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TAFS Project

Transitions to Agroecological Food Systems

Agroecological initiatives in eThekweni Metropolitan Municipality, KwaZulu-Natal

Final site report
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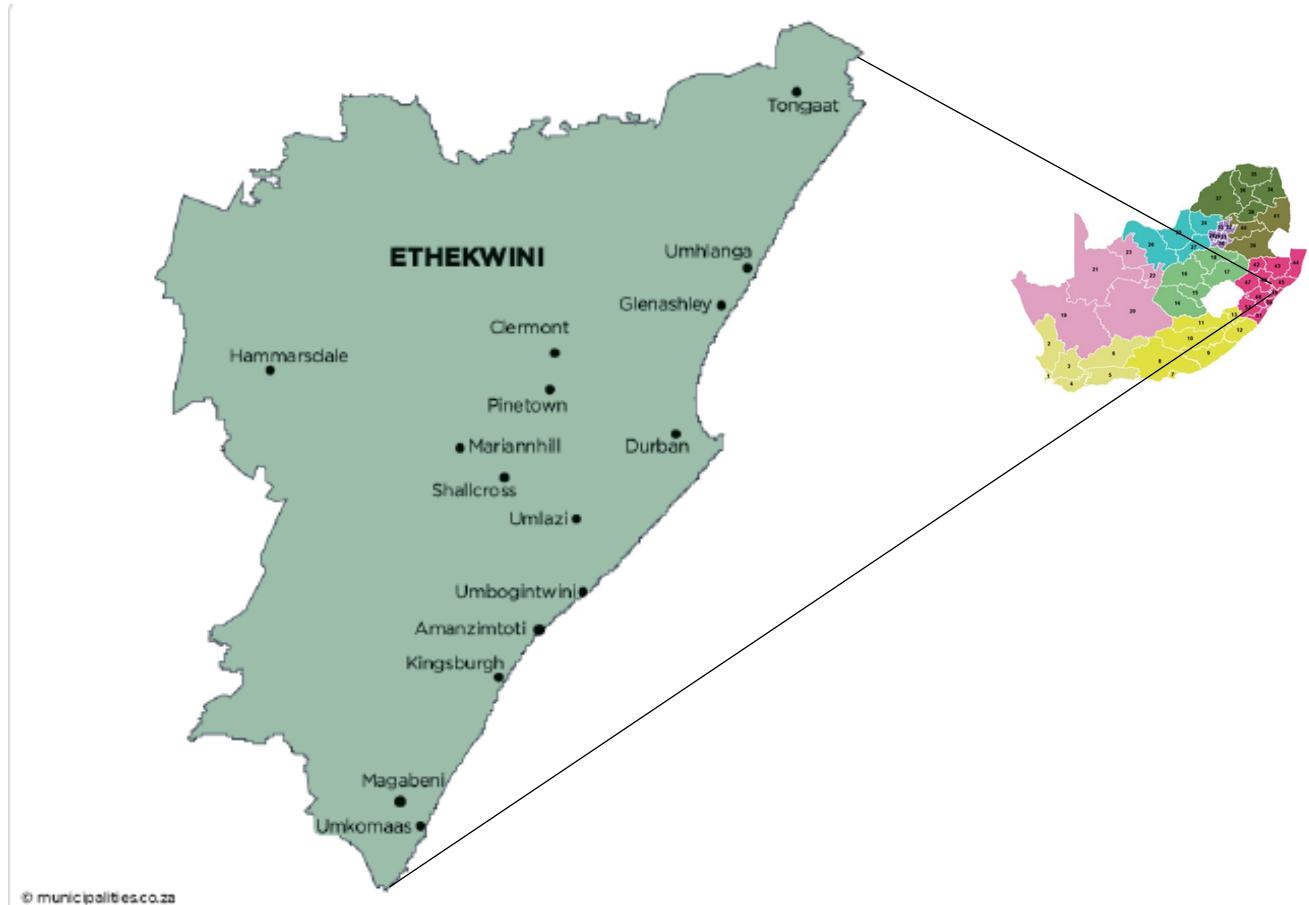
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1. Background

The case study covers activities in eThekweni Metropolitan Municipality, which is located in the southern extent of the Province of KwaZulu-Natal and covers an area of approximately 2,297km². There are a total of 110 Wards found within the municipality of which around two-thirds rural in nature.

Figure 1: Map of eThekweni Metropolitan Municipality



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

The eThekweni Metropolitan Municipality is a Category A municipality, the largest city in the province and the third-largest city in the country. Its land area is comparatively larger than that of other South African cities and is topographically hilly, with many gorges and ravines and almost no true coastal plain. According to the South African Local Government Handbook, it is “a sophisticated, cosmopolitan city” and is known as the home of Africa's busiest port (2022)². In description, Durban is characterised as having “a turbulent history dating from ivory hunters in the 1820s and their conflict with local indigenous people. KwaZulu-Natal has the largest number of battlefields in the country reflecting the colonial subjugation of people and Nature. It is a major centre of tourism because of the City's warm, subtropical climate and extensive beaches (2022).

As part of the Municipal planning process, the Municipality has been divided into four functional areas, namely, the Central Municipal Planning Region (CMPR), South Municipal Planning Region (SMPR), West Municipal Planning Region (WMPR) and North Municipal Planning Region (NMPR). The functional boundaries of these regions are defined by the Umgeni River, the Umlazi River and the

²The Local Government Handbook: South Africa: www.municipalities.co.za

This institutional arrangement is unique to the Municipality and presents challenges particularly with respect to land, planning and urban management (IDP Review 2022⁵). There are tensions between municipal versus traditional governance and with traditional laws often unaligned with the Municipality's strategic planning plans (Pinto *et al.*, 2022⁶).

The remainder of the municipal area, approximately 32%, is urban and is dominated by residential, commercial/office and industrial land uses. The economic land uses located in closer proximity to the N2 and N3 highways are unevenly distributed throughout the Municipality and separated from the higher density residential uses. It is important to recognise that some areas have been viewed as rural because they fall within *Ingonyama* Trust and Traditional Authority jurisdiction, yet these areas are no longer sparsely populated and have very limited vacant spaces (IDP Review, 2022).

1.1 Ecology

eThekweni's terrestrial assets make it among the world's most biodiverse cities (McLean *et al.*, 2016)⁷. Furthermore, the municipality's data collection, assessment and monitoring programs have generated some of the most comprehensive understanding of its terrestrial assets among cities worldwide (World Bank, 2016). The status of being a "biodiversity hotspot" has, however, 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 (World Bank, 2016)⁸. The arrival of thousands of in-migrants over decades has stretched the city's ability to deliver adequate public services, housing and jobs. Unplanned, densely populated informal settlements that lack basic water, sewer, and waste services now cover much of the city's land area.

At the same time, climate change is placing further strains on the city's ability to manage the urban environment (World Bank, 2016). According to the eThekweni Municipality Environmental Planning and Climate Protection Department (EPCPD), the Municipality is already experiencing the impacts of climate change, with a documented annual sea level rise of 2.7 mm that threatens coastal wetland and dune ecosystems (EPCPD, 2014⁹). 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. Such conditions have degraded the quality of the city's environmental assets and the vital ecosystem services that they provide. eThekweni is projected to experience increasing and more varied rainfall with rain events expected to increase in intensity, with a potential increase in aggregate rainfall by 2065 of up to 500 mm by 2100 (EPCPD, 2014).

In terms of the flooding of April 2022, the volume along the coastal areas of KZN were severe, with places registering over 300 mm on a single day and over 400 mm accumulated over several days,

⁵ eThekweni Municipality Integrated Development Plan (2022) "5 Year Plan: 2017/18 to 2021/22 - 2021/2022 Review", eThekweni Municipality

⁶ Pinto, I., Zachariah, M., Wolski, P., Landman, S., Phakula, V., Maluleke, W., Bopape, M-J., Engelbrecht, C., Jack, C., McClure, A., Bonnet, R., Vautard, R., Philip, S., Kew, S., Heinrich, D., Vahlberg, M., Singh, R., Arrighi, J., Thalheimer, L., van Aalst, M., Li, S., Sun, J., Vecchi, G., Yang, W., Tradowski, J., Otto, F., and Dipura, R. (2022). Climate Change Exacerbated Rainfall Causing Devastating Flooding in Eastern Southern Africa. WWA, pp 31.

⁷ McLean, C.T., Ground, L.E., Boon, R.G.C., Roberts, D.C., Govender, N. & McInnes, A. (2016). Durban's Systematic Conservation Assessment. EThekweni Municipality, Environmental Planning and Climate Protection Department, Durban, South Africa.

⁸ World Bank (2016) *Promoting Green Urban Development in African Cities, Urban Environmental Profile for eThekweni, South Africa*, Accessed 1 June 2022:

<https://documents1.worldbank.org/curated/en/312921468184169809/pdf/103643-REVISED-PUBLIC-P148662-Report-eThekweni-UEP-Final-February-2016.pdf>

⁹ EPCPD (2014) *Durban Climate Change Strategy (DCCS) Final Draft for Council Approval*. eThekweni, South Africa: eThekweni Municipality.

with the main events falling on already very wet and saturated soils (Schulze, 2022¹⁰). Some caution has been suggested when referring this event to be the result of climate change as long-term research indicates that in the historical past, there have been many rainfall events far exceeding the magnitudes of the 2022 flood (Schulze, 2022). Based on long-term historical data, Schulze argues that rainfall intensities in the April 2022 rains were generally quite low, and by anecdotal accounts much higher rainfall intensities have been experienced many times in the past.

Nonetheless, the event provides an important lesson for eThekweni as more extreme events are likely as a result of climate change. The consequences of the 2022 floods over especially the coastal areas of the Province were disastrous largely because of high degree of formal urbanization, with expanding suburbs as well as business and industrial areas, all associated with more impervious areas which result in near direct and rapid surface runoff with higher peak discharges. With a lack of control in certain areas as to where to build and how and what to build, the marked expansion of in-migrants compounded the number of dwellings established on or on steep slopes with often unstable soils, with structures often constructed without appropriate foundations.

A serious problem identified in eThekweni is the proliferation of alien riparian vegetation which grows fast with shallow rooting systems and “crowds out” slower growing deep rooted indigenous plants (Tooley, 2022¹¹). In a flood, alien plants are easily pulled off riverbanks, exposing riverbanks that disintegrate quickly and provide downstream silt, with the aliens establishing blockages at culverts and collecting solid waste that would have otherwise flowed through the culverts. The blockages then cause overtopping and structural damage (Tooley, 2022).

Essential “vegetation assets” [or, to put it another way, Indigenous biocultural variety] have been drastically decreased and are in danger of extinction (EPCPD, 2013). South Africa is the world's third most biodiverse country. eThekweni is located in the Maputaland-Pondoland-Albany Region (World Bank, 2016), and as a global biodiversity hotspot, its unique environmental legacy is under threat from urbanization, economic development, and climate change. The subtropical climate of the municipality, with hot, humid summers and moderate winters, provides a natural habitat for numerous indigenous plant and animal species.

In 2012, only 26% of eThekweni's land area was in a natural, non-degraded state (EPCPD, 2012¹²). It is likely to be less than this ten years later. Land loss and climate change have a number of consequences, including establishing new habitat for invading species, jeopardizing endemic species' survival, reducing carbon sequestration capacity, increasing greenhouse gas levels, lowering aquifer recharge rates, and fragmenting habitats. Invasive plant species are having a significant influence on the Municipality, as noted above in regard to the May 2022 floods, threatening the biodiversity and ecosystem integrity of eThekweni. Through competition, predation, or pathogen transmission, as well as disruption of local ecosystems and ecological processes, invasive alien species are causing the decline or extinction of indigenous species.

Rivers have become extremely polluted as a result of human activities and are continuing to deteriorate (World Bank, 2016). The degradation of eThekweni's rivers has been progressively increasing; in 2006, 34% of eThekweni's rivers were evaluated as being in poor condition, and by

¹⁰ Schulze, RE (2022) “The April 2022 Flood Producing Rainfalls in KwaZulu-Natal in Perspective: An Historical Review and a Comparative Overview”, Centre for Water Resources Research, University of KwaZulu-Natal, Pietermaritzburg.

¹¹ Tooley, G. (2002b) KZN Crises: Engineering Design for the Future. University of KwaZulu-Natal Workshop on the April 2022 Floods over KwaZulu-Natal.

¹² EPCPD. (2012). *State of Biodiversity Report 2011/2012*. eThekweni, South Africa: eThekweni Municipality.

2010, that proportion had risen to 40%. The main environmental issues are eutrophication, inadequate riverbed light penetration, erosion, slowed river flow, and the spread of alien species. There are sixteen main rivers and estuaries, a number of which have headwaters and catchments that begin outside the Municipal Area (World Bank, 2016).

The causes of degradation of the aquatic assets are numerous and include effluent spills and illegal discharge, sporadic short term wastewater treatment challenges during high rainfall events, solid waste dumping, realignment and canalization of water channels, flow reductions (dams), and the sedimentation that has resulted from land conversion, removal of vegetation (particularly within the riparian corridors), and sand mining. In general, the conditions of the rivers worsen as they flow through Municipal Area toward the coast.

Similarly, eThekweni's wetlands have been severely damaged, rendering them incapable of supporting adequate levels of biodiversity and biological output (World Bank, 2016). While a small percentage of the municipality gets its water from boreholes, activities like waste disposal sites, pit latrines, septic tanks, and projects without sewage infrastructure increase the risk of aquifer pollution.

There is significant and increasing competition for water with growing water requirements as the city and region develop. Hardened surfaces and the excessive extraction of natural resources such as sand for building has stripped soil and vegetation cover with significant erosion and sedimentation. These practices have exacerbated stormwater runoff and flooding, causing further disturbance in water catchment areas and the decline of water quality and availability. The city's water is predominantly from Umgeni Water Supply Scheme, which is managed as an integrated system for greater regional supply. Water is becoming increasingly more expensive as local resources are fully developed and depleted, requiring more water to be imported inter-basin transfers.

The vegetated ecosystems of the eThekweni Municipal Area are highly fragmented. While 26% of land area is vegetated with natural and semi natural habitats, the majority of the vegetated areas are not large. Contiguous vegetated areas are generally in the range of 50 ha or less while the majority are significantly smaller. Habitat fragmentation impacts different species in different ways and could greatly threaten the municipality's biodiversity. While the vegetated areas need not be particularly large to contain significant ecosystems, inter-connectedness of vegetated areas can compound their ecological value.

Under conditions of global environmental change, the protection of viable ecosystems is becoming increasingly important in meeting the health, social, cultural and economic needs of urban and peri urban communities (IDP Review 2022). The ecosystem services provided by Durban's natural areas offer some of 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.

1.2 Socio-economic

In 2019, the population of eThekweni was 3 987 648 having grown from 3 468 415 in 2009 with the annual growth rate steadily declining from 1.6% in 2011 to 1.2% in 2019. (COGTA, 2020). The estimated population in 2021 according to the eThekweni Integrated Development Plan (IDP) 2021/2022 was 4,082,208. According to the 2016 Stats SA Community Survey, 51% of the eThekweni population comprised of females (COGTA, 2020). The median age of the metro of 27 years is higher

than that of the province (22 years) and 10% higher than the figure for South Africa (25 years) (COGTA, 2020).

According to the StatsSA Forecast 2020, the eThekweni population is young with 59.74% of the population below the age of 35 years. Individuals within the 0-14 year's old group comprise 25.28% and the 15-34 age group 34.46% of the population. The 35 to 59 age group comprises 31% and those 60 and over 11%. The economically active age group from 15 to 59 years includes 65.37% of the population. The population dependency ratio is 53:100 and this indicates that 53 persons either young or old depend on 100 persons of working age between 15 and 64 years.

According to the 2016 Community Survey, there are 1 125 765 households in eThekweni which is an increase of 169 052 households since 2011 (COGTA, 2020). 81.5% lived in formal dwellings which is an increase from 79,0% in 2011 (COGTA, 2020). Of these households, 13.3% were living in informal dwellings, whilst 4.3% resided in traditional dwellings. The average household size slightly declined from 3.6 to 3.3 between 2011 and 2016, which is equal to the South Africa average of 3.3. In terms of human settlements, the official housing backlog of informal settlements in eThekweni is 238 000 households, which means that just over 800 000 (assuming a household size of 3.3 people), or approximately 22.4% of the city's population, live in informal settlements (eThekweni Municipality, 2017¹³).

An exceptionally large number of the population of eThekweni Municipality is not economically active (IDP Review 2022). eThekweni has the highest number of people that are not economically active of all the metros. The unemployment rate at the beginning of 2016 was 19.7%, which increased to 22% at the end of 2016 before declining slightly to 21.8% in Quintile 1 and Quintile 2 2017 (COGTA, 2020).

Approximately 60% of eThekweni's 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 are living below the food poverty line in eThekweni in 2018, which is 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).

The City has been a top performer in the delivery of basic services and provision of free basic service to poor residents (IDP Review 2022), which has meant that eThekweni residents are less likely to be living in extreme poverty (i.e., poor in eThekweni receive better service packages than those in other metros). As eThekweni has a poorer population than the other metros, and consequently, a larger proportion of its budget is spent on its social package. The City has consequently done well in addressing poverty, relative to its metro counterparts; however, the extent to which this is sustainable is questionable.

eThekweni's urban form is characterised as having a clear separation of residential uses from economic uses (IDP Review, 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. There is a concentration of more intense uses in the Central and North planning regions, and by comparison, relatively low intensity of use in the Outer West and Southern Planning Regions. This is important in terms of opportunities for economic activities such as agriculture in the Outer West.

¹³ eThekweni Municipality (2017) Housing backlogs, unpublished report, Department of Human Settlements, eThekweni Municipality, Durban.

People living in informal settlements are the most vulnerable communities in the city and climate change is expected to impact these communities the most, especially with regards to increased flood risk (IDP Review, 2022). This was a pertinent point made in the IDP before the impact of the heavy rains in 2022, as the document emphasised that urgent attention be given to addressing the housing backlog and a key spatial challenge is to identify residential opportunities on land that is well located, serviced and with good access to public transport as well as social and economic opportunities.

1.3 Economy

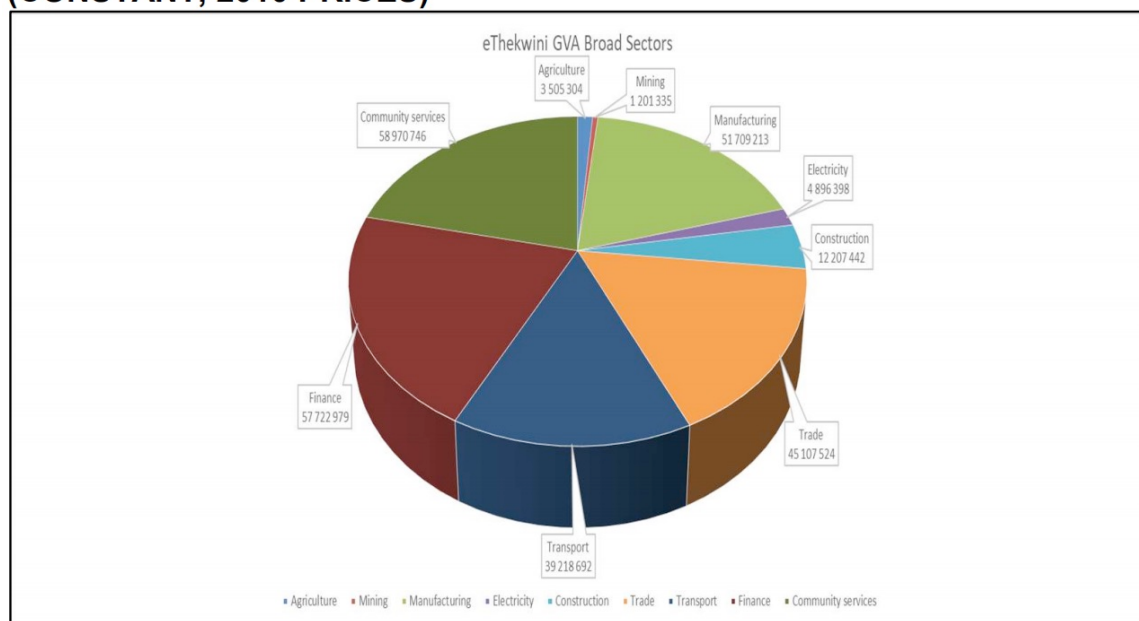
eThekweni is the economic powerhouse of KwaZulu-Natal with a provincial GDP contribution of 59.88% or R468 billion (IDP Review 2022). The region is a vital link between the regional economies of Pietermaritzburg (and onward to Gauteng) and Richards Bay, and ranks as the second largest economic centre with the second most significant industrial region in South Africa (IDP Review, 2022). The municipality is characterised by a diversified economy, with strengths ranging from manufacturing, logistics, property and finance to tourism, leisure, sports as well as arts and culture (COGTA, 2020). The four main economic sectors are:

- Total Manufacturing 23%
- Financial & business services 22%
- Community Services 19%
- Wholesale & Retail 15%

Figure 3 depicts the percentage contribution to GDP by broad sectors during 2019 for the eThekweni Municipal region. GDP growth was recorded as R301.3 billion in 2019, growing by -0.15% from 2018. The local economy was dominated by tertiary industries that included finance, manufacturing, trade, transport and construction.

Figure 3: eThekweni GDP

SECTORIAL COMPOSITION OF ETHEKWINI'S GDP: BROAD SECTORS, 2019 (CONSTANT, 2010 PRICES)



Compared to its metro counterparts, a large proportion of eThekweni's population is unskilled or low skilled. However, the primary sectors that absorb the most unskilled and low-skilled labour (such as agriculture and mining) are very marginal in the eThekweni economy. While promoting more

productive rural areas, eThekweni needs to grow tourism and agriculture, which can absorb some low skilled labour.

The smaller buying power in the City as a result of lower incomes and higher unemployment means that there is less disposable income to support growth of the City's economy. While the tourism industry holds many opportunities, the tourism sector is weak compared to the other large metros as eThekweni only ranks fifth among the cities for foreign visitors. While eThekweni is a strong domestic tourism destination, some segments of that market bring little value to the City.

Possibly eThekweni's biggest competitive advantage is its port, which results in eThekweni's skilled population in the Transport and Logistics sector being larger than that in other cities, both nationally and globally (COGTA, 2020). Skills in this sector in eThekweni (including Logistics and Supply Chain Management, as well as Transportation) are more abundant than in the country's other metros.

1.4 Institutional

City management in eThekweni is made more complex than other South African metropolitan municipalities as a result of its dual governance system. 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). The respective governance roles of traditional councils, the Municipality and other governance actors within the *Ingonyama* Trust landscape have resulted in a complex web of governance. While these roles are relatively separate in some areas, in others they overlap creating governance challenges, particularly with respect to the relationship between the Municipality and traditional councils at a local level.

Local tourism, trading laws, fences, markets, municipal abattoirs, trash disposal, and street trading are just a few of the limited but major municipal duties in the South African agri-food sector *sensu largo* (De Visser, 2019¹⁴). They also have the authority to control land use and undertake spatial planning under the 2013 Spatial Planning and Land Use Management Act (SPLUMA).

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*, 2016¹⁵).

An important dimension to note 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, especially in the context of climate change (Roberts *et al*, 2017).

The fragmented ability to adopt and enforce environmental laws presents a difficulty for eThekweni (World Bank, 2016). With little power at the municipal level and a lack of synergy between planning and environmental processes, there are many levels of government involved in regulating the

¹⁴ De Visser, J. (April 2019), "Multilevel Government, Municipalities and Food Security" *Food Security SA Working Paper Series No. 005*. DST-NRF Centre of Excellence in Food Security, South Africa.

¹⁵ Sutherland, C., Sim, V., Buthelezi, S. and Khumalo, D. (2016). Social constructions of environmental services in a rapidly densifying peri-urban area under dual governance in Durban, South Africa, *African Biodiversity and Conservation*, 46(2): 1-12.

environment. The Durban Metropolitan Open Space System is the main mechanism for conserving the municipality's natural assets. Natural assets are formally protected through land purchase, the declaration of nature reserves, and non-user conservation servitudes.

The horizontal institutional fragmentation at metropolitan level causes a challenge facing land matters and by extension agricultural production is (World Bank, 2016). However, a counter argument to this World Bank perspective is evident in the City's Resilience Strategy which argues that 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 (2017¹⁶). Currently these households are not required to pay municipal rates or to abide by the costly building plan submission process although the loss of land previously allocated for agricultural and grazing purposes could lead to food insecurity for the poor in traditional communities.

The Integrated Development Plan (IDP) is the municipality's principal strategic planning instrument to guide and inform all planning and development and related decisions in the municipality. It is also a key tool for coordination within the municipality. Reviewing the latest IDP it is not clear how coordination of different sectors that have a bearing on food security and agro-ecology is managed; the document implies that this falls to a particular unit to develop relationships with Councillors, the Clairwood Fresh Produce Market, the National School Nutrition Programme and various service providers that can support farmers with training and inputs. No explicit recognition of an inter-sectoral platform is made.

The lack of a reliable forum or systems for cross-sectoral, integrated discourse and decision-making presents another difficulty for eThekweni (World Bank, 2016). Goals, timetables, and reporting requirements are out of alignment, and there is a lack of integration in strategic and financial planning across sectors. Institutional fragmentation as a result has made it difficult to create a framework that can effectively safeguard and conserve the environmental resources of the municipality.

The Municipality has been supporting small farmers through its Parks and Recreation, Agroecology and Business Support, Tourism and Markets Unit. Farmers are assisted with inputs and mechanisation. However, such support remains uncoordinated and provided on an *ad hoc* basis, which led to the development of an agribusiness master plan to promote the coordination of such support services (eThekweni Municipality, 2020¹⁷). In late 2021 and early 2022, the main unit overseeing agriculture was the Agroecology Unit.

2. Overview of the local food system

Generally speaking, in eThekweni 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 strategies (i.e. food that is purchased) and non-cash-based strategies, with the latter often involving coping strategies such as borrowing or sharing food from friends and neighbours (CSP,

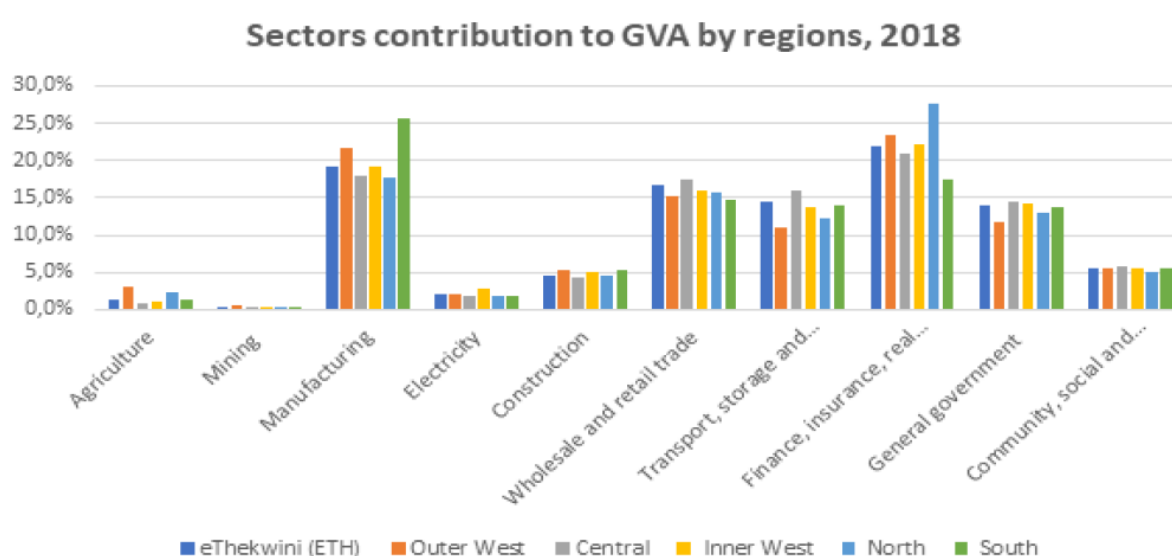
¹⁶ Roberts, D; Douwes, J and Hassan M (2017) Durban Resilience Strategy, www.durban.gov.za/100RC

¹⁷ eThekweni Municipality (2020) eThekweni Agribusiness Master Plan, developed by Agriculture House and the Independent Development Trust, <https://foodfoundation.org.uk/sites/default/files/2022-03/eThekweni%20Agribusiness%20Master%20Plan%20-%20Draft.pdf>

undated¹⁸). 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 eThekweni 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 a small percentage of the economy of eThekweni (see Figure 4) with the municipality being a net importer of food from other districts, provinces and outside the country. Agriculture has however, 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 (IDP Review, 2022).

Figure 4: Gross value added to eThekweni Economy, 2018



Source: COGTA, 2020

When accounting for potential agricultural lands that have not been surveyed especially under the *Ingonyama* Trust in the South Region, the assumption is that, when accounting for such lands, eThekweni has at least between 800 to 1200ha of such land (eThekweni Municipality, 2020). In terms of smallholders, the total confirmed land currently used within eThekweni Metro is estimated at 560ha (eThekweni Municipality, 2020), the bulk of which lie within *Ingonyama* Trust areas. The land sizes vary; townships have access to lands ranging from below 0.1ha to 1ha whilst peri-urban and rural areas have lands ranging from 0.5ha to 12ha.

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%) (eThekweni Municipality, 2020). Sugarcane is regarded as an industrial non-food crop and excluded. eThekweni farmers are generally small scale in nature and conduct their farming activities at various levels of the primary farming value chain. Most of these small-scale farmers produce for household consumption, informal markets and to more formal markets on an ad-hoc basis. Only 5% of the

¹⁸ Cities Support Programme, National Treasury (undated) Township food economies and urban food security, <https://csp.treasury.gov.za/csp/DocumentsProjects/Township%20Economies%20Series%202%20paper.pdf>

eThekwini farmers can be regarded as semi-commercial and commercial supplying formal markets consistently and these are mostly in the Isipingo area.

Although dated, a report by the Institute of Natural Resources (INR) provides a useful description of the nature of small-scale and subsistence agriculture common particularly in the outer areas of the municipality (2005¹⁹). Subsistence agricultural activities include both cropping and keeping livestock. Small areas of maize, dry beans and *amadumbe* are commonly grown to supplement household needs. Some households also grow vegetables, while a limited number also have fruit trees for household consumption (papaya, bananas, citrus and mangoes). Herd sizes of 2 to 8 are common for cattle owners and flocks ranging from 1 to 10 are common for goats. Many households have indigenous chickens, which are used mainly for home consumption, but also sold locally. Due to the lack of fencing, goats and cattle are commonly tethered to prevent them from damaging crops.

In 2020, an estimated 98.5% of the farmers reported to be getting an income below R5000 per commodity produced per annum. Only 1.5% of the farmers reported higher income ranging from R50 000 to R100 000 with the exception of one co-operative called *Mbali Yesizwe Sasenanda* that reported to receive an income in excess of R1 million per annum for all commodities combined (eThekwini Municipality, 2020).

Urban and peri-urban agriculture is noted to be on the increase within small sections in cities, either in vacant plots of land being used to grow food near informal settlements, yards and nearby rivers (Khumalo and Sibanda, 2019²⁰). These various plots are sustained either by individuals or small groups. The primary purpose is to feed their families and perhaps make additional money to provide for their families and households to be able to sustain their growth potential.

Table 1: Summary of Agriculture in eThekwini

<i>Vegetables</i>	The entire metro is a small contributor of vegetables consumed in eThekwini and KwaZulu-Natal Province. The bulk of vegetables consumed within eThekwini are imported from other areas in KwaZulu-Natal and other provinces. This presents an opportunity for eThekwini producers to scale-up their operations. High value crops should be considered under tunnel farming especially where infrastructure exist such as the Agrizone at Dube Trade Port.
<i>Fruit</i>	There is almost no commercial fruit production occurring within the eThekwini Municipality, with the exception of a banana producer located in the northern parts. A strawberry operation is located at Cato Ridge.
<i>Poultry</i>	One of the large agricultural poultry sub-sectors within the eThekwini Municipality is broiler production. The largest operation is that of Rainbow Chickens (RCL) albeit at a reduced scale over the past few years. Its operations are located around Cato Ridge, and include broiler breeders, hatcheries and rearing farms. In Cato Ridge and surrounding, there are other small broiler producers operating at different scales between 1 000 to 50 000 broilers. The eThekwini broiler value chain is anchored around the Hammersdale / Georgedale Abattoir. This abattoir is currently supplying fresh chicken to various customers, mainly restaurants. The abattoir has a slaughter capacity of 10 000 chickens per day with a potential to expand.
<i>Dairy</i>	The number of dairies in the western region (around Cato Ridge) has declined. A number of small dairies do exist, located in Pinetown (at the Mariannhill Monastery), Hillcrest, Alverston and Cato Ridge. There are no dairies in the northern or southern parts of the municipality.

¹⁹ Institute of Natural Resources and Iyer Rothaug Collaborative (2005) Agricultural Development Framework Plan for the Southern Agricultural Region, prepared for eThekwini Municipality

²⁰ Khumalo, N.Z.; Sibanda, M. Does Urban and Peri-Urban Agriculture Contribute to Household Food Security? An Assessment of the Food Security Status of Households in Tongaat, eThekwini Municipality. *Sustainability* **2019**, *11*, 1082. <https://doi.org/10.3390/su11041082>

Beef	There is very little commercial beef production occurring within the eThekweni Municipality. Two operations with herds larger than 200 animals are located in the Camperdown area. Most cattle related activities involve speculation (buying and selling to the informal market).
Pigs	There are a number of small-scale piggeries located within eThekweni.
Sheep/ Goats	Activities based on sheep and goats are almost exclusively of a speculating nature. Sheep and goats are purchased from farmers in the Northern Cape, Eastern Cape and Namibia and brought down to KwaZulu-Natal. They are generally sold informally to wholesalers and retailed directly to consumers. The animals are principally purchased for slaughter purposes. Most of the goats are slaughtered for traditional/cultural reasons.

Source: SAFL, 2021²¹

Figure 5: Geographical Location of Farmers



Source: eThekweni Municipality, 2020

²¹ Southern Africa Food Lab (2021) Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality: Towards the Development of Value Chain for a Circular Economy in the Food Waste Sub-Sector for Sustainable Jobs and Inclusive Growth, Report prepared for the United Nations Development Programme, 25 November 2021.

According to figure 5, the highest concentration of farmers is in the South at 28, 83%, Central – 21.47% and Outer- West Regions at 36.81% (eThekweni Municipality, 2020).

Box 1: Edamame (Soya Beans)

A project supporting the development of the agricultural sector relates to Edamame (Soya bean), which is one of the emerging agricultural sectors in South Africa with the potential for improving health, job creation and to strengthen local economic development within the city. The Edamame Development Program (EDP) was set up 5 years ago to establish an Edamame soya bean industry in South Africa, based primarily in eThekweni Municipality.

The EDP has conducted on-going valuable and successful research in South Africa with key academic partners on a new crop type and having improved opportunities and scope for small scale growers and emerging farmers through the program. The EDP supports both larger emerging farmers and smaller homestead growers.

To date, 85 emerging farmers have been engaged to supply Edamame to the program. The EDP programme has also led to 265 homestead and community gardens being actively engaged and mentored. The EDP programme has also led to the product being supplied to local retailers and has also attracted the interest of international consumers.

Source: IDP Review, 2022

Access to markets was identified in the Agriculture Master Plan as a key component to enable sustainable agricultural production (eThekweni Municipality, 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 department or related organisation with their produce. Although some farmers were aware of potential markets within government, through programmes such as RASET, the farmers did not know how to go about accessing these markets. Only 18% of the farmers were supplying retailers mainly Spar and Boxer Supermarkets and Durban Fresh Produce Market in Clairwood.

The arrangement with these markets was largely on a produce availability basis, due to limited production capacity and inconsistency supply of fresh produce by the farmers. Growing and co-ordination of fresh produce supply requires major improvement. The majority of the eThekweni small-scale farmers (82%) were supplying informal market which is made up of local communities, pension pay points and hawkers. This group also comprised of farmers who plant for both own consumption as well as income generation. None of the smallholder farmers within eThekweni supply the hospitality industry and agro-processors directly. This is a major market segment not exploited by the farmers.

In terms of agro-processing for smallholders, there are few small businesses within eThekweni which rarely buy from local farmers preferring the Durban Fresh Produce Market in Clairwood due to unavailability of some commodities from local farmers especially fruits (eThekweni Municipality, 2020). Other reasons cited by the processors precluding them from buying agricultural commodities from small farmers include inconsistency and poor quality of produce as well as disagreements with pricing. Some of the processors include *Frutee Belliez*, a youth-owned business, which has expanded into the provision of fruit salads from a range of seasonal fruit, the supply of vegetable salads and the preparation of a variety of peeled and chopped vegetable packs (eThekweni Municipality, 2020).

3. Agroecological initiatives

3.1 Agroecological initiatives – The 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 (eThekweni Municipality, 2010²²). 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 vision of the Agroecology programme 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 (eThekweni Municipality, 2011)²³.

The primary targets are those with greatest need and where the most impact can be made with limited resources. The programme encompasses three key areas of focus: semi-commercial focus for activities such as community mini farms; socio-economic focus for communal gardens and co-operatives; and social focus aimed at improving food security in informal and low-income settlements (eThekweni Municipality, 2011).

In order to enable this, the municipality has six agricultural hubs and ten fishponds in place. According to eThekweni's Agribusiness Master Plan, agroecology hubs have been established in Northdene, Newlands, Inchanga, Marriannridge, Umbumbulu and Hambanathi (eThekweni, 2020). These are situated in strategic points across the municipality. The Northdene Hub is based at the old Northdene waterworks has scientific facilities including a fish hatchery and broodstock ponds, a seed bank, tissue culture and other laboratories for research processes. In 2011, the concept of rural fishponds was introduced to deliver polyculture and material support (see box 2) (eThek16). The Newlands-Mashu Permaculture Centre is a site of permaculture demonstration and learning, which has the potential to "provision" larger numbers of people in the KwaMashu area, as do the Inchanga and Mariannridge demonstration gardens. The Hambanathi Hub helped establish an active farmer organisation with connections to a local retailer. The Umbumbulu Hub provides a training, packing, and marketing and coordination venue for growers organised into cooperatives.

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 co-ordination centres, not geared for commercialization" (eThekweni Municipality, 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.

As mentioned above, the metropolitan area has been divided into agricultural zones to facilitate the equal distribution of resources, taking into account catchments, road access and logistics. 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. According to eThekweni's Chief Horticulturist, approximately 39 people are employed at the hubs, but the real impact is in communities with field staff currently supporting approximately 241 gardens

²² eThekweni Municipality, Agricultural Management Unit (AMU), Strategic plan, Version 1a - 29 April 2010.

²³ eThekweni Municipality. Agro Ecology Unit. 2011. Available online: http://www.durban.gov.za/City_Services/AgroEcology/Pages/Agro-Ecology-Background.aspx.

representing 1896 growers (Bisaga *et al*, 2019²⁴). This figure differed from the 2019 eThekwini Annual Report which cited 425 gardens (2019; Dayal, 2021: p.21) and an interview with an official for this study noting 426 gardens (eThek16).

An early initiative of the Agroecology Unit was an urban agricultural project is the Newlands Mashu Hub, emanating in 2010 from a partnership between the Water and Sanitation Unit (EWS) of the Municipality and the pollution Research Group (PRG) at the University of KwaZulu-Natal. The project was set up to undertake integrated research on sanitation, decentralised wastewater treatment, nutrient recovery and recycling, serving as a bio-intensive vegetable production site, promoting household food security and developing solutions for closed-loop systems for the use of sanitised waste streams, such as wastewater, faeces and urine, for agricultural use (EAWAG, no date²⁵). A recent paper indicates that despite the intention to assess these various waste products from on-site sanitation systems through agricultural trials, to date these solutions have not been widely adopted (Bisaga *et al*, 2019).

Box 2: Aquaculture

The eThekwini Municipality is currently involved in the roll out of food gardens into the rural areas of eThekwini. Linked to this is the provision of fish, specifically Mozambique tilapia, as an additional food source. The concept is that all the food gardens need water to be stored for use, and if fish can be grown in this water, there is the added benefit of protein, in the form of fish, available to the rural community. Polyculture is the practice of culturing more than one species of aquatic organism in the same pond. The motivating principle is that fish production in ponds may be maximised by raising a combination of species having different food habits. The mixture of fish gives better utilization of available natural food produced in a pond.

Source: IDP Review, 2022, p.519.

“It is, however, questionable whether aquaculture fits the definition of agroecology, since it is not a community-based practice; aqua-culturists are mostly in charge of the system due to its technicality.”

Source: Dayal, 2021, p.37.

“Aquaponics is a mixture of aquaculture and agriculture where the fishways serve as a fertiliser for the plants and the plants in turn provide clean water for the fish. We’ve got that and we do training to the school kids.”

Source: Key Informant Interview (eThek16)

3.1.1 Early Endeavours – the Rainman Landcare Foundation

An important early initiative that seeded agroecology in eThekwini and provided the basis for much of the future work at the Agroecology Hubs and the Participatory Guarantee System (PGS) nationally was that of the Rainman Landcare Foundation. This was set up in 1994 in parallel with the Water

²⁴ Bisaga, I Parikh, P and Loggia, C (2019) Challenges and Opportunities for Sustainable Urban Farming in South African Low-Income Settlements: A Case Study in Durban, Sustainability 2019, 11, 5660; doi:10.3390/su11205660 www.mdpi.com/journal/sustainability

²⁵ EAWAG (n/d). The Newlands Mashu Research Site. Available online: https://www.eawag.ch/fileadmin/Domain1/Abteilungen/eng/projekte/vuna/doc/Newlands_Brochure.pdf

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, p.184²⁶). 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).

The Rainman Rainwater Harvesting System helped the community gardens and the school gardens to catch rainfall runoff using swales, compost and mulch (Auerbach, 2009, p.43²⁷). These approaches were still widely used at the Newlands Mashu hub when the Agroecology unit was founded. Rainman pioneered PGS in South Africa at Umthombongashi in Cliffdale: “Rainman Landcare Foundation was asked by local emerging small farmer co-operatives west of Durban to help form a PGS, also in 2006, in order to give the co-ops experience of quality controlled organic production while they are building their quality management capacity” (Katto-Andrighetto & Auerbach, 2009, p.50²⁸).

3.1.2 Challenges facing the Agroecology Unit

All members of the team who were part of the original Agroecology Unit in 2010 had left the unit and moved to NGOs, the eThekweni Parks Department, or retired (eTheko5). This was partly due to a difference in approach and understanding about the role of the Unit, which was exacerbated when engineering officials took over the Agroecology Unit which led to an overly technical or “scientific way of thinking” as opposed to an emphasis on building a movement and sustainable management of resources through stakeholder participation (eTheko5). This was by the municipality’s emphasis on income generation (Dayal, 2021²⁹). An example of this approach is that of the urban agricultural project is the Newlands Mashu Hub with PRG and EWS (see above).

This difference in approach is still playing out as shown in the results of a recent postgraduate study which shows that there is a struggle between those managing the project and those executing the agroecological principles (Dayal, 2021). For example, although horticulturists assist with starting community gardens and land preparation based on agroecological practices, the focus is not on sustaining project by assisting farmers to sell their produce and connecting them with consumers, due to Agribusiness overseeing this aspect (Dayal, 2021). The concept of agroecology largely used within the unit pivoted on horticulturalists view of soil: double digging, soil improvements, multiple crops, dense planting, implementation of swales, finding other biomass to supplement the soil health, and to increase microorganisms in the environment (Dayal, 2021). Yet the ongoing capacity to drive such initiatives has been questioned: there is a lack of support for a long-term relationship with the farmers.

“Agroecology, permaculture, regenerative agriculture are disciplines that required an investment of time and effort on behalf of the existing crop of horticulturists but there was absolutely no desire or

²⁶ Auerbach, RMB (1999) “Design for participation in ecologically sound management of South Africa’s Mlazi River catchment”, PhD thesis, Wageningen University, Netherlands.

²⁷ Auerbach, RMB (2009) “Food Production, Biodiversity and Water Use in South Africa: Benefits Of Organic Production Systems”, Ecology & Farming, No. 45, August 2009.

²⁸ Katto-Andrighetto, J and Auerbach, RMB (2009) “Participatory Guarantee Systems in Africa: Farmers’ empowerment and local market development”, Ecology & Farming, No. 45, August 2009.

²⁹ Dayal, P (2021) “Exploring the eThekweni Municipality’s Agroecology Unit: Drivers, agroecological principles, benefits, and challenges”, Honours Thesis, Department of Environmental and Geographical Science, Faculty of Humanities, University of Cape Town, October.

motivation to acquire this vital knowledge to assist them in making a meaningful contribution to the rollout of sustainable projects. The fact that there was and still is no level of monitoring due to the lack of competent managers exacerbated the problems” (key informant cited in Dayal, 2021: p. 21).

Apart from necessary training or capacity strengthening, other constraints included shortages of funding, resources (tools, implements), and staff, the latter been a point emphasised a number of horticulturalists interviewed during a postgraduate study (Dayal, 2021). As one remarked, “...we are busy with 425 gardens on hold because we can't do a whole lot of gardens at one time, because we need budgets. They would get fencing for their gardens, infrastructure in terms of containment, irrigation, and JoJo tanks. We also train them before we start with anything, especially propagation of their own seed” (key informant cited in Dayal, 2021: p.21). The ability to mobilise funds quickly in response to needs on the ground and insufficient equipment in particular vehicles were also 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 does still concern itself with financial sustainability. A key informant noted that few farmers, possibly “20% out of the 426”, are able to connect to market partly because of oversupply issues (eThek16). “This is mainly because of it being cabbage season, then everybody else is producing cabbage. You can imagine, if you’ve got 426 gardens, some of them having 1 hectare and everybody’s purchasing cabbage, chances of them not getting the market are very high” (eThek16).

Alignment between the Agroecology Unit and provincial government has also been a challenge. On a site visit to the Inchanga Hub, it was noted that “The reminisce of conventional inputs scattered around the farms was something to note, blue death being the most prominent bottle that we saw lying on the surrounds of the farms” (Purkis and Moody, 2021³⁰). This reflected a lack of collaboration between provincial authorities and that of the Agroecology unit on farms supported by different government entities. An official from the Agroecology Unit noted the danger of provincial extension officers promoting and distributing synthetic pesticides and fertilizer and how these efforts undermine the Unit’s agenda (eThek03).

3.2 Agroecological initiatives – Woza Nami

The Woza Nami (‘come with me’) project focuses on strengthening healthy food production and nutrition awareness through the scaling of vegetable farming in peri-urban settlements based on agroecological practice. The vegetables are farmed in harmony with the natural environment, including the economic use of water and enrichment of the soil without chemical fertilisers or pesticides. 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 step by step. 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.

³⁰ Purkis, M and Moody, D (2021) Woza Nami – Inchanga Report, unpublished reflections from the PGSSA and SAOSO site visit to the Woza Nami project.

Woza Nami is funded by the WWF Nedbank Bank Green Trust and the DG Murray Trust (DGMT) and facilitated by the Southern Africa Food Lab (Food Lab) in partnership with eThekweni Municipality, specifically the Agroecology Unit³¹. 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.

Inchanga is situated in the Outer West, a large peri-urban settlement between Durban and Pietermaritzburg. The Inchanga Hub was selected because it was functioning fairly well in the sense that it has municipal agricultural extension officers who support the farmers in the area, is close to the office of the KwaZulu-Natal Department of Agriculture and close to a clinic, which is important as the project is jointly about healthy food production and nutrition (eThek01). The clinic (Fredville) is run by the KwaZulu-Natal Department of Health. In terms of nutrition, the diet in most financially stressed households is high in starch, mainly pap (thick maize porridge), with little fruit and vegetables.

The project provides direct support in terms of agroecology training, both 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 various extension officers based at the hub and the head of eThekweni 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).

The project focuses on the 35 farmers to elevate their vegetable production in order to be able to sell their produce directly to residents in their community; currently the farmers are mainly producing for their own consumption. The farmers, predominantly women, comprise two groups:

- Fifteen are part of cooperatives, with between five and ten farmers doing intensive vegetable farming on half to one hectare. All types of vegetables are grown, including wild crops like *amadumbe* and bambara groundnuts³², which are part of traditional diets in KwaZulu-Natal, as well as maize, carrots, spinach, onions, pumpkins, green peppers and lettuce.
- Twenty are “One Home One Garden” farmers – these are backyard vegetable gardens that supplement the household diet with vegetables especially leafy greens.

As reflected after a site visit, the challenge with household gardens are the sustainable access of inputs and distribution of seeds and seedlings required to maintain a level of productivity within the network of farmers (Purkis and Moody, 2021). This access requires a complex distribution system that ultimately needs to be localised between the farmers and household gardeners, developing sustainable access and ownership of inputs. This requires capacity development in the form of on-site seed saving systems and soil fertility training. The household gardens have focused on easier crops namely the leafy greens while the community farms had slightly more diversity and volumes of produce coming off the farms. All the Inchanga farmers sell their produce at schools and community facilities and to bakkie vendors and informal traders (eThek10).

The production cycles of the project have followed a similar trajectory as to most government supported projects (Purkis and Moody, 2021). This has meant that there has been a glut of certain varieties, namely Cabbage, Kale, Spinach and Onions (seasonally dependent). This generally happens due to the distribution and varieties of seed and seedlings distributed by government extension

³¹ <https://www.southernafricafoodlab.org/woza-nami/>

³² <https://www.arc.agric.za/arc-vopi/Pages/Plant%20Breeding/Bambara-groundnut.aspx>

services as well as the consumption patterns of people within the communities. To create diversity on farms and gardens, a dual approach is required working with the farmers to diversify on farm production and with the communities to consume other diverse varieties. It becomes important to link these two challenges into a production plan and consumer awareness around nutrient dense produce.

Thus, a key goal of Woza Nami is to grow the farmers' markets so that they can 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. A number of local informal traders interviewed indicated that they would welcome the local supply of fresh produce, indicating that this would decrease the cost that consumers would have to pay and increase their own potential to expand (eThek12). They also indicated that agroecology produce would have an appeal to Inchanga consumers particularly if this was 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 (see below). Research participants were thanked with vouchers that they used with Inchanga farmers selling their produce (eThek08).

Reflecting on the importance of this, a project lead reflected on Pietermaritzburg Economic Justice & Dignity Group figures reflecting that the average household food basket in South Africa increased by R354.22 or 8.9% (February 2022 year on year) and food prices continue to rise (eThek01). Emphasising this, two other statistics stand out: the food poverty line is situated at R624.00 per month and the child support grant is R460.00 per month. Every year the poverty indices get worse and it is clear how vulnerable food systems are (eThek01).

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 focused on gaining insight into the intake of vegetables, fruits and legumes, including opportunities and barriers to these. Knowledge, perceptions and use of indigenous and traditional plants (ITPs) including African leafy vegetables (ALV), Swiss chard, *amadumbe*, green leafy amaranth, and bambara groundnuts amongst others. The study is undertaken by Stellenbosch University's Nutrition Division in partnership with the Medical Research Council and local nutritionists and is built around key informant interviews and focus group discussions. The questionnaire focuses on people's habits regarding eating vegetables and fruit and the barriers to access (eThek08). A nutrition literacy questionnaire investigates how people rate nutrition in importance and how much time they spend planning around nutrition.

The intention is to inform a strategy to promote agroecologically grown fresh produce within neighbouring communities and for potential inclusion of micronutrient rich ALVs 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 process is to encourage people to increase their consumption of highly nutritious wild crops and vegetables. Thus, part of the Woza Nami project is to investigate 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 Seeds³³, an internet-based supplier of heirloom seed, to ensure inputs are appropriate for

³³ <http://www.organicseed.co.za/content/4-who-we-are>

agroecological practice. Other organisations are Umgibe, Biowatch and Participatory Guarantee System (PGS) South Africa (see below).

3.2.1 Umgibe Farming Organics and Training Institute

Umgibe promotes the idea of a sustainable local food system through the cost-effective and environmentally friendly Umgibe growing system, which is a scalable business model³⁴. Local farmer co-operatives receive access to the system, and Umgibe offers a platform that enhances farmers' market access, boosting local income generation. The enterprise delivers organic products to local communities at a reasonable price, while at the same time protecting the environment. Additionally, the provision of capacity building helps farmers to produce and sell more. The system has been sold to over 50 cooperatives, whilst Umgibe provides technical advice and support to these cooperatives, collects and delivers their produce to various buyers and markets in return for only a transport fee and offers training in organic farming, crop production and food processing (eThek17).

Umgibe has been active in eThekweni training community members in organic farming, crop production and food processing. The approach minimises physical work related to farming, which benefits youth, elderly and women. A key innovation is the diversion of more than 10,000 plastic bags from landfills by utilising them as growing bags. The system was pioneered on land given by eThekweni municipality, which although earmarked as an agricultural sit, 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 eThekweni (eThek17).

Although Umgibe has not been an active partner on Woza Nami, it has supplied seedlings to the farmers through a procurement arrangement.

3.2.2 Biowatch

Biowatch, a local environmental justice NGO established in 1999, was commissioned using Green Trust funds awarded to the Seriti Institute³⁵ and the Food Lab 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). This can be as simple as "holding back one pumpkin, for example, to save the seeds for the next crop" (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"³⁶. Based in eThekweni, 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.

Apart from advocacy and research, Biowatch works with smallholder farmers (mainly women) in five communities in northern KwaZulu-Natal towards developing a sustainable agroecological practice: household food security has increased; traditional seed varieties have been reintroduced and are increasingly being taken up by local communities; and land, water and other natural resources are cared for. Seed is a fundamental part of Biowatch's work with smallholder farmers, which seeks to revive diverse traditional crops and varieties and promote household seed banks. These practical

³⁴ <https://umgibe.org/our-world/umgibe-system>

³⁵ <https://seriti.org.za>

³⁶ <https://biowatch.org.za/about>

experiences were shared with the Inchanga farmers including farmer-led seed systems, which can strengthen communities and offer diversity and resilience in uncertain times, demonstrating that seed cannot be reduced to a commodity but is embedded in social and cultural systems (Greenberg et al, 2021³⁷).

3.2.3 Flood Impact on Woza Nami

By March 2022, the project has reached an advanced stage with farmers having sufficient crops to sell at local markets with three market days already concluded, especially focussing on participants of the nutrition quantitative surveys. However, between 8 and 12 April 2022, the province experienced torrential rains (between 200mm and 304mm) leading to floods, loss of life, damage to houses and infrastructure. During these floods, the Woza Nami farmers lost not only their production and homes, but in some cases, members of their households.

An assessment with the farmers conducted by the Food Lab concluded that farming operations would need to be totally re-built³⁸. On reflection, the farmers argued that if they had moved further along towards full agroecological practice the flood impacts would have been much less. This was based on arguments around following the Biowatch and PGS training particularly around diverse growing practices including interspersed fruit and other trees, building raised planting beds (trenching³⁹), and establishing storm damage mitigation and prevention areas particularly with vetiver grass⁴⁰, a sterile and non-invasive alien that can only be propagated by plant division.

The re-building process provides an opportunity to transition quicker to agroecological practices and in a manner that would be more resilient to such impacts in the future (eThek01 – follow up). The Food Lab appealed for relief funding including for labour costs to support the establishment of trench gardens, planting vetiver grass, procuring seedlings and fruit trees, and restocking chickens and chicken feed. This was granted support by Misereor, the German Catholic Bishops' Organisation for Development Cooperation⁴¹, and funding proposals were likely to be supported by the Green Trust and DGMT. The project secured the support of the local municipality for the provision of garden tools, indigenous non-fruit trees and transporting procured goods to the farmers.

3.3 Agroecological initiatives – PGS Pollinators Programme

The PGS Pollinator Programme is active in eThekweni and is affiliated to PGS South Africa⁴², a national network established in 2011 to assist with local market access for organic and

³⁷ Greenberg, S., Pelser, D. and Ranqhai T. 2021. Farmer-led Seed Systems. Securing food sovereignty in the face of looming ecological and social crises. *Biowatch Briefing*. Biowatch South Africa: Durban.

³⁸ This assessment took the form of site visits and focus group discussions with the farmers.

³⁹ Trenching has a long history in the Inchanga area linking back to the work of Robert Mazibuko (Africa Tree Centre) and Halley Stott (Valley Trust) with key personalities such as Raymond Auerbach, Baldwin Mbutso, and Ferdi Engel (eThek18). The Valley Trust focuses on deep trench vegetable farming, combined with nutrition education. Halley Stott's vision was "the mothers come here, their kids have got kwashiorkor, we teach them three things. We teach them the basics of hygiene, but we teach them nutrition and we teach the veggie gardening. By the time they go home, they should be able to grow their own veggies and know something about a balanced diet." (eThek18).

Another key institution in the Inchanga area was the Nansindlela Research and Development Farm which was an open-air laboratory for teaching and demonstration that people could farm more productively but at the same time conserve and protect the land (eThek18).

⁴⁰ <https://www.farmersweekly.co.za/agri-technology/useful-products/vetiver-grass/>

⁴¹ <https://www.misereor.org>

⁴² <https://www.pgssa.org.za/>

agroecological farmers, supported by the South African Organic Sector Organisation (SAOSO)⁴³ PGS Pollinators' Programme. SAOSO has created a regional Standard for Organic Production and Processing (SAOSO, 2020) that is a part of the IFOAM Organics International Family of Standards in the lack of a government-approved organic standard. The guiding concepts of the standards and agroecological principles strongly concur⁴⁴.

PGS is a system for second-party certification of organic products that offers regionally oriented organic quality assurance and accredits farmers based on their active participation. In essence, several local actors (farmers, customers, retailers, and other actors in the local system) periodically visit farms to check on compliance and offer help. The foundation of the system is social networks and trust. It is a more affordable and accessible system of quality assurance, with a focus on smallholder farmers and regional markets in South Africa. Farmers or groups of farmers may attach a logo to their product designating PGS compliance on the grounds that it complies with SAOSO criteria. Although it might take some time to increase retailer and consumer awareness of and acceptance for higher rates, this could potentially offer a premium in the market.

In terms of challenges facing farmers intent on transitioning towards agroecological practices, access to resources, especially organic resources, are a major challenge (eThek02). Urban centres such as Cape Town and Durban, and to a smaller extent Joburg, where there is an organic sector, it is easier to access organic seed, good fertiliser, good knowledge, and information. However, the knowledge about agroecology may be lacking or have been eroded over time. Traditional and indigenous knowledges may be in place in areas such as *Ingonyama* Trust lands, but over generations that knowledge has been eroded including practices of saving seed, heirloom seed, and open pollinated varieties (eThek02). This reiterates the importance of processes such as PGS and non-governmental organisations such as Biowatch which promote farmer-led seed systems; systems of seed development, saving and replanting, primarily led by farmers.

The PGS programme supports people called pollinators who are mandated in their communities to push the organic narrative, work with farmers, and to develop PGS groups who essentially work together to develop skills and certify each other. Part of their work is to engage with government, usually at the local level, especially local economic development offices to try and leverage support from government with the idea that government should really be supporting organic. 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.

Participatory methods of dialogue, research, experimentation and learning are defining features of agroecological practice – and the Participatory Guarantee System (PGS) has been introduced to the Inchange farmers through Woza Nami. This aligned well to the transitional nature of the Woza Nami farmers as “It is targeted at “farmers who are interested in either scaling up production for market or looking to convert from a mixed method of farming, like some aspects conventional, some organic... to the point where you can take organic produce to market” (eThek02).

⁴³ <https://www.saoso.org/>

⁴⁴ They include on-farm wildlife refuge habitats, soil and water conservation, precautionary principle with regard to 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 amongst others.

3.3.1 PGS Partnership with Woza Nami

A partnership with the PGS Pollinator Programme, funded by the Green Trust through Seriti, was established with Woza Nami to build community support structures to sustain the initiative around Inchanga. Arguably, PGS would provide the Agroecology Unit 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, the intention of this partnership is to integrate the Inchanga farmers into the PGS Pollinator Programme and through a five-month period of training, beginning in April 2022, ensure continuity in the province and linking 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).

Monthly training sessions held over two days over five months have been conducted based on a condensed version of the “organic farmer journey”, which the South African organic sector has developed as the preferred approach to empowering small-scale farmers to benefit from adopting ecological organic agricultural practices (EOA). The primary intended outcome is to empower farmers and officials with a solid foundation on EOA and create a cohesive group of farmers that will eventually become ready to sell surplus for market. The trained officials, linked to the Inchanga Hub, will be better placed to create an enabling environment for the uptake of EOA in the hub. Training includes aspects of soil fertility and organic pest management, permaculture design, setting up cohesive farmer-led structures, Introduction to PGS and ultimately consolidating production and group organisation.

In a related project funded by GIZ, the Food Lab is undertaking LocalGAP⁴⁵ and Primary Farm assurance (PFA) training with farmers across eThekwini with the intention of these farmers selling into the formal sector (specifically targeting retailers such as Spar). As part of this process, key elements of food safety have been extracted and ported into the PGS framework as part of training with the Woza Nami farmers.

4. Government programmes

The eThekwini Municipality has identified Agriculture as a key primary sector in industry that can play a vital role in “radical socio-economic transformation and development within local communities” (eThekwini Municipality, 2019⁴⁶).

The Farmer Eco-Enterprise Development Programme (FEED) is a model intended “to transform the agricultural value chain in the eThekwini region” (IDP, 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 (IDP Review, 2022). A striking statement in the 2022 IDP argues that “food heritage plays a vital role in the empowerment of our people and is an important part of our multi-cultural society. Agroecology and food sovereignty speak to the cultivating and the growing of food and is the first form of human expression in society. ... *the concept of food sovereignty is clearly focused primarily on small-scale agriculture (including livestock, forestry and fisheries) of a non-industrial nature, preferably organic, mainly using the concept of agro-ecology...* (2022, p.608). The uniqueness of the urban-rural geography of eThekwini highlights

⁴⁵ <https://globalgapsolutions.org/products/localgap/>

⁴⁶ eThekwini Municipality Annual Report - 2018-2019 (2019), Online Access: <https://municipalities.co.za/resources/5/ethekwini-metropolitan-municipality>

the relationship between people and the soil and that growing food is as important as other forms of human heritage and the right to a healthy environment.

Building on this, the vision of the agricultural programme, as stated in the 2022 IDP, is food sovereignty for all eThekweni residents and the development of a thriving urban and rural agriculture sector that significantly contributes to:

- The health and wellbeing of eThekweni residents
- Small-grower farmer driven agriculture
- Local economic skills development and rural regeneration.
- Environmental sustainability.
- Climate change mitigation and resilience (p.609).

As such, it has initiated a number of programmes to assist in the alleviation of food insecurity. These include the creation of dedicated structures to drive agriculture, aqua and poultry farming; soya bean project, community support farms; community gardens, mushroom vs. hydroponics project, One Home One Garden project, amongst others (IDP Review, 2022). The Agricultural Department supports 85 established community gardens in terms of the provision of technical information, implements and seeds. The Department is responsible for providing support to communities in terms of organic fertiliser and compost, provision of fencing, storage containers, toilets and water provision as well as the farming tools. It also provides up to ten fruit trees per community garden.

In terms of urban and peri-urban agriculture, the Municipality has the Agroecology programme in place which complements other municipal policies which focus on poverty and unemployment (IDP Review, 2022). The programme aims at promoting appropriate and sustainable approaches to the way in which agriculture is planned and implemented (see above).

There are a number of national and provincial programmes through different departments, which have a bearing on eThekweni. These include RASET mentioned above. A key challenge here is that most provincial strategies focused on smallholder production is conventional in approach, which runs contrary to agroecological practices. For example, the extension department situated in a district office in Umbumbulu in eThekweni often promotes maize varieties that are likely to be genetically modified and often if vegetables are being promoted it is probably some kind of hybrid seed, which cannot be saved and will be inconsistent over time (eThek02). Conventional approaches are encouraged by provincial extension officers including spraying with insecticide and chemical fertilisers.

It is important to note that the eThekweni Agribusiness Master Plan sets out how it is aligned to these strategies and policies (eThekweni Municipality, 2020). This subsequently formed a part of the eThekweni Integrated Development Plan (IDP) through its adoption by the eThekweni Council (IDP Review, 2022). Although not made explicit, there is a 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 eThekweni Metro within the ambit of national and provincial development strategies emphasising commodity based agricultural development, commercialisation and implicitly conventional approaches.

According to both the Agribusiness Master Plan and the 2022 IDP, for the agricultural sector to be commercial in eThekweni it would have to be commodity focused, promote access to markets, promote and invest for agricultural development (agro-processing) and create strategic partnership with industry bodies for skills transfer (IDP Review, 2022: p. 466). This makes it clear that the emphasis on agroecology is largely “welfare” in orientation and left to the Agroecology Unit as opposed to the Agribusiness Unit. A key informant clarified the relationship between the two units:

“For those that are able to function on their own financial basis, then we (Agroecology Unit) transfer them to our sister department, which is agribusiness that focuses more on the SMMEs and they connect them to the market, the Clairwood Market, which is in Durban” (eThek16).

Although small, the District Health service available in eThekweni is jointly provided by the Provincial Department of Health and the municipality, with former contributing 60% and the latter 40% (KZN Health, 2022⁴⁷). The Provincial Primary Health Care service in the Metro has a number of services, which need to be integrated within the context of the overall city plan. Food security is a small programme that falls under social health alongside the clinical department and environmental health (eThek06). This programme emanates from concerns of HIV and TB treatment adherence when people often default when there is not enough food available within their households. Moving from food parcels, which have been criticised for being politicised, the programme has partnered with the Agroecology unit to support gardens at households and at Early Childhood Development Centres (ECDs) (eThek06).

Box 3: Sihlanzimvelo Stream Cleaning Project

The Sihlanzimvelo Stream Cleaning Project in the Umlazi area provides a model of establishing and sustaining co-operatives to foster community involvement in environmental initiatives. This has implications for the Agroecology Unit. Three assessors are employed for monitoring and supporting 22 co-operatives maintaining a total of 110 km of streams in the Umlazi area and four assessors monitoring and supporting 37 co-operatives maintaining a total of 185 km of streams in the Inanda, Ntuzuma and KwaMashu area. With 59 co-operative contracts with the eThekweni Municipality active, the project has employed 472 workers, many of them youth, and has focused on activities such as removal of alien plants, solid waste management, water quality improvement, indigenous vegetation planning for stabilising riverine zones, increase resilience to climate change and capacity building in communities to better understand the value of natural infrastructure and the need to maintain it.

Source: Bisaga *et al*, 2019

“The city of Durban contracts cooperatives to look after the 5kms stretches of stream and they do a number of tasks that are related to service delivery in the city so it saves the city money, provides employment for community members and improves the environment. This could be a model for African Development going forward.” Sean O’Donoghue, eThekweni Municipality Senior Manager for Climate Protection.

Source: <https://gagasiworld.co.za/ethekweni-launches-sihlanzimvelo-project/>

Another example of an adjacent municipal programme is that of ecological restoration, one of the branches in 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. The participants have been encouraged to also grow fruit trees and other vegetables through training in permaculture (eThek07). Building a resilient city involves “encouraging a lot of urban agriculture, including agroecology...[establishing] good topsoil, pollinators and a good water table to help our farmers. All of those things help to adapt, help society to adapt in a way that we can survive or be more resilient to the threats of climate change” (eThek07). However, a major limitation is the reach of the

⁴⁷ <http://www.kznhealth.gov.za/ethekweni.htm>

Agroecology unit and insufficient demonstration sites where “no-till and agroecology practices” are accessible (eThek07).

D'MOSS is mapped by the Biodiversity Planning Branch of the Environmental Planning and Climate Protection Department (EPCPD) in consultation with relevant experts. It provides a unique opportunity to conserve many of the threatened ecosystems and species in the eThekweni Municipal Area and will assist the province and the country in meeting biodiversity conservation targets. The EPCPD, included in the Development Planning, Environment and Management Unit, coordinates D'MOSS and further strengthens it with other proactive initiatives (e.g. strategic spatial planning, land acquisition, a drive for 'green jobs', etc.). D'MOSS has contributed to the attainment of provincial and national biodiversity conservation targets and provides a range of services to residents, including the formation of soil, erosion control, water supply and regulation, climate regulation, cultural and recreational opportunities, raw materials for craft and building, food production, pollination, nutrient cycling and waste treatment.

In 2004, eThekweni launched the Municipal Climate Protection Programme (MCP) which is responsible for monitoring and responding to climate change challenges within the municipality with a major focus of the programme is to develop strategies to assist people to adapt to climate change. The programme incorporates a number of activities designed to assist urban farmers including community-led installation of barrels and gutters to collect rainwater; training in composting and permaculture techniques; and construction of roof gardens (Knegtel & Naidoo, 2014)⁴⁸. The Durban Climate Change Strategy details the projected climate changes for eThekweni, especially increases in temperature and severe weather events, which are predicted to threaten urban food security (eThekweni Municipality, 2014⁴⁹). In response to these projections, the strategy promotes the development of a robust and resilient food security system that promotes sustainable local farming in order to increase regional food production and availability. A key response to achieve this is to establish local food production systems that are able to withstand future climate threats and provide for the poor. The promotion of ecological and sustainable farming practices is an overarching approach to protecting local food production against climate change impacts.

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 in order 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 in order to reduce human risk, as well as being responsive to the challenges posed by climate change (2017, p. 42). This relates directly to the importance of agroecology both in terms of sustained livelihoods and the protection of the ecological basis.

5. Main lessons and way forward

Governing urban food systems toward agroecological transition requires engagement with state governance mechanisms and rationalities (Kroll, 2021⁵⁰). 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

⁴⁸ Knegt, J and Naidoo, S (2014) Climate-smart urban agriculture in eThekweni, Quest, 10: 4, accessed at <https://journals.co.za/doi/pdf/10.10520/EJC164367>

⁴⁹ eThekweni Municipality (2014) Durban Climate Change Strategy, Environmental Planning and Climate Protection Department, <https://www.globalcovenantofmayors.org/wp-content/uploads/2015/06/Durban-Action-Plan.pdf>

⁵⁰ Kroll, F. (2021). Agroecology and the metropolitan biopolitics of food in Cape Town and Johannesburg. *Urban Agriculture & Regional Food Systems*, 6, e20010. <https://doi.org/10.1002/uar2.20010>

posing major hurdles to transition. A compelling alternative narrative must emerge to transcend these challenges, the basis of which already exists in eThekweni through the efforts of the Agroecology Unit and initiatives such as PGS-Sa and Woza Nami. This, however, requires persistent strategic engagement between officials and allies working with agroecology.

5.1 Building coalitions of support

For projects such as Woza Nami and the initiatives of the Agroecology Unit to be successful and sustainable, it is essential that there is an alliance between local government, local farmers, local consumers and local non-government organisations. There needs to be a shift in discourse from "filtering down" to local government level as the implementers, but rather towards co-development of policy and programming, as per the conversations within Woza Nami and echoed by the emerging Urban Food Coalition and FAO/GAIN Urban Food Systems Working Group⁵¹. This is in contrast to top-down authorisation through policy and directive with inadequate budgetary and other support.

This also raises the importance of placing agroecological principles and practices at the core of discussions around the better integration of 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 based at the hubs and the “middle layers” of the state where commitment to increasing budgetary and staff support remain ambiguous at best. Without adequate resources, building coalitions of support is essential whilst stronger, more focused advocacy for such resources from the state intensifies.

Woza Nami reflects a partnership that has enabled the “aligning” of resources and support, in particular from organisations like Biowatch and PGS-SA for strategic advice and project development strategies. These are all required over a sustained period of time to enable the project to reach fruition. This should be taken further and include the Provincial Department of Agriculture, in particular local extension officers, to consider the potential damage imposed by conventional inputs to agroecological transitions.

The methodologies employed by Biowatch, PGS and Food Lab promote genuine participatory engagement with a range of stakeholders and actively facilitate the development of more innovative responses that are informed by appropriate knowledge and implemented through new partnerships. This has opened opportunities for the local officials working at the level of 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.

Traditional authorities are a key constituency that can do much to support agroecology. The City’s Resilience Strategy argues that 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. The loss of land previously designated for agricultural and grazing uses poses a serious risk to the densification of settlement in Ingonyama trust areas and may result in food insecurity in traditional communities. As such, the Resilience Strategy identifies securing institutional support for the process of integrating planning between municipal and traditional governance systems as key for resilience building.

⁵¹ <https://www.gainhealth.org/events/addressing-nutrition-and-environmental-challenges-role-urban-and-territorial-governance>

5.2 Strengthening intersectoral collaboration

It is clear that the departments dealing with food security and agroecology are understaffed and must deal with political unpredictability and resource constraints. As evident within the IDP and Agribusiness Master Plan, officials are required to pursue diverse portfolios and conflicting goals. As revealed by overlapping yet contrasting approaches (conventional agriculture versus agroecology), there are tensions between province and metropolitan which constrain multiple-level governance. It may be opportune to draw in provincial extension officers into PGS training, as suggested above.

Yet it must be recognised that officials in the Agroecology Unit and in other departments such as Health are supportive of agroecological transitions. The emerging networks formed through Woza Nami and other initiatives such as PGS-SA offer chances for collaboration, cross-sectoral coherence, and assimilation of agroecological values.

Part of the coalition building should involve breaking the silo's between government sectors and units and finding areas of mutual support. On a Woza Nami learning journey, participants reflected that the "collaboration amongst the various municipal departments was an impressive observation" with "representatives from Health, Agroecology, Community Participation and Health (Food Security) demonstrating the cross-cutting nature of agroecological farming" (Purkis and Moody, 2021).

The potential for collaboration is significant with, for example, the representative from Community Participation noting how there are a number of soup kitchens throughout the municipality which can be linked to farms and farmers in the hub. Similar observation can be made with the Department of Health and Basic Education in which schools serving lower-income communities (Quintile 1 and 2) are mandated to run feeding programmes for learners. In sum, there is great potential to link projects across the municipality and beyond to developing shorter and more profitable value chains. This aligns to a "place-based" agenda.

5.3 Pursuing a Place-Based Agenda

A place-based agenda would create opportunities for linking a variety of actors across local food systems, supporting farmers and flows of nutritious foods. Differing to a localisation approach, it recognises the potential role of local government and local actors to guide place-based food systems towards goals of economic inclusion, environmental sustainability and food and nutrition security. This serves two purposes: (1) It heals, in part, the metabolic rift associated with industrial forms of production and globalised consumption patterns and (2) it re-scales and restructures agricultural production in ways that are beneficial to smallholder livelihoods.

In an ideal world, "you would have a municipality who can coordinate that, who essentially teams up with selected farmers in the municipality and uses opportunities to coordinate the different departments" (eThek02). The problem with bureaucracy is that they don't tend to coordinate too well (eThek02). A place-based approach seeks to enable groups of actors, faced with a common collective concern, to find ways of acting together with their different, often competing, interests. This resonates with the approach adopted within Woza Nami.

Similarly, it resonates with the objectives of PGS-SA. These efforts have served to localise not only the production of food, but also the localisation of knowledge production systems. Approaches such as PGS can actively seek to draw upon farmers localised experiences and experiments to inform practices and innovations elsewhere.

5.4 Fostering experimentation and learning

One of the most notable mechanisms through which the capabilities of local knowledges have been tapped has occurred through various farmer-to-farmer (*campesino a campesino*) initiatives that have emerged in the past decades (Machado, 2022⁵²). This in effect is the approach of Biowatch and PGS-SA. However, this will require a mindset change within a government-led programme as it requires an approach which elevates experimentation and innovation as the core mechanisms through which socio-ecological 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, however, the overarching policy framework provided by the municipality has an important role in fostering such spaces for exchange and providing technical support in the form of extension agents, research facilities and other inputs.

This echoes an observation made a decade prior in eThekweni. Experience at the Rainman Landcare Foundation demonstrated that where technological innovations that reduce the risk of crop failure are combined with local capacity development and improved market linkages, smallholder farmers are more willing and able to take risks, and hence, production increases (Auerbach, 2009, p.44).

5.5 Aligning policy and strategy

There is a significant opportunity in forging a stronger partnership between the Agroecology Unit and the Environmental Planning and Climate Protection Department – particularly in light of the recent floods. The Climate Change policy has a bearing on this. In light of the effects of global environmental change, it is crucial to preserve healthy ecosystems in order to meet the health, social, cultural, and economic demands of urban and peri-urban denizens. The ecosystem services that eThekweni's natural areas provide have some of the most important chances for infrastructure and local residents to be buffered against the adverse effects of climate change. As an immediate example, the reforestation programme run by EPCPD could emphasise indigenous fruit bearing trees (such as *Carissa macrocarpa* or num-num⁵³) as these can have multiple purposes of making a barrier for the roaming cattle, providing fruit and protecting run-off.

Similarly, the Resilience Strategy guides eThekweni in how to build urban resilience in the face of a future where slow onset issues (such as environmental degradation) and acute shocks/stresses (such as flooding) are likely to become more prevalent. Placing agroecology at the core of the Resilience Strategy is an opportunity as it enables an increased understanding of the relationship between urban biodiversity and human health and well-being, but also requires that this knowledge be quickly translated into urban planning, management, policymaking, and governance. Linking agroecological farming techniques and natural resource conservation as part of building resilience for people across the municipality helps ensure they sustain their livelihoods and the environment around them.

Indeed, the Inchanga hub and Woza Nami more broadly can be argued to represent an example of “endogenous, locally situated processes, knowledges and norms” (Ziervogel et al, 2017⁵⁴), that the Resilience Strategy suggests needs to be adopted in the South African and Durban context. to build

⁵² Machado, MR (2022) Smallholder farming for sustainable development: lessons on public policy from the Cuban agroecological transition, The Journal of Peasant Studies, DOI: [10.1080/03066150.2022.2072214](https://doi.org/10.1080/03066150.2022.2072214)

⁵³ <http://pza.sanbi.org/carissa-macrocarpa>

⁵⁴ Ziervogel, G., Pelling, M., Cartwright, A., Chu, E., Teshpande, D., Harris, L., Hyams, K., Kaunda, J., Klaus, B., Michael, K., Pasquini, L., Pharoah, R., Rodina, L., Scott, D. and Zwe, P. (2017). Inserting rights and justice into urban resilience: a focus on everyday risk, Environment and Urbanisation, 29(1): 1-16.

resilience for transformation (Roberts *et al*, 2017, p.16). The rapid growth of eThekweni's urban areas is placing pressure on land, energy and water resources; on housing, water and sanitation services; on quality of life and social facilities; and is increasing global carbon emissions (Roberts *et al*, 2017). However, there is an opportunity for innovation and governance for change to create more sustainable and just ways of living. Agroecology could play a more powerful catalyst for such change if recognised and elevated beyond the tropes of policy.

6. Interviews

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