

Phase 2

Agroecological initiatives in South Africa: Lessons and recommendations from three study sites

Synthesis report



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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 policymakers and food system stakeholders, a strategic vision of transition towards sustainable food systems based on agroecological practice.

TAFS is coordinated by CIRAD (the French Agricultural Research Centre for International Development) with five research partnership platforms in three continents:

- In Africa: ISA (Food Safety Information), PP&G (Public Policies and Governance), and SPAD (Altitude production systems and sustainability in 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 with 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 *Agroecological initiatives in South Africa* was drafted by Stephen Greenberg and Scott Drimie (Southern Africa Food Lab), Bruno Losch (CoE-FS and CIRAD), and Noxolo Jila (University of KwaZulu-Natal).

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Acronyms

ABI	Agulhas Biodiversity Initiative
AMU	Agricultural Management Unit
CA	Conservation Agriculture
COGTA	Department of Cooperative Governance and Traditional Affairs
CSO	Civil society organisation
CWP	Community Works Programme
DALRRD	Department of Agriculture, Land Reform and Rural Development
DFFE	Department of Forestry, Fisheries and Environment
DM	District Municipality
D'MOSS	Durban Metropolitan Open Space System
DRDAR	Eastern Cape Department of Rural Development and Agrarian Reform
EPWP	Expanded Public Works Programme
ERS	Environmental and Rural Solutions
EU	European Union
FAO	United Nations Food and Agriculture Organisation
FPM	Fresh produce market
FVCT	Flower Valley Conservation Trust
GDP	Gross Domestic Product
HLPE	United Nations' Committee on World Food Security High-Level Panel of Experts on Food Security and Nutrition
IAP	Invasive alien plant
IDP	Integrated Development Plan
KZN	KwaZulu-Natal
LED	Local Economic Development
LM	Local Municipality
MAGIC	Municipal Applied and Green Initiatives and Concepts
MoU	Memorandum of Understanding
MN	Meat Naturally
MRCMP	Mlazi River Catchment Management Programme
NGO	Non-government organisation
NPO	Non-profit organisation
NRM	Natural resource management
ORCT	Overberg Renosterveld Conservation Trust
PGS	Participatory Guarantee System
SANParks	South African National Parks
SAOSO	South African Organic Sector Organisation
SMMEs	Small, medium and micro enterprises
TA	Traditional authority
TAFS	Transitions to Agroecological Food Systems
UCP	Umzimvubu Catchment Partnership
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WfW	Working for Water programme
WMA	Water Management Area

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1. Introduction

1.1 Background to the study

Low- and medium-income countries face several interlinked sustainability challenges. In particular, food systems must provide food and nutrition security, decent jobs and incomes, and adapt to climate change in a context where government budgets are constrained. Agroecological approaches are increasingly recognised as relevant solutions for ensuring sustainable food production and security under climate change and without any negative environmental impacts.

Several knowledge gaps exist about the possible contribution of agroecological food systems for sustainable development and, particularly, their capacity to provide:

- food security: sufficient, affordable, nutritious and healthy food for rural and urban populations;
- decent jobs and incomes; and
- food production that respects the environment while adapting to climate change.

Ongoing projects and research initiatives mostly focus on the socioeconomic and environmental assessment of agroecological practices at the farm and landscape levels. In addition to addressing this core level of analysis, the Transitions to Agroecological Food Systems (TAFS) project also deals with public policies and food systems.

This research report is the second phase of the multi-stage TAFS project. The first phase provided an overview of actors, policies and discourses on agroecology in South Africa, at the national level¹. It also identified possible sites of existing agroecological transitions to be investigated during the second phase. These sites are Overstrand Local Municipality (LM) in the Western Cape; Matatiele LM in the Eastern Cape; and Inchanga in eThekweni Metro in KwaZulu-Natal (KZN).

The objectives of the research are:

- to describe, analyse and characterise the food systems engaged in agroecological transitions in the selected sites;
- to understand how national, provincial and local government policies and initiatives supporting agroecological practices are translated at the local level;
- to understand how national, provincial and local government policies and initiatives constrain agroecological practices at the local level;
- to identify initiatives from local state and non-state actors supporting the transition to agroecological food systems at the territorial level, to put into perspective the evolution of these systems with their institutional and political environment at the territorial level;
- to provide a basis for the analysis of the possible evolutions of food systems (phase three of the wider project); and for the identification of the main value chains, activities and practices, as well as actors of the food systems, whose socioeconomic performance will be studied further (phase four).

The research ultimately aims to identify the levers which can facilitate the development and progressive transition to agroecological practices and the evolution of local food systems.

1.2 Framing agroecological transitions, territories and local food systems

For the purposes of this report, agroecology is defined based on the 13 principles developed by the United Nations' (UN) Committee on World Food Security's High-Level Panel of Experts on Food and Nutrition (HLPE, 2019). The HLPE principles build on and incorporate the UN Food and

¹ The report is available at <https://www.southernAfricaFoodLab.org/transitions-to-agroecological-food-systems/>

Agriculture Organisation's (FAO) 10 elements of agroecology (FAO, 2018), but more directly embrace the social and political dimensions of agroecology (Annex 1).

We have placed a strong emphasis on social justice and redress dimensions for the South African context. Many other countries working on agroecological transitions in food systems do not face the same extent of inequality or historical injustice as South Africa, which, to date, have been inadequately addressed in the post-apartheid era. Any meaningful transition in South Africa must ensure it simultaneously responds to the ecological imperatives and the need for social redress to secure lasting social cohesion, peace and prosperity for all. An agroecological approach in South Africa, therefore, calls for an extension beyond environmental sustainability alone to incorporate elements such as improved farm worker and farm dweller conditions, food sovereignty, redistribution of land and other resources to black ownership, altering the economic structure for gender and social inclusion, and diversification of the agrarian structure to incorporate more small- and medium-scale, black and women producers. Agroecology is also explicitly understood to embrace diverse indigenous practices that rebalances the denigration and exclusion of local and indigenous knowledges imposed under colonialism and apartheid. This finds expression in the core agroecological principles.

Farmers are located along a continuum, from backyard and smallholder farmers to large-scale and corporate commercial farmers. The dominance of large commercial farms characterises South Africa's present dichotomous agrarian structure. These large farms occupy a significant share of the total agricultural land area and the most optimal production areas. Extensive livestock grazing on farms that are thousands and even tens of thousands of hectares each is a major agricultural land-use. To date, agroecology in South Africa has been championed mainly by civil society organisations (CSOs) working with small and marginalised food producers, on marginal lands and often in fragile environments. However, these producers are not the major contributors to the agro-food system's ecological damage (including greenhouse gas emissions). In the absence of rapid and widespread land redistribution, the responsibility for (environmental) sustainability transitions will remain with large-scale landowners and commercial farmers who occupy, by far, the most land and who broadly remain dependent on the agricultural modernisation package (chemical inputs, mechanisation, selected seeds and genetically modified organisms).

One way that transitions can occur is through innovations in protected niches that may impact the dominant socio-technical regime (Annex 2). Niches are intentionally developed through a community of actors. Activities may be heterogenous and not clearly visible, especially when still emerging. The incumbent regime retains strong selection power over innovations (Klerkx et al., 2010; Ingram, 2015:63).

In this paper, we follow Wezel et al. (2016) in defining agroecology territories as places where a transition process toward sustainable agriculture and food systems is engaged. There are three major domains:

- i) adaptation of agricultural practices;
- ii) conservation of biodiversity and natural resources; and
- iii) development of embedded food systems.

The objective is to link farm-scale activities with a landscape approach by integrating farming and non-farming activities throughout a larger area (Wezel et al., 2016:133-34). Territories must consider local authority boundaries, sociotechnical networks, the intersection of farming systems and ecosystems, territorial resources, governance of the commons, and the embeddedness of food systems. Stakeholder group strategies are developed by those actively engaged in the three domains (Wezel et al. 2016:134-35).

Adaptation of agricultural practices refers to transitions towards sustainable agricultural production based on agroecological principles. Practices work towards integrating ecosystem services at field, farm and landscape scales. Conservation of biodiversity and natural resources refers to activities around agricultural biodiversity, conservation of species and natural habitats in a territory, and ecological corridors in agricultural landscapes, with "composite landscapes" integrating agriculture

and biodiversity conservation. Water, soil, biodiversity and natural resource management (NRM) are critical to this component (Wezel et al. 2016:137-38). Embedded food systems refer to multi-actor processes and democratic governance, with socio-technical networks expanding beyond farming and “localisation” of production, distribution and consumption links (Wezel et al., 2016:139). These three domains provide a useful integration of agriculture, NRM and food systems reflected in the case studies.

On food systems, the TAFS methodology says: “Local food systems may generally be related to three domains of proximity: geographical proximity constitutes the basis for defining local food systems (e.g., physical locality, the distance between food production and consumption), relational proximity (e.g., the close relationship between actors within the food system) and proximity in values (e.g., place of origin, traceability, freshness, quality) (Eriksen, 2013)”. The boundaries of the local are flexible and approximate. Distances defining the local will vary depending on specific spatial arrangements and stakeholders’ sense of belonging found in different places.

1.3 Methodology

The methodology followed guidance from the TAFS collective for all the case studies. Steps included identifying and characterising food sub-systems based on their adoption of agroecological practices. Key commodities in each site were identified based on significance for production and consumption in each area. For each sub-system, we looked at actors and practices, products and food flows, and interrelationships within and between sub-systems. Value/supply chains from inputs to consumers were considered.

The definition of the study area was made in reference to municipal limits, then by identifying a central node. The central nodes are Stanford in Overstrand, Matatiele town in Matatiele LM, and Inchanga in eThekweni. The selection of the study areas also referred to the main CSOs and stakeholder networks’ areas of intervention or collaboration. Food and economic flows move primarily along transport routes, which may bring more distant sites into local networks. At each site, we started with the central node, then followed the food flows and adapted the boundaries of the local accordingly.

Initial data was collected through literature gathering and review, including municipal and departmental planning and review documents, academic publications, newspaper reports, company annual reports, and ‘grey literature’. The desktop review provided a context and situation analysis for the food system in each site, broadly delineated the geographical scope for “the local”, and enabled identification of key products and actors for follow-up in the field. Prior to field visits, we discussed the study with local “contact points” in each site, who were also included in the research reference group. These were individuals who the authors knew working on the specific or related initiatives in each of the sites. These contacts supported the study through enabling access to key informants and provided valuable contextual information. This enabled us to align the research with existing processes from the outset. A key objective was to ensure that the research could link up with and support the initiatives in whatever way research is able to do this, rather than merely extracting information. We aimed to engage with a diversity of actors including farmers, CSOs, government officials, value chain actors, and local experts. Interviews were mostly scheduled ahead of time, but we also relied, to an extent, on “snowballing”, i.e. following up additional contacts we got while in the field. Field visits were conducted during February and March 2022. Semi-structured interviews and focus groups were conducted and recorded in audio and text in the three sites and online based on free, prior, informed consent and following Stellenbosch University’s approved ethics protocols (see Annex 3). Audio recordings were transcribed. Three site reports were drafted and shared with interviewees for each site, along with a request for comments, especially on accuracy of the information as presented. We received positive feedback from all sites, and some minor revisions in one site. In all sites, the reports have subsequently fed into ongoing processes. This synthesis report draws on the three site reports and the comments received.

References in the text in square brackets, e.g. [Ov03], refer to interviews. The names of individual interviewees are kept confidential². However, we have retained actual organisational names (but not in connection to specific statements or interviews), as one objective of the research is to facilitate dialogue. Many respondents may be recognised by other local actors, even if the specific individuals are not named. This is not high-risk as actors in specific localities are mainly working closely together, and there are no major contentious statements referenced that would create hostility in others.

² In line with the Protection of Personal Information Act 4 of 2013

2. Case study context

2.1 Overberg DM and Overstrand

Overberg District Municipality (DM) is geographically segmented due to natural barriers, but there is a strong articulation between the different natural and human landscapes. Two major territories are identified for their incipient transition towards agroecological systems: Overstrand LM and the inland cereal-based system, which has developed over the other LMs in the district (see Annex 4). Stanford is a small town at the centre of the research in the Overstrand LM. ‘Local’ is defined to incorporate Stanford, Hermanus, Gansbaai, Pearly Beach and the farms within this area (20-40 km radius around Stanford).

The Overberg DM has a diversity of natural habitats, incorporating a coastal belt, a narrow coastal plain, mountains and valleys, and — about 15 to 20 km inland — a winter grain belt known as the Rûens (hillocks) across Theewaterskloof, Cape Agulhas and Swellendam LMs. The district has gentle to moderately undulating hills, enclosed by mountains and the ocean. Overstrand LM encompasses coastal and mountain/valley terrains, with significant natural resource conservation areas. The district has a Mediterranean climate, characterised by cold, wet winters and warm, drier summers. The average annual rainfall in Overstrand is 450-830 mm (OLM, 2020:38). The natural environment is the region’s largest asset. NRM is considered highly critical (OLM, 2020:37). The Overberg is part of the fynbos biome of the Cape Floristic Region, a global centre of terrestrial biodiversity. It was added to the United Nations Educational, Scientific and Cultural Organization (UNESCO)’s World Heritage list in 2004, and extended in 2015. It includes national parks, nature reserves, wilderness areas, state forests and mountain catchment areas, with 13 protected area clusters covering over one million hectares (DFFE, 2019). The Agulhas Plain crosses the Overstrand and Cape Agulhas LMs. Land use on the plain includes wetlands, mixed agriculture and game farming [Ov07], with the Agulhas National Park along the coast from Cape Agulhas to Pearly Beach.

Wildfires, encroachment of invasive alien plants (IAPs) and inadequate governance systems threaten biodiversity if not timeously managed (DFFE, 2019). In 2011, approximately 31% of the Agulhas Plain was estimated to be invaded by IAPs to a density of more than 50%, with the Breede-Gouritz Water Management Area (WMA) — in which the plain falls — being the most invaded area in the Western Cape (ODM, 2017a:7). The south and east coastal areas of South Africa may face slightly fewer problems with heat and drought compared with the rest of the country. However, climate change is anticipated to result in more intense and frequent storms, rising sea levels, increased flooding, increased wind speeds, and longer drought periods. The fynbos biome is fire-prone and, combined with dry, warm, and windy summers, creates a substantial fire risk (ODM, 2017a).

Overstrand LM has a population of around 90 000, with Stanford estimated at 15 000 people. The LM is 94% urbanised, concentrated along the coastline, mainly around Hermanus (OLM, 2021:48). The population is mixed, with 43% black African, 29% coloured and 28% white (OLM, 2021:50). The population is growing (COGTA, 2020a:5), including inflows of resource-poor migrants from Eastern Cape, Zimbabwe and Malawi, and wealthy (mainly white, domestic and European) retirees. Economic and spatial arrangements remain strongly shaped by the apartheid legacy. Towns are still spatially divided into commercial core areas (formerly white areas), with primarily black townships and informal settlements on the margins. There is a growing housing backlog, and almost 20% of the district population resides in informal settlements (COGTA, 2020a). This has led to urban sprawl and the spread of low-density settlements into rural areas (OLM, 2021:100), with significant protest actions in 2018 around land access and housing, as well as the looting of shops owned by African migrants.

Half the population lives below the upper poverty line (monthly income of R1 183 or less) (OLM, 2021:57-58). Unemployment (based on the official definition) stood at 21% in 2019 (prior to the COVID-19 pandemic) (COGTA, 2020a). The pandemic, and responses to it, led to sharply increased

unemployment and food insecurity rates across the country (Spaull et al., 2021). While on a national level this appears to have eased more recently, local actors consider the situation dire [Ov13, Ov15].

Overstrand LM has a predominantly service economy, accounting for 44% of gross domestic product (GDP) and employment³, followed by manufacturing (15% GDP, 9% employment). Eco-tourism and agri-tourism are a significant part of the services economy, and Overstrand has 61 accommodation establishments, 26 restaurants and 26 wine farms (OLM, 2021:250). Almost 80% of formal jobs in Overstrand, including in agriculture, are semi- or low-skilled (ODM, 2017:81).

Agriculture, forestry and fishing contributed 7% to GDP and 12% to employment in Overstrand in 2017. As the second smallest sector in the local economy, some consider that agriculture does not have strong growth potential (OLM, 2021:235, 249). However, many strategic documents and plans indicate a key role for agriculture and agro-tourism for employment and economic growth in the area, and upstream and downstream economic linkages should also be considered. Primary agriculture, forestry and fishing products constituted 72% of total international exports from Overberg DM in 2015 (ODM, 2017:80).

An estimated 45% of household expenditure leaks out of the Overstrand economy due to “imported” goods and services demanded by consumers living in the municipality (OLM, 2020:37), including 86% of manufactured goods (ODM, 2017:80). There is a recognised absence of detailed consumer spending data (OLM, 2020:37).

The land is mainly privately owned, with portions of state-owned land for nature reserves. Protected and natural areas constitute the largest land use in the district. Overstrand has extensive agricultural activities on the coastal plain, with plantations, smallholdings and larger agricultural holdings, including wine farms in the valleys. Land-use change includes shifts from large-scale agriculture to game lodges, resorts, smallholdings, farm stalls, guest accommodation, extensive industries and agro-industries (OLM, 2020:56). Information on land redistribution and black land ownership is sketchy. A 2007 survey showed 654 emerging farmers on 13 599 ha in the Overberg (around 4% of the estimated 330 000 ha of district arable land) (de Satge, 2013). A 2017 provincial government progress report indicated 11 land reform projects in Overstrand since 2014 (Western Cape, 2017). Official planning documents such as the Integrated Development Plans (IDPs) and Spatial Development Frameworks do not discuss land reform in much detail, suggesting limited land redistribution.

2.2 Alfred Nzo DM and Matatiele

The case study covers activities mainly in Matatiele LM in Alfred Nzo DM in the former Transkei homeland in the Eastern Cape (Annex 4). The area is mainly rural, with many dispersed villages and a few small towns (Matatiele, Cedarville and Maluti) as service centres, surrounded by high-density, peri-urban settlements. Tenure is primarily communal under traditional authorities (TAs), with smaller freehold sections under private ownership. KZN is to the north and east of the district, with Kokstad in KZN as the biggest regional centre, about 75 km south-east of Matatiele town.

Matatiele is in the Upper Umzimvubu Catchment. The area is located in the Maputaland Albany Pondoland biodiversity hotspot, stretching from southern Mozambique to the Western Cape border. The catchment is mostly in the grassland biome, with pockets of indigenous forest. Only 3% of the grassland biome is currently protected in South Africa (McLeod and ERS, 2019:26). The area is defined by mountain ranges and river systems from the southern Drakensberg escarpment to the sea. The topography includes deep and steep-sided river valleys, with extensive wetlands at the base of the escarpment (Alfred Nzo DM, 2017:57). A very small area is formally protected, with only the Ongeluksnek/Malekhalonyane nature reserve (13 787ha) and Matatiele Mountain Lake (4 800 ha)

³ Finance, insurance, real estate and business services (24% GDP, 17% employment); wholesale and retail trade, catering and accommodation (20% GDP, 27% employment)

(ERS and Conservation SA, 2011:21). There are some small private conservancy efforts, such as the Cedarville Protected Environment on approximately 18 000 ha (Matatiele LM, 2021:203-204).

The Upper Umzimvubu is a strategic water source area, supplying over 50% of water to South Africa from just 10% of the land surface (Matatiele LM, 2021:238). It is in the Umzimvubu to Keiskammahoek WMA with around 15% of South Africa's total mean annual runoff (Matatiele LM, 2021:245-6). Rainfall is 550–1 000 mm/year, mainly during the summer (Matatiele LM, 2021:246-7). Umzimvubu is the largest undeveloped river system in South Africa, with only a few minor dams (ERS and Conservation SA, 2011:8). There are many springs in the area, often serving as the only potable water source for communities. There is interest in seeking RAMSAR⁴ status for the wetlands. However, running counter to this are municipal dreams about damming the upper catchment for hydropower, and draining the land for commercial agriculture [Um11], with implications throughout the catchment.

Land degradation from overgrazing, alien invasive plant encroachment, topsoil loss and river sedimentation are key environmental concerns. High runoff and weak rangeland management practices in the upper catchment make Matatiele an erosion hotspot (McLeod and ERS, 2019:14). Twenty-six percent of the municipal area is degraded grassland (Matatiele LM, 2021:246). Frequently occurring disasters include wildfires, floods, heavy storms and tornadoes. Climate change impacts are expected to be relatively muted with increased floods, rainfall, and heat waves (Matatiele LM, 2021:249).

The district population, of around 867 000 in 2016, is very young, with around 85% of the population under 35 years of age (Alfred Nzo DM, 2017:25). The majority of the predominantly African population lives in scattered rural villages and depends, at least in part, on the use of natural and ecosystem services and resources for their survival and security. The area is characterised by poor infrastructure, and social facilities, basic services, housing and infrastructure are municipal priorities. As part of the former homeland system under apartheid, Alfred Nzo DM is one of the most impoverished and underdeveloped districts in the country (Alfred Nzo DM, 2017:18). An estimated 75% of the district population was living in poverty in 2020, with an unemployment rate in the district at 50% in 2020, up from 32% in 2010 (Alfred Nzo, 2017:26). Fewer than 7% of the economically active population had an income of more than R1 600/month (Alfred Nzo DM, 2017:49). Matatiele had 37% unemployment (66% for youth) in 2017 (Matatiele LM, 2021:36). Most jobs in the district are in the low- and semi-skilled categories (Alfred Nzo DM, 2017:42).

Matatiele has the largest economy in the district. Wholesale and retail trade, catering and accommodation (28% of GDP), and community, social and personal services (27%) contribute a combined 55% of municipal GDP (Alfred Nzo DM, 2017:47). All the major corporate wholesale and retail chains have stores in the main towns, which are consumption hubs. A limited economic/income base generally generates significant expenditure leakage to other towns (EC COGTA, 2020:134). Business inputs and services are mostly imported from Kokstad, Mthatha and Port Shepstone. Matatiele has only small-scale manufacturing activity, and manufacturing constitutes just 2% of employment in the district (Alfred Nzo DM, 2017:45). There is some eco-tourism around Ongeluksnek/Maluti at the Lesotho border, but this is limited by lack of accommodation, dining facilities or a tourism information office.

2.3 eThekwini metro

The eThekwini Metropolitan Municipality is a Category A municipality, the largest city in KZN and the third-largest city in the country. Its land area is comparatively larger than other cities and is topographically hilly, with many gorges and ravines and almost no true coastal plain. It is divided into four administrative areas, the functional boundaries defined by the Umgeni River, the Umlazi River and the Kloof Ridge (Annex 4). Within these, the eThekwini Municipality accommodates a wide

⁴ UN Convention on Wetlands <https://www.ramsar.org/about-the-convention-on-wetlands-0>

range of land uses, including formal and informal, urban and rural settlements, complemented by economic, transport, and public and social infrastructure. Another prevalent land use is traditional settlement. A large part of the municipal area is designated as part of the Durban Metropolitan Open Space System (D'MOSS), currently at approximately 95 000 hectares. About 68% of the Municipal area is considered rural, with pockets of dense settlement (Urban Sustainability Exchange, 2021). About 10% of the rural areas comprise commercial farms, and metropolitan open space, and about 90% of the rural area is defined by its geospatial features, such as hilly, rugged terrain, dispersed settlement patterns in traditional dwellings and communal land holdings under the Ingonyama Trust (COGTA, 2020).

eThekwini's terrestrial assets make it among the world's most biodiverse cities (McLean et al., 2016). However, the status of being a "biodiversity hotspot" has come under intense pressure. The Municipality has undergone a period of rapid urbanisation that has contributed to the degradation of the city's natural environment. According to the Environmental Planning and Climate Protection Department, the Municipality is experiencing climate change impacts, with a documented annual sea level rise of 2.7 mm that threatens coastal wetland and dune ecosystems (EMM, 2014). More immediately visible, the increasing levels of rainfall from climate change contribute to storm runoff levels that exceed the capacity of the city's infrastructure, causing flooding and the spread of pollution. Indeed, the flooding of April 2022 had severe consequences for the municipality because of a high degree of formal urbanisation, with expanding suburbs as well as business and industrial areas, all associated with more impervious areas, which result in a near direct and rapid surface runoff with higher peak discharges.

Rivers have become extremely polluted due to human activities and are continuing to deteriorate (World Bank, 2016). The degradation of eThekwini's rivers has been progressively increasing; in 2006, 34% of eThekwini's rivers were evaluated as being in poor condition, and by 2010, that proportion had risen to 40%. As the city and region develop, there is significant and increasing competition for water with growing water requirements. Under climate change conditions, protecting viable ecosystems is becoming increasingly important in meeting urban and peri-urban communities' health, social, cultural and economic needs (EMM, 2022). The ecosystem services provided by natural areas offer the most significant buffering opportunities for local communities and infrastructure against the negative impacts of climate change. As such, the protection of local ecosystems will contribute significantly to the city's ability to adapt to climate change impacts, including extreme weather events, sea-level rise and more variable rainfall patterns.

The estimated population was 4 082 208 in 2021 (EMM, 2022). The municipality is the economic powerhouse of KwaZulu-Natal, with a provincial GDP contribution of 59.88% or R468 billion (EMM, 2022). The region is a vital link between the regional economies of Pietermaritzburg (and onward to Gauteng) and Richards Bay. It ranks as the second largest economic centre with the second most significant industrial region in South Africa (EMM, 2022). The municipality is characterised by a diversified economy, with strengths ranging from manufacturing, logistics, property and finance to tourism, leisure, sports, and arts and culture (COGTA, 2020). Yet, an exceptionally large number of the population is not economically active. Approximately 60% of households are low-income and earn less than R38 400 per annum or R3 200 per month. According to Global Insight, over a million people were living below the food poverty line in 2018, the highest number of people living below the food poverty line in cities, followed by Johannesburg, Cape Town, Tshwane and Nelson Mandela Bay (COGTA, 2020). eThekwini's urban form is characterised as having a clear separation of residential and economic uses (EMM, 2022). This implies that there are few employment opportunities where people live, and that economically active residents must commute long distances at great cost in terms of time and financial resources.

The dual governance system is unique to the municipality and presents challenges, particularly concerning land, planning and urban management (EMM, 2022). The municipality shares the governance of 38% of the municipal area (97 000 hectares), located predominantly in its rural periphery, with 21 traditional councils (Roberts et al., 2017). Distinct challenges between traditional

and municipal governance are being experienced in the sphere of customary land tenure practices (traditional land allocation and leases), resulting in development that is largely unaligned with municipal spatial plans and not subject to conventional land use planning control. Traditional land allocations on Ingonyama Trust land, mainly for residential use, have rapidly increased in recent years, driven by a reverse migration of lower- and middle-income households, with citizens choosing to leave the townships and central urban areas in favour of the traditional land tenure system and way of life (Sutherland et al., 2016). The Ingonyama Trust areas provide a range of opportunities and benefits to new households as the traditional system enables households to legally gain access to land for a minimal cost compared with the private property market (Roberts et al., 2017). An important dimension is that as land pressures grow, the allocation of marginal and environmentally sensitive land, such as floodplains, wetlands, steep slopes and the coastal zone, has increased, putting households at risk from flooding and heavy rainfall events (Roberts et al., 2017).

3. Overberg case study⁵

3.1 Overview of the local food system

Key sub-sectors in the Overberg agri-food system are winter grains and livestock, horticulture and wine, and abalone and fishing. The district is a major producer of wheat, barley, canola and apples (ODM, 2017:82). Most production goes out of the district into regional (Cape Town, Gqeberha), national and global markets. There is some agro-processing in the area before products leave.

Agricultural land use covers around 20-25% of land in the Overstrand LM. Livestock-related activities dominate agricultural land use in these zones, with lucerne, natural grazing and planted pastures constituting around 75% of agricultural land use in the area, followed by winter grains at about 16%. However, the area is better known for intensive, high-value production of wine grapes and wine, proteas and fynbos, vegetables and agro- and eco-tourism (OLM, 2021:250).

3.1.1 Winter grains and livestock in the Rûens

The Middle Rûens is a winter grain production area, running mainly west-east across Theewaterskloof and Swellendam LMs. The area is a major producer of wheat, barley and canola, with lucerne (alfalfa) and pasture for sheep and dairy cattle. More recently, there has been some diversification into citrus and nuts on portions of farms [Ov05].

The area is one of the last refuges of Renosterveld (a sub-category within the fynbos biome). It contains some of the largest and most intact remnants consisting of four different vegetation types, all of which are critically endangered. Most fragments are less than 80 ha in size, and almost all remnants are on privately-owned land⁶.

A typical farm in the area has wheat, barley, oats, canola, and some lucerne, peas and triticale. The minimum farm size is 800 ha, with concentration and land consolidation over the past decades [Ov05, Ov06]. Smaller farmers are leasing or selling their land due to high production costs and economies of scale needed for commercial viability. Production is highly mechanised, e.g. combine harvesters. Conservation agriculture (CA, see below) and precision farming are widely adopted.

Wheat is mainly produced for human consumption. In the Overberg, most is aggregated at local silos and then exported out of the area. Most millers are large corporate entities. Small millers in the Overberg sell flour to local urban areas, but this is comparatively small-scale [Ov06]. Overberg is one of the few South African locations with the appropriate barley production conditions. Barley is used mainly for malt for beer, with a small amount for animal feed. AB InBev (former SAB) has a malting facility in Caledon and is the main buyer. The grain is malted in Caledon and then sent to Cape Town for brewing. Otherwise, it goes to a malting facility in Alrode in Gauteng. Transport is mainly by road (trucks) as the rail system is chronically mismanaged and has decayed.

Overberg is also the commercial hub of canola production in South Africa, which is generally sufficient to meet local demand. Southern Oil (SOILL)⁷ in Swellendam introduced canola into South Africa in 1993, and had the only canola oil press in South Africa in 2015. They contract with around 500 local farmers. They produce edible oils and related products with national supply to manufacturers, retailers and restaurants, with occasional small exports into the Southern African region. Most oil cake is sold for animal feed to farmers in the Western Cape (including Overberg), and some for organic fertiliser.

⁵ Refer to longer site report for more detail, <https://www.southernAfricaFoodLab.org/wp-content/uploads/2022/08/TAFS-Overstrand-research-report-for-sharing-July-2022-final.pdf>

⁶ <https://overbergrenosterveld.org.za/>

⁷ www.soill.co.za

Acorn Agri & Food⁸ dominates the grain sub-sector in the area. It was established as a merger between Acorn Agri and Overberg Agri in 2018. Acorn Agri is an investment company formed in 2014 with Overberg Agri as its first investment. Overberg Agri⁹ is itself a product of a merger in 2005 of companies formed out of the former Caledon and Bredasdorp farmers' cooperatives following agricultural deregulation in the mid-1990s. Overberg Agri has nine divisions covering grain storage and handling, input supply through retail outlets (11 in Overberg), and diverse financial and agricultural services. It has eight grain depots in Overberg. Overberg Agri works with about 200 farmers in Overberg (the majority of the farmers in the area), providing a comprehensive package of services, including extension and management, focusing on grain, pastures and animals [Ov06].

Grain processing and storage have expanded in the past few years. Increasing yields have required more storage but constructing new siloes is costly. South Africa has followed global trends to cheaper storage, such as bags and bunkers, with lower capital costs (but slightly higher repairs and maintenance) [Ov05, Ov06]. Farmers harvest the grain and deliver it to the siloes where it is graded and stored. Buyers collect from the siloes, and mostly manage the logistics. Wheat and barley prices are derived from the South African Futures Exchange (SAFEX)¹⁰, but other grain sales are based on spot markets [Ov05]. Most waste from the siloes is used for animal feed. Unusable grain (e.g. with pathogens) goes to the municipality for safe disposal [Ov06].

Sheep and dairy cattle are the main types of livestock in Overberg. Sheep are mainly dual-purpose (mutton and wool) merino or Dohne merino breeds. Ninety percent of wool production is exported, while South Africa is a net importer of mutton (cheap, frozen portions) with a few exports (fresh or chilled carcasses). Cheap meat imports tend to undercut local producers. The dairy industry is dwindling in the area, with around a tenth of the number of active producers compared with two decades ago. Only those with permanent water and irrigated pastures are doing dairy now [Ov06].

Acorn Agri & Food is also dominant in the commercial livestock sphere, through ownership of Overberg Meat (formerly Bredasdorp Slagpale) which incorporates a sheep and cattle abattoir, distribution to retail and wholesale, and processed meat through Overberg Speciality Foods. Smaller abattoirs exist but generally do not comply with the Meat and Health and Safety Acts. There are a few small local feed manufacturers, but the sector is mostly corporate-dominated.

3.1.2 Horticulture and organic production in Overstrand

Several large commercial horticultural producers have farms and packhouses in the area, mainly producing fruit and vegetables for national and export markets. Although agriculture is still mainly under conventional production, organic farming has grown, and more ecological ways of thinking in the area, including farmers changing their practices [Ov01, Ov02]. Wine farming, organic production and agro- and eco-tourism are interlinked. A profile of some organic farmers is found in Annex 5.

The more mature organic farms have their own marketing systems in place. Some contribute to the Participatory Guarantee System (PGS) and shared box schemes but also do their own marketing. Some farmers have 20-75% international exports, while others are almost 100% local, including informal traders. Depending on the diversity of their produce, they try to send the best into local or Cape Town markets for a premium price.

Local markets for organic products include box schemes, farmers' markets, informal traders, formal retailers, restaurants and food relief. More detail is given about the Overberg PGS box scheme below. One farmer did try his own box scheme in a 100 km radius, but transport costs made it unsustainable, and he closed it down. Hermanus has a small farmers' market with potential for expansion. Farmers' markets are cheaper than box schemes because of lower transport costs and simpler logistics. Stanford

⁸ <https://www.acornagri.co.za/>

⁹ <https://www.overbergagri.co.za/>

¹⁰ <https://sashares.co.za/safex/#gs.zyifzj>

has occasional farmer markets, and Gansbaai has a municipal market, but these are too small for commercial producers. Informal traders are a good market but, like formal retailers, require consistent volume and availability. There is strong demand for African leafy greens, mainly from migrant consumers, which can be sold profitably without a premium. Several large and small supermarkets, health stores and restaurants in every local town buy organic produce. However, the market is small as a proportion of overall fruit and vegetable sales. For organic premium markets, demand is for smaller quantities and greater diversity of products. A portion of the Overberg PGS box produce is allocated to free food parcels managed by Food 4 Thought, a local non-government organisation (NGO). Rotary and the LM run other local food relief programmes. Rotary purchases groceries at a discount from Savemor in the township, with supplementary food donations, including from local farmers.

There is stronger demand for organic produce from Cape Town, but obstacles include small quantities, long distances, and excessively precise product specifications. Oranjezicht City Farm Market is a key channel for the PGS box. Any excess goes to the Epping Fresh Produce Market (FPM), but obstacles include no premium, long distances, and produce frequently discarded without any income. Higher-end restaurants and ships are lucrative markets, but COVID-19 has lowered demand. National markets may sometimes be more lucrative than export markets, for example with garlic at present. Some farmers are planting in anticipation of this opportunity. Fruit and vegetables, flowers and wine are exported through the Cape Town airport. With lower volumes, farmers must share logistics with non-organic producers, and they lose the organic premium on vegetables, though the export market is still lucrative. European Union (EU) certification is required for organic exports there. The South African Organic Sector Organisation (SAOSO)¹¹ standard is recognised by IFOAM¹² and prepares farmers for this certification. All countries that recognise IFOAM accept the SAOSO standard except the United States and EU [Ov01]. Export proteas will face pressure from the EU on chemical use and wider environmental issues [Ov08].

3.2 Initiatives on transitions to agroecological systems

Efforts are underway by actors to integrate a series of activities adopting and oriented towards greater ecological sustainability and agroecological practices. In the Rûens, commercial grain farmers are widely adopting CA. In Overstrand, efforts are focused on organic farming, a PGS, livelihoods initiatives around food production, alien vegetation clearing, and wildflower harvesting linked to biodiversity conservation activities, cooperatives, and engagement with local authorities in efforts to coordinate and mutually support plans and activities.

3.2.1 Conservation agriculture

CA is based on three core practices: intercropping and/or crop rotations, minimal soil disturbance (low or no-till), and permanent ground cover (crop residues or living plants). More recently, livestock integration is becoming a feature. CA adoption is a response to soil degradation in conventional farming systems caused, particularly by soil tillage and the removal of crop residues, in the context of rising input prices and low commodity prices (Strauss et al., 2021).

The initial conversion to no-till and CA in the Western Cape was farmer-driven and occurred in the 1980s. Historically, regulations encouraged the production of monocultures in marginal areas. After agricultural deregulation in the mid-1990s, farmers were exposed to global competition. This resulted in crop diversification, crop rotation and the adoption of CA (Stead, 2021:1-2). The provincial Department of Agriculture initiated a CA programme in the Swartland in 1996, and three long-term trials were started in the Southern Cape in 2002 (Strauss et al., 2021:3) at the Tygerhoek Research Farm¹³ at Rivieronderend in Theewaterskloof LM.

¹¹ <https://www.saoso.org/>

¹² <https://www.ifoam.bio/>

¹³ <https://www.elsenburg.com/tygerhoek-research-farm/>

The adoption rate is around 40% for each of the core CA practices, although only around 25% of farmers have adopted all three practices simultaneously. The Western Cape has the highest adoption rate in the country (Strauss et al., 2021:2), with an average of 51% of grain farmers adopting all three legs of CA. Ninety-five percent are doing crop rotation, though fewer keep stubble in the fields [Ov05]. Winter grain farmers in the Overberg have become core adopters of CA, shifting towards regenerative agriculture that incorporates core CA practices and explicitly includes livestock integration and reduction in synthetic inputs. Currently, there is some integration with sheep, with plans to integrate dairy and beef cattle over time [Ov05].

Other ecological practices associated with CA include using legumes for soil nutrition, high-density grazing, and integration with biodiversity conservation. “The aim is for the carbon content of the soil when it was under fynbos, which is 3-5% depending on the area” [Ov05]. Trials are developing cover crop mixtures prepared specifically for the conditions, with evidence that yields from mixtures perform better than single pastures, with nutrient variety for livestock grazing.

“We plant mixes. I prefer 70% grasses or cereals and 30% brassicas and legumes. Because the brassicas and legumes in the summer months break down very fast, where the grasses tend to take a little bit longer, so they keep your soil cooler and protect your organisms under the soil a bit longer and stop erosion of the soil. So, 70% cereals and then your legumes, I would put one or two nitrogen-fixing crops in a mix. But I try and have different root types, like a bulb type and a taproot and a fibrous root.”
[Ov05]

Winter grains are rotated with pastures like lucerne and medic (an annual legume) pastures. Alternative crops like linseed and chickpeas, fava beans and lupins have been tried and are viable, although there are challenges with appropriate cultivars and royalties on intellectual property. These crops contribute green manure, grazing, and some sales. On the trial farms, spraying is done before planting but not again during the season. Pests and diseases are managed through active scouting, and sprays are only used if this is economically necessary to save the crop. Pollinator strips are planted. Huge growth in soil life has been detected, as well as a return of birds [Ov05].

High-density grazing is being tested, where animals are kept in a small area, grazed intensively for a short time, and then camps are rotated. The animals fertilise and trample the soil, and then it is rested. The carrying capacity for the area is around three to four small stock units per ha, but with high-density grazing; this can be up to 500 units per ha [Ov05].

As a distinct process but with some overlap, the Overberg Renosterveld Conservation Trust (ORCT)¹⁴ was established in 2012 to manage and conserve renosterveld through a combination of land purchases and conservation easements, linking fragments through the restoration of corridors, and awareness-raising amongst landowners. Tygerberg Research Farm aims to bring natural corridors into their trials. This signals a potential expansion of the production-based CA initiative to the landscape level, bringing in elements of wider NRM. There is also a potential connection to the Agulhas Biodiversity Initiative (ABI, see below), which is considering the development of a district-wide biosphere reserve.

There is a long catalogue of evidence-based benefits of CA, including improved soil water retention and reduced erosion; reduced leaching of chemicals into the catchment; improved soil quality, health and fertility; increased nutrient use efficiency; increased yields and crop productivity with no strong evidence of yield losses during conversion (which takes up to five years); reduced input costs because of less synthetic fertiliser and pesticide use; weed suppression; reduced environmental degradation and increased biodiversity (Stead, 2021; Ov05; Ov06). Overall, CA practices have improved the sustainability and viability of the commercial farming industry in the area [Ov06].

¹⁴ <https://overbergrenosterveld.org.za/>

Nevertheless, farmers wanting to convert still face challenges. Herbicide resistance is a major driver of CA adoption. Nevertheless, weed control remains one of the biggest management challenges. Herbicide use is still considered the most effective weed management option but results in herbicide-tolerant weed species that threaten the CA production system. This requires an integrated weed management approach (Strauss et al., 2021). In the Overberg, “post-emergence, selective grass herbicides don’t work anymore” with resistance, especially on the grass weeds (ryegrass, brown grass, wild oats, etc.). Rotations with pastures and broadleaf crops are necessary to break up the resistance [Ov06].

Another challenge is the difficulty in convincing farmers to replace a cash crop with a cover crop to build soil fertility. “You can’t be sustainable if you’re not profitable. I can do everything that’s nice, but if I don’t make money, I’m not going to farm; the next guy is just going to take the farm and do what he wants” [Ov05]. “Rotations should generate margin to be viable” [Ov06]. It is easier to convince those with animals to plant pasture which contributes to extra feed. There has been a move away from the term ‘cover crop’, which has a negative connotation among farmers, and towards the concept of a ‘utility crop’ [Ov05]. Farmers tend to listen to company reps for advice, but these reps get commissions on product sales. Many farmers do not know what is happening on their farms and blindly follow advice [Ov05].

The lack of availability of alternative inputs is another constraint to adopting CA. Equipment is costly, and farmers have limited support, e.g. there are no conversion subsidies. Commercial farming is expensive to set up and maintain, consolidating and increasing scale [Ov05]. Although there is a push for organic and bio-friendly seed treatments and fertilisers, and generally a reduction of input costs, alternatives are not readily available and commercial crop production relies on synthetic fertilisers and pesticides [Ov06]. Alternative crops and cultivars are needed. There is no local breeding of canola, lupins, lucerne, medics, etc. Most seed imports are not adapted to local conditions, and there is limited research unless farmers do it themselves [Ov06].

3.2.2 Overberg PGS

The Overberg PGS started in 2016 and is affiliated with PGS South Africa¹⁵, a national network established in 2011 to assist with local market access for organic and agroecological farmers, supported by the SAOSO PGS Pollinators’ Programme. Without a government-approved organic standard, SAOSO (2020) has developed a local Standard for Organic Production and Processing, which is included in the IFOAM Family of Standards. Principles underpinning the standards have a strong overlap with agroecological principles. They include on-farm wildlife refuge habitats, soil and water conservation, adopting the precautionary principle regarding technological deployment, sustainable management of the commons, organically produced genetics (plants and animals), locally appropriate varieties, crop diversity, biological pest and disease management, restrictions on processing methods, animal welfare, separation of organic and non-organic products throughout the supply chain, and social justice, among others.

PGS is a second-party organic certification system that provides quality assurance based on diverse local actors (farmers, consumers, retailers and other actors in the local system) monitoring farms for compliance and providing support through periodic farm visits. The system is based on trust and social networks. It is cheaper and more accessible than third-party certification, with an emphasis in South Africa on smallholder farmers and local markets. Based on meeting SAOSO standards, farmers or groups of farmers can affix a logo to their product indicating PGS compliance. Potentially, this can offer a premium in the market, although it may take time to build up retailer and consumer knowledge and acceptance of premium prices.

¹⁵ <https://www.pgssa.org.za/>

The Overberg PGS procures organic fresh produce from local farmers and a community garden for a box scheme to consumers locally and in Cape Town (see Annex 5 for profiles of some PGS farmers). Wealthy consumers cross-subsidise cheaper boxes for resource-poor consumers. Initially, four organic farms joined up, with numbers growing to 12. Given the distances, there are plans to split the PGS and create a separate one linked to the Greyton-Genadendal Transition Town¹⁶ in Theewaterskloof LM and the Valley Food Gardens initiative there. The Overberg PGS will remain with nine farmers. Farm visits are conducted as part of the PGS model, although, currently, mutual support is mainly around some shared transport to market but not much else. Overall, the PGS needs dedicated coordination (a paid individual), which could potentially be funded from membership fees or a levy [Ov08].

Food 4 Thought¹⁷ is an NGO that has renovated and run a school for the past 20 years for scholars from Die Kop informal settlement in Stanford without any government school. In 2020, they occupied public land next to the school to start a community food garden, and now have a lease on the land from the municipality. Zizemeleni Cooperative was formed to run the garden and contribute to the PGS box and food relief efforts. The cooperative offers potential as a point of integration for various programmes and initiatives, including as a coordinating hub for other cooperative ventures in alien vegetation clearing, biomass processing, sustainable flower harvesting and others, linked to the MAGIC process for engaging with local authorities (see below). Food 4 Thought provides administrative and mentoring support to ensure the gardening is functioning. The longer-term goal is for the cooperative to supply most of the produce for the PGS box scheme.

As discussed above, most farmers participating in the PGS have their own markets, and the PGS box is just one small part of their overall sales. Farmers decide what to contribute to the box. There is a range of boxes, from R150 to R500 weekly. They include diverse products from participating farmers, including fruit, vegetables, eggs, and products processed on the farm. This may be supplemented by purchases from other certified organic farmers locally and further afield as needed [Ov01].

Produce is delivered to storage at Stanford. The box is then assembled and delivered weekly to 20-50 customers in Stanford, surrounding areas, and Cape Town. About 45-50% of sales are at the Oranjezicht Market at the Waterfront in Cape Town. One of the participating farmers takes boxes to Cape Town as part of their own delivery process. The objective of the PGS box is not to make big money, but to sustain small producers. Once producers are paid, any profits are returned to Food 4 Thought to subsidise food relief [Ov01, Ov14]. Overall, the box scheme makes only a very small contribution to the local food supply but indicates one aspect of a multi-dimensional niche activity with the potential for scaling out over time.

Box 1: Conversion to agroecological practices

On Farm 1 (see Annex 5), two existing blocks of grapes were kept conventional at the start for an income. The blocks that were converted to organic showed a sharp drop in yields before starting to increase. But yields do not need to be as high as conventional production because of the organic premium.

“The main issues here, very out when we took over, were high or bad calcium-magnesium ratios, very low organic matter within the soil, drenched with inputs and needing to build back topsoil and cover cropping techniques, so we are trying to implement no-till techniques” [Ov01].

Farm 1 stopped using fertiliser and introduced compost, although with some amendments to correct ratios as needed (e.g. lime, sulphur, magnesium, or potassium rock).

“Where we lacked maybe a bit of foresight was the amount of compost requirement that we would need. Initially, we were quite strong on trying to produce our own, but without the machinery to produce it, we realised the cost implication of producing good-quality compost is actually just too much. We can’t do it on

¹⁶ <https://www.greytontransitiontown.org.za/>

¹⁷ <http://food4thought.org.za/>

the farm. Doing it on the farm, it was working out; when I worked the maths out with labour and hands, it was probably about R920 a ton. Bloody expensive.” [Ov01]

They now purchase a mix of mushroom compost and *kraal* manure from local farmers and suppliers in the area. The current need is 10 tonnes/ha, and with a woodchipper and the cover crop, they will try to bring it down to 4-6 tonnes/ha. Soil carbon is already increasing, from 0.5 to 1.3% at the start to 3.2% on average now. Conversion to fully organic production is anticipated to be a five-to-seven-year process.

3.2.3 Livelihood initiatives linked to biodiversity conservation

Two-thirds of the Overstrand municipal area is classified as a ‘natural habitat’ (OLM, 2021:133). Wildflower exports are a lucrative niche. However, biodiversity is threatened by invasive alien plants, fires and weak management. Landowners are legally responsible for the management of alien vegetation on their land. Coupled with a nature conservation focus, this has resulted in the state and private landowners’ significant biosphere and biosphere conservation efforts. More recently, there has been growing awareness of the need to find ways to link conservation efforts to livelihoods and income generation for the population excluded from conservation efforts to date.

Box 2: The Agulhas Biodiversity Initiative (ABI)

The Agulhas Biodiversity Initiative (ABI)¹⁸ was launched in 2003 as a voluntary association of landowners with the government on landscape-level biodiversity conservation. They started projects on sustainable harvesting, community-based tourism, private sector models for conservation and tourism, and communication and awareness raising. About 25 organisations were involved, and the initiative established lines of communication between diverse actors [Ov07]. On completing a Global Environmental Facility-funded project in 2010, South African National Parks (SANParks) ended their coordination role. Actors agreed to carry on the partnership based on five thematic areas: renewable energy, green economy, environmental education, responsible tourism and integrated land use planning and management. The green economy incorporates natural resource use and services, fire, alien clearing, erosion control, and wetland restoration [Ov07].

The Flower Valley Conservation Trust (FVCT)¹⁹ functioned as the ABI secretariat from 2010 but relinquished this role in 2021. FVCT was established in 1999, focusing on managing a conservancy on a farm near Gansbaai, but later with an extended mandate to work with ABI. It was established as a non-profit organisation (NPO) to promote the conservation and sustainable harvesting of wild fynbos, in the context of expanding wine production in the area.

Within the broader initiative, landowners form their own voluntary groups and agreements on joint land conservation. Examples are the 46 000 ha Nuwejaars Wetland Nature Reserve, an agreement between 25 landowners to remove land from agriculture, and a shift to game farming and tourism to recoup income losses [Ov07]. Another initiative is the Walker Bay Fynbos Conservancy, established in 1996 as a voluntary association of conservation-minded landowners. It includes the 480 ha Grootbos Farm with a high-end ecotourism lodge as part of a green corridor incorporating Bhodi Khaya (high-end nature retreat) and the Platbos forest.

The Grootbos Foundation was established in 2003 on the grounds of Grootbos Farm as a separate NPO from commercial operations. The foundation is funded partly by Grootbos, and partly by outside donors, and has a team of 40. It started with fully funded conservation training through the Green Futures College with 12 community members per year, with a second year on indigenous horticulture. A share of income from an indigenous nursery goes to college. The foundation does landscape research with a team including botanists, an entomologist, and a mammologist focusing on Elim ferricrete fynbos. A protected area was registered with eight core landowners in 2021 and connected to the wider Walker Bay Fynbos Protected Area Network. They have a long-term plan for animal corridors [Ov11].

ABI is working on becoming a biosphere reserve registered with UNESCO, to cover the whole Overberg, incorporating 1.2 million ha compared with ABI’s current 250 000 ha [Ov07].

¹⁸ <https://agulhasbiodiversity.co.za/>

¹⁹ <https://www.flowervalley.co.za/>

Alien vegetation clearing

As indicated earlier, invasive alien plants constitute a clear threat to biodiversity in the Overberg. Landowners are becoming more sensitive to the risk of invasive aliens. The Alien and Invasive Species Regulations of 2014, as promulgated under the National Environmental Management: Biodiversity Act 10 of 2004, mandates all property owners to manage listed invasive species on their properties (ODM, 2017:169) and pressure from land redistribution to justify land use, too, “is stimulating some level of discomfort” [Ov09].

In 2011, ABI established a voluntary association for land management, including alien clearing, and in 2013, they contracted with the Expanded Public Works Programme (EPWP) via the national Department of Forestry, Fisheries and Environment (DFFE) for alien clearing. The EPWP consists of three-yearly contracts, with supplementary philanthropic funds and landowner payments. They work with 100 farmers in nine land-use groups based on existing farmer or ratepayers’ associations. At the start, they employed 240 people in teams of 10, clearing around 10 000 ha. More recently, this was reduced to 140 people clearing 6 000 ha because of budget cuts [Ov07].

FVCT contracted and implemented alien clearing projects using their own staff, on behalf of ABI. However, at the end of 2021, the FVCT’s mandate was reduced to looking after their farm near Gansbaai. Staff were retrenched and formed their own company to try to sustain the NRM activities. With ABI collaboration, they successfully took over the alien clearing contract [Ov09]. The work will be outsourced to seven contractors with teams of 10 to clear the land of aliens, and ideally stack and get that biomass ready for processing [Ov01].

The idea is to go beyond alien clearing in the field, to multiply contractor skills and develop small, medium and micro enterprises (SMMEs) in the bioeconomy so they can offer a comprehensive land management package to landowners incorporating diverse elements such as trail maintenance, veld management, sustainable wood cutting, biofuel production, firefighting and managing fire breaks, sustainable sour fig and flower harvesting, follow-up clearing and re-seeding of natural fynbos, potentially planting orchards, control plans, and assessments of harvestable population stocks [Ov01, Ov07, Ov09, Ov11].

Cooperatives are included in the SMMEs providing services, incorporating several potential downstream opportunities such as clearing and processing biomass into firewood, wood chips and compost, and local and export firewood sales. Green waste can be diverted from the municipal waste site for composting or chipping. The municipality could purchase compost for use in community garden programmes, thereby giving life to policies on preferential procurement from local SMMEs [Ov01]. There is potential demand for biomass for renewable energy through producing chips, pulverised dust and pellets. For example, the Overberg Agri lime works outside Bredasdorp, and AB InBev malting facilities in Caledon are looking to shift to renewable energy [Ov07].

Efforts have been put into organising and building a model for contractors to have access to biomass and a site for processing. There is potential to look at carbon credits and other ecosystem services funds [Ov01]. Four of seven contractors are currently aligned with this vision. The aim is for 30 contractors through ABI, with Zizemeleni as a community-based development cooperative, to develop and house the contractors, provide resources, and build compliance. When the cooperatives and SMMEs are registered and can go on their own, they can remain as associated partners but as their own entity [Ov01].

However, contractors raise concerns about the feasibility of a business model based on extraction from the field and processing of biomass. Although the physical conditions are more suitable for small operators, the cost of extracting and processing biomass raises questions:

“The nature of the logistics required to get biomass off the fynbos, out of the field is not a viable option for a highly technical, commercial outfit. It’s not a plantation. It’s highly dependent on physical labour to collect stuff and make it a viable option to then move to another location to add value. That currently plays the role of small SMMEs ... [but] if you justifiably calculate the labour intensity required to do that, it becomes not affordable for any commercial outfit to buy the product.” [Ov09]

Wildflowers

Three main types of wildflowers are harvested in the area: Protea, Leucospermum and Greens. Plants are also cultivated, and Overberg produces 33% of cultivated ‘wild’ flowers in the Western Cape, with the majority in the Agulhas Plain. Although cultivated flowers are more highly valued, the value distribution does not favour farmers, who get just 25-30% of the final retail price [Ov08]. Packhouses exercise significant power in the local part of the supply chain, determining picking teams and prices. They manage harvesting teams and control value distribution between suppliers and buyers. Exporters dominate the industry, with an estimated 92% of flowers exported in 2008 (ODM, 2017:88).

Wildflower harvesters are mostly labour-intensive and localised small enterprises, contracted in teams. Local pickers have operated in the area for generations, and have strong tacit knowledge about fynbos and harvesting, e.g. what to pick and when, which to dry, etc. Contracted teams are highly competitive and don’t share information about what they pick or where. The result is a lack of a pickers’ organisation, and, consequently, they are price takers [Ov07]. Suppliers either harvest their own land or pay landowners for access. There is some informal (unregistered) harvesting.

Different flowers have their own prices, but the packhouses mainly control these. The price of natural fynbos has been pushed very low, and the market has kept it there by cultivating fynbos and hybrid species. Local packhouse prices for planted proteas are R25-R50 per head, but wild harvested natural species are getting 25c. The price paid to pickers has not increased in 22 years, but the market price has skyrocketed [Ov01].

“There is such a high dependence on what the industry call filler species, which are your low-value species, versus a focal flower, which is your high value. There’s been a decline in focal flowers, and the industry is basically just supplying fillers. Supplying a filler at 20c per stem for many years is not a viable thing ... That type of pricing has got a real negative impact on sustainable harvesting. Because what happens now is harvesters are forced to harvest more volume to justify their business model. You push the industry in a way that it is forced to harvest unsustainably.” [Ov09]

In this context, efforts are being directed towards organising pickers to establish themselves as enterprises rather than just being contract workers for the packhouses, with efforts to open new channels not so controlled by the packhouses. The longer-term idea is to establish a cooperative packhouse owned by the pickers to compete with the private packhouses [Ov01].

For alien clearing, NRM and sustainable flower harvesting alike, there are wider concerns about market-based approaches to biodiversity conservation. To date, advocates have been unable to convince buyers to pay a premium for sustainably sourced flowers that could be returned to sustain the programme to support training, monitoring, supervision, etc. “This hasn’t really translated into a lot of benefit to the harvesters themselves” [Ov07]. A neoliberal approach to biodiversity conservation means dependence on profitability in entrenched markets, small enterprises carry the financial risk with limited financial reward, and premium markets are considered the only route to profitable enterprise. But there is limited effective demand. “People won’t [change our current system] when it’s a good thing to do, they’ll do it because they benefit. What’s in it for consumers?” [Ov07].

3.3 Public support and roles of local authorities

The Overstrand LM supports many activities related to the food economy that are part of the local economic development (LED) portfolio (Ov03). This includes support to community gardens, farms, SMMEs and cooperatives, management of informal trade, and the implementation of the Community Works Programme (CWP) and EPWP programmes. Some of these activities are under the umbrella of or related to the Township and Rural Entrepreneurship Programme²⁰ implemented by the Department of Small Business Development (DSBD), the Small Enterprise Development Agency (SEDA) and the Small Enterprise Finance Agency (SEFA).

Local and district municipal plans encompass eco-tourism, agri-tourism, SMME and informal sector development, including food retail, preferential public procurement for smallholders and local enterprises, and emerging farmer support, including the provision of land and inputs for home food gardens. The short-term economic recovery strategy aims to improve and expand public employment programmes (OLM, 2021:237-9). There are links to provincial programmes such as the ‘Nourish to Flourish’ programme in connection with the Western Cape Economic Development Partnership²¹. The provincial Department of Agriculture also has programmes in the area, but these are not currently coordinated with the municipality.

However, like most municipalities, these activities are relatively marginal in responding effectively to local needs, especially in spatial planning and housing. Among these activities, two initiatives are of specific interest regarding sustainable development: the MAGIC initiative, public employment programmes, and other government policies.

Municipal Applied and Green Initiatives and Concepts (MAGIC) is a civil society initiative on inclusive economic transformation initiated in 1994. In 2012, a methodological approach was consolidated as a model for civil society working with the Department of Cooperative Governance and Traditional Affairs (COGTA) for multi-actor sustainable development activities at the municipal level. A key aspect of the process is consolidating a secondary cooperative on sustainable development in each municipality, incorporating all primary cooperatives across several economic sectors. The secondary cooperative becomes the interface between CSOs and the municipality. Together, they form a transparent and accountable special purpose vehicle for integration into LED and IDP planning processes, including preferential public procurement.

“Looking at COGTA procurement policies and localisation, local service providers should be used for municipal contracts, but also local cooperatives should be putting forward tenders for local work. If they are there, a minimum of 70% of any contract should be awarded to those cooperatives. That type of legislation and policy is written in but is not actioned on the ground because people are not aware or cooperatives are seen as destined to fail, so they are never used or actioned ... If the product is endorsed by the local municipality, with good governance and transparency, other donors would be able to sit in that collective. This becomes a sustainable development initiative in the LM, with local service providers, NGOs providing support, and local SMMEs and cooperatives operate.” [Ov01]

The model led to practical activities with LED offices in several municipalities in Gauteng and the Western Cape (MAGIC, 2018). It had some success in the machinery sector with the National Tooling Initiative Programme²², working with the Department of Trade, Industry and Competition to revitalise South Africa’s toolmaking industry through building skills and expertise among black-owned and -managed SMMEs, with effective public-private governance structures. The objective is to

²⁰ <http://www.dsbd.gov.za/programme/township-and-rural-entrepreneurship-programme>

²¹ <https://wciedp.co.za/>

²² <http://www.nims-skills-sa.org/web/index.cfm>

expand this example to other sectors. Agroecology is one of eight development sectors the initiative is working on.

MAGIC has provided a framework for local civil society efforts at systematic engagement with the Overstrand LM, linking biodiversity conservation, agricultural production, social redress and transformation, livelihoods and food relief. The first step is to create a link with the municipal LED office, with the manager/director as the main port of call to understand the vision. Municipal LED units are the only constitutionally mandated departments that can promote LED and draw funds from outside the municipality. Other departments do have allocations, but the LED office has wider potential to bring projects into the IDP, Municipal Infrastructure Grant (MIG) investment, and provincial and national budgets [Ov01].

The ward committee is a site for intervention. The committee consists of area-based reps, community-based organisations, and NGO-based reps. Members are selected through community elections. Most of the current Stanford ward committee supports the broader approach, and there is some alignment with other ward committees in Hermanus, Zwelihle and Gansbaai. The approach “is about raising priorities on the IDP. That’s what it comes down to, is how many hands can raise to push a certain agenda up the IDP … It’s one revision per year and five-year cycles, so you must make sure that you’re in for your revisions” [Ov01].

Current laws and policies allow for good collaboration between secondary cooperatives and the municipality, whether for housing, tendering or procurement. There is a lot of policy to leverage secondary cooperatives [Ov01]. The Zizemeleni Cooperative has potential as a secondary cooperative, integrating various initiatives and activities, including food production, alien vegetation clearing, sustainable flower harvesting, land reform, public employment and LED programmes.

The CWP and EPWP public employment programmes provide a critical material base to build the activities defined above. The programmes include wage subsidies/stipends and skills training. Zizemeleni food garden incorporates CWP stipends for some members (with efforts to also get others onto the programme). EPWP and the Working for Fire and Working for Water (WfW) programmes subsidise teams for alien vegetation clearing.

The CWP pays a stipend to some participants to work at the Zizemeleni garden for eight days a month. It is only for the unemployed and those earning less than R3 500/month. After the eight days, the workers can continue in the garden if they choose, and the cooperative pays from its own income for extra days based on monitored days of work [Ov14]. The garden has a memorandum of understanding with the municipality on CWP and selected its own manager. Not all workers are beneficiaries of the CWP, and efforts to include others are hampered by ineffective bureaucracy [Ov01, Ov14].

4. Matatiele case study²³

4.1 Overview of the local food system

Matatiele has good conditions for agricultural production, but this is mostly underdeveloped, especially in the former homeland areas. Key agricultural activities are livestock (cattle, sheep, goats, poultry) and, to a lesser extent, maize, vegetables (e.g. cabbage, spinach, potatoes, some tomatoes), sugar beans, and forestry. Agriculture, forestry and fisheries contribute only about 6% of Matatiele's GDP (Matatiele LM, 2021:36-37) and 4% of total officially recorded employment (Alfred Nzo DM, 2017:45). However, communal tenure with grazing and subsistence farming is the norm, and "the reality on the ground is that the agricultural sector is probably worth much more in terms of the monetary value of its output and production and contribution to household food security" (Alfred Nzo DM, 2017:47).

Commercial production is mainly found along the Cedarville-Matatiele corridor, an area of around 440 000 ha, mostly under white ownership. Farming has converted indigenous grasslands to perennial rye grasslands with year-round irrigation and fertiliser addition (ERS and Conservation SA, 2011:33). Commercial agriculture is increasingly concentrated, with the expansion of vertically integrated corporate farming under pressure for economies of scale [Um01, Um05].

Communal areas are predominantly residential (Alfred Nzo DM, 2021:15). Communal land is under the custodianship of the national Department of Agriculture, Land Reform and Rural Development (DALRRD) on behalf of the land rights holders (the communities). Local management is carried out under the jurisdiction of traditional authorities, with development on this land subject to consultation with communities and TAs under the Interim Protection of Informal Land Rights Act (IPILRA)" (ERS and Conservation SA, 2011:9).

Communal agriculture is mainly for subsistence, with dryland crops relying on rivers and summer rainfall. Production includes wool for cash, maize intercropping for subsistence, and periodic livestock sales for short-term cash injections. Communal agriculture in the province generally averages about 10% of household income, and up to 50% at the most (EC COGTA, 2020:125). Extension services are weak or non-existent, especially for communal farmers (EC COGTA, 2020:129). For the Eastern Cape, only about 1-5% of marketed agricultural output comes from smallholder farmers (Alfred Nzo DM, 2017:16).

Market access for agricultural produce in the district is limited, with sales mainly to Matatiele and Kokstad or further out. There is room for small-scale farming but only in very localised markets [Um05]. Much processing takes place outside the district.

4.1.1 Livestock sub-sector

This study emphasises cattle as the major agricultural activity, with maize as the main grain. Sheep and goats constitute a smaller element of livestock production in the area. The meat mostly goes to local abattoirs in Matatiele and eMaxesibeni, and wool and mohair go to BKB and Cape Wool in Matatiele and Cedarville.

Commercial farming

Commercial livestock farms are found around Matatiele, Cedarville, Swartberg and Mvenyane, with an estimated 150 or more farmers [Um01], including 20 big commercial dairy farmers [Um06]. Large-scale commercial farmers are mostly, but not exclusively, white. There is limited interest or involvement in wider community development issues [Um08].

²³ Refer to longer site report for more detail, <https://www.southernAfricaFoodLab.org/wp-content/uploads/2022/08/TAFS-Umzimvubu-Matatiele-report-for-sharing-July-2022-final.pdf>

Feedlot-based conventional beef production is dominant, with widespread use of force-feeding, steroids and hormones and corporate supply of feed, medicine and services [Um01]. Farmers, including communal ones, without the facilities or interest in feed production, send their animals to the feedlots [Um01]. Triple A feedlot based in the KZN Midlands is a dominant force, with 55 000 cattle in their feedlot and slaughtering up to 800 a day [Um01]. Greenlands Abattoir in Kokstad has a feedlot near Matatiele with 3 500 cattle and one other local seasonal feedlot. Greenlands' feedlot is vertically integrated and supplies the Kokstad abattoir. 'Conventional' large commercial feedlot production is increasingly unsustainable. Health and safety concerns around steroid and hormone use drive consumers and producers towards alternatives [Um01].

Matatiele is known for its grass-reared and free-range beef. Grass-reared animals are not put into feedlots, but growth stimulants and hormones are still used to "get the weaners out of the blocks as soon as possible" [Um01]. In contrast, free-range production does not use hormones, with regulated farm checks on water, fencing, quality, condition and size of pastures, etc. However, there are no specific grassland or grazing management protocols. At least 12 commercial farmers in the area are producing free-range. A big challenge is to show profitability; otherwise, farmers will not shift [Um01].

'Emerging', small-scale, communal and informal livestock owners

Box 3: Defining farmer terms

'Emerging' is the preferred government terminology. It means previously marginalised farmers who are in the process of becoming commercial farmers in the formal sector. 'Small-scale' is more of a technical term. For livestock, it is based on the number of animals in a herd. There is no formal definition, but under 50 head can definitely be considered small-scale. 'Communal' refers to black farmers whose livestock graze on shared land under the control of TAs. 'Informal' refers to livestock owners who are not registered anywhere, don't necessarily have their own land (though they may have communal access rights), and may sell animals from time to time without any formal mediation or regulation. There are obviously strong overlaps between the categories, and the categories almost overwhelmingly refer to black farmers.

Forty percent of the South African cattle herd is owned by black communal farmers (Malusi et al., 2021:1). In the Umzimvubu catchment, between 50 and 82% of households own cattle (Matela and McLeod, 2016). A survey of participants in a government livestock improvement project in the area offers a profile of farmers. Farmers were organised in group- and village-owned enterprises. The majority were older men, and most had less than matric (Malusi et al., 2021:10). Old-age grants were the main source of income, and just 17% had cattle as their main source of income. The majority did continuous (as opposed to rotational) grazing. Just over half were doing supplemental feeding (lucerne, mineral licks, maize). Vet services were mostly from drug suppliers rather than government extension services. Herd sizes were mostly below 50. Water was sourced mainly from rivers and dams, and water shortages were not a major issue for these farmers (Malusi et al., 2021:3-5). Homesteads are the basic unit of livestock ownership and management. In communal areas, animals are often left to graze in an uncontrolled fashion. However, there is some collective herd management under village-level livestock and pasture management structures under the leadership of TAs (Madolo, 2008:14).

There are multiple economic and sociocultural uses of livestock outside of sales, including ceremonies, dowry payment rituals, and social status (Mbatha, 2021:144-6). Cattle are held for cash when required, rather than for sale at optimum market value. Sales are mainly direct to the buyer through informal channels for immediate cash, and because of the unavailability of other market channels (Madolo, 2008:28). There is a difference between holding cattle as a flexible source of wealth that can be monetised as needed and that performs multiple other functions and services on the one hand, and market orientation, towards commercial livestock production on the other. Most communal livestock owners are not producing primarily for the market.

Commercialisation focuses on improving animal health and weight. This is the basis of livestock improvement programmes, including breeds, feed and grazing/rangeland management, and disease management.

Imported *breeds* are favoured for commercial production mainly because of better weight (and hence, market value) than local Nguni breeds. However, they are susceptible to diseases, environmental conditions and limited feed availability and require a high level of dietary supplements, especially in the dry season (Malusi et al., 2021:2). Nguni are hardier and better suited for disease conditions. They may not grow as big as some commercial breeds, so there's some trade-off. Generally, there is not much controlled breeding, leading to inbreeding and declining stock quality (Malusi et al., 2021:2).

A Nguni Cattle Project was launched in 2004, to reintroduce Nguni nucleus herds for adaptation and disease resistance. The project — a partnership between the Industrial Development Corporation (IDC), DRDAR, and the University of Fort Hare — was implemented in three sites in Alfred Nzo. Each site received 10 in-calf heifers and two bulls. After five years, the same number would be returned to the project and given to other communities. Part of the project was fencing and rotational grazing, with existing bulls to be replaced with registered bulls. It also aimed to develop a niche market for Nguni beef and skins, and provide cattle management training (Malusi et al., 2021:2). Although about 180 beneficiaries of the project are still active in cattle farming (Malusi et al., 2021:10), the results have not been great. All the cattle provided in Mount Ayliff and Maluti died because of poor vaccination schedules (Madolo, 2008:19). More generally, the project could not overcome the significant limitations on a commercialisation model for communal farmers, regardless of breed.

Feed and grazing/rangeland management is the second intervention in improving livestock health and weight. There have been longstanding traditional grazing arrangements with enforcement and sanctions and a responsible person appointed by the chief [Um03, Um09]. But these governance systems have crumbled over the decades, especially in the face of colonial and apartheid interventions, contributing to land degradation, among other things. Grazing and land use have become uncontrolled open access, with no regulations or enforcement of rules [Um09]. Rangeland management is key to efforts to improve grazing quality (see Meat Naturally initiative below). A key challenge regarding feed is that most animals need supplementary feed during winter as available grass is nutritionally inadequate. However, commercial feed is expensive and not readily available. Likewise, irrigated pasture is costly, and requires secure access to land, water for irrigation, and fencing. Because of the difficulties of securing supplementary feed, many animals are underfed during winter, leading to poor condition, low weight and even death.

Despite relatively good production conditions, maize is not widely grown in the Eastern Cape. Some feedlots and livestock farmers plant their own maize on 1 000 ha or more each, and some individual farmers focus only on grain and plant thousands of hectares for bulk commodities and feed markets [Um01].

Disease management is the third area of intervention for livestock improvement. The government used to provide veterinary services (e.g. dipping, vaccinations), but these services have more or less ceased, with a few fragmented government programmes providing sporadic services.

Challenges facing communal farmers in generating income from livestock included land and water access, market channels and access, rangeland management, feed, poor animal condition, diseases, small herd sizes, stock theft, low fertility, vet services, capital resources, education, and extension services (Malusi et al., 2021:2). Government approaches of productivity through fencing and commercial management practices, and commercial contracts with a fixed offtake at certain times of the year just do not work [Um03]. Key infrastructure problems include no fencing for grazing camps, no handling facilities and limited water points. Communal grazing occurs in largely unfenced areas, making effective pasture management and rotational grazing almost impossible. Water comes from

the rivers, which are long distances from most villages and leads to exposure to drought despite the apparently water-rich conditions (Madolo, 2008:10).

Livestock value chain

See Annex 6 for a schematic diagram of the livestock value chain.

Auctions

Aside from selling locally to other farmers and households, auctions are the main channel through which farmers sell cattle to abattoirs, supermarkets or individuals. Farmers bring weaners or fat slaughter animals for sale by batch to monthly auctions in Cedarville, Kokstad, Swartberg and elsewhere. Auctions organised by the Cedarville Farmers' Association attract buyers from Gqeberha, eThekewini, Howick and Pietermaritzburg. The main buyers are feedlots like Triple A, abattoirs and butcheries [Um01]. Demand from the bigger feedlots in KZN strongly influences local prices [Um06].

Prices offered at auction were around R52/kg for fat A grade at the time of the research. A standard commission of 3% is deducted from the farmers' share, going up to 6-14% for unregistered farmers [Um06, Um15]. Registered farmers pay annual fees via their associations to the auction, which is why they pay a lower commission. The commission is split between the auctioneer and the use of facilities. Abattoirs incur slaughtering fees and running expenses, with around 20% added to the cost. Retailers add a 25-30% markup, and the final product on the shelf can cost R99/kg [Um06].

Challenges for auctions include low-quality livestock, limited infrastructure (e.g. weighing and loading facilities) and services, large distances between farmers and high transport costs, proof of ownership to prevent stock theft, and lack of knowledge about markets (Matatiele LM, 2021:189; Um01). The provision of decentralised auctions with appropriate facilities would assist communal farmers in gaining access to auctions [Um01].

Abattoirs and processing

There are three abattoirs in the area, two in Kokstad (Greenlands Meats²⁴ and East Griqualand Meat) and one in Matatiele (Drakensberg, owned by Modern Group). Drakensberg is oriented more towards the Eastern Cape market, and the others more to KZN. Greenlands slaughter around 150 animals a week, and Drakensberg about 60 [Um01].

Abattoirs source from a combination of their own herds, auctions, and direct from farmers. One abattoir indicated 60% own production and 40% sourcing from other farmers, working with about 150 farmers, of which just two are black. There is a preference for direct sourcing as it removes the auction commission fee, but the farmer must have a good grading system to know which animals are slaughter-ready [Um01]. Abattoirs have two streams: wholesale (mainly to supermarkets) and processing. One of the abattoirs had a ratio of around 60% wholesale and 40% to their own processing facilities and butcheries [Um01].

Free-range carcasses are segregated at the abattoir and processing. Free-range processing has strict protocols and testing regulated by the South African Meat Industry Company (SAMIC)²⁵. Abattoir and processing facilities must be registered and audited for free-range carcasses. On approval, the facility receives a certified roller mark for use on carcasses. There are regular checks and strong traceability [Um01].

²⁴ <https://greenlands-meats.business.site/>

²⁵ <https://samic.co.za/>

Markets and logistics

For small-scale livestock farmers, most sales are within local communities where there is greater trust and lower costs (ERS, 2016:6), fewer regulations and controls, and greater flexibility.

Commercial markets are divided into so-called ‘A-grade’ (conventional production through feedlots) and grass-fed beef, with the latter further divided into free-range and grass-reared. The basic difference between these two is the use of hormones in grass-reared beef. Feedlots have captured the quality narrative by being able to call their meat ‘A-grade’. Free-range beef has a 10-15% premium on the market. However, the market is small because of the cost of production, especially the long time it takes to raise the animal because there is no force feeding or use of growth hormones. Sales are mainly to ‘boutique’ butcheries and are only an estimated 1% of the total beef market, as very few people can afford it. Free-range farmers also sell to Cavalier (the Woolworths abattoir in Johannesburg) [Um01].

Abattoir wholesale mainly goes to supermarkets with multiple outlets in one area, reducing transport costs. Supermarkets have their own in-house butcheries that process retail cuts. One supermarket in Matatiele indicated that 75% of meat is sourced from local abattoirs/butcheries and the rest from eThekweni, with frozen meat from the centralised distribution centre (DC) [Um07]. Abattoirs also sell to hotels, bed and breakfasts, and restaurants [Um01]. There are several local independent butcheries in the towns. Greenlands owns butcheries in Kokstad and Harding. Modern Butchery in Matatiele is under the same ownership as Drakensberg abattoir (Modern Group), and EG Meats has a butchery in Kokstad. These are vertically integrated, with the abattoirs supplying the butcheries. Other smaller butchers are falling out of the market due to a lack of volumes to make it cost-effective [Um01].

Informal markets also play a role. Some “bakkie traders” purchase from farmers and on-sell to communities. In the former Transkei area, informal markets and small butchers were a big market, but in the last five years were significantly displaced by corporate supermarket chains. Most supermarkets work with the DCs and local drop shipments. Volumes are key, and small independents can’t compete on costs [Um01].

Despite public procurement laws and regulations, there is limited meat procurement from small-scale producers. Mount Frere prison and hospital procure beef from independent suppliers on tender, but mostly from the formal abattoirs. A challenge for public or private direct procurement from local farmers is the need for slaughtering. As such, they must go through an abattoir and then deliver. Food safety issues are more complex than fruit and vegetables, meaning direct local procurement of meat from farmers is less feasible [Um06].

Smallholder farmers face numerous challenges in gaining access to formal markets. They are dropping out based on input costs [Um01]. Small herds and poor-quality livestock raise transaction costs for buyers seeking good quality animals from many scattered small herd owners (Mbatha, 2021:143). Most smaller and informal livestock owners lack the detailed knowledge for a profitable enterprise for market-oriented production, such as costing, early growth, feed, and breeding. Lack of market information, e.g. requirements/standards, market operations, auction dates, etc., and transport costs mitigate against participation (Mbatha, 2021:147). Land access, planning, and material and technical support are required for small-scale black farmers [Um06, Um07].

4.2 Initiatives on transitions to agroecological food systems

4.2.1 Meat Naturally Initiative

The Meat Naturally (MN) Initiative is a civil society-led rangeland restoration project started in 2013 and driven by Conservation South Africa (Conservation SA)²⁶ in partnership with Environmental and Rural Solutions (ERS)²⁷, Lima Rural Development Foundation²⁸, and the Institute for Natural Resources²⁹ as an initiative under the multi-actor Umzimvubu Catchment Partnership (UCP)³⁰, established in 2013 [Um02]. A memorandum of understanding (MoU)³¹ for the UCP elaborates on the objective of integrating sustainable natural resource restoration, conservation, management and use, and equitable economic development for local people. The UCP is a voluntary collective based on the MoU, with voluntary coordination by ERS. Participants, which include government departments and agencies at municipal, provincial and national levels, traditional authorities, NGOs, cooperatives, and conservancies and trusts, share a common vision but do different activities. It offers a community of practice and gives a collective voice. They hold quarterly platform meetings for information sharing, presenting on activities, opportunities, etc. UCP activities are mainly in the upper catchment at present but with some links to CSOs in the lower catchment [Um08]. In the upper catchment, UCP works in six TA areas on outreach and education, eco-rangers, alien plant clearing, ecotourism, grazing plans and auctions, game, fire management, erosion control, agricultural development, wetland rehabilitation, fish farming stock theft, land claims, job creation, biomass value chain, and water and sanitation, with annual training on committee skills. Funded projects are sought and allocated across these areas and sites (McLeod and ERS, 2019:7).

Brief overview of Meat Naturally

The MN initiative's primary objective is to find solutions to sustain a supply of quality cattle off soundly managed rangelands without dependence on external funding (ERS, 2016:2). The immediate goal is to get collective herds into a healthier, more productive state [Um09]. The basic principle is that healthy rangelands will produce healthy cattle, increasing value for smallholder farmers. Farmer/rangeland associations sign negotiated stewardship agreements for improved rangeland management, including grazing management for improved grassland cover, rest areas, monitoring, incentives, with local livestock farmers and specified livestock supply (ERS, 2016:4). These serve as guidelines and a standard of practices for farmers to adopt, built on the revival of traditional rangeland practices and restoring social capital and governance. This involves allowing traditional institutions to function effectively, integrating restoration efforts into existing local regulations and sanction systems, clearly linking conservation actions with livelihood resource improvements (local knowledge and ownership, and peer-to-peer exchange), and support and guidance through adaptive co-management (ERS, 2016:4).

Meat Naturally Pty³² was set up in 2016 as a for-profit company to run the initiative. Farmers hold 70% of the shares through a trust, and the executive head holds 30% based on investment [Um03]. The farmers' trust then gets a "profit share that's proportional to the revenues that the farmers contribute to the business" [Um03]. MN partners with NGOs to offer rural farmers formal training on regenerative grazing techniques, rangeland restoration practices, cattle management, stock theft patrol, and predator control. They organise mobile auctions and abattoirs to provide small-scale farmers with market access, and complete sales. In exchange, farmers commit to preserving rangelands and providing sustainably produced quality meat products. MN aims to contract others to

²⁶ <https://www.conservation.org/south-africa>

²⁷ <https://enviros.co.za/>

²⁸ <https://lima.org.za/>

²⁹ <https://www.inr.org.za/>

³⁰ <https://umzimvubu.org/>

³¹ <https://umzimvubu.files.wordpress.com/2014/09/ucpp-mou-signed-7mar2013-dwa.pdf>

³² <https://www.meatnaturallyafrica.com/>

manage the regenerative farming aspect and supply, and currently works with local NGOs to mobilise farmers and facilitate the eco-rangers [Um03].

Currently, participating farmers indicate the benefits of Meat Naturally are mainly lower commissions paid at auctions and improved forage. Other incentives such as vaccinations, licks, supplementary feeding and jobs were less significant for most farmers (ERS and Dartmouth, 2020:8). Nevertheless, there is a need for a range of incentives to ensure people stay involved, especially given meat price volatility [Um03].

Rangeland management practices

Regenerative practices are based on rotational grazing and collective herding. MN is “looking at high-density *kraaling* and just using very basic infrastructure, like single-strand electric fences that eco-rangers can literally carry out into the field to kraal livestock and to keep them within certain areas and to help them manage livestock” [Um09]. The emphasis is on governance, as “an eroded landscape stems from eroded governance” [Um09]. The initiative works with TAs and community-based rangeland or livestock associations and facilitates discussions and training.

Associations voluntarily sign on to stewardship agreements. “They agree to certain management practices within their rangeland area. In the early stages, it’s simply resting in one area, and farmers can graze everywhere else. A veld assessment is done in each place, key intervention areas are identified, and calculations made according to the grazing densities and what the herds will need to sufficiently move through the season and then rest certain areas” [Um09]. TA structures remain intact and strong, they “are longstanding, people know and trust those leaders within the community, and it’s an institution that’s been well established and been there for many, many years. They already have the lines of communication for us to be able to engage and really move into a community” [Um09]. Part of the idea of rangeland associations is to widen beyond livestock and to integrate with water management, veld monitoring and planning, alien vegetation clearing/harvesting and associated livelihood opportunities.

Eco-rangers

Eco-rangers/eco-champs are essentially capacitated, community-based extension workers, providing a range of support services to livestock farmers and wider rangeland conservation and restoration. ERS works with South African National Biodiversity Institute (SANBI) Eco Champs as community-based multisectoral extension workers responsible for conservation agreements, rangeland and veld monitoring, developing green business value chains off alien plants, looking at the whole value stream and trying to build up small enterprises to run those [Um02]. Other functions include paravets, stock theft and fire patrol, alien clearing follow-up and erosion control, facilitating trampling on cleared areas, auction preparation and support, recording and monitoring, and serving as community stewardship ambassadors (McLeod and ERS, 2019:28).

Eco-rangers hired from the community are at the core of the rangeland management methodology. A key role is around monitoring livestock movement and health, rest camps, putting in place measures to manage the livestock and intervening on medication as needed [Um09]. Afrivet³³ provides capacity for animal health interventions such as basic animal health training, and provision of medicine as needed. A Lima project subsidises this, and associations may pay a small fee for some resources [Um09]. Eco-rangers in the MN initiative are paid by Meat Naturally for now, with the idea to transfer responsibility to rangeland associations once profits from better livestock health and higher meat prices are flowing [Um09]. Herding, usually considered one of the lowest jobs, is given renewed value, offering youth pathways for economic activity [Um03].

Livestock association members in Mafube TA indicated that eco-rangers have helped them to identify rest areas and monitoring, and helped with vaccinations, environmental and fire awareness, auctions and the grazing association. However, there is no money to support rangeland management, and local

³³ <https://www.afrivet.co.za/>

people don't want to volunteer without pay. In the past, the government employed rangers to do fire breaks, fencing, and monitoring of camps. In principle, the association is willing to pay eco-rangers, but funds should also pay herders to assist with monitoring stock theft [Um17].

Meat Naturally livestock auctions

MN facilitates annual or bi-annual mobile village livestock auctions for small-scale producers as one of the incentives to participate in environmental protection efforts. Mobile auctions can reduce small farmers' transport, logistical, and infrastructure costs (Mbatha, 2021:156). The auction date and mobilisation of buyers and sellers are agreed upon in discussion with community leaders. Farmers with higher levels of monitored participation in environmental and restoration efforts pay reduced commission on sales (5% rather than 6%) (ERS, 2016:4). Farmers who are not part of grazing agreements pay a higher commission rate (up to 10%) [Um03]. A regular supply of quality livestock is the key to success. MN needs flexible but consistent offtake, a minimum number of animals is required for the model to be financially viable, and the chief must guarantee that he'll put up animals even if there is a local shortfall [Um03].

Almost 3 000 farmers are participating in MN, supplying from November to August. MN is currently supply-constrained due to the "time it takes people to get farmers organised to implement regenerative grazing" [Um03]. While farmers sell in the auction, many continue to prefer sales in local markets. About 75% of farmers in an ERS community survey sold locally, with the majority selling five or fewer animals yearly (ERS and Dartmouth, 2020:8).

MN has an insignificant market share at this stage. "At the moment, I think, on average, we're probably selling about 100 animals per auction. If we were at 1 000 animals per auction, I think we'd be able to pull in a lot more of the bigger players in the meat market and engage different markets. Engage the range-fed beef market, market the meat as range-fed meat, market it as reduced carbon or meat that has a smaller carbon footprint and take it from there. But it's slow steps to there" [Um09]. Nevertheless, the initiative is generating some income. From 2014 to 2018, 25 auctions were held in which a cumulative 479 sellers sold 2 553 animals (87% of those put up for sale) with an average turnover of R730 551. The average household income was R14 139. There was a cumulative total of 112 buyers, with an average of four per auction (McLeod and ERS, 2019:5). In 2019, 2 400 cattle valued at R15.3 million were sold by 1 168 sellers through more than 20 mobile auctions. Most were classed as Grade B, thus excluding high-end markets, and most animals ended up at local abattoirs, butcheries and farms for further fattening (Mbatha, 2021:153). In 2021, MN had a R27 million turnover, with 94% going to farmers directly [Um03]. In an MN post-auction survey in 2020 with 255 farmer respondents, 62% said the income from sales was critical for survival or extremely important as other income sources are insufficient to cover basic needs. The main uses of income were for food and child support, with about 25% looking to purchase items that Meat Naturally can supply (Meat Naturally, 2020a).

Logistics and distances are the main challenges for buyers in attending the auctions. Holding pens and loading areas/systems are needed to make it more efficient. The low number of animals on sale and poor quality are issues for some buyers. Improved financial terms and credit arrangements could build buyer participation (Meat Naturally, 2020).

Box 4: Carbon credits as a supplementary funding source

Carbon credits are considered a possible income source linked to land management. Communities participate in regenerative practices and get a share of carbon credits. MN has been discussing this with an investor who is also interested in purchasing livestock [Um03].

"Carbon revenue is marketed through a carbon trader called TASC [who are] basically funding the initiation, they are catalysing this first stage of the project with the understanding that five years down the line when we start to see the positive impacts of the project, they'll be taking carbon as an offtake of that" [Um09]. The plan will operate in three catchments targeting 130-160 000 ha. It is a large project on communal rangelands

and the first of its kind globally. Meat Naturally is taking on the full risk associated with the project. Carbon currently is priced low, so there is a need for scale for profit [Um09].

Three levels of the carbon plan have been developed: Level 1 is rotational rest and the development of a fire management committee and a fire management plan. Level 2 is planned grazing. More than just selecting one rest area, they have rotational rest during the grazing season, but not the creation of a village herd yet. Level 3 is a village herd and training eco-rangers and professional herders as first responders for fire management. MN is putting 500 eco-rangers through a Herding Academy³⁴ programme to sustain the carbon investment [Um03].

The value of carbon in a village grazing area is at best one-fifth of livestock value, so it will be a relatively small share of income [Um03]. “The profit that the community receives or the financial incentives that they receive from [carbon credits] is actually not that big. But we see it as an opportunity to establish this in the communities, and the benefits that they will be receiving from marketing their livestock is going to be much, much bigger” [Um09].

Overall, the MN initiative is still in its early stages and is based on a long-term change in rangeland quality that translates into improved livestock quality. In the short term, participating small-scale and communal livestock farmers continue facing the same challenges as others (ERS and Dartmouth, 2020:9).

4.3 Public support and roles of local authorities

Government plans focus on the commercialisation of smallholder production as a driver of agricultural growth in the area (Alfred Nzo DM, 2017:16). Matatiele LM farmer support includes the EPWP to subsidise employment, SMME and cooperative training and funding, informal trader facilities in town, seed and seedling distribution, alien plant eradication, a household and food security gardens project and a livestock improvement project (vaccinations) (Matatiele LM, 2021:92, 111, 126, 287-9). National and provincial rural development and farmer support programmes have offered ploughing, fencing, irrigation, other infrastructure, production inputs, training, shearing sheds and dipping tanks based on ‘conventional’ (high external input) commercial agricultural models. The Provincial Department of Rural Development and Agrarian Reform (DRDAR) currently has about four projects in Matatiele, district Agriculture has about six projects, and the LED Unit in Matatiele LM has about eight projects out of 27 wards [Um11]. However, these are poorly coordinated and have been relatively or entirely ineffectual to date. Matatiele LM’s LED unit tries to coordinate, bringing in others to do the actual work, but agriculture is not a core mandate of theirs [Um15]. Efforts to establish an Agrihub at Cedarville and then Matatiele in line with the national Agriparks Programme (DRDLR, 2019) have failed to date. Preferential public procurement from black-owned small enterprises is on the books but not acted on.

Provincial DRDAR has a livestock improvement programme including the provision of animals (cattle, goats) and support to improve quality to meet market standards, especially on animal health and vaccines. National DALRRD also has their own programmes on livestock support [Um15]. The Matatiele LM LED Unit assists small-scale livestock owners mainly with animal health, with a target of 10 000 cattle [Um15]. The area does have dipping tanks, but most are not functioning (Madolo, 2008:11). The provincial COGTA has noted an increase in animal diseases following budget cuts to services such as dipping, inoculation and shearing (EC COGTA, 2020:129).

Government commercialisation plans, working with GrainSA (commercial grain farming industry body), target 80 000 ha for soya and maize production with an emphasis on animal feed and a planned link to the proposed Agrihubs. Qualifying farmers (minimum five ha current production, available matching funds and a plan to secure additional funds are required) may receive a R3 200/ha subsidy with a farmer contribution to support discing, planting, spraying and top dressing at government rates. The subsidy supports conventional production, with some no-till [Um15]. Matatiele LM is completing

³⁴ <https://www.herdingacademy.co.za/>

the construction of two siloes for local storage, and there is some small-scale independent maize milling in the area. Still, overall, maize production and milling is not a significant activity in the area.

5. eThekwini case study³⁵

5.1 Overview of the local food system

Generally speaking, eThekwini households depend on a range of formal and informal retailers to access food at different points to maximise their potential food security. As such, the local food system pivots on access to food largely through purchase, emphasising the importance of employment, informal labour and the grant system. Provisioning strategies are divided into cash-based and non-cash-based strategies, with the latter, often involving coping strategies such as borrowing or sharing food from friends and neighbours (National Treasury, undated). Own production of food is a partial solution for only a small number of township households, due to land constraints, the costs and availability of inputs such as water and the risks of losses including from theft and vermin, in particular increasing numbers of vervet monkeys.

Although eThekwini is not a leading producer of food domestically, it plays a critical role in connecting South Africa's food system with the international community through the Port of Durban. Agriculture makes up less than five percent of the economy, with the municipality being a net importer of food from other districts, provinces and outside the country. Nevertheless, agriculture has been identified as an important sector of the economy with the ability to create employment, address food insecurity and improve the livelihoods of communities, especially in rural and peri-urban areas where unemployment and poor living conditions are severe (EMM, 2022). When accounting for potential agricultural lands that have not been surveyed, especially under the Ingonyama Trust in the South Region, the assumption is that eThekwini has between 800 to 1 200 ha of such land (EMM, 2020). Regarding smallholders, the total confirmed land currently used is estimated at 560 ha (EMM, 2020), the bulk of which lies within Ingonyama Trust areas. The land sizes vary: townships have access to lands ranging from below 0.1ha to 1ha, while peri-urban and rural areas have lands ranging from 0.5 ha to 12 ha.

Within the municipality, there are an estimated 350 active producers, farming mainly vegetables (90%), field crops (7%), poultry and other livestock (1%), aquaculture and fruits (2%) (EMM, 2020). eThekwini farmers are generally small-scale in nature and conduct their farming activities at various levels of the primary farming value chain. Most of these farmers produce for household consumption, informal markets and more formal markets on an ad-hoc basis. Only 5% of eThekwini farmers can be regarded as semi-commercial and commercial, supplying formal markets consistently, mostly in the Isipingo area. In 2020, an estimated 98.5% of farmers reported getting an income below R5 000 per commodity produced per annum. Only 1.5% of the farmers reported higher incomes ranging from R50 000 to R100 000 (EMM, 2020). Urban and peri-urban agriculture is noted to be increasing within small sections in cities, either in vacant plots of land used to grow food near informal settlements, yards and rivers (Khumalo and Sibanda, 2019).

Access to markets was identified in the Agriculture Master Plan as a key component of enabling sustainable agricultural production (EMM, 2020). Six categories of markets exist, namely government departments, retailers, municipal and farmers' markets, hospitality industry (restaurants and hotels), informal markets and agro-processors. Yet, no smallholder farmers supplied government departments or related organisations with their produce. Only 18% of the farmers supplied retailers, mainly Spar and Boxer Supermarkets and Durban FPM in Clairwood. In terms of agro-processing, there are few small businesses within eThekwini which rarely buy from local farmers preferring the Durban FPM due to the unavailability of some commodities from local farmers, especially fruit (EMM, 2020).

³⁵ Refer to longer site report for more detail, <https://www.southernAfricaFoodLab.org/wp-content/uploads/2022/08/TAFS-eThekwini-report-final-July-2022.pdf>

5.2 Initiatives on transitions to agroecological systems

An important early initiative that seeded agroecology in eThekwini and provided the basis for much of the future work at the Agroecology Hubs and PGS nationally was that of the Rainman Landcare Foundation. This was set up in 1994 in parallel with the Water Research Commission-funded Mlazi River Catchment Management Programme (MRCMP). The MRCMP helped set up 28 community gardens and 21 school environmental education clubs, mainly in Hammarsdale and Mpumalanga (Auerbach, 1999: 184). The Rainman Landcare Foundation taught organic farming as a Sector Education and Training Authority (SETA)-accredited training provider from 1999 until 2010 and developed accredited Landcare Facilitator courses (National Qualifications Framework (NQF) Level 5) and a National Certificate in Mixed Farming Systems (Organic, NQF2).

5.2.1 The eThekwini Agroecology Unit

The Agroecology Unit was established under the auspices of the Agricultural Management Unit (AMU) in April 2010 to give impetus to the municipality’s strategic plan for sustainable agriculture (EMM, 2010). The municipality founded the unit on “economic development, job creation and food security”, as agriculture is not a municipal competency (eThek05).

Notably, the AMU was situated in the Parks Department of the municipality. The programme’s vision is food sovereignty for all residents and a small-scale agro-sector which can contribute to improved health and well-being, growth of local economies and environmental sustainability (EMM, 2011). In order to enable this, the municipality has six agricultural hubs and 10 fishponds in place. Agroecology hubs have been established in Northdene, Newlands, Inchanga, Marriannridge, Umbumbulu and Hambanathi (EMM, 2020), situated in strategic points across the municipality. The hubs are used as training and resource centres for small farmers on permaculture principles and farming skills. In their nature, “these hubs are mainly food security coordination centres, not geared for commercialisation” (EMM, 2020). The hubs have infrastructure that could be used for receiving and distributing fresh produce, and these centres can fulfil other functions such as distribution of inputs and planting programmes. Training includes ‘bio-intensive’ food production where the soil in main crop production beds is built through a method of double digging and adding organic composts, compost making and organic pest control. The training also offers programmes for water conservation, composting and productive use of land. Field staff currently support approximately 426 gardens (eThek16).

Besides necessary training or capacity strengthening, constraints facing the Agroecology Unit include funding shortages, resources (tools, implements), and staff. The ability to mobilise funds quickly in response to needs on the ground and insufficient equipment — in particular vehicles — was emphasised. Securing markets for agroecological farmers has also been a challenge. This is partly due to a different unit having a market responsibility (Agribusiness Unit), although the Agroecology Unit still concerns with financial sustainability. Alignment between the Agroecology Unit and the provincial government has also been challenging.

5.2.2 Woza Nami

The Woza Nami (‘come with me’) project is a multi-actor initiative driven by the Southern Africa Food Lab (SAFL) and WWF, working with the Agribusiness and Agroecology Units in the metro, as well as other researchers and organisations. The project focuses on strengthening healthy food production and nutrition awareness by scaling vegetable farming in peri-urban settlements based on agroecological practice. The overarching goal is to develop a “proof in concept” that Woza Nami becomes an opportunity for the other hubs and other urban centres to follow and, in this way, grow local and national food security incrementally. The Woza Nami project is designed around three objectives:

1. Support 35 small-scale farmers (80% women), and the local municipality extension officers based in the Agroecology Unit at the Inchanga Hub, to transition towards agroecological farming through farming support and training
2. Through a nutrition education programme, increase awareness and changing food habits which would create demand for more nutritious vegetables grown by the farmers
3. Create local community markets where the farmers can sell their produce.

Working with one of the six hubs, the project is supporting its transition towards full agroecological practice, extending principles and practice to small-scale farmers (individuals and collectives) and, through linkages, aggregation and nutrition education, building demand for such produce in neighbouring communities. The Inchanga Hub, situated in the Outer West, a large peri-urban settlement between Durban and Pietermaritzburg, was selected because it was functioning well in the sense that it has municipal agricultural extension officers who support farmers in the area, is close to the office of the KwaZulu-Natal Department of Agriculture and a clinic, which is important as the project is jointly about healthy food production and nutrition (eThek01). The KwaZulu-Natal Department of Health runs the clinic (Fredville).

The project provides direct support in terms of agroecology training in relation to the principles of such a transition and the practice on the ground. The project team works closely with local officials, including the coordinator and extension officers based at the hub and the head of eThekwini Health Food Security responsible for the “One Home, One Garden” farmers at Inchanga. The project has promoted coordination across different government units. As reflected by a health official, it helps us to strengthen relationships and move away from operating in silos with “departments wanting to shine” (eThek06).

A key goal is to grow the farmers’ markets to supply the community, including early childhood development centres, schools and residents (eThek01). Currently, Inchanga residents buy vegetables from traders coming from the Durban area who source their vegetables from the Clairwood market and retail stores in adjoining areas such as Camperdown or Hillcrest. Several local informal traders interviewed indicated that they would welcome the local supply of fresh produce, which would decrease the cost that consumers would have to pay and increase their potential to expand (eThek12). They also indicated that agroecology produce would have an appeal to Inchanga consumers, particularly if this were readily available (eThek13). Thus far, a few Saturday markets have been held near the Inchanga town hall linked to the quantitative survey interviews feeding into the nutrition research.

In parallel, the nutrition team has been working with the community as the demand for refined grain staples and unhealthy packaged ready-made food is significant. This has been done through understanding the neighbouring community and focused on gaining insight into the intake of vegetables, fruits and legumes, including opportunities and barriers to these. The intention is to inform a strategy to promote agroecologically grown fresh produce within neighbouring communities and to potentially include micronutrient-rich food in community kitchens. This approach will, in turn, inform the production strategy of the Hub. Ultimately, the challenge is to increase the local demand for healthy, fresh vegetables by advancing nutrition awareness about healthy, affordable diets. Part of the project investigates the potential to cultivate and popularise indigenous wild crops and vegetables in the Inchanga area.

Another part of the project is to connect the hub and the farmers with alternative input suppliers, including seedling nurseries that practice agroecology, in particular Mahlathini Organics and Organic Seeds³⁶, an internet-based supplier of heirloom seed, to ensure inputs are appropriate for agroecological practice. Other organisations are Umgibe, Biowatch and PGS South Africa. Umgibe has been active in eThekwini, training community members in organic farming, crop production and food processing. The approach minimises physical work related to farming, benefiting youth, the

³⁶ <http://www.organicseed.co.za/content/4-who-we-are>

elderly, and women. A key innovation is diverting more than 10 000 plastic bags from landfills by utilising them as growing bags. The system was pioneered on land given by eThekwini municipality, which, although earmarked as an agricultural site, had become a dump site. With the help of women who would become equity partners in a cooperative, the platform serves hundreds of farmers in Chesterville and beyond. More recently, Umgibe has moved operations to a location outside Pietermaritzburg but is still active in eThekwini (eThek17). Although Umgibe has not been an active partner in Woza Nami, it has supplied seedlings to the farmers through a procurement arrangement.

Biowatch, a local environmental justice NGO established in 1999, was commissioned to support the farmers and extension officers to more fully understand the principles of agroecology and practices around seed-saving, as well as connecting them to other seed-saving farming networks (eThek01). Biowatch works with smallholder farmers, other civil society organisations and government to “ensure that people have control over their food, agricultural processes and resources, and other natural resources, within a biodiverse, agroecological and sustainable system”³⁷. Based in eThekwini, Biowatch brought training and a diverse network of other smallholder producers to the Inchanga farmers. Building on their traditional farming knowledge, Biowatch focuses on strengthening agroecology practice and securing farmers’ rights.

5.2.3 PGS Pollinators Programme

The PGS Pollinators Programme is active in eThekwini through the PGS Pollinators’ Programme. The PGS programme supports people called pollinators who are mandated in their communities to push the organic narrative, work with farmers, and develop PGS groups who essentially work together to develop skills and certify each other. Part of their work is to engage with the government, usually at the local level, especially local economic development offices, to try and leverage their support. PGS enables local market outlets for farmers’ produce and can play a role in seed banks for farmers. Defining features are that PGS is a low-cost, locally based system of quality assurance within the organic movement, specially designed to include smallholder farmers. A partnership with the PGS Pollinator Programme, was established with Woza Nami to build community support structures to sustain the initiative around Inchanga. Arguably, PGS would provide the Agroecology Unit with a system and method to align farmers to a production standard, market access opportunities and a system of working in a collaborative method to support the basic elements of the value chain of Woza Nami (Purkis and Moody, 2021). Thus, this partnership intends to integrate the Inchanga farmers into the PGS Pollinator Programme and, through a five-month training period beginning in April 2022, ensure continuity in the province and link market access opportunities mapped through the PGS Pollinator Programme. The partnership sets out to train and capacitate the farmers, government officials and extension officers to work with agroecological producers in supporting the emergence of a local ecological food system (eThek02).

5.3 Public support and roles of local authorities

The eThekwini Municipality has identified agriculture as a key primary sector in the industry that can play a vital role in “radical socio-economic transformation and development within local communities” (EMM, 2019). The Farmer Eco-Enterprise Development Programme (FEED) is a model intended “to transform the agricultural value chain in the eThekwini region” (EMM, 2022). Under this, the municipality has identified eco-sustainable agriculture as a strategic focus in terms of economic development, job creation, poverty alleviation and food security (EMM, 2022). As such, it has initiated several programmes to assist in alleviating food insecurity. These include creating dedicated structures to drive agriculture, aqua and poultry farming; soya bean project, community support farms; community gardens, mushroom vs hydroponics projects, and One Home One Garden project, among others (EMM, 2022). The Agricultural Department is responsible for supporting communities in terms of organic fertiliser and compost, fencing, storage containers, toilets and water provision, and farming tools. It also provides up to 10 fruit trees per community garden.

³⁷ <https://biowatch.org.za/about>

Several national and provincial programmes through different departments have a bearing on eThekwini. A key challenge here is that most provincial strategies focused on smallholder production are conventional in approach, contrary to agroecological practices. Provincial extension officers encourage conventional approaches, including spraying with insecticide and chemical fertilisers. It is important to note that the eThekwini Agribusiness Master Plan sets out how it aligns with these strategies and policies (EMM, 2020). This subsequently formed a part of the eThekwini IDP through its adoption by the eThekwini Council (EMM, 2022). Although not made explicit, there is tension within the IDP and its recognition of food sovereignty and agroecology and the integration of the Agribusiness Master Plan, which offers details on how to approach the development of the agricultural sector in eThekwini Metro within the ambit of the national and provincial development strategies emphasising commodity-based agricultural development, commercialisation and implicitly conventional approaches.

Although small, the District Health service available in eThekwini is jointly provided by the Provincial Department of Health and the municipality, with the former contributing 60% and the latter 40%³⁸. The Provincial Primary Health Care service in the metro has several services which need to be integrated within the context of the overall city plan. Food security is a small programme under social health, alongside the clinical department and environmental health (eThek06). Another example of an adjacent municipal programme is that of ecological restoration, one of the branches of the Environmental Planning and Climate Protection Department (eThek15). Emphasising ecosystems and biodiversity, the branch works to protect these in the municipality, including establishing corridors to enable the movement of species. This includes a reforestation programme working with over 300 people propagating indigenous trees for forests. However, a major limitation is the reach of the Agroecology Unit and insufficient demonstration sites where “no-till and agroecology practices” are accessible (eThek07).

The Durban Climate Change Strategy details the projected climate changes for eThekwini, especially increases in temperature and severe weather events, which are predicted to threaten urban food security (EMM, 2014). In response to these projections, the strategy promotes the development of a robust and resilient food security system that promotes sustainable local farming to increase regional food production and availability. A key response to achieve this is to establish local food production systems that can withstand future climate threats and provide for the poor. Promoting ecological and sustainable farming practices is an overarching approach to protecting local food production against climate change impacts. Finally, the City’s Resilience Strategy identifies six “levers” to build resilience, one of which is to “manage environmental assets more efficiently”: this lever addresses the need to more effectively manage Durban’s natural capital assets to preserve the city’s rich biodiversity and the valuable services that these ecosystems provide to citizens. This involves working and developing within ecological thresholds to reduce human risk, as well as being responsive to the challenges posed by climate change (Roberts et al., 2017: 42). This relates directly to the importance of agroecology both in terms of sustained livelihoods and the protection of the ecological basis.

³⁸ <http://www.kznhealth.gov.za/ethekwini.htm>

6. Synthesis and way forward

The case studies cover the three main agricultural sectors in South Africa: horticulture, livestock and grains. As such, the study's findings are generally applicable to several areas in South Africa with similar context. Across all sites and sectors, large-scale conventional agriculture remains dominant, and black and small-scale farmers are mostly still marginalised from the mainstream. Agriculture makes a small contribution to GDP in all sites; nevertheless, it is recognised as a key sector for employment and income generation because of its potential to create jobs and absorb a large, unskilled labour force. Agroecological initiatives are very small and mostly in very early stages. Diverse terms are used for sustainable agricultural production across the sites, including agroecology, permaculture, and climate-smart, climate-resilient, conservation, regenerative, and organic agriculture. These are loosely defined and, while there may be divergences in orientation on some scores, they have in common some basic sets of practices and issues, in particular soil and water conservation and management practices, adaptive management, and rangeland management that conserves and restores natural resources. Nevertheless, agroecology as outlined in the HLPE principles is considered by the authors to be the most all-encompassing term which also foregrounds the social and economic justice requirements for just transitions in the food system.

6.1 CA in the Rûens

Winter grains and livestock in the Rûens are corporate-dominated, with a concentration of ownership and resources and high barriers to entry into commercial production. Commercial farmers have increasingly adopted CA, driven by soil degradation, herbicide resistance and input costs. The convergence between new sustainable agricultural practices and the possibility of cost reduction in a competitive context facilitates the awareness of sustainability issues. This indicates a shift towards greater environmental sustainability, but within a conventional production and profit-driven orientation, a limited mindset change and relatively unchanged corporate-industrial value chains. The adoption of CA goes with the development of outsourcing of activities by farmers to specialised contractors, motivated by economies of scale (notably equipment), which increases the industrialisation of agriculture.

Using Wezel et al.'s (2016) approach to agroecology territories, we can consider practices, biodiversity conservation, and food system embeddedness. The practices underpinning CA are compatible with some of the principles of agroecology as defined by the HLPE, although in isolation, they remain fairly limited in terms of agroecological transitions (Annex 7). Following Gliessman (2016), they remain incrementalistic activities operating mainly at the field or farm level (input use efficiency and substitution of inputs and practices) but without a wider transformational paradigm (including farm labour conditions, redistribution of land and resources, redress and social justice, democracy, deconcentration, or wider food system transitions).

Some thought is going into integrating CA with biodiversity conservation and NRM, especially through developing natural corridors. This is in the early stages but could mark a shift from productivism to multifunctionality and highlights the importance of landscape-based approaches. When considered at a field or farm level, CA can only be incremental. But, when considered at a landscape level, and integrated with other landscape level approaches, its system and scale dependencies and trade-offs may be mitigated.

Local embeddedness of grain and livestock systems is weak, with local production and processing but then export out of the area, with processed products imported back for consumption. Local grain and livestock producers and consumers are disconnected except for some narrow channels (local millers, brewers, oil processors, and abattoirs), which are limited both by effective local consumer demand and by entrenched structuring of the industry (e.g. large silo complexes, processing facilities located nearer to urban centres nationally, centralised manufacturing and distribution systems, etc.).

CA can be considered an example of “pragmatic adaptation”, where problems in the prevailing socio-technical regime inform the guiding principles, creating a niche. Some practices developed in the niche are sufficiently flexible to be incorporated into the regime. Such practices reinforce the prevailing regime by assisting with its adaptive capacity (Ingram, 2015:64; Smith, 2007; Geels and Schot, 2007). As such, it is adaptive rather than transformative. Nevertheless, the significance of CA lies in the fact that it is a sustainability move being made in large-scale commercial agriculture, which has, by far, the largest ecological impact in the agricultural sector and occupies by far the largest land area. As such, it can be considered one, albeit partial, process directing South African agriculture towards greater ecological, if not social, sustainability.

6.2 PGS and NRM in Overstrand

At Stanford, the research highlights a relatively limited and unbalanced economy, with structurally high unemployment and persistently high poverty levels. The area has a strong economic dependency on Hermanus and relies heavily on external sources for food supply. Land access for settlement is a key issue, and apartheid spatial relations remain intact. Natural resources are a key asset in the area, currently being used economically, mainly for high-end agro-tourism and eco-tourism. This is unbalanced and tends to entrench inequality and access to the formal economy for marginalised communities and groups. Invasive alien species, wildfires and water quality are key environmental issues.

Organic farming is expanding in Overstrand, although it still constitutes a small part of the overall food economy. Organic producers still rely primarily on premium domestic and export markets. Diverse local market channels exist but with a limited economic base for premium markets. This necessitates the identification of niches not reliant on premiums for profitability (e.g. African speciality vegetable market, domestic niches such as garlic or organic eggs). Some of the HLPE principles are widely adopted on individual organic farms (Annex 7). PGS and biodiversity conservation initiatives raise the sights beyond individual farms to the wider food system and landscape levels with potential for transformative activity. However, this is still in the early stages.

Biodiversity conservation and NRM constitute a significant land use in the area. It is mainly voluntary and driven by private landowners. There are efforts to link to livelihood opportunities to bring disadvantaged and marginalised constituencies into the bioeconomy, particularly through alien vegetation clearing and flower harvesting. However, this is premised on adopting a neoliberal model of market-based conservation, requiring a profitable business model for ecosystem services in the face of a lack of sustained and widespread consumer interest in paying a premium for these services. In this model, small enterprises carry the risk of failure and are essentially left to fend for themselves in markets that still require much work to develop. Biodiversity conservation and NRM are not directly related to the food system. Still, they are potential avenues for income generation (and hence, improved food security) and, in line with Wezel et al. (2016), are key elements in establishing wider agroecological territories.

Food systems are not well embedded in the local area. Most production is sent out, and consumer goods are imported in. The PGS box scheme begins to develop the links between producers and consumers, but still constitutes only a tiny portion of total consumption in the LM. Efforts to integrate PGS, NRM and LED present a compelling vision, but the practice is in its early stages.

6.3 Meat Naturally Initiative in Matatiele

The Matatiele case study reveals a poorly developed economy driven by consumption and government spending. Vertically-integrated corporate feedlot and abattoir operations dominate the beef value chain in Matatiele, and communal livestock farmers are marginalised from the formal economy. Most agricultural products exit the area, and food is imported for consumption.

The initiative focuses on livestock; hence, not all HLPE principles are applicable (Annex 7). The main agroecological intervention is around grass-fed cattle and rangeland restoration, which indirectly impacts soil health and biodiversity. The model also opens space for the participation of marginalised producers and is premised on improving the share of value accruing to farmers in beef value chains.

Biodiversity conservation is the strongest component of the initiative, integrating livestock management with diverse landscape management activities, including fire and water management, wetland and spring protection, alien clearing, grassland and biodiversity restoration, and catchment level actions.

The initiative has had limited impact on embedded food systems to date, as local markets are skewed towards corporate manufactured products resulting in local farmers selling out of the locality and consumers' buy-in from outside. Matatiele is mainly a consumption hub, with weak links between local producers and local consumers.

6.4 Agroecology Hubs and Woza Nami in eThekwini

eThekwini Metro is the second largest city in South Africa. As such, most food consumed in the municipal area is imported from outside. However, around two-thirds of the municipality is rural, albeit with dense informal settlements covering a portion of this area. There are efforts to support local food production, and the municipality has a network of hubs to service local farmers.

Agroecological initiatives in the municipality are well-aligned with the HLPE principles and associated practices (Annex 7), even though the initiatives are very small in relation to conventional agricultural support and other land uses such as settlement. The methodologies employed by NGOs promote genuine participatory engagement with a range of stakeholders and actively facilitate the development of more innovative responses informed by appropriate knowledge and implemented through new partnerships. This has opened opportunities for local officials working at the hub as new and stronger relationships have emerged with the farmers and, more broadly, into neighbouring communities. Although relatively small in terms of numbers, these approaches reflect deliberate efforts to encourage resilience building ‘from below’ and present opportunities to produce new relations between citizens and the state through the development of skills, new forms of engagement and the sharing of resources.

On biodiversity conservation and NRM, eThekwini has the D'MOSS, a spatial layer of interconnecting open spaces in public, private and traditional authority ownership that seeks to protect the biodiversity and associated ecosystem services of eThekwini. Although not presently integrated with agroecological initiatives, it presents opportunities for cross-linking agroecology, biodiversity conservation, and NRM.

Currently, local food systems are poorly embedded, with most food being imported into the metro and sold via supermarkets.

6.5 Government policies and initiatives

In South Africa, municipal responsibilities in the agri-food sector are limited but not insignificant (De Visser, 2019): they include local tourism, trading regulations, fencing, markets, municipal abattoirs, waste disposal, and street trading. The 2013 Spatial Planning and Land Use Management Act empowers municipalities to manage spatial planning and land use. Wards have statutory elected committees with 10 representatives per ward, based on geographic and sector representation. The ward committees work with councillors to coordinate and manage ward planning and implementation and represent the ward on community-based planning and IDP task teams in local municipalities. However, in practice, many municipalities do not have the human resources or financial means to effectively engage in food system management, sustainable development and agroecology. This

requires systematic capacity building at municipal level on these issues, which may best be realised through multi-actor processes of mutual support and engagement.

The following clusters are key government policies and programmes being engaged with at the local level:

LED, IDPs, SMME development and cooperatives

These are good on paper, but challenging to implement in practice. Issues identified include lack of political will at local and provincial levels, a tendency to treat public participation as a “box ticking” exercise (doing the bare minimum to comply with legislation), elite capture and corruption (reported across all sites), municipal capacity constraints, weak civil society/community organisation, lack of knowledge about channels for engagement, and lack of integration (e.g. support for alien clearing but with no programme to assist in the extraction and processing of biomass, which also increases the fire hazard). Bringing municipalities into multi-actor processes can facilitate greater accountability, transparency, learning and coalition building around the many areas of commonality on sustainability, food security, ecological integrity and improvement in the lives of the populations, especially the marginalised and resource-poor.

Farmer support, in particular, input supply, infrastructure, training, and market access

These are oriented to conventional production, commercialisation, and integration into corporate value chains, despite the inappropriateness of this for many small or marginalised farmers. This is because of policies that are mainly driven from an economic perspective rather than an integrated one: the need for more production, economic growth and trade overrides most other considerations, perfectly illustrated by the 2022 Agriculture and Agro-processing Master Plan. Farmer support is also marred by a lack of coordination, or “spheres of influence” and clientele where departments and levels of government divide up geographical areas and do the same things instead of coordinating activities and providing different elements of integrated support, contradictory interventions (e.g. eThekweni where Agroecology Hubs are open to agroecological interventions but these are undermined by provincial input supply programmes offering only conventional inputs), inadequate budgets and capacity, and weak conceptualisation of agroecology in government where it is considered a welfarist intervention and is limited to low external input agriculture, with the result that agroecology is kept on the margins (Kushitor et al, 2022). In some cases, the government farms on behalf of farmers (e.g. providing inputs, ploughing services, field management, and harvesting), and farmers get paid a portion of sales minus costs, making them no more than glorified labourers.

Local actors, including government officials, appear open and sympathetic to more ecologically sustainable production systems. Still, they are subject to top-down programmes that generally are rigidly enforced for financial control and economies of scale. This entrenches corporate input suppliers and a particular model of smallholder farmer support as part of the dominant socio-technical regime. Marginalised black farmers continue to face a well-known set of obstacles, including a lack of secure access to land and water, infrastructure, technical support services, training/mentoring, finance, transport, and access to markets. Current programmes and implementation are not responding effectively to these.

Public employment programmes

These include the CWP, EPWP, WfW and the more recent Presidential Social Employment Fund (SEF). These potentially offer key financial support (albeit limited to wage subsidies and training) for transition activities. However, they are beset by corruption and lack of accountability, top-down control of participant selection, unreliable payment and timeframes, payment below the minimum wage, rigid and demanding systems for SMMEs, and limited resource allocations for effective supervision and management.

Local actors are pressured into adopting neoliberal market-based approaches to NRM and conservation. It is not that the individuals indicating and experiencing these pressures are neoliberal, but they are forced into a particular rationality to survive. This reveals a significant market failure, with the undervaluing of the wide range of recognised ecosystems goods and services from sustainable NRM, and the externalisation of negative ecological consequences from mainstream pricing. This translates into a general unwillingness of consumers to pay a premium for sustainable produce, limiting the incentives for producers to alter their practices.

On the other side, the true valuation of ecosystem goods and services and the negative impacts of production would result in a sharp rise in food prices. If passed onto the consumer, this is not feasible in the context of widespread hunger and lack of resources. The main alternative to the market-based or donor-funded models of NRM is public sector support, which is questionable in the face of chronic financial and capacity constraints. Payment for ecosystem services and carbon credits are being considered in Overstrand and Matatiele as a potential sustainable source of income. Still, low market prices for carbon mean these may not generate significant income.

Other potential policy areas for engagement that have not received much attention from civil society to date include climate change and just transition, disaster management, and preferential public procurement.

Governing urban food systems toward agroecological transition requires engagement with state governance mechanisms and rationalities (Kroll, 2021). Considering state capabilities to promote agroecological transitions, Kroll argues that fragmented institutional structures, policy patchworks, intersecting logics of control, and divergent ideologies constitute an ambiguous governance terrain posing major hurdles to transition. A compelling alternative narrative must emerge to transcend these challenges.

6.6 Final comments and general recommendations

- The transition to more sustainable systems and agroecological practices cannot rely only on market forces. Even if new practices could be certified and rewarded with premiums, local markets are generally not “ready”, and the existing experiences reported in the case studies highlight the importance of costs related to transitioning to new systems. It is important to remember that past transitions (e.g the adoption of the Green Revolution techniques) have always been heavily supported (subsidies and extension) and that governments will need to provide specific incentives that require ad hoc funding sources.
- Municipalities are overwhelmed by their existing mandates in the context of limited (and shrinking) human and financial resources. Local governments have a key role to play in local food environments in numerous ways from LED support to food security programmes and waste management. This offers an opportunity to support more sustainable food systems because they can contribute to local economic development and have a positive impact on employment. This calls for including food systems and their sustainability in drafting and revising the local development strategy, which is reflected in the IDPs and increased support for strategy design.
- For projects to be successful and sustainable, partnerships between local government, local farmers, local consumers and local NGOs are crucial. Discourse needs to shift from “filtering down” to the local government level as the implementers towards the co-development of policy and programming. This contrasts with top-down authorisation through policies and directives with inadequate budgetary and other support. This also raises the importance of placing agroecological principles and practices at the core of discussions around better integrating food systems transformation in urban policies and planning at a grassroots level. There is a disconnect between, on the one hand, the progressive language in policy frameworks and the work of local officials

and the “middle layers” of the state, where commitment to increasing budgetary and staff support remains ambiguous at best.

- A place-based agenda creates opportunities for linking various actors across local food systems, supporting farmers and nutritious food flows. Different from a localisation approach, it recognises the potential role of local government and local actors in guiding place-based food systems towards goals of economic inclusion, environmental sustainability and food and nutrition security. This serves two purposes: it heals, in part, the metabolic rift associated with industrial forms of production and globalised consumption patterns, and it re-scales and restructures agricultural production in ways that are beneficial to smallholder livelihoods.
- Placing agroecology at the core of resilience and adaptation strategies is an opportunity as it enables an increased understanding of the relationship between biodiversity and human health and well-being. However, this requires rapidly translating this knowledge into spatial planning, management, policymaking, and governance. Linking agroecological farming techniques and NRM and conservation as part of building resilience for people helps ensure they sustain their livelihoods and the environment around them.
- One of the most notable mechanisms through which the capabilities of local knowledge have been tapped has occurred through various farmer-to-farmer (*campesino a campesino*) initiatives that have emerged in the past decades (Machado, 2022). This, in effect, is the approach of several civil society actors in the initiatives (e.g. pollinators). However, it requires a mindset change in government-led programmes as it requires an approach which elevates experimentation and innovation as core mechanisms through which socioecological knowledge is produced and disseminated. This is in contrast to the dominant extension approach that elevates the role of the extension officer as a purveyor of knowledge. At the same time, the overarching policy frameworks provided by municipalities have an important role in fostering such spaces for exchange and providing technical support in the form of extension agents, research facilities and other inputs.
- As revealed by overlapping yet contrasting approaches (conventional agriculture versus agroecology), there are tensions between provinces and municipalities which constrain multiple-level governance. It may be opportune to draw provincial extension officers into PGS training. Yet, it must be recognised that local officials often support agroecological transitions. The emerging initiatives offer chances for collaboration, cross-sectoral coherence, and assimilation of agroecological values.
- There are long conversion times from conventional to ecological production systems, with estimates of five to nine years, depending on the state of resources and types of production. Conversion subsidies for defined activities should be considered. However, these should be conditional on the explicit extension of activities to social justice and redresses, such as redistribution of land and other resources, and multi-year financing and support to enable SMMEs and cooperatives to establish, test and adapt business models for sustainability in food production, biodiversity conservation, land management, livestock herding and management, alien vegetation clearing, wildflower harvesting, and biomass and wildflower processing and sales.
- Demand is outstripping supply in agroecological and organic input production and supply systems. The cost of inputs for these systems remains prohibitive for conversion. Funding is required for public sector research and development and agroecological/organic production, public sector crop breeding programmes for climate adaptation, bulk production of biofertiliser, and effective organic pest and disease management goods and services.
- Potential exists for SMMEs in the bioeconomy to offer a comprehensive land management package to landowners incorporating diverse elements such as trail maintenance, veld

management, sustainable wood cutting, biofuel production, firefighting and managing fire breaks, sustainable sour fig and flower harvesting, follow-up clearing and reseeding of natural fynbos, potentially planting orchards, control plans, assessments of harvestable population stocks, and rangeland and livestock management. However, this needs investment and integrated support across departments and levels of government.

- In Overberg, there is potential for dialogue and integration between CA/regenerative agriculture trials and practices and biodiversity conservation and NRM via the ABI and ORCT, including around the idea of establishing an Overberg biosphere reserve. Biodiversity conservation and NRM may be a point of inter-sector integration (grain/livestock and horticulture).

6.7 Specific recommendations for the short term

- **Define a national agroecology programme to promote the use of agroecological practices across the spectrum of producers.** DALRRD, who prepared the 2013 National Agroecology Strategy (still in draft), should facilitate this process at national level, working with a diversity of actors, through the establishment of a multi-actor Agroecology Working Group. For commercial farmers, this could take the form of incentive schemes for the adoption of defined agroecological practices building on what producers are already doing (e.g. CA) but that also explicitly include social redress dimensions as a basis for receiving any incentives. This will vary in different contexts, but the department could develop a framework and identify a menu of good practices to be selected from. For example, farm labour conditions, land and resource redistribution, and/or material, organisational and intellectual support for small enterprise development could be selected as elements of social transformation and improvement in different contexts. For household and smallholder farmers/small agricultural enterprises, programmes could be tailored to explicitly promote and facilitate access to ecological inputs, knowledge and information and support for local markets.
- **Multi-actor coalitions to develop agroecological food systems pilots in specific locations in the form of place-based initiatives.** These should build on existing initiatives, for example the UCP, ABI and the eThekwin Agroecology Hubs and Woza Nami and strengthen local multi-actor fora. The overall objective of such initiatives would be to facilitate agroecological transitions in local food systems as discussed in the reports, integrating sustainable agriculture practices, household and local food and nutrition security, small enterprise development in the bioeconomy, sustainable biodiversity conservation and use and natural resource management, embedded food systems, climate change adaptation, and landscape approaches. Such processes can be aligned to District Development Model processes, with district-level coordination. A wide range of actors should be included, such as commercial farmers, household and smallholder farmers, CSOs working in the field, PGS groups in all sites, relevant value chain actors (alternative input suppliers, food processors and manufacturers, retailers, informal traders, consumer groups, etc), local and district municipalities (representatives and departmental officials), and provincial and national departments and public entities such as DALRRD, COGTA, DFFE, SANBI, DSBD, DTI, Department of Health, and Department of Water and Sanitation. All the sites reviewed in this report are in a position to advance such multi-actor processes, as are others elsewhere in the country.
- **Integrate public employment programmes into ward priorities and IDPs, with an emphasis on creating SMME opportunities in agriculture and the bioeconomy.** The Overberg offers a practical example of a route towards this and can be learned from and replicated elsewhere. Multi-actor engagement can promote transparency and learning to overcome existing challenges with the deployment of resources for public employment programmes.

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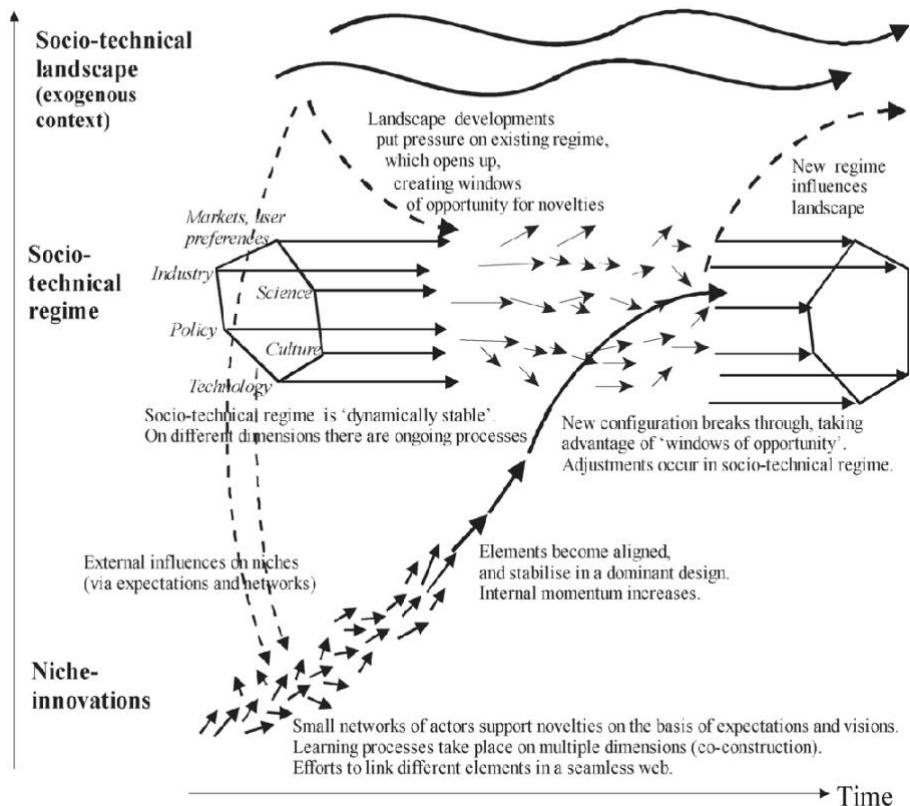
8. Annex 1: HLPE 13 agroecological principles

Principle	FAO's ten elements
Improve resource efficiency	
1. Recycling. Preferentially use local renewable resources and close resource cycles of nutrients and biomass as far as possible.	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 species diversity, functional diversity and genetic resources, thereby maintaining overall agroecosystem biodiversity in time and space at the 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 consumer demand.	Part of diversity
Secure social equity/responsibility	
8. Co-creation of knowledge. Enhance co-creation and horizontal knowledge sharing, 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 local communities' culture, identity, tradition, and social and gender equity 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 by promoting fair and short distribution networks and 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 natural and genetic resources managers.	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

9. Annex 2: Multi-level perspective on transitions

Increasing structuration
of activities in local practices



Source: Geels and Schot, 2007:401

10. Annex 3: Interviews and focus group discussions conducted

Interview #	Description of interviewee	Location	Date
eThek01	NGO Coordinator	eThekwini	8/3/22
eThek02	PGS Pollinators Programme	eThekwini	7/3/22
eThek03	Municipal Official (agroecology)	Inchanga	7/3/22
eThek04	NGO staff, previous municipal official	eThekwini	8/3/22
eThek05	NGO staff, previous municipal official	eThekwini	8/3/22
eThek06	Municipal Official (health)	Inchanga	11/3/22
eThek07	Municipal Official (ecology)	eThekwini	11/3/22
eThek08	Nutritionist	eThekwini	8/3/22
eThek09	School Principal	Inchanga	11/3/22
eThek10	Farmer Group (FGD)	Inchanga	9/3/22
eThek11	Store manager, corporate supermarket	eThekwini	10/3/22
eThek12	Informal trader	Inchanga	10/3/22
eThek13	Informal trader	Inchanga	10/3/22
eThek14	Informal trader	Inchanga	10/3/22
eThek15	Academic	Pietermaritzburg	24/3/22
eThek16	Municipal official (aquaculture)	eThekwini	10/3/22
eThek17	Agroecology Business	Pietermaritzburg	7/3/22
eThek18	Academic/ activist	Stellenbosch	15/3/22
Ov01	Organic farmer	Stanford farms	8/2/22
Ov02	Organic farmer	Stanford farms	7/2/22
Ov03	Manager and staff, Overstrand LM LED Unit	Hermanus	10/2/22
Ov04	Academic/food systems consultant	Hermanus	10/2/22
Ov05	Researchers, Elsenberg Tygerhoek Research Farm	Riviersonderend	9/2/22
Ov06	Managers, OverbergAgri	Caledon	9/2/22
Ov07	Coordinator, Agulhas Biodiversity Initiative	Napier	10/2/22
Ov08	Organic farmer	Stanford farms	11/2/22
Ov09	Alien clearing contractor	Bredasdorp	11/2/22
Ov10	Organic farmer	Pearly Beach	9/2/22
Ov11	Public relations, Grootbos Foundation	Grootbos Farm	11/2/22
Ov12	Store manager, supermarket franchise	Stanford	8/2/22
Ov13	NGO staff	Stanford	7/2/22
Ov14	Coordinator, Food 4 Thought and farm manager, Zizemeleni cooperative	Stanford	7/2/22
Ov15	Coordinator, NGO	Stanford	11/2/22
Um01	Manager, commercial abattoir	Kokstad	18/3/22
Um02	NGO team group discussion	Matatiele	16/3/22
Um03	Manager, Meat Naturally	online	14/3/22
Um04	NGO staff	Matatiele	15/3/22
Um05	Manager, private FPM	Kokstad	18/3/22
Um06	Store manager, corporate supermarket	Matatiele	14/3/22
Um07	Store manager, corporate supermarket	Matatiele	14/3/22
Um08	NGO team group discussion	Matatiele	16/3/22
Um09	NGO staff	Matatiele	14/3/22
Um10	NGO team group discussion	Matatiele	15/3/22
Um11	Manager, Matatiele LM Economic Development and Planning Unit	Matatiele	18/3/22
Um12	Manager, SANAMI	eMaxesibeni	15/3/22
Um13	Staff member, SEDA	eMaxesibeni	15/3/22
Um14	Coordinator, Umzimvubu PGS	Mgungundlovu	17/3/22
Um15	Agricultural advisor DRDAR and Manager Matatiele LM LED Unit	Kokstad	18/3/22
Um16	Manager, butchery	Matatiele	16/3/22
Um17	TA livestock association group discussion	Mafube	16/3/22

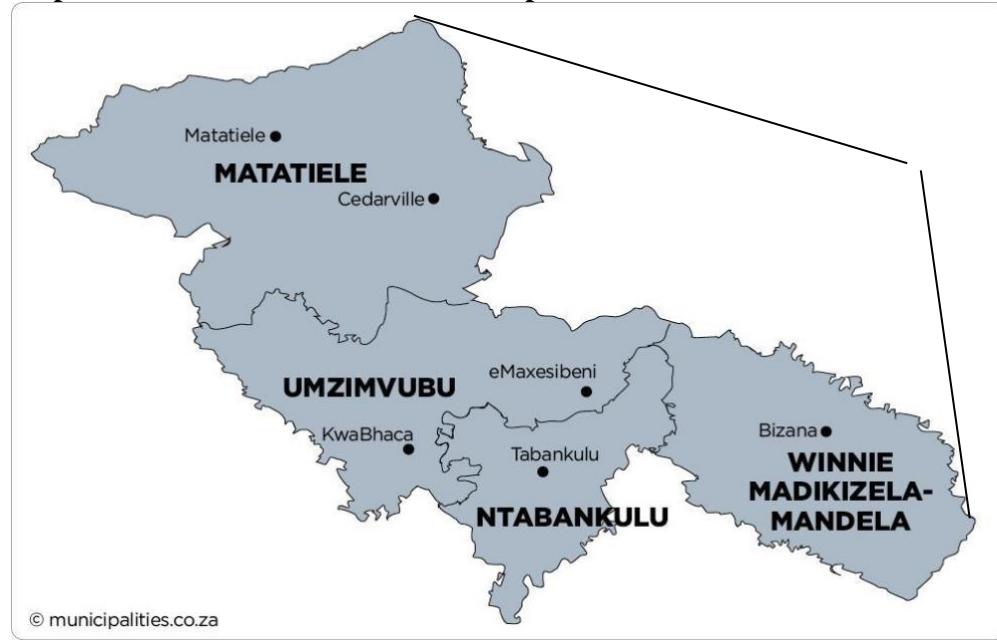
11. Annex 4: Maps

Map of Overberg District Municipality



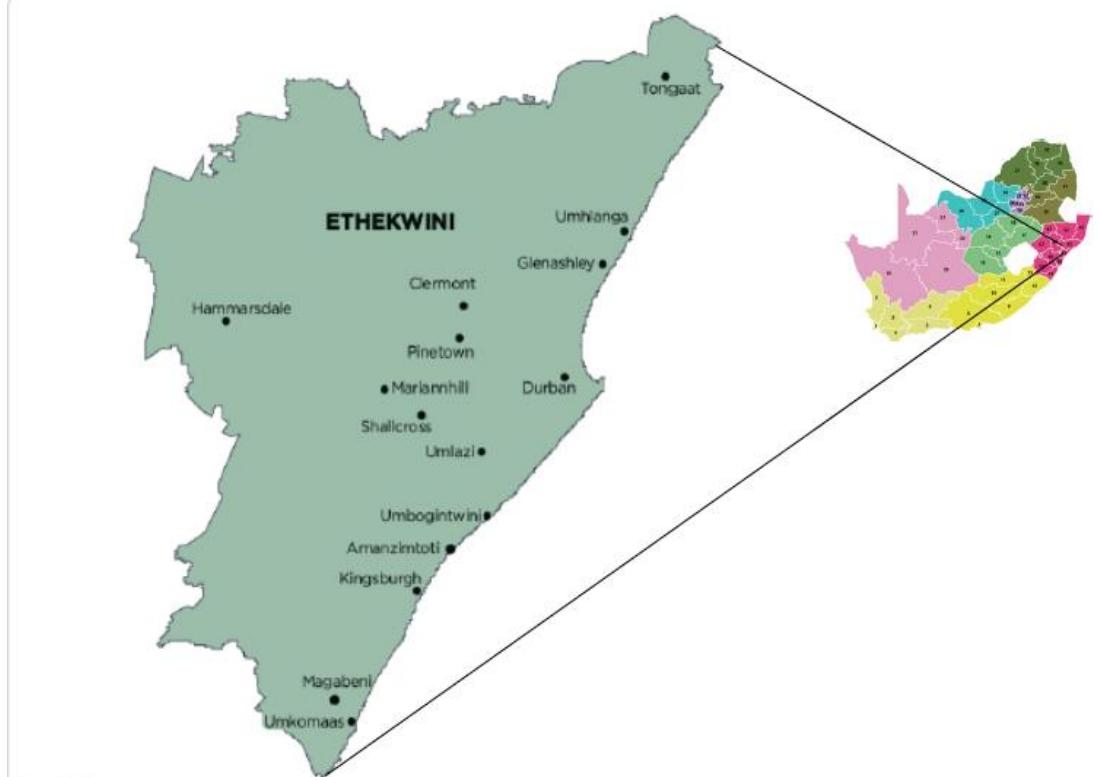
Source: https://municipalities.co.za/img/maps/overberg_district_municipality.png?1519287239

Map of Alfred Nzo DM with local municipalities



Source: <https://municipalities.co.za/map/1002/umzimvubu-local-municipality>

Map of eThekweni Metropolitan Municipality



Source: <https://municipalities.co.za/map/5/ethekweni-metropolitan-municipality>

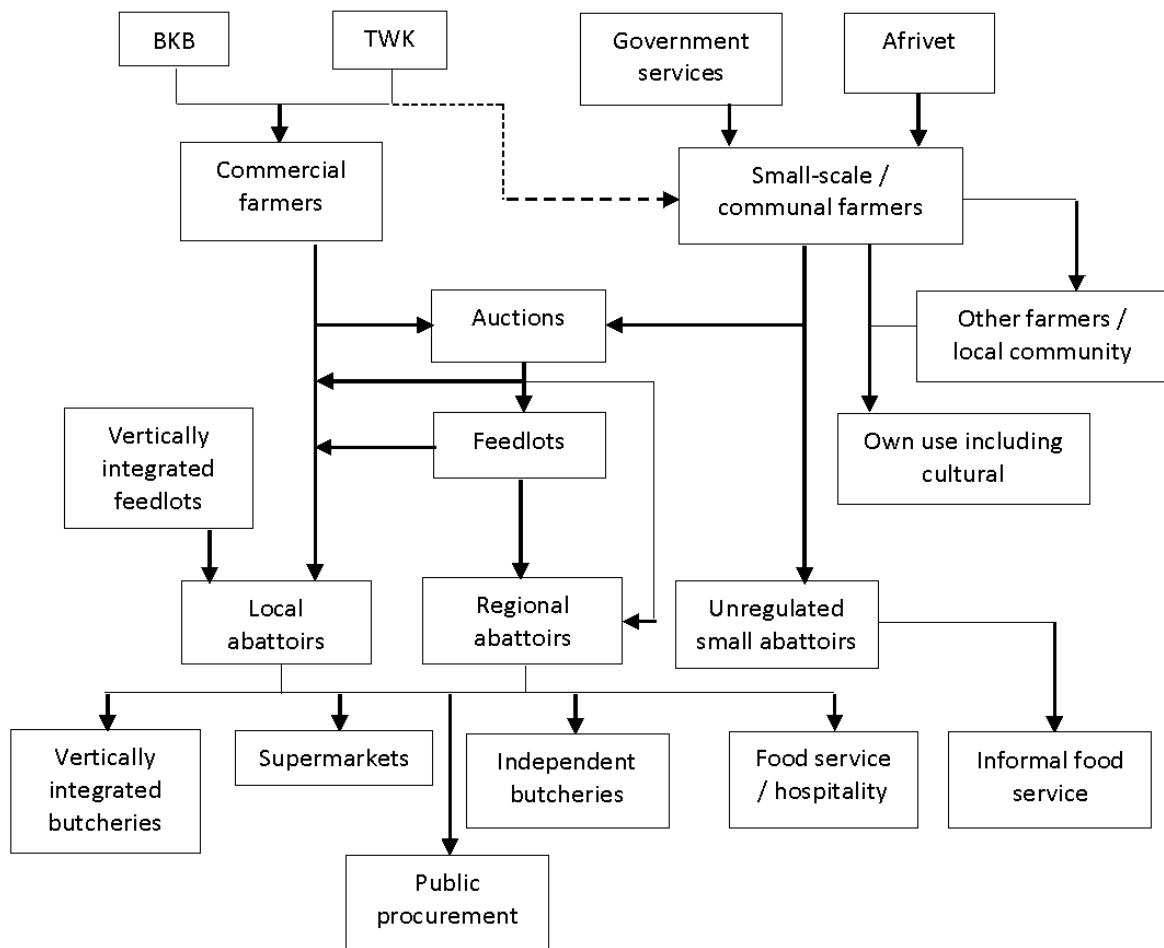
12. Annex 5: Overberg PGS farm profiles

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
Ownership	Family Trust, farm purchased 2016. Cooperative established for aspects of the farm.	Family Trust. Owned for more than 20 years. Subdivided and portion sold 18 years ago.	Purchased farm 9 years ago	Started farming in 2016, started chickens in 2018. Currently leasing land but insecure tenure.	Cooperative. Land leased from municipality via Food 4 Thought (NGO).
Farm size and land use	273 ha wild fynbos, 120 ha earmarked for agricultural production. Currently 17 ha grapes, 4 ha figs, 3 ha seasonal veg	210 ha. Most of the farm is wild fynbos, with 60 ha that can be used for production. Currently 5 ha of organic vegetables and developing 1-2 ha granadillas, aiming for 4-5 ha garlic	123 ha, mainly rocky mountainous fynbos. 9 ha planted proteas, <1 ha organic vegetables, limited grazing land	Chicken coops with 2 ha grazing camps. Currently, 5 coops and a forest area for retired birds. Aiming for 10 ha for breakeven.	3 ha lease with potential for another 10 ha at the site. About 1 ha is currently under vegetables.
Products and processing	Wine, figs, vegetables, wildflowers. Wine production using leased cellar for now.	Western vegetables African vegetables – covo, rape, pumpkin, chard Developing garlic and granadillas	Cultivated proteas, vegetables Small number of horses, cattle and goats 3 cottages for accommodation	Around 1,200 eggs a day, spent hens Sell compost from coops (mix of manure and wood shavings) in 50kg bags Starting garlic on a different farm	Vegetables Plans for cooperative activities in flowers, alien clearing and wood
Agroecological practices	SAOSO Organic Standards. PGS certified. Compost, pest and disease management.	SAOSO Organic Standards. PGS certified. Compost, green manure, low tillage, pest and disease management.	PGS certified. Organic principles for vegetables. Soil remediation. Wilderness conservation. Some synthetic chemicals on proteas (cost of alternatives a major issue) but efforts to reduce and switch to alternatives.	PGS certified. Outdoor pasture-raised poultry (don't label as free range because a lot of what is labelled free range are barn hens), animal welfare, no vaccinations, deep pile composting in coops, high-intensity rotational grazing with mobile coops and temporary electric fencing, solar panels for power, lime wash to kill parasites, intercropping garlic with green manure, drip irrigation	Organic principles. Produce own compost.
Employment	Retained all workers on acquiring farm. 12 full-time, permanent workforce, including owner-managers, 5-15 flower pickers depending on the season, 3-4 seasonal for figs, 5-10 seasonal during the few	5 permanent local SA workers living on farm, 1 casual worker, owner Occasional fynbos pickers on the farm	2 owners, 5 workers. Not enough labour. Occasional fynbos pickers on the farm	2 owners, 1 full time and 1 part time worker (husband and wife) living on farm	32 people working on agriculture, about 28 wood harvesters (alien clearing) out of about 134 cooperative members.

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
	weeks of grape harvest. Extended pickers and alien plant harvesters are sourced through Zizemeleni Cooperative.				Some paid stipends through CWP, others get profit sharing and food parcels from time to time.
On-farm production infrastructure	Vineyards, orchards, cold storage, buildings, irrigation. Plans for a cellar.	Buildings, cold room, irrigation, plentiful good supply of water under gravitation. No pumping needed.	Buildings, irrigation	Buildings, 2 fixed coops and 3 mobile coops, pumped water, orchard	Fencing, shade house, container for storage /office, disused reservoir nearby as potential water source
Logistics	Own transport locally and to Cape Town Occasional PGS shared transport to Cape Town Aggregators and agents for exports, couriers deliver. During peak season, daily delivery of vegetables and figs, otherwise on-farm storage for 2-3 days and then delivered	Own transport locally and to Cape Town Occasional PGS shared transport to Cape Town	Proteas couriered to Cape Town airport Veg - no cold chain, just harvest and deliver	On farm egg sorting, quality control, weighing, grading, packing by hand. Store on farm and distribute every 3-4 days. Own deliveries and shelf packing locally and Cape Town. Provide transport to Cape Town for other organic farmers when there is space.	Produce collected from farm for PGS box
Markets	Targeting organic premium markets. Good market response to wine. Local – PGS box, retailers, informal traders Cape Town – retailers, PGS box to Oranjezicht Market, Epping FPM Exports – wine, vegetables, figs, flowers	Western vegetables to retailers and restaurants local and Cape Town African vegetables – working with bakkie trader for local market Previously had a box scheme but stopped due to delivery costs Hermanus weekly farmers' market is a major and profitable outlet Need to do bigger markets Garlic – national via supermarkets (prices significantly higher than export)	Proteas – export through agents Need another 3 ha of proteas for financial sustainability. Veg – health shop and farmers' market in Hermanus, surpluses to Cape Town organic shops and markets Some locally, Overberg PGS box but product consistency challenges. Veg production volumes still too low for profitability.	Eggs – targeting premium markets, PGS branding. Retailers (independent organic shops, supermarkets), organic box schemes and restaurants 60% local, 40% Cape Town. 15-20,000 eggs per trip to Cape Town. Demand currently higher than supply Spent hens to informal live market in Masakhane	PGS box, weekly Stanford market. Aim is to supply most of the PGS box from the cooperative. SAOSO to guide towards certified organic produce

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
		Proteas more for aesthetics but do sell some in local markets	Goats - need a herd of 100 for goats' cheese production to be financially viable		
Other		Pest and disease management costs	Labour and time shortages, pest and disease management costs	Feed costs. Pasture to reduce.	Basic inputs from Dept of Agriculture then step back. Food 4 Thought admin, mentoring, making sure garden is functioning.

13. Annex 6: Schematic diagram of livestock value chain



14. Annex 7: Matching agroecological initiatives with HLPE agroecology principles

HLPE principle	Overstrand PGS and NRM	Rûens CA	Matatiele Meat Naturally	eThekwini Agroecology Hubs and Woza Nami
Recycling	On-farm biomass recycling	On-farm biomass recycling		On-farm biomass recycling, separation of organic and non-organic products throughout the supply chain
Input reduction	Biological pest management, reduction or elimination of synthetic fertilisers	Pasture grazing, efforts to reduce synthetic fertilisers and pesticides, scouting for pests and diseases	Extensive grazing on grasslands	Reduction or elimination of synthetic fertilisers
Soil health	Legumes for nitrogen fixation, crop rotation, cover crops, organic matter addition, monitoring of soil health	No or low till, legumes for nitrogen fixation, crop rotation, permanent ground cover / utility crops, organic matter addition, monitoring of soil health, high density and rotational grazing	High density and rotational grazing	Crop rotation, cover crops, organic matter addition, monitoring of soil health
Animal health	Free range poultry, biological pest and disease management		Some use of adapted local breeds, grass-fed ruminants, holistic grazing, natural environment for roaming	
Biodiversity	Intercropping, crop diversification, conservation of forest fragments, multi-habitat approaches, biological soil fertility measures, biological pest and disease management	Crop diversification, intercropping, biological soil fertility measures, no or low till	Rangeland restoration, some use of local breeds	Intercropping, conservation of forest fragments, multi-habitat approaches, biological soil fertility measures, locally appropriate varieties, crop diversity, biological pest and disease management
Synergy	Companion planting, intercropping, polycultures, cover crops, legumes for nitrogen fixation	Grain-livestock integration, cover crops, permanent ground cover, legumes for nitrogen fixation		Deep trench vegetable farming, combined with nutrition education, companion planting, intercropping, polycultures, cover crops, legumes for nitrogen fixation
Economic diversification	On-farm processing, development of SMMEs in bioeconomy (alien vegetation clearing, wildflower harvesting, holistic land management), farm-based non-agricultural	Crop diversification, crop-livestock integration	Development of SMMEs in bioeconomy, holistic land management, efforts to extend value chains to include previously marginalised	Establishment of farmer markets, nutrition awareness to support consumer demand, efforts to extend value chains to include previously marginalised

HLPE principle	Overstrand PGS and NRM	Rûens CA	Matatiele Meat Naturally	eThekwini Agroecology Hubs and Woza Nami
	activities (tourism), efforts to extend value chains to include previously marginalised			
Co-creation of knowledge	PGS, valorisation of indigenous knowledge (wildflowers), capacity building, farmer-NGO collaboration	(Commercial) farmer-researcher collaboration, farmer field schools, capacity building (commercial farmers)	Valorisation of indigenous knowledge (livestock and rangeland management), capacity building, farmer-NGO collaboration	PGS, seed and seed saving training, capacity building (extension and farmers), NGO-local government collaboration
Social values and diets	Right to food framing, explicit discussion on inequalities and how to overcome, solidarity (contribution to food relief)			Explicit focus on nutrition and dietary diversity, food sovereignty framing (in policy documents), social justice
Fairness	Fair trade, equitable and collective ownership models			Moving towards collective ownership model
Connectivity	Farmers' markets, PGS, short supply chains, soup kitchens		Mobile auctions	Farmers markets, PGS, short supply chains
Land and natural resource governance	Conservation areas, natural corridors, land redistribution, alien plant clearing	Natural corridors	Community-based NRM / rangeland management, wetland conservation and maintenance, spring protection, alien plant clearing	Metropolitan Open Space System, interconnecting open spaces in public, private and traditional authority ownership to protect biodiversity and associated ecosystem services
Participation	Facilitation of participation of marginalised groups in municipal LED and planning processes, cooperatives	(Commercial) farmer-researcher collaboration	Community-based NRM, grazing / rangeland associations, participatory land use planning, participatory biosphere conservation, local adaptive management	Building farmer organisations, stronger collaboration with local government