally adapted and indigenous seed.

The agrochemical input industry was deregulated in the early 1990s. Synthetic industrial pesticides and fertilisers with imported IP are assembled in South Africa on licence. Pesticides are under private self-regulation with limited access to information. The National Pesticide Management Policy of 2010 by and large seeks tighter and more transparent governance of the agrochemicals sector. The policy was approved but has not been implemented to date. According to Prof Leslie London (School of Public Health and Family Medicine, University of Cape Town), the Department of Environment indicated a plan to pass a Chemicals Bill in 2016 for rigorous risk assessment of industrial chemicals, but nothing has been released to date. Prof London indicates a lack of political will in government to limit industry influence. A multistakeholder forum was established but industry took consultation into bilateral meetings with government out of view of civil society participants. Civil society only had one NGO and one academic participating, compared with 7 industry representatives. Chemical registration guidelines are drawn from CropLife and the Tobacco Industry of South Africa. Information requests directed to the DALRRD are redirected to CropLife and information provided comes with a disclaimer on its accuracy (London 2019:22). These reveal the power of the agrochemicals lobby in South Africa.

With regard to water in relation to smallholder agriculture, there is strong emphasis in the NDP and APAP on the expansion of irrigation as a key trajectory. It is possible that this approach may be mediated as recognition grows that such as approach is contradictory to climate exigencies. For example, according to the Department of Water and Sanitation (DWS) "the NDP indicates that irrigation can be expanded by 500 000 hectares but the Second Edition of the National Water Resource Strategy (NWRS 2) states that water is available only for expansion of about 80 000 hectares due to limitations in water resource

availability" (DWS 2021:12). Although water legislation, policies and plans emphasise equity and redress in water access, civil society organisations indicate a limited focus on water for smallholder production in regulations and procedures.

Land access and ownership are premised on protection of private property in the Constitution. This essentially endorses colonial dispossession. The land restitution pillar of the land reform programmes takes 1913 as its starting point, by which time most dispossession had already taken place. The land reform programme (restitution, redistribution and tenure security) does recognise the need for redress and redistribution but was initially set within a market-based approach i.e. the state had to purchase land at market value for redistribution. This hampered rapid transfer of land. Even the state's Proactive Land Acquisition Strategy (PLAS) operates on a market-based approach. More recently, the Expropriation Bill opens possible avenues for a more rapid redistribution of land but is unfolding in the context of deep and entrenched corruption which poses questions about the possible positive outcomes of expropriation without compensation.

The content and approach to research and development (R&D), education and training remains locked into the corporate-industrial model, with private IP rights and commercialisation driving R&D, and training content and method geared to meeting commercial employee skills needs e.g. the SETAs, universities, agricultural colleges, etc. This is part of the wider 'socio-technical regime' incorporating market and user preferences, science, policy, culture, technology, etc. which stabilise and reinforce existing trajectories (Geels and Schot 2007). These embedded socio-technical systems are part of the 'lock-ins' elaborated by the International Panel of Experts on Sustainable Food Systems (IPES Food), incorporating elements such as economies of scale, existing agricultural subsidies especially for inputs and bulk retail contracts, with "a web of interlocking market and political incentives tailored to large-scale farming therefore offer[ing] de facto support to industrial modes of production" (IPES Food 2016:46).

In the 1970s and 1980s the apartheid government initiated a process of trade liberalisation and the abandonment of import substitution and food self-sufficiency that had characterised policy to that time. This major process of agricultural deregulation (MALA 1998; Bayley 2000) included emphasis on export orientation and global competition and adopted the neoliberal consensus of the World Trade Organisation (WTO) and the Agreement on Agriculture which came into force in 1995. This framing has governed agricultural trade policy since then, although in more recent times there is some renewed emphasis on import substitution and localisation (see below).

Policy development and implementation is taking place in a very fragmented landscape, with local, district, provincial and national spheres of government, siloed departments, multiple committees, bureaucratic inefficiency, top-down approaches with weak popular participation, lack of alignment, capacity and resource constraints especially at local level, endemic corruption, use of policy for factional and party political battles, government-led (instead of government-supported/ facilitated) processes, poor or non-existent implementation, and limited effective monitoring, evaluation and learning.

There is frank recognition of this context in some recent policy documents. For example, the draft NSDF (2019:73) says: "Inefficiency, incompetence, corruption and theft of state resources has (1) led to an erosion of trust in public institutions, (2) severely damaged the culture of service delivery in the public service, and (3) siphoned off billions of Rands

required for redress and development. The result has been an increasingly frustrated populace that has lost much of its trust in the State and its capabilities." Recognition is the first step to remedy, but this decay of state functionality and descent into corruption is deep and entrenched at this stage.

4.4 Stocktaking of existing policy instruments directly or indirectly promoting AET

Forms of support for agroecological practices are scattered throughout diverse policies, sometimes in contradiction with other elements of these policies. However, there may be sufficient material to piece together a coherent and comprehensive agroecological strategy as well as programmes and pilots. Many policies reflecting on ecological agricultural production are still in draft form. Challenges include resource allocation for programmes, and drivers in government at all levels. Given the failures to materialise these elements of policy, many CSOs ask whether these progressive policy elements are a mere rhetorical cover for enrichment of political and economic elites.

4.4.1 Regional, continental and global

There are currently a number of regional, continental and global policies and processes unfolding. Generally, the dominant continental and regional frameworks mirror the South African situation in embracing the Green Revolution approach to agricultural support, but also reflect social and environmental concerns, which provide opportunities for alternatives to emerge. A few processes of immediate relevance to South Africa include:

The AU's *Agenda 2063* sets out four sub-areas of work, which align strongly to the Sustainable Development Goals (SDGs): Industrialisation and Wealth Creation, Shared Prosperity and Transformed Livelihoods, Human Capital Development and Transformed Institutions, and Natural Resources Management and Environment Resilience. The latter envisages the continent's aspirations for "Africa in 2063 to be recognised globally as a continent respectful of its environment, ecologically conscious with well-established green economy and green energy". Central to this are agricultural programmes supporting adaptation to climate change and building the resilience of farmers to climate related and economic shocks.

The *AU Decision on Organic Farming* (AU 2011) called for the establishment of an AU-led platform on organic farming with the New Partnership for Africa's Development (NEPAD)'s Planning and Coordination Agency "to provide guidance in support of the development of sustainable organic farming systems". This led to the formation of the Africa-wide *Ecological Organic Agriculture Initiative* (EOA-I) with a 5-year plan in 2011-15 followed by a 10-year strategic plan 2015-25. It is aligned with continental frameworks including the *Comprehensive Africa Agriculture Development Programme* (CAADP) and the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (AU 2014).

It is important to recognise that CAADP is generally aligned to the Green Revolution paradigm with which the EOA-1 would have to contend. The Malabo Declaration is essentially a recommitment to the key role of agriculture in African economies, and to uphold the earlier commitment (made in the Maputo Declaration of 2003) to allocate at least 10% of public expenditure to agriculture. South Africa has publicly committed to this and provides

data to the AU Development Agency-NEPAD to track this. South Africa claims 4% of the 10% target, while about 10 of 54 African Union member states have reached the target. Although it is fairly generic on agricultural production techniques, it does place agriculture in the context of the need for conservation and sustainable use of natural resources.

EOA is defined as "a holistic system that sustains the health of ecosystems and relies on functional cycles adapted to local conditions, rather than the use of synthetic inputs which have adverse effects on total health (human, animal, plant and environmental)" (AU 2015:1). A continental policy scan on EOA and national developments undertaken in 2020 develops a typology of countries, from those with developed organic agriculture supporting environment (organic policy in place, product standards, strong government support, farmer organisation and export and domestic markets) to those 'awaiting inspiration', which have none of these elements (Auerbach et al. 2021). To date, only 4 countries are in the strong category (Madagascar, Morocco, Tunisia and Uganda), with 18 countries having nothing in place. South Africa is in the middle, with some market development, farmer organisations and standards but weak on policy and government support (Auerbach et al. 2021). The scan is feeding into recommendations for regional policy which can potentially bind the South African government to adopt EOA as part of regional commitments.

Avaclim[9] is a 3-year project (2020-22) being led by CARI Association comprising practitioners, farmers and scientists to study agroecological initiatives in dry areas in seven countries: Burkina Faso, Senegal, Morocco, Ethiopia, South Africa, Brazil and India to promote agroecology to the political authorities of these countries and to intergovernmental bodies. EMG is the South African lead. The project is building a scientifically-based argument in collaboration with agroecological practitioners. This argument is built in two key steps: the sharing of acquired knowledge between the practitioners themselves and the multidimensional evaluation of the impact of these initiatives using scientific methods. CIRAD is part of the Avaclim scientific consortium and is thus involved in developing the approach for assessing agroecological initiatives. Like the TAFS project, Avaclim can contribute to building an evidence base for agroecology.

Participants in the NetMap process highlighted the importance of South Africa's international commitments to environmental sustainability, with key UN conventions that South Africa is signatory to including the UN Framework Convention on Climate Change (UNFCCC), (discussed further under the climate change section below), the Convention on Biological Diversity (CBD) and the UN Convention to Combat Desertification. Some of these are echoed at continental level. These impose legal obligations on the South African government. The more recent UN Declaration of the Rights of Peasants and Other People Working in Rural Areas (UNDROP) adopted by the UN Human Rights Council in 2018 offers potential for progressive and food sovereignty action on agroecology and democratised food systems. South Africa was a champion of the process, signifying an opening to engage on the content of the Declaration.

[9] https://avaclim.org/en/the-project/

4.4.2 Overarching policy on agroecology

Draft National Organic Policy (2010)
Lead: DALRRD

SAOSO has championed the draft policy following its formation after the FRIDGE report. However, the policy appears to be dormant, without a strong champion in government.

"This policy on organic production should be viewed in the context of the broader agro-ecology principles, and other relevant national policies and frameworks regarding sustainable development and initiatives such as the LandCare Programme" (draft National Organic Policy, 2010:3).

The rationale includes consumer protection, environmental and health benefits, climate change, social justice and economic benefits. The draft emphasises certification, standards for commercial production and trade, and global competitiveness. It calls for education and training, awareness campaigns, a national inspection and certification programme, the establishment of a sector leadership organisation (SAOSO), research and development, an organic regulatory framework in line with Codex Alimentarius Guidelines and IFOAM Basic Standards, support schemes for organic farmers, a national organic mark or logo, market development and traceability.

The overall assessment is that the draft policy is dated, with an emphasis on formal standards and markets for the commercial organic sector fairly narrowly defined. It has a relatively small although growing constituency but with resources. SAOSO is still pressing for the finalisation of the policy, although it is open to discussions on a wider joint strategy around policy.

Draft National Agroecology Strategy (2013)
Lead: DALRRD

This draft emerged from the SPP initiative on agroecology following the release of the IAASTD report in 2009 mentioned in the history section. The draft agroecology strategy is a strong framework on paper, mainly crafted by food sovereignty activists. It has an entry point in government (DALRRD Directorate: Plant Production) but has seen no public movement since 2013. The draft states that "Agroecology has … broad performance criteria which include properties of ecological sustainability, food security/sovereignty, economic viability, resource conservation and social equity, as well as increased production through the development of fertile healthy soils" (p.2).

Strategic objectives listed include participation, knowledge, support for practice, healthy food, local markets and soil health. It goes through agroecological principles and benefits/impacts of agroecology which include positive contributions to climate change response, ecosystem and genetic diversity and resilience, and soil and nutrient management amongst others indicated. The problem statement includes low awareness levels, unsustainable production practices, high competition for land and water resources, water pollution from agriculture, soil degradation, low rainfall, and lack of access to appropriate technologies. Proposed interventions include awareness, training, zoning, incentive programmes, research and technology development, market development, demonstration plots/farms, and access to appropriate technology. It proposes institutional structures and includes an implementation plan.

The overall assessment is this draft strategy is a good basis for further development since significant components of a considered programme are already in that strategy. However, it would require wider buy in and consultation especially from government but also civil society organisations, farmers and other actors. Food systems elements could be further developed and other revisions could be made to refresh the draft.

4.4.3 Agricultural and environmental policies

In this section, we pull out those elements of policy and programmes that enable agroecological practice. Agricultural and environmental policies are clustered together as there is significant convergence, especially around climate change, biodiversity and NRM.

Overall environmental policies are framed by the *National Environmental Management Act* (NEMA) of 1998 which establishes environmental principles, institutions, cooperative governance procedures, and allows for the development of specific environmental management Acts incorporating biodiversity, waste, protected areas, coastal management and others. These supplementary Acts were passed mostly in the first decade of the 2000s. Climate change has received significant policy attention in the past decade.

Government has adopted a smallholder strategy for direct support to farmers. This flows consistently from the NDP down to programmes, albeit with a commercialisation slant. Black, women and youth smallholder producers (including fishers) who previously were discriminated against and neglected under apartheid are supported in policy with land access, fishing rights, food production, skills, infrastructure and market access. Household and subsistence producers are recognised in policy, and a differentiated approach based on differentiated needs is adopted. This approach inherently has elements of redress, participation and diversification in line with national objectives to transform away from apartheid.

Combined, these environmental and social redress and justice components provide a platform for multi-actor agroecology strategies and programmes.

4.4.3.1 Producer support

Draft National Policy on Comprehensive Producer Development Support (CPDS) (*draft 7 v2, July 2019)*
Lead: DALRRD

This policy was tabled in Cabinet on 4 March 2020. According to the document, “the policy will be the overall national policy for the agricultural sector in South Africa” (p.x). It is based on producer differentiation and differentiated support, with 35% of support ring-fenced for household food producers (annual turnover of less than R50,000) and 50% of support ring-fenced for smallholder producers (annual turnover of up to R1 million) with specific targets for youth and women. A specific policy objective is “to assess, protect, rehabilitate, improve and optimally utilise scarce natural resources (e.g. land, water, bio-diversity and genetic resources)” including “by using an agro-ecosystem planning framework, agro-ecological principles” (p.7).

There are snippets of support for an agroecological orientation throughout, such as to “conduct regular agro-ecological assessments, promote regenerative agricultural systems and

bio-resource management", "selection of crops and animals adapted to local soil, veld, terrain and climatic conditions", "promote gender responsive, agro-ecological and environmentally friendly mechanisation technologies within the principles of sustainable agriculture", "promote a diversity of production systems including agro-forestry and related practices to increase productivity", "invest in innovative solutions (vertical farming, aquaculture, aquaponics, mixed farming, urban arboriculture, rooftop gardens) to enhance productivity in agriculture", "invest in research to expand the South African knowledge base on the potential, capability, suitability and conservation status of the natural agricultural resources, agro-ecology, the regeneration of soil health, rangeland health, healthy and resilient farming and agro-ecosystems through a participatory on farm research system".

Although the agroecology elements are still contained within a wider framework of (conventional) commercialisation of smallholders and export orientation, the policy is sufficiently flexible and there are enough statements to form the basis for the potential development of an agroecology strategy and programmes.

Extension and Advisory Services Policy (*2016)*
Lead: DALRRD

This policy is framed in the context of linear modernisation: "This policy framework serves as a primary cornerstone through which households and smallholder producers can graduate to medium scale commercial producers" (p.viii). The policy endorses the commodity value chain development approach (pp.16-17), leading to a core policy action being the organisation of smallholder producers into commodity groups (p.13). Major challenges identified include poor links between research, extension and producers; a low extension to producer ratio; lack of integration across extension agencies; and weak extension education (pp.2-5). The policy aims to contribute to sustainable agriculture, defined as socially acceptable, economically viable and ecologically sound (p.6). Emphasis is placed on providing an effective service for household and smallholder producers and processors (p.11). In line with recognition of the active role of producers in generating knowledge and innovation, participatory approaches are a key element of the policy. Actions outlined in the policy include participatory research and learning, innovative and climate resilient production practices, and calls for a review of the education and training curriculum for extension practitioners. It calls for the establishment of local district extension forums to bring together diverse groups of stakeholders in the design and coordination of high quality, geographically relevant farmer support. This review is under way with opportunities for integration of agroecology into the process.

National Pesticide Management Policy (2010)
Lead: DALRRD

This policy was approved but not implemented. It recognises the health and safety and ecological dangers of agro-chemicals and proposes an update and revision of the outdated agro-chemicals legislation in South Africa. "Changes to the method used to manage pesticides are required. These changes must be based on a policy that aims to eliminate all significant risks to human health and environment potentially from pesticides use and also incorporates sound production systems." (p.2).

Objectives include "encourag[ing] the development and use of alternative products and techniques and reduce dependence on chemical plant protection products" (p.3). "DAFF shall

develop and implement comprehensive pesticide reduction strategies that would apply to all of its activities, including the registration process. The pesticide reduction strategies will include the incorporation of an appropriate application of the 'substitution principles' as an important tool to promote the replacement of pesticides with less toxic products and non-chemical alternatives. The substitution principle requires or encourages phasing out the use of harmful substances when less harmful substances or methods can be identified to achieve the same or similar level" (pp.4-5). "The Policy proposes that the Government should support the development, availability and adoption of sustainable pest management tools and practices in agriculture", including "support[ing] the development of and provide information on the best Integrated Pest Management and organic production" (p.10).

Producer support programmes
Lead: DALRRD

Key programmes on producer support are illustrative of how policy translates into operations. DALRRD has two main programmes: The Comprehensive Agricultural Support Programme (CASP) (2004) and Ilima/Letsema[10] (2011). A third programme, Fetsa Tlala (meaning End Hunger in Setswana), works within these two overarching programmes. CASP is oriented towards commercialisation of smallholders, while Ilima/Letsema is more oriented to household food production (Greenberg et al. 2018). The overall model emphasises the "commercialisation of smallholders and 'farming as a business'" especially from national level where commercially viable crops, mechanisation, irrigation and value are prioritised (Greenberg et al. 2018:39). Flowing from the commercial orientation is an uncritical adoption of a Green Revolution model: hybrid and GM seed, synthetic fertiliser and pesticides produced by multinational corporations.

In 2004, the government initiated CASP to provide support and services to targeted beneficiaries of land reform, restitution and redistribution, and later to incorporate black producers who acquired land through private means. CASP funds are quite generalised and are used for a variety of purposes, of which production inputs are a relatively small proportion and infrastructure, extension recovery, and disaster response (repair of damaged infrastructure) are prioritised.

Ilima/Letsema and Fetsa Tlala both have focused on production inputs. Fetsa Tlala, for example, encouraged communal land farmers, through the provision of mechanisation, distribution centres, advisory services and access to markets, to produce yellow maize and dry beans for the market. Households would use the income generated to purchase food. More recently, this initiative focused on attaining one million hectares under production by 2018/19, with a primary focus on maize, beans and potatoes, which are considered important contributors to households' basic dietary requirements.

A key critique of this is the latent expectation of turning smallholder and subsistence farmers into commercial farmers, through conventional support, which has been expensive and largely ineffective (Aliber 2015; Greenberg 2013). Another challenge is that there appears to be little appreciation of the multi-functionality of rural livelihoods, and the social

[10] Ilima/Letsema doesn't have an official translation although Letsema is South/North Sotho word meaning a group of people working together towards one objective whilst in isiZulu iLima means when people of the same village team-up for executing a certain task, be it fixing of roads or cultivation of land for ploughing, for the benefit of the whole village.

differentiation of who engages in particular livelihood activities and why (Hebinck and Cousins 2013). Nonetheless, there have also been some localised successes such as the Siyazondla programme in the Eastern Cape. Even though it has subsequently been cancelled, this programme focused on networking through social learning to build intensified home garden cultivation at smaller, closer sites rather than larger and distant fields (Fay 2013).

There is potential for alternative approaches through supporting diversification of inputs, suppliers, products, markets and relations. However, this would need to be part of a new vision that places diverse and distributed smallholder production at the centre; differentiated support for different producer categories; an emphasis on local markets and preferential public procurement as alternatives to adverse integration into corporate value chains; and upstream diversification to include smallholders and small enterprises into diverse and ecologically sound input production, and not only as conduits for corporate products (Greenberg et al. 2018).

Agri-Parks and Incubation Hubs
Lead: DALRRD

The Agri-Parks programme was planned for 44 districts with the basic idea to develop rural development hubs linked to district gateways or growth points and to assist smallholder farmers to access land and local markets. The Agri-Parks framework clusters agricultural enterprises, and provides integrated value chain services and support, including farm infrastructure (including irrigation), extension services, production inputs (livestock, seedlings, fertiliser) and mechanisation inputs (Greenberg et al. 2018). The Agri-Parks are defined as "the catalyst around which rural industrialization will take place" intended to stimulate a "partnership between government and private sector stakeholders to ensure increased access to services (water, energy, transport) and production on the one hand, while developing existing and create new markets to strengthen and expand value-chains in-line with APAP" (DRDLR 2016). An intention is to maximise the use of high value agricultural land.

The framework influences a number of policies including the National Food and Nutrition Security Plan (FNSP) (see 4.3.4), which states "There is a need for strengthening the Agri-Park model … The Agri-Parks model will also ensure job creation, local food processing, creation of a demand for local producers" (Republic of South Africa 2017:24). The objective is to ensure the Agri-Parks are owned 70% by smallholders and 30% by government and commercial farmers, with state support phased out over 10 years. It falls within a Green Revolution paradigm with statements such as "agricultural technology demonstration parks to train farmers ... on new technologies in terms of fertilizers, plants and seeds, irrigation, energy use and farm implements" (DRDLR 2016) and a major challenge facing smallholder framers being a "lack [of] access to expensive inputs such as fertilisers and chemicals" (RASET 2017) included throughout the framing.

In KwaZulu-Natal, the Agri-Parks framework has informed the Radical Agrarian Socio-Economic Transformation (RASET) initiative under Operation Vula, which reiterates the commercial emphasis of integrating smallholder farmers into commercial value chains (vegetables, grains, chicken, livestock) reflecting the emphasis of the IPAP (Mfusi 2017). Endorsed by the provincial Cabinet, several provincial departments signed service Memoranda of Understanding to align resources and establish a dedicated RASET office and FPMs as primary implementers of the programme. The political logic of RASET and

COGTA was to address the power "of the corporate core that dominates the agro-food system resulting in the increased marginalisation of Black African farmers". Taking this "agrarian revolution further", COGTA pack houses were established in the province in 2017 to open up agricultural opportunities in communal areas through "support with plant nurseries linked to fresh produce markets to supply district co-operatives with quality seeds and seedlings" (COGTA 2017). This focus on communal areas was echoed in the national Medium-Term Expenditure Framework of 2019-2024 using funds from the National Lotteries Commission and the Community Works Programme (MTSF 2019-24:168).

4.4.3.2 Climate change, CA and CSA

Climate change adaptation
Lead: DFFE

South Africa is a signatory to the UNFCCC. A number of climate change adaptation strategies and plans have been developed especially in the past decade. These include the National Climate Change Response Policy (NCCRP) White Paper 2011, the draft Climate Change Sector Plan for Agriculture 2015, the Climate Change Adaptation Plan for South African Biomes 2015, the Climate Change Bill of 2018, and the National Climate Change Adaptation Strategy 2019.

The NCCRP of 2011 sets the scene. It is a comprehensive plan to address both mitigation and adaptation in the short, medium and long term (up to 2050). Water, agriculture, health, biodiversity and disaster management are priority sectors. "A climate-resilient agricultural response depends on the recognition that agriculture should provide not only food, but also a range of other environmental and socio-economic benefits" (DEA 2011:18).

The *Climate Change Adaptation Plan for South African Biomes* 2015 identifies adaptive actions that can be used to reduce the effects of climate change at biome level, including spatial planning approaches to change the mix of activities in given biomes, changes to land use management approaches, eco-system based adaptation and biodiversity stewardship programmes.

The objective of the 2018 *Climate Change Bill* is "to build the Republic's effective climate change response and the long term, just transition to a climate resilient and lower carbon economy and society in the context of an environmentally sustainable development framework". It requires a National Adaptation Strategy with sectoral emissions targets including Agriculture, Forestry and Fisheries and Rural Development and Land Reform.

The 2019 *National Climate Change Adaptation Strategy* promotes CA and CSA practices. "These are sustainable agricultural practices that work with the environment and help to increase productivity, build resilience of farmers to stresses, and lower carbon emissions. Particular emphasis will be placed on reaching the most vulnerable farmers, taking gender into consideration" (p.27).

Throughout the strategies, agriculture is identified as a priority sector and is required to produce a sector mitigation and adaptation plan. The need for an agriculture 'just transition' plan for agriculture is reiterated in the MTSF 2019-24. There is a 2015 draft sector plan for agriculture, forestry and fisheries but it does not appear to have been finalised. According to the draft, "the basic approach of the sector plan is climate smart agriculture" (p.21). The draft

recognises the duality and differentiation in the agricultural sector and proposes specific measures for commercial, smallholder household and subsistence producers. It incorporates a wide range of measures such as emphasising local context when planning, farming under cover (shade nets), soil protection, CA, water use efficiency, water harvesting, wetland conservation, permanent soil cover using mulch and crop residues, multi-cropping, integrated crop and livestock production, carbon sequestration in the soil, use of locally adapted indigenous species and others that are included in agroecological practices.

Conservation Agriculture and Climate Smart Agriculture
Lead: DALRRD

CA/CSA are central to agricultural policies around sustainable production from the NDP down. These approaches tend to be oriented mainly for commercial agriculture, but also extending to smallholders in policy and practice (e.g. Mahlathini and AWARD are NGOs working with smallholders on CA/CSA). The 2017 draft CA Strategy and 2018 draft CSA Strategic Framework give impetus to this thrust. In both documents, but in the CSA Strategy in particular, definitions are fairly broad and seek to cover a diversity of actions that can facilitate the goal of more ecologically sustainable agricultural production from smallholders to large commercial producers. Although there are critiques of CA/CSA from within the food sovereignty movement, the policies do offer openings for engagement and support for agroecological practice.

Draft Conservation Agriculture Strategy 2017
Lead: DALRRD

The Strategy defines CA as "farming practices which use three key characteristics: 1. minimal mechanical soil disturbance (i.e. no tillage and direct seeding); 2. maintenance of a mulch of organic matter covering and feeding the soil (e.g. straw or other crop residue including cover crops); and 3. rotations or sequences and associations of crops including trees which could include nitrogen-fixing legumes." (p.3) However, throughout it is open to diverse methodologies that meet the same objectives.

It acknowledges serious questions about the sustainability and efficiency of current agricultural production systems in South Africa, stating that current farming methods have a high environmental demand and are largely dependent on external inputs, thus leading to the depletion and degradation of natural resources. The strategy addresses the need to adapt conventional farming systems "which are compromising agricultural production and resulting in alarming natural resource degradation" (p.7). The objective of the CA strategy is to promote and establish ecologically and economically sustainable agricultural systems that will increase food security levels and address associated national security risks.

The draft strategy says that "although CA was primarily developed for the sustainable production of grain and other field crops, the underlying principles of sound integrated management of natural resources for long-term sustainability of production equally apply to farming in the livestock and horticultural sub-sectors, with context specific adjustments" (p.6). It says that CA and its principles should be tailored and adapted to suit specific farming situations. The draft acknowledges a continuum from unsustainable conventional agriculture towards ecological agriculture (see Annex 6). However it stops short of fully embracing this path and focuses on reaching CA with low external inputs "as proven realistic goal" (p.7).

The strategy recognises that CA is more prevalent in commercial than small scale agriculture and demands a special approach and skills to empower and adapt these farmers and their systems to CA. It recognises a general dearth of skills to initiate and facilitate such innovation systems approaches. It identifies a main feature of CA as the emphasis on efficient external input use, which reduces production costs, while sustaining or even increasing yields, leading to a substantial increase in net farm income for smallholders and larger commercial farmers alike. As indicated above, a number of CSOs have adopted the CA/CSA framing as a way of supporting ecological smallholder production.

The strategy makes an explicit call for greater state support to government and private initiatives that promote sustainable and agroecological approaches and systems addressing priority issues, such as restoration of degraded land, reduction of external input use, etc. One example of practice given is sustainable grazing management. It also proposes substantial investment in training, curriculum development, farmer-based innovation and implementation, and participatory learning and action research. Farmer field schools (FFS) are mentioned a number of times in the document. There is express acknowledgement of the bias of existing curricula towards high input agriculture (p.11).

In another internal critique/recognition of policy contradictions, the strategy says: "To an extent, the CA policy is not in alignment with the Illima/Letsema programme which was established to reduce poverty through intensified production initiatives, mechanization based ploughing and food 'massification'. Common ground is possible if more sustainable options for food production can be integrated in these programmes as they do seek to increase food production" (p.14).

Draft CSA Strategic Framework 2018
Lead: DALRRD

The CSA Framework was developed with the aim of creating a socially inclusive and sustainable agricultural, forestry, fisheries and natural resource management underpinned by increased productivity for national food security and nutrition (p.13). It embraces the centrality of context-specific farmer-led innovation role and action research, in particular for smallholder farmers (p.43). It recommends more resources be invested into researching indigenous knowledge systems with the involvement of local subsistence and commercial farmers. This knowledge should be brought into the formulation and implementation of mitigation and adaptation strategies (p.5).

Efforts will involve assisting smallholders to adopt integrated crop and livestock systems, at various scales (on-farm and area-wide) to increase efficiency and environmental sustainability; and to diversify their income sources in particular by adopting agroforestry practices as part of their agricultural systems (p.54).

CSA is not defined anywhere in the framework, and presumably draws from APAP. According to APAP "climate-smart agriculture in South Africa would be based on the following production systems, namely organic farming, agro-ecology and conservation agriculture" (p.84). It goes on to define each of these, with agroecology defined as "a form of agriculture [which] when and where properly implemented provides all the solutions for soil fertility, natural parasites, pest and weed control, and the potential hazards associated with continuous irrigation. The principle of agro-ecology is that a healthy soil enables healthy pastures and crops" (p.84).

Despite some criticism of both CA and CSA as 'greenwashing' by food sovereignty proponents, a closer reading of the strategies does indicate some openness to diverse agroecological approaches and practices, while also seeking to bridge the commercial-smallholder divide. The documents are based on an 'adapted modernisation' approach (use commercial technologies adapted for improved resource efficiency) but this is not a hard and fast principle of the policies.

4.4.3.3 NRM and biodiversity

Another set of environmental policies and plans converging with agriculture are on NRM and biodiversity. These include the White Paper on Conservation and Use of Biodiversity 1997, the National Environmental Management: Biodiversity Act of 2004, the 2013 Bioeconomy Strategy, the National Plant Genetic Resources (PGR) Plan 2017, and seed laws specifically in relation to agricultural biodiversity – the GMO Act of 1997, Plant Improvement Act (PIA) of 2018, Plant Breeders' Rights Act (PBRA) of 2018, touched on under the dominant Green Revolution approaches above. These are mostly under DALRRD and DFFE.

The National PGR Plan of 2017 recognises that "farmers and indigenous and local communities play a crucial role in the development and conservation of plant genetic diversity in situ, especially on-farm. The management of crop diversity at farm level has since been considered as a recognised method of conservation, particularly for traditional crop varieties." The plan further says: "farmer seed systems are the key to the production and to the conservation of plant genetic resources." It provides for activities to support on-farm management and improvement of plant genetic resources for food and agriculture, including seed fairs, crop diversification and participatory plant breeding programmes. The PBRA and PIA have some exemptions for (non-commercial) farmer seed systems with regulations still to be developed. In conjunction with the National PGR Plan this opens opportunities for community seed work. However, government resources for this are limited.

The objectives of the *Indigenous Knowledge Act* 2019 are to protect indigenous knowledge, equitable benefit sharing, promote commercialisation, record indigenous knowledge, certification mechanisms for practitioners, and recognition of indigenous knowledge as "prior art"[11] under IP laws (s3). The Act seeks to convert indigenous knowledge into property owned by or on behalf of communities. This is relevant to biodiversity conservation and use especially of indigenous crops and plants, recognition of producer knowledge and innovation, and participatory and co-learning extension approaches.

Programmes and projects under NRM and biodiversity include LandCare, Working for Land, Working for Water, government supported permaculture projects, participatory extension including FFS, community seed banks and small enterprise seed production.

The *National LandCare Programme* is a government-supported community-based initiative, which is active throughout the country. It is focused on the conservation of natural resources (soil, water and vegetation) through sustainable utilisation and the creation of a conservation ethic through education and awareness. Four sub-programmes are WaterCare, VeldCare, SoilCare and JuniorCare. Concerns about land and water degradation are identified in each province and specific projects address these issues, funded through the LandCare Conditional

[11] Any evidence that an invention was already publicly known or available, in whole or in part, before a patent application.

Grant, whereby ring-fenced funding is transferred under the Division of Revenue Act 2 of 2013. These are aligned with government's broader objective of job creation with temporary jobs created under the *Expanded Public Works Programme* (EPWP). Within LandCare, EPWP teams are established to work on different aspects of NRM under the auspices of biodiversity stewardship to expand, for example, protected areas on private and communal land, promote sustainable land management through management agreements, and form corridors between these and state-owned protected areas. This landscape-based approach builds on farmer-managed natural regeneration to halt and reverse land degradation, soil loss, water loss, veld loss and general biodiversity loss.

The EPWP, under the Department of Public Works and Infrastructure (DPWI), provides poverty and income relief through temporary work for the unemployed, carrying out socially useful activities. It includes an Environment and Culture Sector which employs people to work on projects to improve their local environments. Objectives include jobs and training to facilitate long-term employment, creating land-based livelihoods, promoting community-based NRM, rehabilitation of natural resources and protection of biodiversity[12]. This is an ongoing programme which offers opportunities for payment for ecosystem services within which agroecology could be defined. The *Community Works Programme* (CWP) under COGTA is an employment safety net that provides a small stipend to qualifying individuals to work on various community programmes including community gardens.

As an example of what LandCare looks like in practice, each provincial team submitted plans for inclusion in a broad proposal submitted to the global Green Climate Fund for supplementary funding. These emphasised CA as key for smallholder farmers on both private and communal land, suggesting that farmers be able to compare conventional and CA practices and, if interested, be provided with training and the provision of inputs (FAO 2017).

Since 2013 DALRRD has been working with Bioversity International (a CGIAR Research Centre) "to establish and support community seedbanks as a means of strengthening farmers' seed systems, supporting conservation and sustainable use of traditional farmers' varieties, and maintaining seed security at district and community levels" (Vernooy et al. 2019:1). This has resulted in training, knowledge sharing and the establishment of pilot seed banks in Limpopo, Eastern Cape and North West. Although the initiative is small, it indicates openness to develop programmes on farmer-based seed systems which are a crucial component of agroecology. There are also a few initiatives, some stretching back 15 or more years, to support local and community-based seed production albeit within the commercial framework (ACB 2016).

The DSI Bio-economy Strategy of 2013 argues that the sustainable use of biodiversity should form an integral part of agro-processing, while the commercial cultivation of indigenous plants should be promoted. This acknowledges the rich biodiversity that includes indigenous crops and animals that have adapted to harsh local conditions with potential for future adaptation under climate change. Yet these notions are overshadowed by a strong belief in technology including responsible genetic engineering as a critical technology for agriculture presents a significant competitive opportunity for sector development. This provides an example of how policies and programmes may operate at cross-purposes, with departments higher in the "policy hierarchy" favouring more commercially-oriented approaches while

[12] http://www.epwp.gov.za/index.html

those lower down tend (at least in part) to emphasise social justice and transformation and ecological sustainability.

4.4.4 Land and water reform and access

Both land reform and water reform are explicitly based on objectives of social redress and equity, with a key issue being secure access to land and water for smallholder and homestead production. Neither the land reform programme nor water reform refer to specific production methods but they do not preclude agroecological practices and do offer a material basis for the adoption of such approaches by making essential natural resources available to smallholder producers. The ecological dimension is not explicit in land reform (although it is not precluded and other policies do include sustainable land use management), while for water ecological conservation and protection is a key consideration. Lead departments are DALRRD and DWS.

Land reform

Rapid redistribution of land has been high on the policy agenda since 1994 and is reflected across many policies. The NDP emphasises land reform as a critical component for success of agrarian transformation plans and employment creation especially in rural areas. The MTEF and the draft NSDF both emphasise rapid and sustainable land reform and agrarian transformation. APAP highlights the potential of land reform while acknowledging its poor performance to date (p.19). There is some emphasis on productive use of underutilised land especially in the former homelands. The draft CA Strategy proposes reorientation of land reform towards incentivising CA implementation (p.11), which moves towards integrating ecological sustainability dimensions into land reform.

The Advisory Panel on Land Reform and Agriculture, appointed in 2018, opened up opportunities for agroecology. The Panel was given clear terms of reference that referred to the Parliamentary Constitutional Review process to consider the conditions for Expropriation without Compensation with a brief that extended to agriculture, rural and urban land reform including spatial transformation. The final report recommended that more effective land acquisition methods be considered including proactive and targeted commodity and area-based approaches with production capacity informed by agroecological and land use analysis (Republic of South Africa, 2019). It recommended that extension services should also promote agroecological farming methods, and training programmes in agroecology should be developed and delivered at scale. A final pertinent proposal was that the Land Reform Fund advance financing options to incentivise agroecological and conservation agriculture.

The *Spatial Planning and Land Use Management Act* of 2013 (SPLUMA) recognises that "sustainable development of land requires the integration of social, economic and environmental considerations in both forward planning and ongoing land use management" (Preamble, p.4). The principle of spatial justice calls for inclusion with an emphasis on informal settlements, former homeland areas and areas characterised by widespread poverty and deprivation (s7.a.ii). The principle of spatial sustainability calls for consistency of land use measures in accordance with environmental management instruments (s7.b.iii) and should result in viable communities. Norms and standards for land use management and land development must "promote social inclusion, spatial equity, desirable settlement patterns, rural revitalisation, urban regeneration and sustainable development" (s8.2.b).

Chapter 4 of SPLUMA requires the development of spatial development frameworks (SDFs) at national, provincial and municipal levels. The Act opens the door for territorial approaches through enabling regional spatial development frameworks for a "circumscribed geographical area characterised by distinctive economic, social or natural features which may or may not correspond to the administrative boundary" of a province or municipality (Definition s1.1). Analysis of the opportunities or obstacles to agroecological practice are best done through a review of SDFs in specific localities.

Water reform
Department of Water Affairs

For water, the emphasis is on expansion of irrigation in the NDP and APAP as indicated above but not with unanimous agreement. Climate change and water scarcity, fragile ecosystems and disappearing wetlands are critical concerns.

The National Water Act of 1998 governs the sector. Chapter 1 elaborates central guiding principles of sustainability and equity in the protection, use, development, conservation, management and control of water resources. It establishes a basic human needs reserve (which does not include agricultural production) and an ecological reserve (Chapter 3). It establishes that "the person who owns, controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources" (Chapter 3). Authorisation is required for a controlled activity, including irrigation (s37.1). Non-commercial production is exempted (Schedule 1).

The 2015 Irrigation Strategy for South Africa builds on the NDP and the 2nd National Water Resources Strategy. It seeks to increase the contribution of irrigated agriculture to gross domestic product (GDP) with a focus on commercial production, equitable access for previously disadvantaged individuals, revitalisation of existing irrigation schemes and water use efficiency. For community and homestead gardens the strategy promotes rainwater harvesting; efficient, water saving irrigation technologies, such as tower gardens, earth box and trench garden production technologies; and proposes that Schedule 1 water use can go up to 30 ha for community and home gardens (p.49).

The National Water and Sanitation Master Plan was approved in 2019 and is currently in the implementation phase. Two key elements of the plan are redistribution for transformation and protecting and restoring ecological infrastructure. On redistribution, the plan notes that 61% of the water is for agriculture and only 5% of this is used by black farmers. It calls for alignment between land and agrarian reform and irrigation strategies with the objective of improving equity in access with an emphasis on small scale black farmers (pp.17-18). It proposes that efficient use of existing infrastructure must take place before development of new irrigation. On protecting and restoring ecological infrastructure, the plan notes serious river health deterioration across the country as well as loss of wetlands (p.34). It identifies strategic water source areas for protection and restoration.

The Comprehensive Producer Development Support (CPDS) policy proposes to "invest in efficient water use irrigation and production systems (such as drips, centre pivots, sprinklers, precision farming as well as mulching, drought tolerant cultivars and hardy animal breeds)", and to "invest in multiple water use systems for producers including rainwater harvesting and the use of grey water in the agriculture sector" (p.24).

4.4.5 Food and nutrition security and local approaches

A report on the status of food and nutrition security in South Africa (HSRC and NDA 2019) identifies three waves of food and nutrition security policies, programmes etc. The first wave was the Reconstruction and Development Programme (RDP) in 1994. The second wave started around 2002 (the Mbeki era) and included a number of strategies and programmes, the establishment of the NAMC's Food Price Monitoring Committee in 2003 following the global food price spike, fortification regulations and the Social Assistance Act of 2004 which introduced the existing social grants system. The third wave started around 2009 (the Zuma era) and included the Zero Hunger Strategy, the NDP, the National Policy on Food and Nutrition Security in 2013 and the National Food and Nutrition Security Plan (FNSP) in 2017 (HSRC and NDA 2019:13). The report emphasises that food and nutrition policy in South Africa is both complex in that it involves multiple actors, and also fragmented in that there is no coherent coordination (although the FSNP coordination committee consisting of officials meets regularly to update on sectoral programmes). While there is a solid rights-based legislative and constitutional framework, "the implementation aspect has been seriously lacking" (HSRC and NDA 2019:13). The FNSP indicates nearly 60 food and nutrition related policies, strategies, plans, etc. scattered across government.

National Food and Nutrition Security Plan (FNSP) 2018-2023
Lead: Office of the Deputy President

The FNSP offers strong support for the adoption of agroecological practices and localised food systems. It explicitly states that "alternative production systems for home-based production, community production and smallholder production are needed to ensure availability of affordable nutritious food at the household level" (p.25). It calls for low cost, low input production systems such as small hydroponic units, container production, shade net systems and production under protection for smallholders and home gardens. The Plan includes inland fishing, taking advantage of South Africa's 320 inland dams with an emphasis on diversity in local diets.

The plan says that ecological adaptation practices and the introduction of adaptive species into value chains will further aid in mitigating the impact of drought and indicates the imperative to scale up the implementation of production technologies (open pollinated seeds / water harvesting and recycling etc.) for the benefit of both communities and consumers (p.48). It says strategies to increase food system resilience at the local scale should be supported. Target products are fruit and vegetables, maize, beans and tilapia/aquaculture.

The FNSP emphasises local markets. Of particular relevance is strategic objective 2, which seeks to establish inclusive local food value chains to support access to nutritious and affordable food. The strategic intervention to stimulate markets for smallholder farmers will consider how local markets (at municipality and district level) can be supported as a point of market access for smallholder farmers to sell produce directly to consumers. Focusing on local food value chains increases employment opportunities and reduces dependence on imports. Local food value chains are recognised as having many other parts besides the smallholders such as agro-processing, retail and waste, which determine whether people have access to food or not. The plan highlights the role that public procurement, especially the National School Nutrition Programme can play both in supporting smallholder incomes and providing healthy produce for learners.

The FNSP supports the localisation of interventions. It states that the objective of developing inclusive local value chains is to increase internal production and reduce imports of produce into a defined economic radius (60-100km). Promoting production and providing production and secondary infrastructure are proposed improve local flows of produce and reduce distribution and handling costs. The primary focus is "to enable communities and producers to take advantage to government market platforms and by extension distribute and store food for the benefit of local households and communities" (FNSP 2017:48).

The plan calls for local government to pro-actively include food production and the food systems in land-use decision making. Local government should view food production along a continuum from household production to commercial agriculture and develop an understanding of the role that agricultural land can play in achieving broader municipal objectives.

The plan highlights the importance of both formal and informal retail channels and says these should be planned for and supported accordingly. The plan recognises that the food system is dependent on several other systems (energy, water, transport, space) and is therefore vulnerable to a number of "mega-trends". It calls for strategies to increase food system resilience at the local scale (FNSP 2017:50).

Localisation/import substitution (both at national and sub-national levels) are central to a number of policies and plans looking in particular at linking local producers with local consumers, agro-processing and markets.

The objectives of the Department of Small Business Development's *SMME-focused Localisation Policy Framework and Implementation Programme* (draft v14, 18 Nov 2020) are to increase participation of SMMEs in the localisation strategy especially rural and township-based manufacturing enterprises; support public sector procurement for domestic demand; and shift to high tech manufacturing over time. Foodstuffs have a target of 40-60% locally assembled with 40% local content. Strangely out of place in a localisation strategy is an emphasis on increasing exports.

The *Agriculture and Agroprocessing Master Plan* (draft v2, June 2020) places emphasis on commercial and export production, but includes SMMEs in agro-processing. The CPDS policy proposes to support the institutional set-up and development of marketing cooperatives, and to "strengthen public procurement from producers (including upstream input production) and develop local formal and informal markets" (30% set aside) (CPDS 2019:23). Preferential procurement is a recurring theme across multiple policies and plans, starting from the *Preferential Procurement Framework Act* of 2000. Localisation, small enterprises and public procurement are compatible with agroecological approaches.

There is potential to promote agroecological practices at local government level including in food health and safety regulations on processed foods and to create an opening in the market for agroecological produce, advertising and sale of food, municipal bylaws on food trade, preferential procurement, spatial and land use planning and zoning, urban agriculture as a local response to food security in cities (direct promotion of agroecological practices), management of fresh produce markets and subdivision of land for small-scale producers (de Visser 2019).

4.4.6 Governance and participation

A key opportunity lies in recognising the potential for consolidating and reorganising policy to effectively align and support agroecology such that coherence occurs consolidated with mutual learning processes that enable the adjustment of policies over time. Opportunities exist with institutions including the Department of Planning, Monitoring and Evaluation, which oversees the FNSP, and Statistics South Africa, which facilitates data collection across all domains, as examples.

Participation in governance, planning and implementation is generally a standard feature of policies in line with the Constitution but implementation is often in the form of box ticking and top-down processes. This is evident in detailed analysis of the voluminous literature regarding public participation in processes such as the Integrated Development Plans (IDPs) and processes of participation defined within the Municipal Structures Act 117 of 1998 and the Municipal Systems Act, 33 of 2000.

A guiding principle of the CPDS is "participatory planning: The success of agricultural support programmes depends, to a large extent, on the commitment and dedication of beneficiaries. In this regard, Government shall ensure that producers are involved in the planning, implementation and monitoring of their enterprises to stimulate commitment and ownership" (p.10). The policy promotes "decentralised research and training centres incorporating extension and farmer to farmer learning, and improve the linkages between extension, research and producers by making producers active participants in the research agenda" (p.39).

An emerging governance model (as written, although not effectively practically implemented anywhere to date) is of multi-stakeholder fora in multi-level (national, provincial, district/local) integrated processes to discuss and plan. Such a model is explicit across a number of policies and plans, including the FNSP (which intends to replicate the FSN coordination committee at provincial level), the National Policy on Extension and Advisory Services, climate policies and others. In principle, the model offers potential for popular participation to the extent that the populace is organised to engage meaningfully. However, the conception tends to be top down and is government (or private sector) controlled rather than government facilitated.

The currently influential *District Development Model* (DDM) being driven by COGTA proposes a focus on integrated development planning and implementation at district level (COGTA 2019). The DDM intends to address the pattern of operating in silos as a challenge which has undermined coherence in planning and implementation of government programmes. The DDM consists of a process by which joint and collaborative planning is undertaken at local, district and metropolitan levels by all three spheres of governance resulting in a single strategically focussed 'One Plan' for each of the 44 districts and 8 metropolitan geographic spaces in the country. In each, a hub will be established to serve as a functional network of support and a facilitation system for intergovernmental planning in relation to a specific district space and form part of the district's capacity. These will link the localities to provinces and national departments. Three pilots have been identified for implementation: OR Tambo District Municipality (DM) in Eastern Cape, eThekwini Metro in KZN and Waterberg DM in Limpopo. This may serve as an opportunity to align some of the disparate parts of policy that are aligned to supporting agroecology.

An alternative to the top down approach is diverse bottom-up, government-supported, experimental initiatives with cross learning. These could be located in the DDM pilot districts where feasible, with efforts to develop multi actor partnerships including government. However, there is a need for flexibility of boundaries, for example to accommodate food flows, agroecological zones, population dynamics and movements etc. This will require effective cross-boundary coordination.

5. Conclusions and strategic opportunities

The objectives of the scan were to initiate a baseline characterising the different visions of agroecological transitions, key actors, supporting groups and opponents; the nature of sustainability challenges; existing initiatives and policies; and the types of agroecological practices and associated food systems.

In summary, the South African food system is highly contested with the legacy of apartheid leaving a dualistic agrarian system. The advent of democracy coincided with rapid liberalisation of the agricultural sector leading to the consolidation of larger players including agri-businesses, food processors, retailers and other actors in the food value chain. Green Revolution approaches to smallholder support have become the dominant paradigm with powerful actors supporting and entrenching this throughout the food system. As such, agroecology largely has been marginalised. Despite this, important initiatives, particularly those led by civil society, have emerged to advance an agroecological agenda. Pockets have also emerged within government (in particular in DALRRD and DFFE) who are willing to support this agenda.

The movement towards ecologically sustainable agricultural practice in South Africa has some historical precedence. Black farmers prior to colonisation used ecological practices to accommodate the dynamic environmental conditions. After colonisation, neglect and undermining of African farming meant significant use of low-external input practices, which did constrain production but also resulted in more ecologically friendly practices. For (white) commercial farmers, there was always a strand of organic/natural farming. In more recent times – and especially in the past 15 years – there has been a growth in interest in ecological production and the social justice dimensions of agriculture, and the growth of a fairly wide and robust network of organisations and initiatives.

Visions and discourses can be categorised along a continuum of views, from neoliberal and reformist approaches within the corporate food regime, to progressive and food sovereignty approaches in food movements. In the mainstream and specialist media, agroecology is still hardly known. Organics tends to be the most well-known term. On the one hand, mainstream views are mixed. By and large, agroecology or organic production is considered irrelevant or a side issue, with some acknowledgement of organic production for premium niche markets. Agroecology tends to be conflated with subsistence or welfare production. On the other hand, within the food movement, agroecology is gaining ground as a radical alternative to large scale corporate-industrial agriculture, with deep ecological, social and health benefits.

Four major actor clusters were identified: the private sector; research, education and training; state entities; and civil society organisations. The private sector is mainly rooted in the dominant conventional and Green Revolution agricultural paradigm, underpinned by what could be termed the agrochemical complex. The private sector has a strong influence on the government, in particular in those agencies and departments holding the purse strings. There are a few private sector philanthropies supporting agroecological transitions and food sovereignty, and there are a few tentative moves towards organic production amongst producers and retailers although still heavily within the dominant corporate model.

Research and training tend to follow the dominant ideological orientation, with very few openings even simply for agroecological experimentation. State entities and policies are very contradictory, with a policy hierarchy dominated by the economic and financial departments. State entities are a mirror of the wider society with a dominant combination of neoliberalism and reformism, but also a few opportunities for support for agroecological practices. Civil society organisations have developed a fairly coherent narrative and also engaged in practices ranging from movement towards more ecological practices by large commercial grain farmers through to NGO-supported backyard garden initiatives in townships and informal settlements. There is significant knowledge and development of good practices but these are still quite fragmented and initiatives tend to operate in isolation from one another.

Policies and plans were categorised into the overall national planning framework, policies aligned with neoliberalism that actively hinder agroecological transitions, and policies that have elements that open the way for agroecological transitions even if unevenly and sometimes in contradiction with other policy elements. The overall framework is contradictory, reflecting the ongoing contestations at the heart of South African society. For food and agriculture, the dominant voice is of large scale commercial agriculture and big business in the discourse of global competitiveness, export orientation, commercial value chains and finance. However, within the policy mix there are also relatively consistent voices on environment and climate, and also a (more muted and fragmented) voice in favour of ecologically sound, mass based and socially just transformation. These voices contest and contradict each other.

Agricultural policies tend towards a Green Revolution and commercial value chain approach to smallholder farmer support. The trade regime, seed and agrochemical laws pose large obstacles in the way of agroecological transition. On the other hand, there are numerous policies, plans and programmes that have elements that can be consolidated to underpin an agroecology strategy for South Africa. There is significant convergence in agricultural and environmental policies especially around climate change, biodiversity and natural resource management that orient towards more ecologically sustainable production practices. Food and nutrition security plans offer pathways to agroecological transitions on paper. A couple of overarching draft policies – the Organic Policy and the Agroecology Strategy – are currently sitting on the shelf but could be used as a basis for revival of a push for an overall policy or strategy.

A number of strategic opportunities for work on agroecological transitions are identified from this scan. These include:

- Reviving efforts to develop a national agroecology policy or strategy. In this scan we have identified the draft 2013 National Agroecology Strategy as the most developed and promising document for resuscitation. This can be complemented by drawing on the People's Food Sovereignty Act. This will require civil society organisations to unite and present a common front, and to identify the appropriate entry points in government to restart these discussions. One approach that is being discussed amongst CSOs is to adopt "applied policy" where a specific set of sites is identified for work on transitions together with local actors, and then the policy obstacles or opportunities identified and approaches developed arising from those specific localities and experiences.
- Developing an evidence base for agroecology through detailed scientific and social studies on existing initiatives.

- Agroecology curriculum development including aligning with existing initiatives such as the DALRRD/DFFE/South African National Biodiversity Institute (SANBI) Working Group on extension curriculum review.
- Building the links between the food sovereignty movement and trade unions.
- Build on and support the work of Unpoison, including lobbying for implementation of the National Pesticide Management Policy of 2010.
- Building and strengthening agroecological practice, including development of communities of practice on agroecology.
- Engage with food retailers on markets and requirements for procurement from smallholder agroecological producers.
- Engage with local and district municipalities as a key entry point to government, including on food and health regulations, land access and local economic development.
- Develop and implement a coherent communications strategy to raise awareness and inform the public, government / policy makers, the agricultural sector and farmers.

Annex 7 identifies relevant initiatives at the local level as possible place-based initiatives (PBIs), which could help to provide more evidence on South African experiences in agroecology and contribute to the implementation of the next steps of the TAFS project. It seeks to map local actors and dynamics, convene multi-actor dialogues to identify opportunities for building agroecological practice and local food systems agency, prioritise, and develop actions to realise these opportunities in practice.

Initial selection criteria proposed are:
- Existing activity on agroecology
- Autonomous community formations (African, women and youth leadership)
- Link to existing organisations and processes
- Diverse agroecological zones across sites
- Active government participation (2 or more spheres being an advantage)
- Urban / rural and linkages
- Location in pilot DDM being an advantage (i.e. OR Tambo, eThekwini, Waterberg).

Two proposed sites for further investigation and elaboration within the TAFS project are identified. The first is a civil society / government partnership in eThekwini which offers an urban dimension, with active government participation, builds on the concept of agroecology hubs and is in one of the DDM pilot municipalities. The second is a commercial venture based on participatory and inclusive methods in Overberg District in the Western Cape, in which the private sector, civil society and local government are active participants with commercial success and a local food systems transition model. These two sites offer different experiences. Overberg incorporates cooperative agroecological/organic production within a wider local economic development transition and leveraging off a comparatively wealthy consumer base in a small town context. eThekwini focuses more on low income markets in an urban context. Both of them build on pre-existing activities and are already linked into multi-province and national networks with potential for adaptation and replication elsewhere. An overview of the proposed sites is provided in Annex 7.

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Key laws, policies, programmes, strategies and plans referenced are listed in Annex 1.

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Annex 1: Key laws, policies, programmes, strategies and plans referenced

Document	Date	Lead department
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36	1947	DALRRD
Agricultural Pests Act 36	1983	DALRRD
UN Framework Convention on Climate Change (UNFCCC)	1992	DFFE focal point
UN Convention on Biological Diversity (CBD)	1993	DFFE focal point
UN Convention to Combat Desertification	1994	DFFE focal point
Constitution of the Republic of South Africa	1996	Presidency
Genetically Modified Organisms Act 15	1997	DALRRD
White Paper on Conservation and Use of Biodiversity	1997	DFFE
National LandCare Programme	1997	DALRRD
National Environmental Management Act 107 (NEMA)	1998	DFFE
National Water Act 36	1998	DWS
Preferential Procurement Policy Framework Act 5	2000	Dept Finance
Comprehensive Agricultural Support Programme (CASP)	2003	DALRRD
Expanded Public Works Programme (EPWP)	2003	DPWI
Indigenous Knowledge Systems Policy	2004	DSI
National Environmental Management: Biodiversity Act 10	2004	DFFE
National Education and Training Strategy for Agricultural and Rural Development in South Africa	2005	DALRRD
Proactive Land Acquisition Strategy (PLAS)	2006	DALRRD
National Agricultural Research and Development Strategy	2008	DALRRD
National Organic Policy (draft)	2010	DALRRD
National Pesticide Management Policy	2010	DALRRD
AU Directive on Organic Agriculture	2010	AU Commission / NEPAD Planning and Coordination Agency
National Development Plan 2030 (NDP)	2011	Presidency / National Planning Commission
National Climate Change Response White Paper	2011	DFFE
Ilima/Letsema	2011	DALRRD
Fetsa Tlala Food Production Initiative	2013	DALRRD
Bio-Economy Strategy	2013	DSI
National Agroecology Strategy (draft)	2013	DALRRD
2nd National Water Resources Strategy (NWRS 2)	2013	DWS
Spatial Planning and Land Use Management Act 16 (SPLUMA)	2013	Presidency
National Policy on Food and Nutrition Security	2014	DSD / DALRRD
Agricultural Policy Action Plan (APAP) 2015-19	2014	DALRRD
Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods	2014	AU Commission / NEPAD PCA

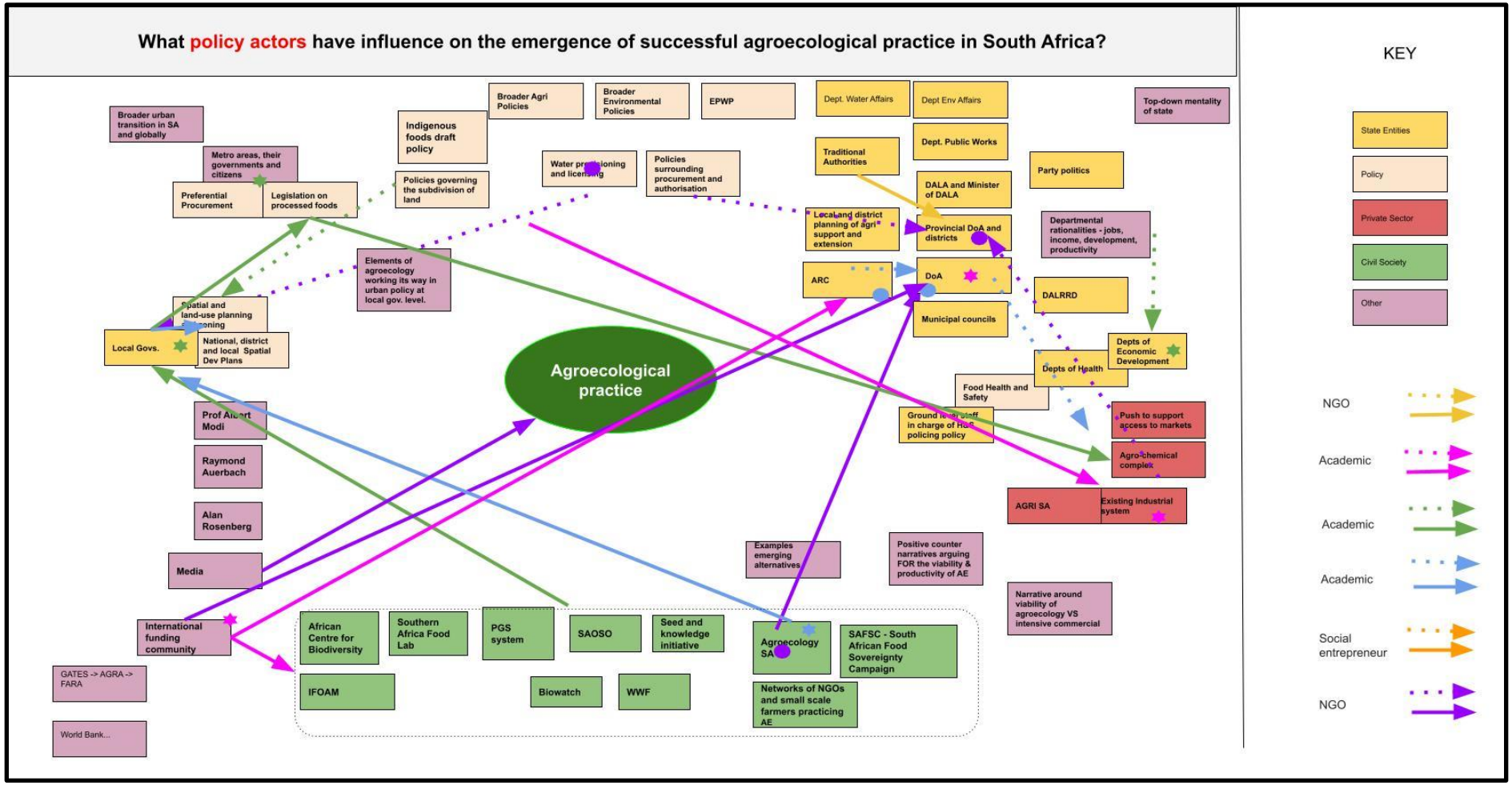
Document	Date	Lead department
Climate Change Sector Plan for Agriculture (draft)	2015	DALRRD
Climate Change Adaptation Plan for South African Biomes	2015	DFFE
Irrigation Strategy for South Africa	2015	DALRRD
National Policy on Extension and Advisory Services	2016	DALRRD
National Policy Framework on the Support and Development of Small and Medium Agro-Processing Enterprises in the Republic of South Africa	2016	DALRRD
National Food and Nutrition Security Plan 2018-23	2017	Office of Deputy President / DPME
Conservation Agriculture (CA) Strategy (draft)	2017	DALRRD
National Plan for Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture	2017	DALRRD
Industrial Policy Action Plan (IPAP) 2018/19-2020/21	2018	DTIC
Plant Improvement Act 11 (PIA)	2018	DALRRD
Plant Breeders' Rights Act 12 (PBRA)	2018	DALRRD
Climate Change Bill	2018	DFFE
Climate Smart Agriculture (CSA) Strategic Framework (draft)	2018	DALRRD
UN Declaration on the Rights of Peasants and Other People Working in Rural Areas	2018	
National Policy on Comprehensive Producer Development Support (CPDS) (draft 7 v2, July 2019)	2019	DALRRD
Medium Term Strategic Framework (MTSF) 2019-24	2019	DPME
National Spatial Development Framework (NSDF) (draft)	2019	DALRRD / DPME
National Climate Change Adaptation Strategy	2019	DFFE
Indigenous Knowledge Act 6	2019	Presidency
National Water and Sanitation Master Plan	2019	DWS
District Development Model (DDM)	2019	COGTA
DALRRD Strategic Plan 2020-25	2020	DALRRD
Expropriation Bill	2020	DPWI
Agriculture and Agroprocessing Master Plan (draft v2, June 2020)	2020	DALRRD
SMME-focused Localisation Policy Framework and Implementation Programme (draft v14, 18 Nov 2020)	2020	DSBD

Annex 2: HLPE 13 principles of agroecology aligned with FAO 10 elements

Principle	FAO's ten elements
Improve resource efficiency	
1. Recycling. Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass	Recycling
2. Input reduction. Reduce or eliminate dependency on purchased inputs and increase self-sufficiency	Efficiency
Strengthen resilience	
3. Soil health. Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity.	
4. Animal health.	Ensure animal health and welfare
5. Biodiversity. Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales.	Part of diversity
6. Synergy. Enhance positive ecological interaction, synergy, integration and complementarity among the elements of agroecosystems (animals, crops, trees, soil and water)	Synergy
7. Economic diversification. Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.	Part of diversity
Secure social equity/responsibility	
8.Co-creation of knowledge. Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.	Co-creation and sharing of knowledge
9. Social values and diets. Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.	Parts of human and social values and culture and food traditions
10. Fairness. Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights**.**	
11. Connectivity. Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies**.**	Circular and solidarity economy
12. Land and natural resource governance. Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources.	Responsible governance
13. Participation. Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.	

Source: Wezel et al. 2020:7

Annex 3: Example of graphic results of NetMap session



Annex 4: Discourse matrix

	Corporate food regime		Food movements	
	Neoliberal	**Reformist**	**Progressive**	**Radical**
	Food enterprise	**Food security**	**Agroecological practice**	**Food sovereignty**
Core approaches to agriculture and food	Increased industrial production; small scale producers are an anachronism or at best a source of cheap labour and land; unregulated or self-regulated corporate monopolies; Green Revolution; land grabs; expansion of GMOs; public-private partnerships; market access (especially export markets for high-value commodities) + FDI = best engine for growth; global value chains (GVC) and markets; global competitiveness; private property rights; return on investment and profitability as primary values; corporate globalisation is inevitable and incontrovertible; science and technology can solve natural resource limits; social Darwinism / survival of the fittest	Industrial agriculture at the base but with a role for small scale production; market-based growth; exports as key markets; public private partnerships; target elite small scale producers to enter commercial markets and scale up; competition; recognition of environmental limits of industrial agriculture; science and technology can solve natural resource limits Linear modernisation	Diverse ecological practices ranging from a set of core practices to integrated systems at farm, landscape and territorial levels, social and ecological integration, popular and indigenous knowledge Core/"entry level" practices - no GMO seed, and use of only organic/natural soil fertility methods and only organic/ biological pest management and controls. Key role for smallholder production and small enterprises throughout supply systems. Sustainable food systems, fair and short distribution networks, food systems embedded in local economies. Open set of dynamic and interconnected practices – examples low energy environmental and biological systems; use of biological resources over fossil fuel resources; permanent ground cover/mulching; compost and manure for soil fertility; vermiculture; green manures; locally adapted farmer and indigenous species and populations; seed saving and sharing; polycultures; guild planting; inter cropping; crop rotation; water harvesting; food trees; agroforestry; mixed farming; crop/animal integration (including fish, poultry, bees); permaculture design; contours, swales, terracing, living fences; on-site recycling (nutrients, energy, water); local production, trade and exchange; ecological housing; landscape planning etc, etc	Agroecological practice plus organised collective agency and democratic control of food systems Decentralised inter-networks of practitioners in the progressive category Cooperative organisation in food systems Racial redress, black African leadership Gender equity, feminism Right to food, food justice Radical redistribution of land and other resources Active organised resistance to corporate and other extractive encroachment and occupation of agricultural, food and wider systems

	Corporate food regime		Food movements	
	Neoliberal	**Reformist**	**Progressive**	**Radical**
	Food enterprise	**Food security**	**Agroecological practice**	**Food sovereignty**
			Participatory methodologies - sharing culture, local adaptation, diversity, participatory research and experimentation, peer to peer learning and exchange (e.g. farmer field schools), communities of practice, multi-actor dialogues, gender equity	
Narratives on agroecology	Agroecological production is irrelevant or a dangerous delusion Food comes from corporate-industrial producers	Different approaches to how agroecology is viewed Environmental modernisation in a commercial context (e.g. water use efficiency, conservation agriculture) Organic mainstream and niche commercial markets – regulations, standards and certification Nice hobby for the landed gentry but in reality food comes from industrial producers Agroecology equated with subsistence production / 'traditional' / backyard or homestead gardening agriculture - welfare and poverty relief	Ecological and social (economic, health, wellbeing) benefits of agroecological production	Agroecology as the material base for food sovereignty and transformed food systems Ecological and social (economic, health, wellbeing) benefits of agroecological production

Source: Adapted and extended from Holt-Gimenez and Shattuck 2011, pp.117-118 and Murphy 2012, pp.15 & 20

Annex 5: Actors and discourses

Note: Colour selection is simply to distinguish one category from another, although the table is viewed as a continuum from neoliberal to radical. Where a block is solid, this means the actor is firmly located in this block. Dashed lines indicate movement of the actor into a category, with the extent of movement shown by the extent to which the block is filled, and the direction from where the movement is coming (e.g. from reformist to progressive, or from radical to progressive). It is important to note that this is a purely subjective assessment of the authors.

	Corporate food regime		**Food movements**	
	Neoliberal	**Reformist**	**Progressive**	**Radical**
	Food enterprise	**Food security**	**Agroecological practice**	**Food sovereignty**
Private sector				
Dominant agricultural complex including agribusiness, agrochemical complex, agrochemical lobby				
Food retailers				
Fast food outlets				
National Fresh Produce Markets				
Street and bakkie traders				
Farmers and fishers - individuals and small enterprises				
Emerging private sector technologies and enterprise models				
Donors / financing				
Media				
Research, education and extension				
Universities especially with Agricultural Faculties				
Agricultural colleges				
Agricultural Research Council				
Extension services				
'Civil society' research, training, facilitation				
New curricula and methods				
State entities				
Department of Agriculture, Land Reform and Rural Development (DALRRD) and Provincial Departments of Agriculture (PDAs)				
Department of Environment, Forestry and Fisheries				
Presidency, Dept Finance, National Treasury, Department of Economic Development (DED), Dept Science and Innovation (DSI), Dept Trade, Industry and Competition (DTIC)				
Department of Health, Dept Social Development (DSD)				

	Corporate food regime		Food movements	
	Neoliberal	**Reformist**	**Progressive**	**Radical**
	Food enterprise	**Food security**	**Agroecological practice**	**Food sovereignty**
Metro and local government				
Public sector donors / finance				
Policies and plans				
National Development Plan (NDP), Medium Term Strategic Framework (MTSF), draft National Spatial Development Framework (NSDF), Industrial Policy Action Plan (IPAP), Agricultural Policy Action Plan				
Trade regime				
Seed Acts (GMO Act, PBRA, PIA)				
Agrochemical legislation				
National Pesticide Management Policy 2010				
National Water Act, regulations and procedures				
Land legislation and programmes				
Draft National Organic Policy 2010				
Draft National Agroecology Strategy 2013				
Draft National Policy on Comprehensive Producer Development Support 2019				
Extension and Advisory Services Policy 2016				
Climate change plans				
Draft Conservation Agriculture Strategy, Draft Climate Smart Agriculture Policy				
Natural Resource Management (NRM), LandCare and biodiversity policies and plans				
Food systems, agro-processing, markets				
National Food and Nutrition Security Plan				
Continental policies and processes				
Global conventions				
Civil society organisations				
Farmer associations (outside AgriSA)				
CSOs and NGOs in food sovereignty movement				
Trade unions				
Organic sector / movement and PGS				
Other CSOs in broad sector				

Source: NetMap sessions and authors' own assessment

Annex 6: Typical crop production systems on a sustainability gradient

Stage	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Type of farming system	Conventional tillage	Minimum or reduced tillage	Conventional No tillage (Direct seeding equipment using tines) Production system lacks adequate soil cover and sound crop rotations.	Conventional Zero tillage (Direct seeding equipment using discs) Production system lacks adequate soil cover and sound crop rotations.	CA (HEI) (NT using high quantities of external artificial inputs (i.e. fertiliser, herbicides, pesticides) Production system has adequate soil cover and sound crop rotations.	CA (LEI) (NT using low quantities of external artificial inputs (i.e. fertiliser, herbicides, pesticides) Production system has above 80% soil cover and sound crop rotations.	Organic CA (NT using no external artificial inputs (i.e. fertiliser, herbicides, pesticides) Production system has adequate soil cover and sound crop rotations.
Level of sustainability	Not sustainable						Increased sustainability

Source: Draft Conservation Agriculture Strategy 2018:6 (in turn adapted from Blignaut *et al* 2014)

Annex 7: Proposed sites for phase 2 study

1. Strengthening local food networks for food systems transformation (eThekwini Metro, KZN)

The "Strengthening local food networks for food systems transformation" platform was established by the SAFL at the outset of the Covid-19 pandemic. In partnership with eThekwini Metro's Agroecology and Agribusiness units, this platform houses three projects focusing on various agri-hubs in the metro. A core pillar has been the German Corporation for International Cooperation (GIZ) funded "Reconnecting and recalibrating local food systems in eThekwini and iLembe", which has actively set out to establish and recalibrate local food systems to build new diversified flows of food across a number of place-based initiatives (PBIs). The second pillar, funded by the Nedbank/WWF Green Trust, has consolidated learning from the GIZ project to provide inspiration and impetus for a larger project across various sites in the country under the leadership of the Seriti Institute. The third pillar, Woza Nami, funded by the Green Trust and the DG Murray Trust, is engaging the Agroecology Hubs across the metro. Working with one in particular, the project is supporting its transition towards full agroecological practice, extending principles and practice to smallholder farmers (individuals and collectives) and through linkages, aggregation and nutrition education building demand for such produce in neighbouring communities working with creches, schools, informal retailers, traders and the like. PGS provides a compelling support to this sustainable transition.

Although the platform as a whole provides an opportunity for agroecological transitions, Woza Nami is specifically focused on agroecology. There are seven agroecology hubs established in eThekwini Metro as part of their resilience strategy. SAFL is working with the Inchanga Agroecology Hub to strengthen connections to local communities through understanding and stimulating demand for local produce. The hubs have been established as training and resource centres with people taking their skills back into their communities. They are situated in strategic points across the metropole, supporting the seven main zones of the municipality. Some of the hubs have scientific facilities including a fish hatchery and broodstock ponds, a seed bank, tissue culture and other laboratories for research processes. One, situated in Umbumbulu, provides a training, packing, and marketing and coordination venue for growers. The Newlands-Mashu Permaculture Centre is a site of permaculture demonstration and learning, which has the potential to "provision" larger numbers of people in the KwaMashu area, as do the Inchanga and Mariannridge demonstration gardens. The Hambanathi Hub has helped establish an active farmer organisation and has connections with a local retailer.

The Inchanga hub has an active reach into neighbouring communities in terms of supplying fresh produce with potential in local Early Childhood Development (ECD) Centres, schools, and a local place of care for disabled people. Following participatory processes and careful consultation with councillors and other community leaders, these food flows will be strengthened through community education, research and programming. This is to sustain a demand for nutritious, healthy foods produced using agroecological practices. This will be done through understanding the neighbouring community with a component of this work focused on gaining insight into parents' knowledge, perceptions and use of indigenous and traditional plants (ITPs). This will also assess children's acceptance of and preference for dishes made with ITPs including African leafy vegetables (ALV), Swiss chard, amadumbe

amongst others. The study, built around focus group discussions, will inform a strategy to promote ITPs within neighbouring communities and for potential inclusion of micronutrient-rich ALVs in school feeding programmes. This approach will in turn inform the production strategy of the Hub.

A relationship with the PGS Pollinator Programme, which is active in eThekwini, will potentially build community support structures to sustain the initiative around Inchanga. This promotes a system of organic assurance for farmers selling into local markets and a model of community development that supports food security and sovereignty. PGS enables local market outlets for farmers' produce and can play a role in seed banks for farmers. The intention is to facilitate the exchange of knowledge among stakeholders. Another key opportunity is the intention to establish an eThekwini Organic Farmers Association, suggested at a SAFL workshop in March 2021. Aligning PGS to this association would provide both support and a clear focus to this group as it establishes structures and direction.

SAFL is doing some Localg.a.p/Primary Farm Assurance training with farmers who could then sell into the formal sector (specifically targeting Spar). As part of this process, key elements of food safety will be extracted and ported into the PGS framework as part of training. Following that there could be some farmer training on PGS which can integrate PGS, food safety and could also be linked to planned agroecology training.

2. Cold Mountain Farm Cooperative and Stanford PGS initiative (Overberg DM, Western Cape)

Located in the south-west of the Western Cape in the Overstrand Local Municipality in the Overberg District Municipality, the Cold Mountain Cooperative aims to demonstrate sustainable development through indigenous knowledge and agroecology to achieve holistic and self -sustaining farm eco-systems and to enable local communities secure greater well-being through economic development, improved nutrition and food sovereignty.

The Cooperative is a 100% black member-owned business based on agroecological principles that processes and markets organic certified produce and wine produced by its members. The members of the registered cooperative democratically elect the directors of the business. The directors are accountable to the other members and report back at general meetings. Working on a specific farm, Cold Mountain has converted it from a conventional, synthetic chemical-based farming system to an agroecological and organic enterprise over the past 5 years. The conversion was initially costly but has shown great results in qualitative analysis of the wine and produce. In order to improve soil and water management, practices include the establishment of mulched and vegetated buffer zones, mulching vineyards and orchards, using cereals and nitrogen fixing cover crops across farms, and extensive construction of swales in cultivated lands to enhance infiltration of rainwater and prevent soil erosion.

In order to support its primary business, Cold Mountain provides supplementary services to its members and local community including training in organic and sustainable production, provision of organic farming inputs to others in the community and providing support for the Overberg organic PGS. There are 10 farms in the PGS network. One of the PGS member farms is the 'Die Kop' enterprise in Stanford, which has 32 members, and is directly supported by Cold Mountain farm, which provides institutional support, training and access to markets. The Cooperative also supports the school at Die Kop via the NGO 'Food4Thought'

(F4T). The Cold Mountain Cooperative supports F4T directly and serves on its governing body.

The business model of the cooperative seeks to achieve greater equity and improve social well-being. Through the PGS Network and F4T, the initiative actively mentors other agroecological producers and values diverse sources of knowledge. The initiative engages with members of the local community based on common values and provides skills development for agroecological production and livelihood enhancement that enhance their resilience and support their efforts to achieve greater equity. The initiative produces a range of agroecological food products and supports local communities to produce and use agroecologically-produced foods in their diets. The initiative supports the local "Food Sovereignty through Agroecology" programme. Access to markets for local agroecological producers have been established, including supermarkets and the export market. This generates greater value for the produce of local farmers and enhances their livelihoods.

Taking a holistic approach of ecological and social systems, through its land use practices and biodiversity conservation the initiative enhances the resilience of local communities living and working within local ecosystems. This reflects a commitment to conserving and improving the diversity of the flora and fauna in the local landscape. Ecosystem services are maintained by conserving the indigenous vegetation and preventing any pollution of surface or groundwater. Plant nutrients are retained on the farm and incorporated into the soils, reducing the economic and environmental costs. Builds agroecological practice through the farming system through composting, mulching and microbial stimulants to produce horticultural crops. Nitrogen-fixing cover crops are grown to enhance fertility and swales have been constructed in cultivated lands to enhance infiltration of rainwater and prevent soil erosion.

Cold Mountain has demonstrated how organic value chains can be established within municipal areas supported by PGS networks catalysing collaboration. Value chains are developed by harnessing various municipal programmes. Funding streams include the various financial resources available from the municipality. The collaboration with the local municipality operates through the Local Representative Committee (LRC), which has a mandate to define programmes and activities of public employment and to take these to be approved by the Municipal Council utilising the IDP. Additional opportunities exist within this with the EPWP and CWP.

As a result, the PGS Pollinator Programme is following the model of working with local government and community engagement structures, which allows diverse funding streams to be drawn in providing opportunities at local level, targeting policy and practice. Under the LRC platform, PGS networks can be established and strengthened by securing funds to operate. Each PGS can use the platform to guide government on how to relate to their principles and educate their staff about agroecological practice. For instance, using CWPs, local value chains can be developed such as composting green waste to ensure producers are getting appropriate inputs. The PGS networks would monitor and evaluate activities on the ground using the standard and PGS protocols. As evidence is gathered by the PGS groups, complementary action research with research partners can help make the case for policy change and programme development. Municipalities and local economic development (LED) offices can be supported with surveys, monitoring and evaluation to demonstrate programme benefits. Policy change can be further supported using the partnership with the ARC. The SAOSO app is a key tool to enable all of this to work. The app can be used by municipalities

to guide pathways towards food sovereignty. Cold Mountain is a case study of the Avaclim project led by the EMG (see above).

Other possibilities that could be considered

Hoedspruit Hub (Limpopo)
Bulungulu Incubator (E Cape)
Africa Cooperative Action Trust (ACAT) (KZN)
Worcester PBI pilot – CIRAD/CoE-FS (W Cape)
Alfred Nzo DM PBI pilot – CIRAD/CoE-FS (E Cape)
CA clubs (KZN and W Cape)

Avaclim studies
Biowatch (KZN)
Bryanston PGS (GP)
Goedverwacht (W Cape)
Heiveld Co-operative / EMG (N Cape)
ECARP/ Phakamani Siyephambili (E Cape)