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A Critical Analysis of the Influence of Social Innovation in Addressing Food (In)Security in the Context of Natural Disaster

by

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DST-NRF
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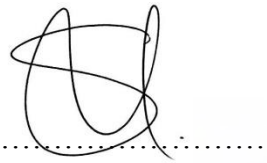
Declaration

I declare that 'A Critical Analysis of the Influence of Social Innovation in Addressing Food (In)Security in the Context of Natural Disaster' is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by means of complete reference.



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Shehaam Moosa

11 November 2022…….

Date

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List of Acronyms and Abbreviations

AI	Artificial Intelligence
CAN	Community Action Network
CCT	City of Cape Town
CHS	Community and Health Sciences
CoE-FS	Centre of Excellence in Food Security
CoP	Communities of Practice
COVID-19	Coronavirus Disease 2019
CSO	Civil Society Organisation
DMA	Disaster Management Act
DPGS	Division for Postgraduate Studies
DSI	Department of Science and Innovation
DVC: R&I	Deputy Vice-Chancellor: Research and Innovation
ECD	Early Childhood Development
EDP	Western Cape Economic Development Partnership
FAO	Food and Agriculture Organization
GBV	Gender-Based Violence
GMO	Genetically Modified Organism
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
ICT	Information and Communications Technologies
IoT	Internet of Things
ISD	Institute for Social Development
ML	Machine Learning
MOOC	Massive Open Online Course
NDMC	National Disaster Management Centre
NDMF	National Disaster Management Framework
NDP	National Development Plan
NGO	Non-Governmental Organisation
NGP	New Growth Path
NPFNS	National Policy on Food and Nutrition Security

NRF	National Research Foundation
NSNP	National School Nutrition Programme
PEDI	Philippi Economic Development Initiative
SAPS	South African Police Service
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SASSA	South African Social Security Agency
SDGs	Sustainable Development Goals
SMMEs	Small, Medium and Micro Enterprises
SRD	Social Relief of Distress
TB	Tuberculosis
TERS	Temporary Employer-Employee Relief Scheme
UN	United Nations
UNISDR	United Nations International Strategy for Disaster Reduction
UWC	University of the Western Cape
VPUU	Violence Prevention Through Urban Upgrading Programme
WHO	World Health Organization

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Key Concepts

Food Security

Food Ecosystem

Natural Disaster

Pandemic

Drought

Social Innovation

Sustainability

Resilience

Development

South Africa

Abstract

The conventional top-down, command-and-control approach to disaster management and buffers implemented during times of crisis are often rendered unsustainable, as these strategies fail to encourage community resilience. In South Africa, recent years have seen the emergence of bottom-up practices and processes where diverse actors co-create solutions. However, despite these inclusive models, local communities remain plagued by poverty and food insecurity. These social inequalities are exacerbated in the context of natural and human disaster. It is against this backdrop that this study investigates the influence of social innovation, novel solutions to pressing social challenges, in addressing food (in)security during times of crisis. The study is qualitatively oriented and makes use of semi-structured in-depth interviews, as well as literature review and document analysis data collection methods. This research endeavour is affiliated to the DSI-NRF Centre of Excellence in Food Security and the Social Innovation & Development Niche Area/Special Projects Unit. The study is conducted, given the levels of food insecurity in South Africa, amplified by the COVID-19 pandemic and its after-effects, past and ongoing floods and drought, insecure employment, widening inequality, climate crisis, etc. The study analyses the influence of social innovations that emerged to address the threat posed by the COVID crisis and the recent Cape Town water crisis on food security. As seen with both of these crises, government was ill-prepared and too slow to act. Central findings of this study reveal that social innovation, whether technical, technological, digital or otherwise, offer potential benefits in promoting food security, efficient food chains, inclusive economies, social cohesion and sustainability. However, it needs to be coupled with other systematic interventions. This research implores that contemporary challenges are too serious and stakes are too high, and government needs to raise its humanity, get past the status quo and embrace local innovation. Actors in government, business and civil society need to understand how inter- and multi-sectoral partnerships contribute to structural change through scaling out (reaching more people), scaling up (impacting regulations) and scaling deep (impacting cultural roots of social behaviour). The COVID and Day Zero crises provide invaluable lessons for public, private and social sectors to reimagine the broken food system and broader ecosystem with creativity, curiosity, collaboration and solidarity of purpose.

1. Chapter One. Introduction

1.1. Introduction and Background

"Food is national security. Food is economy. It is employment, energy, history. Food is everything." – Chef José Andrés, Founder of World Central Kitchen

The South African government highlighted and prioritised food security in the State of the Nation Address of 2010 (Zuma, 2010), as well as in various other strategic instruments. Prior to the National Policy on Food and Nutrition Security of 2013, the central response to food security was grounded in three key frameworks: the Integrated Food Security Strategy (DOA, 2002), the Integrated Nutrition Programme (DOH, 2002) and the National School Nutrition Programme (DOE, 2013). The National Development Plan, launched in 2012, set out targets to eradicate poverty and eliminate inequality in South Africa by 2030. The Plan recognises food security as a critical element of inequality and poverty – it is both a consequence of these social ills, as well as a cause (NDP, 2012; DAFF, 2013).

Since its democratic inception, national government has been faced with complex and interrelated environmental, health, economic, socio-political and agro-food issues, as well as rising unemployment, social unrest, food price volatility, HIV/AIDS, drought, floods, the novel coronavirus, etc. Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus (Moseley & Battersby, 2020; WHO, 2021). These multifaceted challenges make achieving the right of all South Africans to adequate food difficult, despite local, national, regional and international commitments (Manyamba et al, 2012; HSRC, 2020).

The COVID-19 pandemic exacerbated the challenges of food security across the provinces and districts of South Africa. The impact of the public health crisis was greater among those grappling with food scarcity, and widespread food insecurity rose due to restrictions on mobility and production, during hard lockdown and stricter alert levels (PLAAS, 2020; IFPRI, 2020). In South Africa, the COVID crisis unfolded against a backdrop of existing and worrying levels of

hardship, hunger and undernourishment, which worsened as the disease threatens livelihoods and household economies (Valodia & Francis, 2020; WFP, 2021).

The directive, top-down approach to disaster management has been rendered unsustainable – failing to encourage community resilience and promote structural change (Tirivangasi, 2018; Nordling, 2020). In South Africa, recent years have seen the emergence of bottom-up practices, various forms of social innovation, where diverse stakeholders and role players collaborate. However, despite success stories, local communities remain plagued by poverty and food insecurity (Battersby & Haysom, 2019). These social inequalities are deepened during times of crisis, like a pandemic (a rapid onset shock) or a drought (a slow onset shock) (OECD, 2021).

This thesis is a threefold study intersecting food (in)security, social innovation and natural disaster. The study analyses the influence of social innovation, creative solutions to social and environmental problems (Andrew & Klein, 2010), in the context of an epidemic natural disaster. It researches measures of social innovation that emerged to address the threat posed by the COVID crisis and the recent Cape Town water crisis on food security. Scholars regard shocks and crises as opportunities of reflection and possibility (van Niekerk, 2020). Food (in)security is a critical, seemingly intractable problem in South Africa, and ultimately, the study determines the extent to which social innovation can address and achieve food security during times of crisis, if at all.

1.2. Problem Statement

In South Africa, many households experience food insecurity and malnutrition, particularly those in highly informal and marginalised communities. The indigent do not have access to adequate nutritious food, i.e. high quality lean proteins, whole grain starches, vegetables, fruits, healthy fats, etc as a result of their socio-economic realities (Philander, 2015). These social inequalities are exacerbated in the context of natural and human disaster. In precarious times of crisis, various state interventions are implemented to relieve hunger and hardship. However, the impact and sustainability of these efforts are widely criticised.

In recent years, it has been advocated that social innovation, novel solutions to pressing development challenges, can enhance food security and improve the nutritional status of the most vulnerable (Frayne et al, 2014; Hamann et al, 2020). On the other hand, it is argued that food insecurity is the responsibility of government and that needy populations should not have to confront this burden without state intervention (Schmidt, 2012; Adelle et al, 2021).

There is limited empirical research on the influence of social innovation in addressing food (in)security in South Africa, particularly in the context of an epidemic natural disaster (Pereira et al, 2020; Adelle & Haywood, 2021). These are unprecedented times – navigating, enduring and recovering from a global pandemic, thus this study is untapped research. These past few tumultuous years demonstrate that health is wealth and food is medicine, and it is against this backdrop that the study seeks and examines social innovation/s that emerged to address the challenges of food security during times of crisis – i.e. the Day Zero drought of 2017/2018 and COVID-19 pandemic of 2020/2021.

1.3. Rationale

Section 27(1)(b) of the South African Constitution provides for the right 'to have access to sufficient food and water'. Furthermore, Section 27(2) provides the mandate of the state to 'take reasonable legislative and other measures to achieve the progressive realisation' of this right (RSA, 1996: 11). This statutory entitlement, as well as national food security strategy, is in accordance with South Africa's compliance of the Millennium Development Goals, which aimed to reduce the proportion of people who went hungry and were food-insecure between 1990 and 2015 (UN, 2015). The Sustainable Development Goals build on these efforts and call for the end of all forms of hunger and malnutrition by 2030 (UN, 2021). Working towards the 'global goals' is in South Africa's best interest and the NDP is closely aligned to the 2030 agenda.

The NPFNS alludes to the lack of accessible and intelligible data on the concept and issue of food security. This is in itself a hindrance to addressing the challenges of food security in the country (DAFF, 2013). A study of this nature contributes to the existing body of literature on food (in)security – a development challenge that has not only been seriously underrepresented,

but misrepresented too. It offers relevant research on the current state of affairs, particularly in the midst and aftermath of a global pandemic. The study provides a comprehension of the complex, albeit broken food system in South Africa, and how social innovation can play an integral role in reimagining the flawed ecosystem.

The concept of social innovation is well established in theory, yet there is a lack of relevant data on the practicalities of novel interventions for social impact in the South African context (Grimm et al, 2013; Matsimela, 2017). There is far more literature on social innovations in Europe and North America, as opposed to developing regions and nations (Murray et al, 2010; Gupta et al, 2020). The study addresses this data dearth and knowledge gap, and complements the limited African perspective. It provides insight on how vulnerable and marginalised communities cope in the midst of recent social, economic, political and climatic challenges.

Food (in)security is a concept and concern that is not holistically understood in South Africa; social innovation is an emerging, yet contested concept that is still taking shape in the country; and very little research has been conducted in the realm of disaster management in the South African context (Buwa, 2012; Elum et al, 2017). Hence, the study contributes positively towards the ongoing academic and public discourse on effectual responses to various kinds of disaster.

1.4. Aims and Objectives

Disenfranchised communities experience inadequate access to nutritious whole food, due to socio-economic circumstances. This food scarcity and insecurity is deepened in the context of natural disaster, like the COVID pandemic or the recent drought in the City of Cape Town and broader Western Province.

This study explores the influence of social problem-solving in enhancing food security during times of crisis, determines the impact of these novel ideas and establishes whether various modes of social innovation should be supported more resolutely in South Africa.

The study is guided by the following sub-objectives:

i. Review existing literature on food (in)security, natural disaster/disaster management and social innovation on a global, regional and national scale
ii. Analyse the influence of social innovation in provincial and local contexts
iii. Analyse relevant frameworks – NPFNS (2013), DMA (2002) & NDMF (2005)
iv. Consider creative/community responses to the COVID crisis and recent Day Zero crisis
v. Reflect on the role social innovation can play in South Africa, with a particular focus on the food ecosystem/food systems transformation
vi. Engage recommendations to industry and government stakeholders, diverse role players and changemakers.

1.5. Thesis Structure

The study comprises of six chapters:

1. Chapter one presents an introduction and background, problem statement and rationale of the research project. Moreover, the aims and objectives of the study are clearly outlined.
2. Chapter two documents relevant literature on food security, natural hazards/disasters and social innovation, particularly within the South African milieu.
3. Chapter three presents research design and methodology. Sampling methods, data collection, data analysis, ethics, challenges/experiences, and study relevance/credibility, are delineated.
4. Chapter four imparts primary findings and provides an analysis of the study results.
5. Chapter five presents a discussion of the key findings, and engages recommendations to public and private stakeholders, and non-profit, informal and community role players.
6. Chapter six summarises central findings, describes study limitations and suggests areas for future research.

2. Chapter Two. Literature Review

2.1. Introduction

This chapter presents a comprehensive overview of the interrelated concepts embedded in the study. It examines the present literature on food security, natural disaster and social innovation, within the South African milieu – establishing scholarly debate and balanced perspective. The primary purpose of this chapter is to provide a conceptual framework for the investigation. It defines key definitions and terminology. It is composed in the following manner: Section 2.2. Food (In)Security in the World, Africa and South Africa; Section 2.3. Natural Disasters in South Africa; Section 2.4. Food (In)Security During Pandemics and Droughts; Section 2.5. Social Innovation in South Africa; Section 2.6. Food Security and Disaster Management Frameworks and Section 2.7. Nexus Between Food Security, Natural Disaster and Social Innovation.

2.2. Food (In)Security in the World, Africa and South Africa

2.2.1. Defining and Conceptualising Food Security

The Food and Agriculture Organization of the United Nations originally defined food security as "access by all people, at all times, to the food required for a healthy life" (FAO, 1983). In 1986, the World Bank defined it as "the physical, social and economic access to sufficient, safe and nutritious food by all, at all times, to meet their dietary and food preferences" (World Bank, 1986). A decade later, the most universally accepted definition of the concept today was concluded at the World Food Summit: "Food security exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996; DAFF, 2013: 8). For the purposes of this study, the 1996 conceptualisation is the implied and explicit definition of food security.

This definition, as well as other variations of the flexible concept, alludes to four pillars of food security (Black, 2018):

1. Availability of food

This dimension primarily focuses on the supply side of the food system. It is essentially the presence and quantity of food. Domestic production and international trade are components of this element.

2. Accessibility of food

This dimension focuses on whether there is access to existing food, as well as the adequacy of resources.

3. Utilisation, quality and safety of food

This dimension focuses on the ability of communities and households to use food effectively, through diet, clean water, sanitation, health, etc.

4. Stability of food supply

This dimension focuses on the sustainability of food security, where people do not risk losing access to adequate food due to shocks and crises.

Communities, households and individuals are considered to be vulnerable to food insecurity or food-insecure if any of the above-mentioned conditions are not fulfilled (Haywood, 2020).

According to the High Level Panel of Experts on Food Security and Nutrition Report 2020, understandings and framings of food security are evolving in critical ways. In addition to availability, accessibility, utilisation and stability, agency and sustainability are included. These new pillars are being integrated in light of the climate crisis and environmental change, and in an effort to build a global narrative towards 2030. The original dimensions are central to the concept, but omit elements that are essential to reimagining food systems in the ways needed to meet the SDGs (HLPE, 2020).

Experts explain that there is growing recognition of the need to use a food systems lens when considering food security strategies. It recognises the interconnectedness of food systems with

other social systems and appreciates the complex interaction of all the global goals (HLPE, 2020). For instance, progress on SDG 2 (Zero Hunger) has a direct bearing on the progress on SDG 3 (Good Health & Well-Being), SDG 6 (Clean Water & Sanitation) is essential for food production and good nutrition, and SDG 12 (Responsible Consumption & Production) is critical to achieve food security sustainably (UN, 2021).

Ericksen (2008) clarifies that the food system – the activities, actors and institutions responsible for the production, processing, packaging, distribution, promotion, consumption and disposal of food – plays a significant role in food (in)security. Food systems and behaviours are driven by various socio-political, economic, environmental, cultural and technological factors, which in-turn affects the stability and sustainability of a community or household. This makes the concept of food security complex and multifaceted.

Battersby et al (2014) maintain that the food system should not be isolated and separated from other systems, like transport, energy, housing, informality, etc. Food system vulnerability is compounded by many tensions within these interconnected social systems. The systems interact, reinforce and even amplify susceptibility to food insecurity.

According to Boatemaa et al (2018), food policies are indirect actors in the food system, as these strategies delineate relationships between direct actors. Ericksen (2008) believes that this enables a political and social power lens to be applied to the question of food security. In global food systems, economic capital is the primary determinant of food security. The modern food system has advanced and achieved great success in reducing food insecurity through commercial, mechanised agriculture (Pereira & Drimie, 2016). However, despite these strides, the present system is also causing immense environmental degradation and biodiversity loss.

The outcomes of the food system in South Africa, where this thesis is geographically based, are characterised by food insecurity, land degradation and marginalisation of the informal food economy (Pereira & Drimie, 2016). McLaren et al (2015) purport that effective policy with regards to national, provincial and local food security is a debilitating challenge in South Africa.

This stems from the actual policy formulation process, the framing of the chronic food security challenge, and most importantly, the implementation of recommended interventions.

In South Africa, food (in)security has consistently been theorised as a rural challenge, with an increase of overall food production as the solution. Yet, food insecurity is prominent in urban low-income, highly informal communities – primarily due to the inability to access available food (Battersby, 2015). Devereux and Waidler (2017) assert that there is a lack of political will to drive the desired change. The result of this apathy is uncoordinated, duplicated programmes with minimal humanitarian, economic and social impact.

2.2.2. State of Global Food Security

The State of Food Security and Nutrition in the World Report 2021 – prepared and produced by the FAO, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme and World Health Organization – presents a global assessment of food insecurity and malnutrition for 2020 and offers an informed indication of what the situation might look like by 2030. Experts declare that even before the COVID pandemic, the world was not on track to end world hunger and malnutrition in all its forms by 2030 (FAO et al, 2021).

Under the shadow of the global pandemic, up to 161 million more people were facing hunger in 2020, than in 2019. New figures estimate that between 720 and 811 million people around the world faced hunger in 2020. Around 660 million people may still face hunger in 2030, in part due to lasting effects of the COVID crisis on global food security. This represents 30 million more people than in a scenario in which the pandemic had not occurred (FAO et al, 2021).

Key findings of the collaborative report include:

- Globally, 2.37 billion people did not have access to adequate food in 2020.
- In 2020, 149.2 million children under age 5 or 22% were affected by stunting, and 6.7% suffered from wasting.
- 38.9 million children under age 5 or 5.7% are overweight (FAO et al, 2021: vi).

According to FAO et al (2021), in today's uncertain and unstable environment, food systems transformations aimed at bolstering food security are more important than ever before. Major drivers negatively affecting food security include: conflict, climate variability and extremes, and economic slowdowns and downturns. Figure 1 illustrates the significant regional differences in the concentration and severity of food insecurity across the continents.

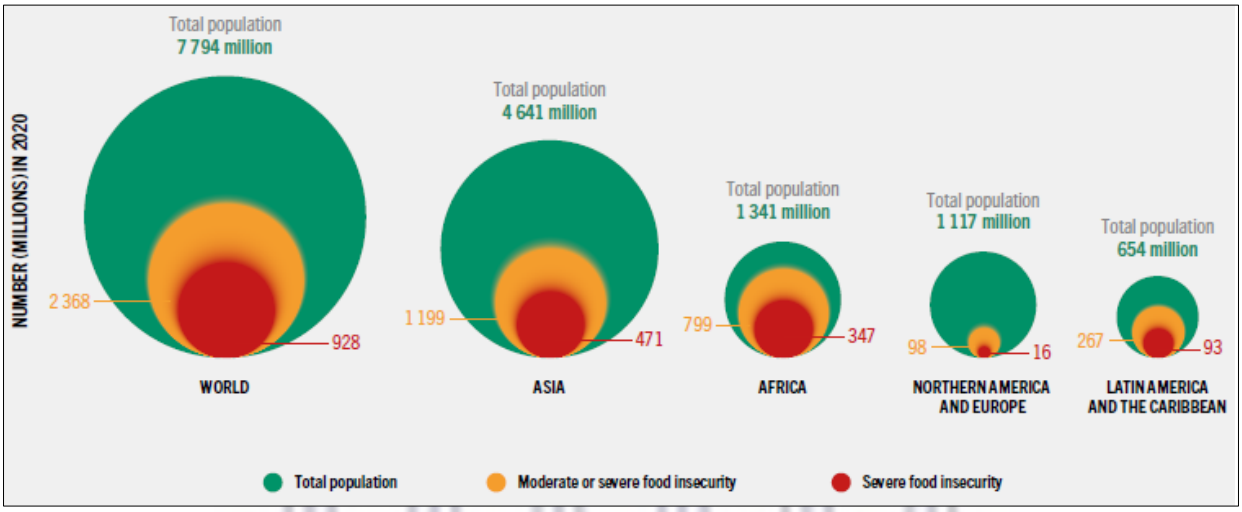

Figure 1. The concentration and distribution of food insecurity by severity differs greatly across the regions of the world. Source: Reproduced from State of Food Security and Nutrition in the World Report 2021.

The global report presents six transformation pathways:

i. Bolstering development policies in conflict-affected areas
ii. Scaling up food systems climate resilience
iii. Strengthening resilience for the most vulnerable
iv. Adapting value chains to lower the cost of nutritious food
v. Tackling poverty and structural inequalities
vi. Promoting diets that support good health and the environment (FAO et al, 2021: xx).

Boatemaa et al (2018) explain that global food insecurity and malnutrition persist despite concerted efforts and technical expertise. Chronic food insecurity leads to extensive illness and death, particularly among women and children. Due to the complexity and persistence of food

insecurity, it has been clarified as a 'wicked problem' by the academic fraternity (May, 2017). Haywood (2020) describes that the latest figures indicate that food insecurity is worsening, despite promising solutions.

2.2.3. State of African Food Security

The Africa Regional Overview of Food Security and Nutrition Report 2021 – prepared and produced by the FAO, African Union and United Nations Economic Commission for Africa – declares that Africa is not on track to meet the targets of SDG 2. After a positive trajectory between 2000 and 2013, hunger has worsened substantially and most of this has occurred between 2019 and 2020 (FAO et al, 2021).

Key findings of the collaborative report include:

- In 2020, 281.6 million Africans were undernourished.
- 44.4% of undernourished people on the continent live in East Africa, 26.7% in West Africa, 20.3% in Central Africa, 6.2% in North Africa, and 2.4% in Southern Africa.
- In addition to the 346.4 million African people suffering from severe food insecurity, 452 million suffer from moderate food insecurity.
- In Africa, the prevalence of stunting in children under age 5 has fallen gradually, but remains high at 30.7%. The prevalence of wasting in children remains just below the global average (FAO et al, 2021: 1, 13).

Experts suggest that in the short term, countries need to provide humanitarian assistance and social protection to improve food security. Whereas over the longer term, countries need to invest in agriculture, water, health and education to reduce vulnerabilities and build capacities to withstand stresses and shocks (FAO et al, 2021).

According to May and Mentz-Coetzee (2021), Africa's food systems are changing and structural transformations are underway, although this progress seems to be less noticeable than in other parts of the world. These changes have been welfare-enhancing, as poverty rates are slowly

declining. However, food insecurity remains high in the region and is often experienced by those directly involved in the production of food. Current trends towards capital-intensive, commercial farming pose serious threats to smallholder farmers, and they are becoming increasingly land- and penniless (FAO et al, 2021).

Small-scale farmers often have no choice but to resort to insecure work on big farms or migrate to cities to find employment. The livelihoods of farmers and traders in the informal economy are further negatively affected by the spread of large supermarkets and shopping malls (May & Mentz-Coetzee, 2021). In terms of diets on the continent, various cultural changes are associated with a heightened risk of diet-related non-communicable disease (Haywood, 2020).

2.2.4. Food Insecurity and Vulnerability: A South African Reality

According to Boatemaa et al (2018), South Africa is a middle-income country and is nationally food-secure. Though, when considering meso and micro levels, the experience of food insecurity at community and household level is dire. National figures consistently show high and worrying levels of undernutrition, obesity and diet-related diseases. The unfortunate enigma is that a fair amount of the population can only access cheaper, unhealthy, highly calorific food. Stats SA data shows that there is a clear racial and class element to food insecurity in South Africa. There is a much higher burden of this chronic problem on impoverished Black and Coloured households, as opposed to White and Indian/Asian households (Stats SA, 2022).

Through colonial and apartheid policies, racism and discrimination was institutionalised, and this is a critical factor underlying high malnutrition across the country. These policies limited the social, economic and political rights and opportunities of non-whites, and this has shaped the experience of food security by population and geography (McLaren et al, 2015). Since the advent of democracy in 1994, government has implemented interventions to address the structural factors that sustain the high levels of food insecurity. These programmes are informed by Section 27 of the Constitution, and they have supported land reform, social grants, nutrition education, etc. Pereira and Drimie (2016) clarify that these initiatives show mixed results on improving

food security, but not nutrition. In South Africa, policy is yet to achieve the desired impact after years of implementation.

According to Haywood (2020), the NDP suggests that the country can become more food-secure through the development of agriculture and agro-processing sectors, SMMEs, and increased fresh produce production. However, Battersby and Watson (2018) argue that South Africa produces or can import more than enough food to ensure that every household is food-secure. Scholars heavily criticise the push by government for more production, and maintain that there is clearly a misguided and partial understanding of food security in South Africa.

Despite high and comfortable levels of food availability, food insecurity is a critical concern. A mere 45.6% of the South African population is food-secure, and the nutritional status of citizens is bleak, as 37% of all deaths in the country are a direct result of non-communicable diseases, like heart disease (Haywood, 2020). Such a dire situation questions the impact of policy and the efficacy of the national food system. South Africa's food system is characterised by the concentration and role of corporate business. Greenberg (2015) contends that deregulation, the reduction in state regulation of private interests, has allowed and facilitated the corporatisation of food and agriculture in South Africa – deepening food poverty and insecurity.

According to Greenberg (2017), due to the increased adoption of capital-intensive production methods, employment in agriculture has significantly decreased in recent years. Increased unemployment leads to a decline in income, which reduces the ability of people to access food on the market. This highly productive, yet inequitable model has largely contributed to the spread of supermarkets and a proliferation of processed foods, which has major implications on public health.

Battersby et al (2016) describe that the informal food sector operates at the margins of the formal food sector, and despite it creating jobs and sustaining livelihoods – it is consistently undermined and overlooked. Informal businesses coexist with the formal sector by positioning themselves on the periphery of supermarkets. These enterprises are closer and more accessible to the socio-economic realities of vulnerable households (Battersby, 2017). Haywood (2020) explicates that

the answer to local economic development is the support and development of the informal food economy.

Society is rapidly changing, from an environmental, social, technological and geo-political perspective (FAO et al, 2021). Ensuring that South Africa's food system is sustainable, inclusive and resilient is a significant challenge. Many drivers will shape the evolution of the country's food system. Some of these can be predicted with a degree of certainty, i.e. population growth. However, many others will be difficult to predict, i.e. international cooperation (May & Mentz-Coetzee, 2021), which creates considerable uncertainty in an era of climate change and natural disaster.

2.3. Natural Disasters in South Africa

2.3.1. Defining and Conceptualising Natural Disasters

According to the Disaster Management Act (2002), a 'disaster' is defined as:
"A progressive or sudden, widespread or localised, natural or human-caused incident that –
(a) causes or threatens to cause death, injury or disease, damage to property, infrastructure or the environment, or disruption of the life of a community, and
(b) is of a scale that exceeds the ability of those affected by the disaster to cope with the effects using only their own resources." (RSA, 2002: 6)

According to the United Nations International Strategy for Disaster Reduction (2009), a 'natural hazard' can be defined as:
"Any natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage." (UNISDR, 2009: 20)

Reddy et al (2019) clarify that a natural disaster can be biological, climatological, hydrological, geophysical or meteorological. Natural disasters often happen unexpectedly, and can cause

immense damage and hardship. Such situations often devastate local capacity, and demand aid at national and international levels. According to HLPE (2020), climate change, urbanisation and environmental degradation are major drivers responsible for the increased frequency and intensity of natural disasters in the world today.

For the purposes of this study, the implied and explicit definition of natural disaster is: "A progressive or sudden natural phenomenon that may result in loss of life or other health impacts, loss of livelihoods and employment, social and economic disruption, and/or ecological damage". This definition is a combination of the DMA and UNISDR conceptualisations. It can be used to describe the Day Zero drought and the COVID pandemic – the natural disasters highlighted in the study. In this thesis, natural disaster can be understood more broadly as times of crisis. These lexes are used interchangeably.

According to Duze (2016), disasters can be long or short-term – shocks, such as outbreaks of disease, or trends, due to environmental degradation and the changing climate. Nirupama (2013) maintains that disasters are deemed as extreme situations in impact and scale, often requiring external assistance. However, smaller-scale disasters can also have a critical impact. Poor and vulnerable households face increased daily risks, i.e. lack of sanitation/clean water, pollution, poor healthcare, crime and violence.

Marginal populations and poorly resourced communities suffer the worst consequences of natural disaster (Duze, 2016). This particularly includes the young, disabled, elderly, displaced, migrated and impoverished. Often, these households, families and individuals are defenceless – forced deeper into desperation.

2.3.2. Natural Disasters in the South African Context

According to Van Niekerk et al (2018), South Africa, with an average rainfall of 497mm per annum, has six rainfall regions, high evaporation rates and high seasonal climatic variability. The country is typically warm and dry. It encompasses many vegetation types, nine biomes and high

levels of biodiversity. South Africa is exposed and vulnerable to El Niño and La Niña-induced events, because of its topographical features and position.

The country is located in a region highly susceptible to climate change. Projections show that the western parts of South Africa will become drier, certain areas will experience shorter rainfall seasons and air temperatures will rise (van Niekerk et al, 2018). Since the early 2000s, the Department of Environmental Affairs has warned and cautioned of sea level rise, and extreme weather events (DEA, 2017).

According to Mulugeta et al (2007), a wide range of natural and human-induced hazards could lead to disaster events in South Africa, i.e. droughts, fires, storms, floods, dam failures, earthquakes, sinkholes and epidemics. The most frequent natural disasters in the country are floods, droughts and fires (van Niekerk, 2014). Floods are the most deadly, yet droughts are the most detrimental in their felt effects. Figure 2 depicts the number of recorded natural disasters between 1980 and 2019 in South Africa.

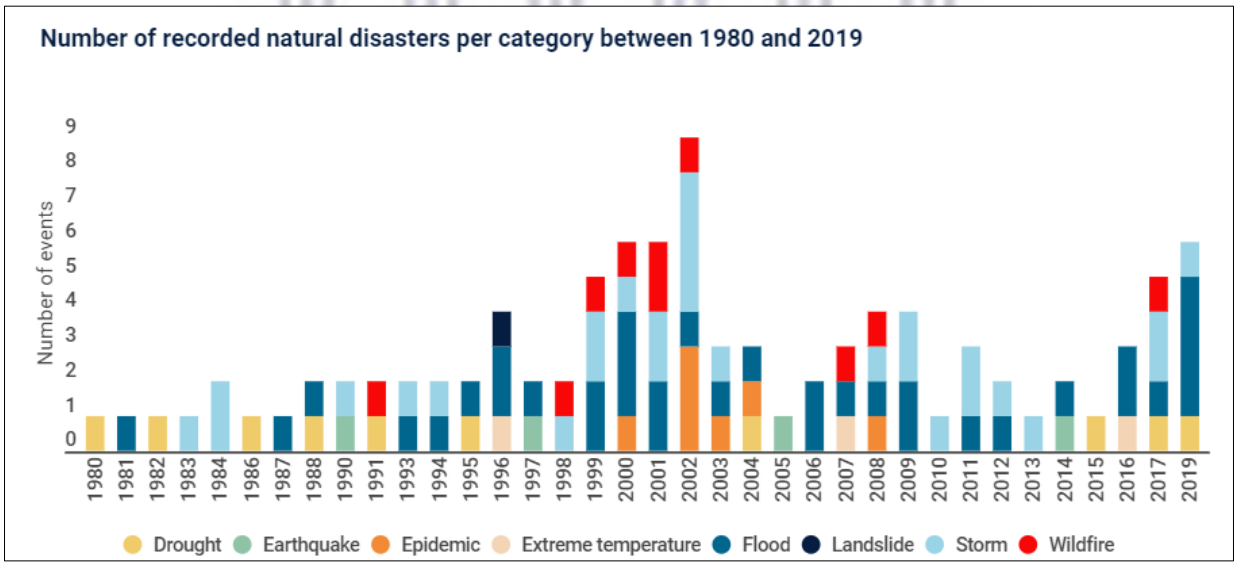

Figure 2. Number of recorded natural disasters per category between 1980 and 2019. Source: Reproduced from South African Risk and Vulnerability Atlas (SARVA) 2021.

The Cape Town Resilience Strategy (2019) defines 'chronic stresses' as:

"Chronic stresses weaken the fabric of a city on a day-to-day or cyclical basis, for example, high unemployment, inadequate public transport systems, endemic violence, food insecurity and substance abuse."

And 'acute shocks' as:
"Acute shocks are sudden sharp events that threaten a city, for example, drought, fires, floods, diseases outbreaks and infrastructure failure." (CCT, 2019: 8)

Contributors to the Resilience Strategy (2019) emphasise that a holistic approach to risk is vital. Countries need to understand how chronic stresses impact the ability of its regions, cities and towns to adequately respond to acute shocks. Resilience is critical and helps communities adapt during times of crisis, helping prepare for both the expected and unexpected.

2.3.3. COVID-19 Crisis

The WHO received reports on 31 December 2019 about several cases of some unknown pneumonia in Wuhan, China. By 7 January 2020, the disease was identified as a novel coronavirus with SARS-CoV-2. COVID-19 was declared a global pandemic on 11 March 2020 (Harapan et al, 2020). According to Kang et al (2020: 1), coronaviruses are: "single-stranded RNA viruses belonging to the family Coronaviridae that can cause various diseases with enteric, respiratory, hepatic and neurological symptoms."

According to Pietersen (2020), symptoms of COVID include: fever, cough, fatigue, headache, shortness of breath, body aches, nasal congestion, sore throat, diarrhoea, loss of taste or smell and skin rash. Individuals with comorbidities like hypertension, diabetes, heart problems and cancer are at higher risk of contracting the disease (Harapan et al, 2020).

The COVID pandemic has had a critical impact on societies (Chin et al, 2020). The crisis has overwhelmed healthcare systems and economies. South Africa approaches COVID as a national disaster, due to its impact on all facets of society. Harapan et al (2020) maintain that the primary

characteristics of a public health crisis include the rapid nature of infections, the severity and death rate, and the extent to which citizens' lives and various social systems are disrupted. For the purposes of this research, the COVID pandemic is clarified and conceptualised as a natural disaster, but it is also discussed as a national disaster and public health crisis. Often, natural disasters are limited to environmental catastrophes, but in this study the concept encompasses health crises (outbreaks, epidemics, pandemics, etc) too.

In South Africa, government acted quickly after its first confirmed case on 5 March 2020 (Mkhize, 2020). By 27 March 2020, a hard lockdown was implemented and required all South Africans to remain at home, except for essential grocery shopping and medical appointments. According to Brandt (2020), these measures were successful in slowing the spread of the disease, however, they exposed the challenges and costs of lockdown, especially on the most vulnerable in society.

According to the Food Dialogues Report 2020, after the lockdown regulations were enacted, hunger was the first shockwave to hit as millions of South Africans could no longer earn an income to purchase food, school feeding schemes were not operating and informal food trading was prohibited. The crisis made visible the lived reality of millions of people, locals and migrants, who already grapple with hunger and food insecurity on a daily basis (Oliver, 2020).

During hard lockdown, limitations on economic activity took its toll on the economy and livelihoods (Odendaal, 2021). The most detrimental externality was increased food insecurity. Lockdown measures favoured large-scale food suppliers and formal retailers. Battersby (2020) argues that decision-makers did not consider how the indigent access food. Informal vendors provide food in small, affordable units, and spaza shops are important actors in the food value chain, particularly in highly informal and low-income communities. Figure 3 is a clear and simplified visual representation of the dynamics and consequences of the COVID-19 pandemic and subsequent lockdown regulations – that threatened global, national and local food security and nutrition.

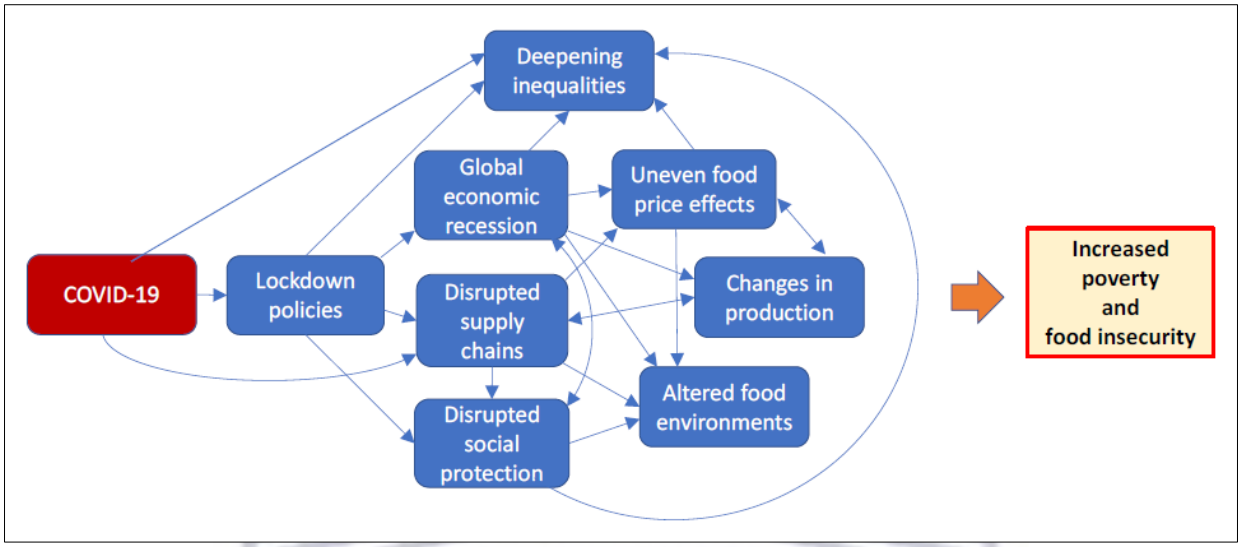

Figure 3. The dynamics of COVID-19 that threaten food security and nutrition. Source: Reproduced from High Level Panel of Experts Issues Paper 2020.

2.3.4. Cape Town Water Crisis

Cape Town, a coastal city with a population of over four million people in the Western Cape province of South Africa, has been and is at risk of water scarcity. The city's water challenges stem from its dry climate and relatively high water consumption. In 2017/2018, after three winters of very low rainfall, Cape Town experienced its worst drought in over 100 years. The city announced that its population needed to take deliberate and drastic action to avoid running out of water – a horror situation termed 'Day Zero' (Parks et al, 2019).

Day Zero alluded to an extreme circumstance where the majority of the municipal water system would be shut off, and water would be distributed through communal standpipes to residents (25 litres per person per day) (CCT, 2018). This was contentious, as the South African Constitution guarantees the right of all citizens to access sufficient water, insinuating that government is obligated to ensure that water supplies are adequate (RSA, 1996).

The Day Zero drought impacted all facets of society, from public health to tourism to agriculture. According to Stanke et al (2013), health impacts are myriad in severe drought conditions – malnutrition, vector and airborne diseases, water-related diseases, mental health issues, etc. Children, pregnant women, the elderly, the sickly and the indigent are especially at risk and vulnerable when it comes to a water scarcity crisis.

Parks et al (2019) clarify that drought impacts on agriculture have cumulative effects on health and well-being, due to reduced yields of crops and livestock. This results in reduced quantity and quality of nutrients. The primary commodities produced within the Western Cape are based on horticulture (fruits, vegetables, wheat, canola, barley, etc), and these crops require irrigation. Additionally, livestock and dairy are important products produced in the Western Province. Large and small-scale farmers attempted to mitigate the adverse effects of the drought by shifting to alternative water sources and embracing water-wise technologies (Johnson, 2018).

Johnson (2018) describes that production for major crops was 20.4% lower from 2016/2017 to 2017/2018, demonstrating a R5.9 billion loss in industry. Furthermore, the anticipation of reduced harvests led to widespread unemployment of seasonal farmworkers, with over 30,000 jobs lost during the drought. This loss of employment increased social unrest and food insecurity in agricultural areas (Parks et al, 2019).

South Africa is one of the most unequal countries in the world (World Bank, 2018). In Cape Town, the poorest residents live in informal settlements without adequate sanitation facilities, while some exclusive properties on the Atlantic Seaboard are worth millions. With regards to water usage and consumption, there is a stark difference between the socio-economic groups in the city. Informal settlements make up 3.6% of total water consumption, while formal settlements make up 64.5% (CCT, 2018).

During the Day Zero drought, wealthier Capetonians managed to stockpile water, install boreholes to reach groundwater, and even go off-grid. Parks et al (2019) explicate that the division between the haves and have-nots of the population is clearly along racial lines. The Day Zero crisis exposed that water shortages can exaggerate and exacerbate historical divisions.

However, it is pivotal to note that natural phenomena such as droughts can either be exacerbated or mitigated by human action or inaction. In this case, better water use practices and water management policies should have averted the threat of Day Zero in Cape Town, in 2018.

2.4. Food (In)Security During Pandemics and Droughts

Pandemics, like the COVID crisis, and droughts, like the Day Zero crisis, are systemic shocks that critically impact food systems. With drought, the effects are predominantly through reduced agricultural productivity and output (food availability and stability of food supply). On the other hand, a pandemic is a shock to the health system mitigated by vaccines and potential cures (Mishra et al, 2021). Societies must adapt through social distancing and travel restrictions, which have indirect effects on food supply and demand through reduced income, physical distancing measures and restricted mobility (food accessibility and stability of food supply).

Mishra et al (2021) explain that with regards to the global COVID-19 situation, the direct effects (deaths per million) have been more substantial in the developed North and in metros, than in developing nations and rural areas. However, the direct effects of drought have been much more significant in the developing South than the developed world, with bigger impacts in rural areas as opposed to urban spaces.

According to Garnett et al (2020), the pandemic is a global problem that impacts food supply and demand – with impacts along the entire food value chain. Agri-food supply chains comprise of: producers of food (farmers), intermediaries (processors, wholesalers and retailers) and finally, consumers. Intermediaries include informal, small-scale shops and formal, large-scale stores.

Mishra et al (2021) describe that both droughts and pandemics may result in certain countries, regions and populations facing severe and deepened food security problems. For instance, in Zimbabwe, the population was already grappling with job insecurity and unemployment, and this was compounded by the outbreak of the novel coronavirus, as well as consequences of drought.

Aladjem and Sunding (2015) explicate that climate and non-climate hazards trigger innovation and technological change. Innovative adaptation to crisis softens the blow and ideally enhances future resilience. Droughts have led to water conservation technologies, increased water trading and groundwater regulation. According to Galanakis (2020), the COVID pandemic triggered modifications to food processing practices. The use of real-time data has proven to reduce disruptions in the food supply chain by minimising delays and extending shelf life. The use of ICT for food distribution has expanded exponentially, and increased automation in harvesting, processing and delivery may lead to shorter and more diversified food value chains.

Galanakis (2020) elucidates that technology already shows marked impacts on agricultural outputs. Whether advances in the Internet of Things and Artificial Intelligence, smart machines or cutting-edge science – innovation has brought about higher-yielding crop varieties and smarter uses of water resources. These innovations should be developed with experienced and established farmers, as well as with subsistence and emerging farmers (Domburg, 2019). This allows for an understanding of real problems on the ground, and not perceived challenges.

2.5. Social Innovation in South Africa

2.5.1. Defining and Conceptualising Social Innovation

Social innovation has developed with loosely defined boundaries and interpretations over time. The term itself is often used to describe a process of social change, a facet of organisational structure, social business (social entrepreneurship and enterprise), and the development of new solutions to pressing social challenges (Murray et al, 2010).

According to the Young Foundation (2012: 42), the concept of social innovation is:

- Cross-sectoral
- A sub-set of innovation
- Distinct from business innovation

- In part a product and a process
- Involved in various phases from inception to impact
- Intended to empower beneficiaries by increasing their socio-political capacities.

For the purposes of this study, the implied and explicit definition of social innovation is: "Social innovations are new solutions (products, services, models, processes, etc) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships, and better use of assets and resources" (Young Foundation, 2012: 18). Additionally, and with much relevance to the global pandemic, these novel social practices are created with the central goal of extending and amplifying civil society (Hamann et al, 2020).

According to Clausen (2013), interest in social innovation is growing among individuals, organisations, policy-makers, academia and government – yet there is no fixed or conclusive definition, but variations of understanding. Social innovation most commonly alludes to diverse actors sharing visions and interests, who collectively create and implement an innovation to address a development challenge (Mulgan et al, 2007). It reflects a shared ownership through a dynamic interplay across dimensions. Social innovation is concerned with social, economic and environmental well-being, and focuses on developing new strategies to meet unmet needs.

2.5.2. Process of Social Innovation

Murray et al (2010) have identified six stages that take ideas from inception to impact. Mdleleni (2021) explains that these stages are not always sequential and that there are feedback loops between them. The various stages provide a valuable framework to consider the support needed for innovations to grow and make a social impact.

1. Prompts

At this initial stage, the factors which highlight the need for innovation – crisis, poor service delivery, etc – need to be clearly expressed. This is where and when the problem is diagnosed, and the root causes are unravelled.

2. Proposals

This second stage involves ideation or idea generation. This may include formal or informal methods. Here, brainstorming and visual aids are key to clear conceptualisation of the new idea.

3. Prototyping

At this stage, the idea gets tested in practice. This step in the process is particularly important in the social economy, because it is through iteration, and trial and error, that partnerships and collaborations are strengthened.

4. Sustaining

At this stage, the idea becomes everyday practice. Here, ideas are sharpened and streamlined. Income streams are identified to ensure long-term sustainability.

5. Scaling

This stage involves growing and infusing the innovation. Demand matters as much as supply. Innovations take hold in the social economy in many ways, through inspiration and emulation, or the provision of support.

6. Systemic change

Ultimately, this is the goal of social innovation. Systemic change involves many elements, such as social movements, business models, policy and regulations, data and infrastructures, and entirely new ways of thinking and doing. Systemic change comprises of new frameworks or architectures made up of many smaller innovations (Murray et al, 2010: 12-13).

2.5.3. Social Innovation in the South African Context

According to Matsimela (2017), the field and concept of social innovation is not completely new to South Africa. It was initially introduced into policy through the 1996 White Paper on Science and Technology, which was theorised by the then Department of Arts, Culture, Science and Technology. The idea was to change the thinking and narrative about innovation in the country, and reconfigure South Africa's National System of Innovation – to one with post-apartheid goals and objectives (Hart et al, 2014). Subsequently, in the New Growth Path (released in 2010),

government recognised the potential of the social economy to drive sustainable economic development through the creation of social value (Matsimela, 2017). Figure 4 displays a diagrammic conceptual model of the process of social innovation.

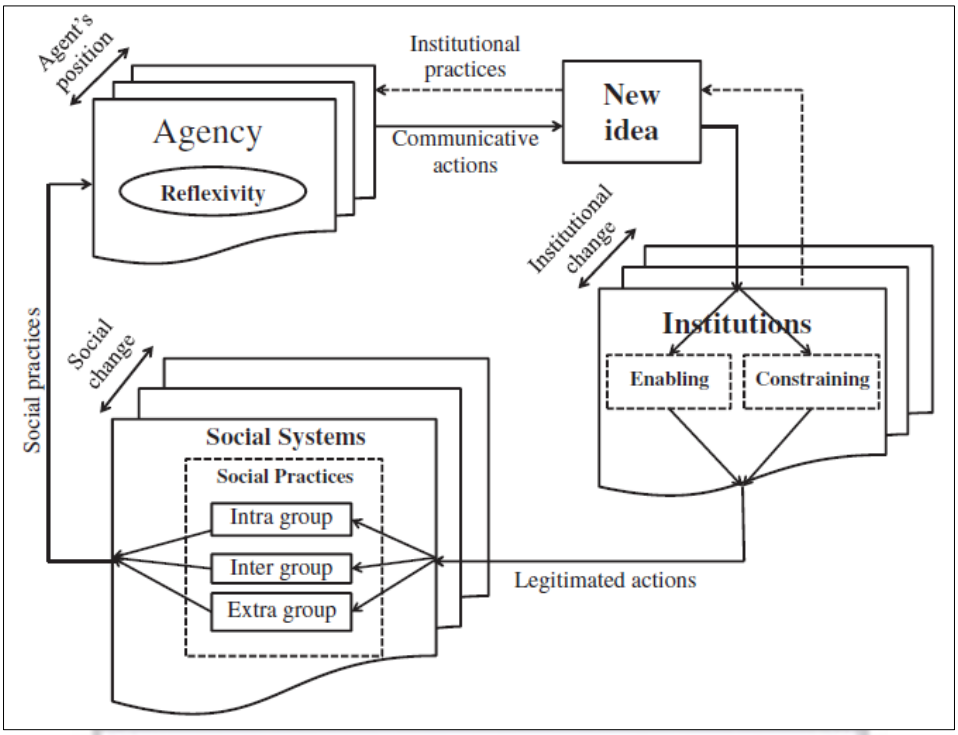

Figure 4. A schematic conceptual model of the social innovation process. Source: Reproduced from Cajaiba-Santana 2014.

Ashoka, an international organisation that promotes social entrepreneurship, pioneered the recognition of social innovation in South Africa. Two university hubs, the Network of Social Entrepreneurs at the University of Pretoria and the Bertha Centre for Social Innovation and Entrepreneurship at the University of Cape Town, have been instrumental in legitimising the emerging field (Meldrum & Bonnici, 2018).

According to Soko (2017), innovation in the technology sector is relatively well established in South Africa. The country has one of the most advanced and growing mobile communication markets in the world. Meldrum and Bonnici (2018) purport that internet penetration is at 52% and smartphone access is at 37%. Tech-driven social innovations make up the majority of

applicants for incubators and competitions across the country. Barclay's accelerator Think Rise, and others like RLabs and Tech Lab Africa, exclusively focus on technological innovations.

Soko (2017) clarifies that for social innovation to thrive, support needs to come from government at all levels, the private sector, NGOs and tertiary institutions. Ultimately, social innovation in South Africa should be about enabling people to ideate and develop their own solutions (ANDE, 2017). However, this will only come to fruition if citizens and their needs are put at the centre.

2.5.4. Social Innovation in the Face of Natural Hazards/Disasters

According to Murray et al (2010), social innovation is prompted by various motivations:

i. Crisis – necessity is the mother of invention. Many countries and cities have used crises to accelerate reform and foster innovation.
ii. Efficiency savings – the right kind of systems thinking can lead to new possibilities.
iii. Poor performance – this highlights the need to transform the way public services are currently designed and delivered.
iv. New technologies – these can be adapted to meet social needs more effectively.
v. New evidence – this sheds light on new needs and responsibilities.
vi. Urban acupuncture – this describes the impact of small-scale projects and how they can create points of energy that make a city or town more open to innovation. Often, these projects symbolise greener, more creative and more 'human' phases of development (Murray et al, 2010: 15-17).

Mittal (2020) explains how social innovation plays a critical role during times of crisis. Crises in any sense, i.e. floods, earthquakes, hurricanes, epidemics, etc. In these times, technologies play a vital role. Technology has been simplifying and enhancing human lives for decades. It is ever-present in all facets of society – transportation, health, beauty, education and so forth. According to Bonnici and Raja (2020), during a crisis, it is crucial to provide and disseminate accurate, fact-

checked information, before anything else. As seen with the global pandemic, misinformation and disinformation are extremely dangerous.

According to Ahmed et al (2020), all countries should be all hands on deck to beat COVID for good. All sectors of society should continue to ideate and develop solutions, constantly adapting to ever-changing world dynamics. Mittal (2020) stresses that the digital divide and technological gaps must be reduced, in order for innovations to have the desired impact. Scholars emphasise that even after the pandemic 'ends', governments need to work closely with civil society and business to stay responsive and ready for future crises. The novel coronavirus, together with other crises, shows that new models of invention, solidarity and collective action are possible. If anything, the COVID crisis has instilled a sense of humanity in people, and this should be drawn on and sustained (Moralli & Allegrini, 2021).

2.5.5. Social Innovation in the Time of COVID-19

2.5.5.1. Community Action Networks

According to Hamann et al (2020), a range of social solidarity networks emerged as a response to the COVID crisis and consequential hunger crisis in South Africa. These networks are deemed critical, because of their 'speed, innovation and local responsiveness'. The CANs, a rapid civil society response, emerged in the diverse communities of Cape Town from March 2020 onwards. The movement later spread to other cities and towns across the country, as the health and economic impacts of the pandemic were increasingly being felt. The initial objective was to ensure that the most vulnerable households within the local community would be supported during hard lockdown. However, its purpose grew to show solidarity across neighbourhoods. CANs in poorer suburbs (Khayelitsha, Gugulethu, etc) paired with CANs in wealthier suburbs (Muizenberg, Seaboard, etc) – bringing residents from varied backgrounds into collective action (van Niekerk, 2020).

Odendaal (2021) explains how this allowed for the exchange of information and ideas, and ensured that food and finance could be channelled to those most in need. Hundreds of volunteers registered in over 100 CANs in the Cape Town metropole. The CANs are connected in an umbrella network called Cape Town Together. Kroll et al (2021) describe that each network formulated its own analysis of what the most pressing issues were/are. The networks made use of social media and virtual platforms, in line with social distancing measures, to connect and organise. Odendaal (2021) purports that the CAN movement has been recognised by politicians and public officials, acknowledging the need for government to partner with such initiatives.

2.5.5.2. FoodFlow

According to the FoodFlow Impact Report 2020, FoodFlow is an initiative which enabled small-scale food producers to feed their local communities during the COVID hunger crisis. Purchases of over R1.6 million benefitted over 400 farmers and fishers, and delivered more than 14,000 harvest bags to more than 30 communities in the Western Cape, Eastern Cape, KwaZulu-Natal and Limpopo. The FoodFlow model is about supporting livelihoods and not just feeding hungry people – considering where food comes from and who is benefitting from the value chain. The model supports the farmers 'upstream' to sustain their enterprises, while also getting food to the families 'downstream' who are experiencing increased food insecurity (Hamann et al, 2020).

FoodFlow is a grassroots, community partnership, and its next phase involves the exploration of market-based approaches to enable small-scale food producers to provide high quality produce and protein directly into their communities (FoodFlow Impact Report, 2020).

2.5.5.3. Food Dialogues 2020

According to the Food Dialogues Report 2020, platforms like the Food Dialogues are critical as they provide the opportunity for citizens and stakeholders to engage with grassroots activists, government officials, university professors and business people. Food Dialogues 2020, hosted by the SA Urban Food & Farming Trust, created a stage to engage the national food system – particularly in relation to the impact of the COVID crisis on global, local and informal systems.

It provided a space for all actors to reflect on the crisis, and their roles in ensuring food security and promoting a just, ethical and accessible food system.

Food Dialogues 2020, sponsored by the CoE-FS and DG Murray Trust, provided a platform to engage the complexity of the food system, especially Cape Town's. The sessions engaged issues of rights, land, identity, economics, diets, health, community mobilisation, etc. The talks were livestreamed and archived, and the Food Dialogues Report serves as a record of a food system and a people in crisis (Food Dialogues Report, 2020).

2.5.5.4. Food Relief Forum

According to Adelle and Haywood (2021), in April 2020, the Western Cape Economic Development Partnership facilitated the formation of the Food Relief Forum. This was in response to the urgent need for coordinated food relief, in the face of the hunger crisis resulting from COVID restrictions and lockdown. Multiple role players from all sectors of society were involved. The success of the forum rests on multi-sectoral cooperation. The EDP stresses that the model means moving away from government's traditional 'community engagement' approach, to real 'partnering' founded on co-planning, co-design and co-implementation (EDP, 2020).

By the end of 2020, the economic consequences of the pandemic were still widely being felt, and the Food Relief Forum evolved into the Western Cape Food Forum. Stakeholders felt that although immediate food relief had abated, the structural inequities of the food system need to be addressed. The Food Forum consists of public and private stakeholders, as well as civil society actors (Trialogue, 2021). It focuses on:

- Promoting multi-sectoral action and joint implementation
- Creating an enabling environment for community-led initiatives
- Continuing with food relief coordination and vulnerability data mapping (EDP, 2021).

2.5.5.5. CoCare Voucher Scheme

According to Adelle and Haywood (2021), one of the most innovative solutions during lockdown was the development of food vouchers schemes, like the CoCare Voucher Scheme. In such a programme, digital vouchers are sent directly to beneficiaries' mobile phones. The solution is safe (the vouchers cannot be stolen), people have choice (within the parameters of the scheme) and beneficiaries decide how to spend it (the full amount is received) (EDP, 2020). Various schemes were piloted and rolled out, in partnership with the EDP, DG Murray Trust, Violence Prevention through Urban Upgrading (non-profit company) and Western Cape Government. The vouchers are redeemable at local food suppliers and spaza shops, rather than formal retailers. Such schemes, funded by a mix of individual, corporate and civil society donors, meet social needs and food requirements, and stimulate local food markets and economic activity at the same time (VPUU, 2020).

Adelle and Haywood (2021) clarify that voucher technologies were initially developed to quickly get resources to those in need, but that they are now performing a much broader function – the development of local and solidarity economies.

2.5.6. Social Innovation in the Time of Drought

2.5.6.1. Dropula

According to Heggie (2018), a professor at Stellenbosch University invented Dropula, in the midst of the Day Zero crisis. It is a locally designed and manufactured smart meter, which allows users to monitor and manage their water consumption in real time. Essentially, a smart meter attached to the municipal water meter detects spikes in usage, and alerts users on their smart devices. The innovation identifies where and why the spike occurred, allowing leaks to be fixed and wasteful behaviours to be curbed. During the drought, Dropula was rolled out to over 100 schools, saving hundreds of gallons of water (Reynolds, 2019). The meter is increasingly being installed in schools across the Western Cape, in order to track and reduce water consumption.

2.5.6.2. Aquatrap

According to Wilson-Harris (2021), a Capetonian innovator created Aquatrap to conserve water and feed the root systems of plants, using recycled tyres. To construct Aquatrap – an inner tube is glued to the inside of the sidewall of a tyre, creating a dish. It is then buried beneath the soil, and the trap collects any excess water, available for plants or vegetables to later consume. The trap also makes the soil warmer, as rubber is an insulator – making crops more comfortable, and yielding larger produce (Wilson-Harris, 2021). Not only is this innovation beneficial to food and water security, but to the environment and warming planet. Abalimi Bezekhaya, Quaker Peace Centre, Nazareth House, etc have successfully implemented Aquatraps.

2.5.6.3. Drop Drop

According to Parks et al (2019), a number of mobile apps were designed and produced during the Day Zero drought, including an app called Drop Drop. Drop Drop was initially developed as a research prototype by the University of Cape Town to test the impact of accurate, fact-checked information on a household's water consumption. Developed by the Information for Community Services research team, it is a stand-alone app that runs on Android smartphones. Users are able to access information on their daily water usage, water conservation methods, municipal contacts, etc. The tool was developed using a user-centred design approach. The design process was iterative – developers engaged users throughout the process (iCOMMS, 2019). The iCOMMS team and the CCT are considering the next phase of the project, and at-scale use and adoption.

2.5.6.4. Hydroponics

According to Mnkeni et al (2020), hydroponics is one of the best ways to use scarce water and fertiliser resources. The technology enables farmers to grow high quality crops on marginal land, rooftops and in greenhouses using limited water supply. Hydroponic systems also enable the production of more plants per area, with light being the only limiting factor. It is often used for vegetables, herbs and fruit-producing plants. There are many methods, i.e. nutrient film, flood

and drain, wick, drip, micro-sprinkler and floating (Mnkeni et al, 2020). In South Africa, and the Western Cape in particular, most large-scale, indoor farming systems use drip or micro-sprinkler hydroponic techniques. It is important to note that hydroponics has been around for a long time, and it is not necessarily a crisis-specific innovation, but within the context of the Day Zero drought, the water crisis catalysed innovative efforts to make more use of such techniques and practices.

2.5.6.5. Internet of Things, Artificial Intelligence and Machine Learning

According to Aguera et al (2020), deployed technologies like the IoT, sensing technologies and aerial vehicles allow for increasing amounts of data to be collected on farms. Sensors can collect data about soil quality and aerial imagery can be captured. Tsan et al (2019) clarify that advances in AI and ML are enabling the use of this data to identify patterns, make predictions and assist in decision-making processes. Farmers are increasingly using these innovations to measure and predict crop yield. In combination with ML algorithms, collated information is used to respond to variability in crop inputs, so as to maximise outputs (Aguera et al, 2020).

Hornby et al (2016) explicate that farming in South Africa should balance water usage and its conservation, the efficient production of food, and ensuring the availability of sufficient, nutritious, affordable food. These are challenges in 'normal' times. As drought becomes the 'new normal', particularly in the Western, Eastern and Northern Cape provinces, these challenges will escalate if they are not adequately confronted (Parks et al, 2019).

2.6. Food Security and Disaster Management Frameworks

2.6.1. National Policy on Food and Nutrition Security (2013)

Food policy in South Africa is developed by various national departments. The Department of Agriculture, Land Reform and Rural Development is central. With the Department of Social

Development, its mandate includes the NPFNS – the most significant food policy in the country to date. According to Pereira et al (2020), the NPFNS provides a framework for the fulfilment of the right to food embedded in the Constitution. The goal of the policy is to ensure the availability, accessibility and affordability of good quality food at both national and household levels (DAFF, 2013).

Delport (2019) clarifies that the NPFNS was designed to address the shortcomings of its predecessor. However, at its core, it does not offer much more. Concerns arose even before its publication, as its development process lacked public consultation and informed input from diverse actors in the greater food system. This narrow and siloed form of decision-making contradicts the one promoted in the policy document itself – 'food security is a complex issue characterised by interdisciplinary approaches' (DAFF, 2013: 4).

With regards to civil society and the private sector, there are no stipulated guidelines on how these sectors should participate, support and engage the policy. The NPFNS emphasises the significance of these sectors' participation and cooperation, yet roles and responsibilities are not clearly defined (Delport, 2019).

The policy recognises the importance of multi-sectoral alignment and coordination. However, due to the limited consultation in the planning process, scholars and practitioners question the commitment of national government to these intentions, and the capability of the NPFNS to lead to real outcomes for food security in South Africa (DAFF, 2013; Delport, 2019).

Delport (2019) describes that there is a lack of focus on employment creation. The policy situates food (in)security within the broader picture of poverty, inequality and joblessness in South Africa, but it does not provide suggestions on how to stimulate job creation. This is evidence of a misalignment of the NPFNS to the strategic goals of the NGP (2010) and NDP (2012).

According to Pereira et al (2020), the policy calls for coordination and partnerships of existing stakeholders within national government. However, lines of coordination and accountability between government departments remain uncertain and unclear (Delport, 2019). Pereira et al

(2016) purport that the NPFNS lacks the legislative framework that is necessary for it to realise its objectives. Policy on its own is not legally binding and therefore not enforceable.

The prevalence of food insecurity in South Africa is high. Policy interventions are indirect actors in the food system that can bring about structural change. Boatemaa et al (2018) simplify that the NPFNS contains gaps and contradictions – there is minimal structure for multi-sectoral collaboration, co-design and co-creation. By addressing these shortfalls, nationwide food insecurity, malnutrition and diet-related non-communicable disease can be considerably reduced.

Succeeding the NPFNS, the National Food and Nutrition Security Plan was published in 2017. However, this plan to overcome food insecurity remains dormant (Sulcas, 2022). The millions of chronically hungry and otherwise malnourished in South Africa are testament to this.

2.6.2. Disaster Management Act (2002) & National Distaster Management Framework (2005)

The DMA and the NDMF are the most significant regulations regarding disaster management and risk reduction in South Africa. The goal of the DMA is to ensure an integrated approach to disaster management, risk reduction and mitigation across all spheres of government, involving all relevant stakeholders and role players (RSA, 2002; RSA, 2005).

According to Bruwer et al (2017), a key feature of the DMA is the important recognition that disaster management cannot be done by national government alone. It requires the cooperation of national, provincial and local governments, civil society and the private sector – through public awareness programmes, early warning systems, risk assessments and formal arrangements to facilitate effective coordination.

Bruwer et al (2017) clarify that various natural hazards pose significant threats to South Africa, particularly when they exceed the capacity of communities to avoid, absorb or recover from

these events. These hazards often result in the loss of lives and livelihoods, cause devastation and financial losses, and even result in the reversal of development gains, as seen with the pandemic.

According to Van Niekerk (2014), although the DMA is detailed and thorough, it should make provision for the implementation of disaster risk reduction within local municipalities. It must be amended to specify the role and function of local towns and cities. Van Niekerk et al (2018) describe that this would ensure that the DMA and NDMF address disaster risk management where hazard risks are created – in metropolitan provinces.

Scholars agree that the DMA and NDMF provide a well-developed framework to guide and support disaster risk reduction, and to manage the disasters that happen (Bruwer et al, 2017). However, they also suggest that the legislation should clearly stipulate the place of the NDMC and all other centres at provincial and local levels. Van Niekerk (2014) believes that the NDMC should be placed within the highest political or administrative office, as this would lead to better implementation and evaluation of the legislation and policy.

Van Niekerk (2014) maintains that the NDMC should embark on a nationwide capacity development campaign in partnership with higher learning institutions. Decision-makers, multi-sectoral stakeholders and disaster management officials must receive focused training and guidance on the correct interpretation and implementation of the regulations.

Bruwer et al (2017) affirm that the implementation of the legislation and policy has not been completely successful. A well-functioning democracy is one that continuously assesses how it is faring and makes necessary changes to its governance. The DMA and NDMF have reached a point at which certain amendments are desperately needed in order for disaster risk reduction to become a reality for communities most vulnerable and at risk.

Van Niekerk et al (2018: 26) clarify that the conundrum of disaster management remains: ‘At which point does a decision-maker err on the side of caution, or when is an intervention too late to safeguard lives and livelihoods?’ National government is the key role player in the management of the country’s disaster profile, and although it has enjoyed acclaim for its

adoption of new-generation laws in the early 2000s, research has shown that strategies without local application are futile (RSA, 2002; van Niekerk, 2014).

In the absence of state intervention, communities are taking it upon themselves to mitigate their risks. However, local capacities, skills and commitment are still lacking. Political will, resource allocation, intergovernmental relations and community participation are critical challenges facing the management of natural hazards (van Niekerk et al, 2018). This is largely due to the 'wait and see' attitude of many government departments, and a clear negligence of responsibility.

2.7. Nexus Between Food Security, Natural Disaster and Social Innovation

Wehn et al (2021) clarify that natural disasters and food (in)security are directly interconnected. Climate hazards like floods, tsunamis and droughts weaken food security and impact agriculture. Consequently, this impacts market access, trade, food supply, food prices, employment, etc. These shocks and stresses create poverty, which in-turn increases the prevalence of food insecurity and malnutrition. Climate and non-climate hazards, like disease epidemics, put food security at risk (Reddy et al, 2019). Poor, vulnerable and marginal populations are most affected by food insecurity during times of crisis.

According to Pereira (2014), the South African food system is dichotomous. On the one hand, there is an established commercial sector. On the other hand, there are small-scale farmers and informal traders. Pereira (2014) describes that the commercial sector is efficient at producing sufficient food and economies of scale make this food more affordable. However, the formal food sector is criticised on the nutritional quality and cultural acceptability of its food. The small-scale farming system has less of an environmental impact and provides dietary diversity in rural areas. However, the informal food sector is severely under-resourced, and therefore more vulnerable to shocks and crises.

Pereira (2014) stresses the need to engage with rapid urbanisation that has distanced people from accessing nutritious whole food. Coupled with an increasing monetisation of the food system, where even rural communities rely on buying food from retail outlets, these trends are

exacerbating the nutrition transition in South Africa. Pereira and Drimie (2016) explicate that urgent niche interventions need to take place to prevent the current inequality in the food system from being further entrenched – inequality which is amplified during times of crisis and disaster.

Ferreiro et al (2021) elucidate how the increasing awareness of societal problems is associated with a wider acceptance of the need for social innovation and diverse ways of understanding the nature of the interrelated challenges at stake. The limits of conventional innovation in addressing multifaceted problems, like food insecurity, and the need to mobilise social innovation are increasingly being addressed in literature on resilience, sustainability and the transformation of complex social systems.

Herrero et al (2020) describe that in the case of current food systems and their shift towards more sustainable models, negative externalities (i.e. pollution, biodiversity loss, public health issues, etc) should be at the centre of the debate. The transition encompasses diverse approaches in food production (organic agriculture, localised agri-food systems, etc) and commercialisation (agri-food short chains, short supply chains, etc), requiring new practices, processes, modalities and technologies.

According to Bansal et al (2019), in the agro-food system, social innovation has been developing through a diversity of forms, in developed and developing nations. It is characterised by the active involvement of consumers and producers. On the part of consumers, it ranges from new attitudes towards fair trade and socially conscious purchase decisions. On the part of producers, it ranges from awareness of the climate crisis and environmental impacts, and the need for a high quality, healthy food supply – providing nourishment and promoting well-being.

2.8. Summary

This chapter reviews the most applicable literature on the interconnected concepts of food (in)security, natural disaster and social innovation. Various measures of social innovation that were implemented during the COVID crisis are presented – CANs, FoodFlow, Food Dialogues 2020, Food Relief Forum and CoCare Voucher Scheme. Likewise, various measures of social

innovation that were implemented during the Day Zero crisis are presented – Dropula, Aquatrap, Drop Drop, Hydroponics, and the IoT, AI and ML. Interestingly enough, most of the innovations and inventions relative to the drought are of a more technical and technological nature, as opposed to those relative to the pandemic. However, these technologies and solutions qualify as social innovations as they are concerned with social, economic and environmental well-being, and meet unmet needs more effectively than existing solutions. Furthermore, the limitations of the NPFNS (2013), DMA (2002) and NDMF (2005) are discussed. The chapter concludes with a nexus of the three central concepts and sets the stage for the following chapters of the study.

3. Chapter Three. Research Design and Methodology

3.1. Introduction

This chapter presents a comprehensive explanation of the research methods used in the study. It includes the examination of the broad methodological orientation, data types and data collection methods, as well as techniques employed in the data analysis. Furthermore, the chapter clarifies the procedures followed during the fieldwork, and primary and secondary data inquiry. It concludes with a personal impetus, where setbacks and experiences are reflected upon, and a delineation of the research relevance and credibility.

3.2. Research Design

A research design is largely described as an overall plan or 'blueprint' of how the researcher intends to conduct research or undertake a research endeavour (Mouton, 2001). Berg (2001) defines a research design as a broad road map used for planning purposes when undertaking a study, while Yin (2014: 20) defines it as a "logical plan for getting from here to there – where 'here' is the initial set of questions to be answered, and 'there' is some set of conclusions derived from the findings".

According to Mouton (2001), designing social research entails the researcher to map out various strategies to be employed to enable the realisation and revelation of the most valid, appropriate and relevant results for the research problem being investigated. In social research, there are two distinctive approaches – qualitative and quantitative. The key differences lie in their respective philosophical and methodological orientations. From a theoretical standpoint, the two approaches vary and contrast in their claims to knowledge (Creswell, 2003).

This study is carried out in a qualitative research design, where knowledge is deemed as socially constructed – implying that meanings are construed and crafted by individuals as they constantly engage in the world they are interpreting and making sense of (Creswell, 2003). For this reason,

the views of the study respondents really matter in the issue/s being examined. Consequently, qualitative research design is exploratory and inductive.

3.3. Research Methodology

Research methodology is considered an inquiry process that has defined limitations. Essentially, it aims to source and create not just new, but beneficial knowledge (Babbie & Mouton, 2006). The qualitative approach entails discovery, a high level of detail and a depiction of research participants' authentic and candid perspectives (Krueger, 1994). It allows for a deeper analysis of the empirical phenomena under investigation, since respondents are given the autonomy to share and express themselves freely. On the other hand, the quantitative approach explores phenomena with numerical illustrations and manipulations (Yin, 2014).

3.3.1. Qualitative Research

Qualitative research methods traditionally focus on trying to understand human social behaviour, culture and context. It seeks to acknowledge and develop ideas which help perceive social phenomena – and in terms of this study, not only social inequalities, but social cohesion and mobilisation too. This research aims to gain and provide an understanding of the experiences and perceptions of individuals, and the meanings attached to their viewpoints (Agius, 2013).

Sutton and Austin (2015) clarify that a qualitative research method can help a researcher access the innermost thoughts and feelings of study respondents, which can enable a comprehension of the meaning that people ascribe to their lives, experiences, contexts and work. A qualitative research design is deemed appropriate for this study, as it addresses the 'how' and 'why' of social innovation in relation to food (in)security, and its influence and potential during war and peace time. Qualitative research, whether through informant interviews, focus group discussions, household case studies, participatory learning and action, or participant observation, allows for

respondent-led, rich data, from a relatively small sample size, that cannot easily be put into numbers to understand social phenomena and human experiences.

3.4. Non-Probability Sampling

Two types of sampling exist – probability (random) and non-probability (non-random) sampling. Choosing which type to apply is dependent on the goal and purpose of the research (Taherdoost, 2016). For the purposes of this study, non-probability sampling techniques are used. A sample is selected for a particular and explicit purpose – the participants' experience, expertise, insight, local knowledge and community engagement. The sample size of the study is informed by the need for representativeness of findings and accuracy (Bryman & Bell, 2008). Experts, academics, project leaders and changemakers are the targeted population.

Non-probability sampling is divided into various categories – quota, snowball, purposive and convenience sampling (Taherdoost, 2016). Due to the nature and scope of this research, the researcher uses a combination of purposive and snowball sampling to find and engage prospective participants.

3.4.1. Purposive Sampling

In purposive sampling, the researcher always has the primary purpose of the research in mind, and chooses respondents based on particular expertise and/or experience, directly correlated to the research problem. This sampling is typically used in exploratory or field research. Purposive sampling is accessible, convenient and selects participants who are most applicable to the research design (Showkat & Parveen, 2017). For instance, Suri (2011) describes that when studying attitudes about climate change and the current climate crisis, a sample of climate experts and activists should be selected to contribute to the study. These individuals qualify to be a part of the sample, as they would have the most relevant, reasonable and comprehensive responses. However, it is important to note that such a sample would provide expert attitudes, not other role players' attitudes and perceptions.

3.4.2. Snowball Sampling

Snowball sampling is a method where the research sample is collected in various stages. The process starts with the collection of data from one contact (the initial seed). At the end of the data collection method (interview, survey, etc), the researcher asks the respondent to provide contact details for other potential respondents in their respective networks. If the initial participant agrees to share, these prospective participants are then contacted, potentially interviewed and further asked to provide more contacts to the researcher. This research process continues until the target sample size or saturation point is reached (Showkat & Parveen, 2017).

For this study, the researcher reaches out and invites Respondents A, B, D, J, M, N and O to participate in the study directly – based on their expertise and experience (purposive sampling). Respondent B provides the researcher with Respondents C and E's contact details. Respondent C provides Respondents F and G's contact information. Respondent D provides Respondent H's details. Respondent G provides Respondent K's details. The researcher receives Respondents I and L's contact information through individuals who do not have the capacity to participate themselves, but who kindly forwards colleagues' details along (snowball sampling). The research process continues until data saturation is reached – which results in a sample size of 15 participants. See Table 1 in Section 3.5.1. This sample size ensures that there is enough, but not too much, data. The sample is small in order to support the depth of analysis that is fundamental to this mode of inquiry.

3.5. Primary Data Collection

3.5.1. Semi-Structured Interviews

Qualitative research interviews offer in-depth information on experiences, thoughts, insights and perspectives of study respondents. An interview is a systematic and constructive method of

attaining highly personal data. For the purposes of this study, semi-structured interviews are conducted, using open-ended questions. The interviews capture the personal and professional views of the participants. Effectively, the interviewee is far more than just a conduit from which raw data is extracted, but an active participant in meaning-making.

Semi-structured in-depth interviews are the sole primary data source for this qualitative study. The interviews are organised around a set of predetermined open-ended questions, with other questions and remarks able to organically emerge from the dialogue between the interviewer and interviewee/s (Ryan et al, 2009). Interview sessions are conducted virtually, in accordance with COVID regulations and social distancing protocol. Interviews range from 40-90 minutes. Refer to Appendix D for the interview guide. The interview protocol is created to intersect and interconnect the three central concepts of food security, natural disaster and social innovation, within the South African milieu. The researcher poses simple, yet broad questions – allowing respondents to highlight and emphasise what they deem most relevant and significant. As the interview progresses, the questions become more focused and specific. The final question is all-encompassing, and ties the interview together. The interviews are an attempt to gage and gain a local 'bigger picture', beyond current literature. Table 1 lists the research participants from Respondent A to Respondent O, and their respective affiliations.

Table 1. Study Respondents

Interview	Participant	Affiliation
1	Respondent A	African Climate and Development Initiative
2	Respondent B	African Centre for Cities
3	Respondent C	Centre for Complex Systems in Transition
4	Respondent D	Centre of Excellence in Food Security
5	Respondent E	Oranjezicht City Farm
6	Respondent F	African Climate and Development Initiative
7	Respondent G	Independent Researcher/Consultant
8	Respondent H	Western Cape Economic Development Partnership
9	Respondent I	Food Security Initiative

10	Respondent J	Centre of Excellence in Food Security
11	Respondent K	African Marmalade
12	Respondent L	FoodFlowZA
13	Respondent M	Ladles of Love
14	Respondent N	Muizenberg CAN
15	Respondent O	Western Cape CoLab

3.6. Secondary Data Collection

3.6.1. Literature Review

The literature review set out in the previous chapter sets the broader context of the study; situates existing literature in a wider academic, social and historical context; and shares what has been accomplished in the area/s of study and what still needs to be. A literature review allows the researcher to organise and synthesise information in a manner that permits a new and fresh perspective (Randolph, 2009). According to Boote and Beile (2005), a good literature review is the basis of both theoretical summary and methodological refinement, improving the quality of subsequent research.

The literature review synthesises, from credible sources (inter- and transdisciplinary journal articles, reports, book chapters, etc), the collective and broader conclusions most applicable to the researcher's academic interests. It evaluates the existing state of knowledge on the concept and application of food (in)security, natural disaster and social innovation, particularly in the midst and aftermath of a global pandemic, within the South African milieu.

3.6.2. Document Analysis

Document analysis is an effectual method to attain empirical data as part of a research process that is indirect and passive. In this study, this method is combined with the other data collection methods (literature review and interviews), to minimise bias and establish credibility. The process of procuring relevant data is appropriate to the research problem and the study's conceptual framework. The researcher determines the value of specific pieces of national legislation and policy (NPFNS, DMA and NDMF), taking into consideration the purpose of the documents and the context in which they were formulated (Bowen, 2009).

3.7. Data Analysis

Data analysis is central to credible and reliable qualitative research. In research of this kind, the researcher is seen as the research instrument. For the purposes of this study, the researcher adopts an interpretative approach to process and analyse the primary and secondary data. After the completion of interviews, the interview data is critically analysed. First, the interview recordings (and observational data) are transcribed verbatim into written text. Thereafter, it is organised and analysed using the thematic analysis technique.

3.7.1. Thematic Analysis

The thematic analysis technique is a method of identifying, organising, describing and conveying various themes within a dataset (Braun & Clarke, 2006). This method is suitable for both explorative and deductive studies. In the following chapters, the most relevant data is clearly presented using explanations, quotations and descriptions. Clarke and Braun (2013) explicate that a rigorous thematic analysis can produce high quality, trustworthy findings. The technique provides a refined and systematic approach to the inquiry of data. It allows the researcher to assign an analysis of themes with an analysis of the study as a whole. The researcher identifies the key themes by grouping interview questions and responses, and reflecting on the interview process in its entirety – in relation to the ultimate purpose of the research endeavour. The seven themes, presented in Chapter Five, attempt to simplify, relate and showcase the most critical findings and points of analysis, emanating from this study.

3.8. Ethical Considerations

Ethics is of utmost importance in any credible and reliable research undertaking. The researcher conducting this study avoids harm to all respondents, communicates information concerning the research clearly, obtains the informed and free consent of participants and stipulates respondents' right to privacy and anonymity (see Appendix A). All data attained from respondents is treated with confidentiality. The researcher clearly relays that the research is strictly for academic purposes (Laws et al, 2013).

Respondents are made aware that they are free to withdraw from the interview at any given time (see Appendix B). The study adheres to the research ethics policy of the University of the Western Cape, UWC Code of Conduct for Research, applicable to all staff and students.

Moreover, the researcher understands the bearing of ethical clearance. Ethical approval not only legitimises study findings, but ensures that research is conducted in a responsible manner, and that the study leads to beneficial outcomes (Hanekom, 2018).

The Economic and Management Sciences Higher Degrees Committee and the Humanities and Social Science Research Ethics Committee of UWC approve the methodology and ethics of this research project. Its reference is HS21/2/11 and reference code is UWCRP200421SM (see Appendix E and F).

3.9. Personal Impetus: Setbacks and Experiences

Throughout the duration of the study, from inception to completion, the researcher experiences personal, social and administrative challenges. The researcher includes this section not to invoke sympathy, but as a potential means of inspiration to aspiring candidates undertaking research endeavours of their own. It is a way of relaying that despite delays and agitations along the way, the researcher perseveres.

Some experiences and setbacks include: Having to find and secure another research supervisor as the supervisor initially secured could no longer serve as one, having to conceptualise and frame an entirely new research proposal and study, delays in procuring official documents to submit for funding purposes (due to the University's adaptation to online, remote systems), delays in institutional meetings (deferring research approval and ethical clearance), having to conduct research virtually due to social distancing protocol, disruptive load shedding, connectivity issues, technology/electronics mishaps, inability to access the university campus (UWC Library, ISD, CoE-FS, DPGS, DVC: R&I Office, etc), inability to freely interact with lecturers, classmates and fellow students, navigating life during unprecedented times of fear and anxiety, post-COVID fatigue and brain fog, balancing work, study and family commitments, bereavement (loss of father), but most significantly, having to educate myself on the three central concepts.

The researcher did not formally study food security, food systems, natural disaster, disaster management, nor social innovation and entrepreneurship. Due to the researcher's association to her supervisor and his research domain, she enabled herself through MOOCs offered on Coursera, FutureLearn, etc. Platforms like The Conversation, Daily Maverick, TED, etc provided much-needed context and comprehension of not only the concepts, but the interconnectedness of the SDGs and potential solutions. Through the study, the researcher understands that the worst of COVID-19 and drought must be relegated to memory, but that much can be achieved with creativity, curiosity, collaboration and solidarity of purpose.

3.10. Research Relevance and Credibility

In 2020, the researcher participated in a Social Innovation and Development research niche area webinar. The researcher introduced her working research topic and explained the societal relevance of the prospective study. The webinar was broadcasted to the wider UWC community. Moreover, the researcher contributed to sourcing and appraising relevant articles for a rapid review, 'Barriers faced by higher education institutions in the time of COVID-19'. The researcher focused on challenges faced by university students during the pandemic, and this contributed to a deeper cognisance of just how disruptive the COVID crisis was.

In 2021, the researcher attended and participated in a niche area writing retreat, where critical conversations were had with PhD candidates, affiliated to the Centre of Humanities Research and School of Nursing, respectively. Furthermore, the researcher participated in a 'train the trainer' Social Innovations Lab (CHS, UWC) by Social Innovations Partners (Journal, Institute & Lab).

In 2022, the researcher attended the inaugural SDG Indaba, hosted by UWC and the DSI (see Appendix G). The researcher engaged fellow delegates (ISD colleagues, panellists, etc) about the SDGs and current trajectories, and this contributed to a deeper clarity and appreciation of her own study.

3.11. Summary

This chapter explores the applicable research design and methodology (qualitatively oriented research), sampling techniques (purposive and snowball sampling), primary and secondary data collection methods (semi-structured interviews, literature review and document analysis), data analysis method (thematic analysis) and ethical considerations of the study. The chapter concludes with a reflection on the challenges and experiences faced throughout the study, and a contextualisation of the evolution and appraisal of the investigation.

4. Chapter Four. Research Findings

4.1. Introduction

This chapter presents primary findings from the in-depth interviews conducted with the study respondents. It provides a comprehensive overview of the interrelated concepts embedded in the study, from the personal and professional perspectives of the research participants. It explores current understandings and localised narratives, imparting sound debate and multi-sectoral views. Effectively, participants' responses are rendered, described and supported by verbatim quotes.

4.2. Questions and Responses

4.2.1. What are the challenges of food security in South Africa?

Respondent D defines and conceptualises food security:

> *"We think of food security as comprising of whether food is available (do we produce enough food), whether food is accessible (can people afford it), how food is utilised (are people eating nourishing and safe food), and then how stable these three dimensions are over time."* [R:D]

Respondent D describes that South Africa's food security problem is multifaceted and complex:

> *"In most years, other than extreme drought, we have enough food available, so we produce enough calories to feed our population – enough proteins and micronutrients. But owing to the extreme inequality in South Africa, about a quarter of our population do not have access to sufficient food. They simply cannot afford to buy food. So, either food is too expensive or incomes far too low."* [R:D]

Respondent D elaborates that South Africa is characterised by a double burden of malnutrition – about 25% of the population is undernourished and around 55% is overweight or obese:

> *"Some people do not get enough calories and micronutrients, and are thus effectively starving. Or people are eating too many calories (too much salt, sugar and fat). And this is not because they are wealthy, it is because they are poor and unhealthy, highly calorific food is cheaper to afford."* [R:D]

Respondent E clarifies that the food security challenge is driven by deep poverty and inequality in the country:

> *"Like so much else in South Africa, it is driven by deeply entrenched inequality, structural inequality, and of course, it is highly racialised. That is driving most of what the challenge is. On a national scale, it is supposedly not a supply issue, but a distributional and access issue. It is just a deeply unequal and unjust society that we live in."* [R:E]

Respondent G describes the very centralised food system in South Africa, and explains how it is inequitable and highly problematic:

> *"We have a very concentrated and centralised system which is not conducive to the economic transformation we need in this country. What we need to do is to decentralise very critically and build the capacity of people to produce food themselves. At a household level, but also at a collective level. We need more localised food, more diversity and more resilience."* [R:G]

4.2.2. How can South Africa's food system be reshaped to be more resilient and sustainable?

Respondent C explains that it is extremely difficult to break the power of the business-as-usual way of doing things:

> *"We tend to have a crisis and then frantically look around for solutions, and you actually need years to build up social capital, connections, etc. The drought in the Western Cape precipitated a*

lot of interesting food-related initiatives, mainly within informal settlements, focusing on community gardens and indigenous foods, and growing, processing and selling foods within place." [R:C]

"Maybe the new system configuration we are looking for is not about taking these niche regimes and building them into another dominant model, but to have pockets of connected niches." [R:C]

Respondent E stresses that national government does not know its role with regard to the food system and that is the crux of the seemingly intractable problem:

"Until government figures it out, there is little that can be done. So, we are left with emergency food relief and other scrambling, which keep hungry people from starving. There is a massive gap between the realities of people and their ability to participate in the systems that exist for getting food. Government needs to get its head wrapped around what its role is, and to be under pressure to deliver on the constitutional right to food." [R:E]

"Like we have complementary public and private systems, we need the same within our food system. We have public/private education, fee-free schools and private schools, but there is no child unable to attend school. And the same with the public/private transportation system, finance system, healthcare system, etc. But for some reason our food system has been abdicated to the private sector. And that is the root of the problem." [R:E]

Respondent J explicates that COVID-19 was very instructive and showed that the current food system, although flawed, is resilient:

"There were concerns because of lockdown and restrictions on mobility, that supermarkets would be empty, that there would be no food in markets, spaza shops, etc. So, there was panic-buying. There was also price-gouging. But after food was declared an essential sector, the food system continued to produce and supply food through the value chain." [R:J]

Respondent J elaborates that in the longer term however, the food system is in fact dysfunctional:

"It is not generating healthy diets. The food system is generating enough food, but not the right food. It is resilient, because there is lots of money being paid. It is very profitable for Tiger

Brands and other big companies. They make sure that the current system keeps operating to earn their super profits." [R:J]

4.2.3. What are the challenges of food security in the context of natural disaster?

Respondent E emphasises that the populations and people who are most vulnerable in times of shocks and stresses, suffer the most:

"Very quickly lots of people get into increased vulnerability and crisis. Whatever the driver of the crisis is, we do not have a lot of resilience in our food system, meaning that the emergency response has to be quite drastic. These different instances play out differently. In times of drought, we have reduction of local supply, so we need to import more and people spend more. And that also plays out in terms of people who work in the food economy, perhaps losing their livelihoods. It all spirals in on itself." [R:E]

Respondent F reflects on drought and the general public health landscape in South Africa:

"You have drought and heat, which affects agriculture and sustenance. There are direct effects of water scarcity, in terms of hygiene and running daily life. But it also threatens whether you are able to grow vegetables or cook." [R:F]

"Then you have factors like the COVID pandemic and the general public health situation in South Africa, TB and HIV, and other health crises. Disaster ends up creating and putting additional pressure on people who are already struggling." [R:F]

Respondent G describes how the national economy is fragmenting and shattering, and how there is a consolidation of a core of individuals who are doing exceptionally well, while the majority are marginalised and increasingly vulnerable:

"If the whole system is based on going to the supermarket to buy food, and you cannot, what are we gonna do? We need an answer. Then, the answer is to either control food prices or make food free to an extent. We have the right to food in the Constitution, but it does not get used." [R:G]

"I was in a meeting once, and I was saying, what is it psychologically that makes us have a situation where inside supermarkets you have shelves packed full of diverse, lovely foodstuffs, and outside people are sitting hungry? But we do not breach this wall and procure food for people who need it. Of course you do not want to destroy systems, but these people are hungry now. The problem is every day, for millions of people." [R:G]

4.2.4. How can vulnerable communities be more food-secure during times of crisis?

Respondent B considers the success of the CAN movement, community kitchens, etc during the height of the COVID pandemic, yet looks towards more systemic and long-term solutions:

"In the short term, there is the role of CANs, etc to provide emergency connections. In the longer term, it is finding ways to increase agency, and to think creatively about a more robust and sustainable local food system. Part of that will be growing food, but we have to be very clear about what the limitations have historically been. There are interesting things starting to circulate and percolate. How can you use NGO or state resources to kick-start the local economy in ways that are going to generate a generative food environment?" [R:B]

Respondent B describes the VPUU project, where ECDs get vouchers that are only redeemable at local retailers and vendors:

"It uses Flash technology. The problem with the food vouchers that were initially rolled out during the pandemic was that it just put money into Shoprite. Money into the community and straight out. If we can think about how to multiply the benefits of any support coming in, that is an important point." [R:B]

Respondent G argues for the integration of emergency food relief as a core facet of the broader food system:

"It is on the margins as a welfare thing. It must be integrated into it, so that at a local community level, people can identify the people who are vulnerable, how do we get food to them, do we have

local food banks, is there somewhere people could go if they need basic foodstuff, and then what is the local production capacity. We need to organise the food value chain as communities. We have left it for these big corporations to do and it is not working." [R:G]

Respondent H explains that a crisis response is primarily about the quality of relationships in the system:

"With the COVID crisis, communities that had prior relationships internally and externally did better than isolated communities that had no history of organisation, weak relationships internally or gang-ravaged communities where people cannot organise, where the only relationships are gang-controlled, or very isolated pockets of informal settlements that have no connections to the outside world." [R:H]

"It boils down to the quality of relationships and whether they are one-way/two-way, top-down/bottom-up, of solidarity/charity, abusive relationships between community and government, thin relationships because of mistrust vs thicker relationships, whether people have worked together and have confidence to quickly pull together, etc." [R:H]

4.2.5. How does the social innovation landscape look in the South African context?

Respondent E explains that during the height of the COVID crisis, social innovation was powerful and important, and that it was essential in the response to the pandemic:

"We were all facing the same situation. A deadly virus. That was locking all of us down, regardless of income, wealth, race, gender, etc. Economic ruin, disease and the terror of losing loved ones strangely bound us all together. How much of it sticks, how much of it lasts, what we learnt, what the living memory is, is this like lessons of World Wars or the Great Depression, who knows?" [R:E]

Respondent E describes how the Western Cape Food Forum grew out of some of the CAN-like efforts:

"We looked at where the community kitchens are, where the supplies are, where the redundancy is, how we can share logistics, all those kinds of things. As partnerships and collaborations started to work, I moved on to find those spots where these coalescing things needed to find each other and come together." [R:E]

"In the meantime, our farms were essential services, so we could carry on growing food. I could focus on these systemic connections within our local food system. And that is playing out now, in terms of how social innovation is taking shape, looking at a post-pandemic situation." [R:E]

Respondent H clarifies that the EDP's Food Forum was the bird's eye view, the strategic overview of coordination, and then the organisation, in partnership with the Western Cape Government and DG Murray Trust, got down on the ground and experimented with digital vouchers:

"How do poor, overworked women desperately trying to cook enough food for hungry people account for the food? We set up WhatsApp groups and said, take pictures of your receipt/s – it takes a few minutes to do, every second week. Having accountability is important, but you do not want to make it so onerous that soup kitchens or volunteerism are paralysed by bureaucratic impediments." [R:H]

"A digital voucher can be used to promote agency, as opposed to some poor family being randomly selected to receive a food parcel. Which will perhaps stop the hunger, but there is little nutritional value. Just maize meal or soya." [R:H]

Respondent O explains how social innovation takes place on many different levels, with many different actors:

"There are so many people who want to make a difference. People who do not care about academic silos or the area of interest they are supposed to be operating in, because they just want to solve a problem." [R:O]

"Social innovation is solving problems in new ways. I have worked with town planners and they always use the term 'urban acupuncture'. You need to find these pockets, where you have

interested actors and some level of institutional support. And if you find the leverage points, you can have impact through linking initiatives together and understanding how interconnected things are." [R:O]

4.2.6. Can social innovation address food (in)security during times of crisis? Are changemakers critical during unpredictable times, and can they promote positive change?

Respondent B explains that there is a diversity of social innovation at play, that if social innovations are implemented on the basis of having a robust understanding of the challenge and context, and are subject to ongoing iterative monitoring and evaluation, then there is potential:

"It is difficult to think about, because food (in)security is so multifaceted. It is economically, socially, spatially and politically determined, making it really difficult to assess impact. You may have an immediate short-term impact, but does it have a long-term legacy?" [R:B]

"Now more than ever we have to think of these things as a suite of potential ways of intervening. I am weary when something comes in, this is gonna be the solution. And sometimes people need to promote what they are doing as that, because that is how you get buzz and funding. But the challenge is so complex that any efforts at innovation should be welcomed." [R:B]

Respondent E elucidates that communities and CAN-like networks are more agile than bigger institutions and government. Ordinary people are not bound by policy frameworks, so ordinary people can make things happen:

"These initiatives are crucial in times of crisis. Changemakers are simply people who are relatively well-networked and motivated to support their communities. Whether they are driven in a social entrepreneurial way, the fact that they are in a position to help do good things, makes them valuable in uncertain times." [R:E]

"In a crisis, no system in a corporate environment is designed with a single point of failure. You have redundancy and resilience. In government speak, this is inefficient. You have multiple nodes

that can do the same thing. These things need to have cause/effect relationships and that can be constraining when they have to be agile. Whereas communities, you are the amoeba, you flow around, through and over the problem." [R:E]

Respondent K explicates that changemakers and the bottom-up approach are definitely needed in precarious times:

"The solutions are going to come from the people and not from the top. People say, what you are doing is innovative and amazing, but I am just doing what people are supposed to be doing. I am providing a solution to something that people have neglected – we are growing resilient crops at African Marmalade." [R:K]

"We have also found ways to prepare indigenous African food that makes it more appealing, even to urban consumers. What would previously have been regarded as 'rural food' is now seen as something that can assist in combating hunger." [R:K]

Respondent O describes that during times of crisis, there are hard systems, and these are under threat and stretched, hence, the more flexible response mechanisms are critical:

"The changemakers, people operating between the lines, are essential. In terms of social innovation for food security, it is critical that people have ownership of processes, design and co-creation. The big challenge in times of crisis is that we do not always have the capacity to deal with the crisis. The moment you do not have capacity, you resort to blunt instruments and simplistic policy." [R:O]

"With social innovation, because it is per definition, closer to the victims, the end user, the people who need food, it is in a better position to assist. But in times of crisis, we are facing this conundrum that the people who are most able to help are the ones who are also most hamstrung by directive, top-down, disaster management regulations." [R:O]

4.2.7. Is the national food security framework comprehensive and inclusive?

Respondent B emphasises that there is a shocking history of food policy in South Africa, and that the NPFNS of 2013 is not comprehensive, nor inclusive:

> *"The NPFNS is relatively transversal. However, it mis-frames where the challenge of food insecurity is and does not grapple with issues of mandates, markets, and still holds implementing power at national and provincial level."* [R:B]

> *"In 2020, there were efforts to try and get a Right to Food case before the Constitutional Court. There were discussions about, is the case that we have the right to food and government has serially been proven not to have taken this seriously, in how they have designed policy, done public participation and implemented. Overall, the policy has significant gaps and has never been anywhere near implemented."* [R:B]

Respondent D believes that the NPFNS is comprehensive, as it has the right ingredients, but that it is not all that inclusive, as it does not include civil society:

> *"They ought to have established a society-wide food council, and that has not been established. There is a technical coordinating committee, which is largely government with some NGOs. So, I would not describe it as inclusive. It is too focused on the availability of food. The focus is on growing more food and having a better agricultural system. There are not enough questions of nourishment and ultimately, how people are going to afford food."* [R:D]

Respondent H poses the question: If something is comprehensive, if something is inclusive, does that make it a good policy?

> *"In 2014, the CCT hired some of the best people in food policy, and they drew up a 300 page report, which had a lot of support from grassroots, communities and NGOs. The mayor said no. Two years of work disappeared because the mayor had a fight with the farmers in Philippi. So, was that a good policy? No, because it had no impact on city actions. Was it a good document? Absolutely."* [R:H]

> *"In 2015, the Western Cape Government drew up a good policy report. It was a participatory and inclusive process. It had a lot of buy-in and got up to cabinet. It did not make it through the*

authorising environment for a host of internal reasons, which had nothing to do with the quality of the document." [R:H]

"I am not a fan of any policy that is not implementable. Often policy falls short. They have an evidence base, and why we need to do this, which is good. What needs to be done? This, this and this. It never says who needs to do what and how people are going to work together." [R:H]

4.2.8. Is the national disaster management framework comprehensive and inclusive?

Respondent H clarifies that the DMA of 2002 and NDMF of 2005 concern when and how a national, provincial or local disaster is declared, and the criteria for classification:

"The DMA sets out a lot of regulations. There is often a clash between the national, provincial and local centres. It is very hierarchical. It is not aligned to engaging locally and taking instructions from the ground. It is about SAPS and oversight." [R:H]

"But with something as protracted as a pandemic, I have not seen disaster management play too much of a role, because it became too complicated. I am not against top-down responses in some respects, but they do not understand how to connect with bottom-up mobilisation of communities, civil society, NGOs, faith-based organisations, etc." [R:H]

Respondent K explains that during heavy lockdown, government tried to regulate how food gets to people:

"For instance, you were gonna supply food in Diepsloot. But government says to deliver the food at a depot somewhere in central Johannesburg. It could have taken less than 30 minutes. Now you have to use your own transport, drive much further, provide the list of beneficiaries, etc." [R:K]

"You are dealing with vulnerable communities where you are not gonna have physical addresses, because people are constantly moving. If you pay your rent, you stay here, if not, you are gonna

crash with a relative. No proof of address. No municipal account. People are sub-letting and renting." [R:K]

Respondent K describes that national government is not thinking on its feet, in as far as disaster management, and is not able to respond promptly:

"The long queues for food are proof. And people having to go to the hospital during the pandemic. With social distancing, less people could go at a time and there were more queues for medical help. We need to come up with policy and solutions that work for us as a country." [R:K]

4.2.9. What kind of social innovations have been implemented to mitigate the challenges of the novel coronavirus/hard lockdown? How effective have they been in addressing the threat posed by COVID-19 on food security?

Respondent E reflects on the efforts of the CANs, connecting FoodFlow with Philippi Economic Development Initiative, VPUU's circular economy model and the Food Forum's contribution in addressing the food crisis:

"The CANs were community to community, context- and resource-specific. With the CANs and outside of them, what is available to work with? Let us strengthen and work with that. WhatsApp was crazy. The partnering, information flow and physical capacity was fantastic." [R:E]

"VPUU turned out to be an interesting one. They were initially linked to PEDI and getting some parcels, but then trying to have the circular economy component. Rather spend money locally and at spaza shops." [R:E]

"The Food Forum can be read as social innovation. The linking of organisations to share information, are we overserving in some areas and underserving in others, not cooking and delivering on certain days of the week, etc." [R:E]

Respondent E explains that the use of digital channels in innovative ways was the 'tech' of the pandemic:

"It was an enabler in lockdown. WhatsApp is the signature thing. Facebook is more storytelling, sharing results, but the work happened on WhatsApp. In times of crisis, we often do not have time to come up with something brand new, but we can use and adapt what already exists." [R:E]

Respondent G believes that the pandemic sped up a lot of processes that were already starting to take place in a subterranean way:

"The issues of localised food systems, local agency, people taking control over themselves, networks of solidarity, etc. And then seeing how you consolidate that, how you build on that impulse and make it more of a systemic thing." [R:G]

"There has been a lot of spontaneous networking forming on the ground, the CANs in different settlements, and the crossing of racial boundaries. Getting to the practicalities of how you organise the food system at a local level." [R:G]

Respondent G reflects on other social innovations and community initiatives:

"In Soweto, information about COVID and gender-based violence was disseminated. People were identifying vulnerable households. As a food procurement team, we connected community groups to deliver food. There was a proliferation of mobile apps, connecting farmers to markets. Box schemes. Voucher systems. We need to draw on and learn from these things as we go." [R:G]

Respondent H alludes to Cape Town Together and the CAN movement and how these networks are a deep form of social innovation:

"They are different ways of organising within civil society, let alone with government. People did not understand that. It is a radical form of local self-expression. Local organisation and locally driven processes, with solidarity." [R:H]

Respondent H describes the Food Forum and digital vouchers as measures of social innovation:

"The Food Forum is an example of where you have an intermediary organisation like the EDP, with no background in food, we are not the experts, nor charity, but we knew that there had to be some cohesion in the system. It is innovation around the governance of a response during a crisis." [R:H]

"The role of the digital vouchers in being able to use technology, pins, codes, etc to be able to transfer resources directly to the ground and to collectives of people. And it is ongoing, the vouchers are being refined and developed." [R:H]

4.2.10. What kind of social innovations have been implemented to mitigate the challenges of the recent drought in Cape Town/Western Cape? How effective have they been in addressing the threat posed by drought on food security?

Respondent D believes that the Day Zero crisis produced greater empathy across society:

"Wealthier people thought about where water comes from for the first time. And what to do when it is in short supply. Perhaps, that better equipped us for COVID." [R:D]

Respondent D reflects on some technical and technological innovations that could be read as social innovation:

"Many smallholders switched to drip-irrigation. They used more water-efficient technologies to be able to irrigate and many started looking for such technologies to sell. In our local Agri-Mark, suddenly Israeli and Indian micro-irrigation systems became commonplace." [R:D]

"At the CoE-FS, we are looking at indigenous grains and legumes, to better understand what makes them drought, salt and heat-resistant. We are looking for answers of how to breed better plants, plants that are better adapted to climate change." [R:D]

Respondent E clarifies that the infrastructure investments are the biggest change and that these measures have a lasting legacy:

"We still have JoJo tanks, low-flow faucets and fixtures, etc. To stand under a hot shower for over ten minutes is impossible. That is the biggest shift. Related to that is the work the CCT and others did in cleaning up leaks and having smarter metering. We are better at managing our water." [R:E]

Respondent E considers what kept the Oranjezicht City Farm operational and productive during the height of the water crisis:

"We had flow bins, thousand litre tanks, we were going to people in the city bowl who have springs and fetching water to keep the crops and soil alive. We had networks of sharing and distribution." [R:E]

Respondent E commends the efforts of the communications team around the Day Zero drought:

"The CCT did a brilliant job and it was the same team who did the communications for the energy crisis. The first Eskom crisis in 2008. Because of the city's past experience, they were able to be nimble. That is why Cape Town was able to pivot quickly, in terms of water usage." [R:E]

Respondent K describes that the drought was quite severe in the Western Cape, but that drought has spread to other regions, like the Eastern Cape, Free State and Mpumalanga:

"We need to take a holistic look and grow more drought-resistant crops. Things that do not require too much maintenance. Growing indigenous is the way to go." [R:K]

"We need to think about the ecology and alternative sources of food, beyond chicken, beef and lamb. What can thrive? What can survive in different localities and encourage those crops to grow? There need to be trade-offs and offsets." [R:K]

4.2.11. What is the role of social innovation in society? What can the role of social innovation be in South Africa?

Respondent B elucidates that different kinds of social innovation can play positive roles in relieving food insecurity and working towards more transparent and just food systems:

> *"The greater, longer term value is in creating robust discussions, dialogues and networks to create more systemic conversations around the issue. They can have a real catalytic impact. Their longer term impact is probably around reframing the challenge and reimaging entry points."* [R:B]

Respondent C believes that the role of social innovation is to provide alternatives to the current status quo:

> *"If the current system is not working, we need something different. Which ties to the theory of change, you need alternatives to interact with the dominant way, which is how transformation happens."* [R:C]

> *"In terms of the food system, the formal/informal economy is a false distinction. They are connected, we denigrate the informal economy by boxing it as such, but that is where the most relevant stuff is happening."* [R:C]

Respondent E clarifies that given the high levels of inequality in society, and the constraints on the fiscus and economy, neither government nor the private sector are going to fix much of anything alone:

> *"There has to be a civil society response and community participation in all the challenges we face. South Africans recognise that. There are higher levels of awareness that we can do things and not wait for government to deliver. What is important is that the conditions conducive to that social innovation need to be protected, and not clamped down against."* [R:E]

Respondent E emphasises that what is needed is the adaptation to a post-crisis reality:

> *"Can FoodFlow, CANs, etc go from being short-term relief to longer term social innovation? The Food Forum can facilitate these conversations. What do we need? What has been created that is helpful? What should we let go of?"* [R:E]

"And then we have the Communities of Practice. The academic, civil society and activist side of things. Also, there is a multi-stakeholder group that has been developing alternatives to food systems governance, which shapes how the future may look. We have resources to draw on." [R:E]

Respondent H explains that in South Africa, there are a host of problems, challenges and crises – where things are stuck:

"We have been talking about improving the rail system for years, why are we stuck? We know that our energy system is not delivering, why are we stuck? We often reduce innovation to new technologies, and these are important. Young people get excited about digital technologies, but they do not solve complex problems." [R:H]

"However, they could be incorporated into a broader solution. How does one work innovation into a system that works better for more people? It is the opposite of bureaucratic, top-down control, where systems and politicians are accountable upwards and inwards." [R:H]

"We have a stuck system – we need social innovation within government, as much as we need it within society." [R:H]

4.3. Summary

Primary findings of the study are presented in this chapter. Interview responses illustrate the complex nature of food (in)security in South Africa, and the country's contentious food system. The findings disclose the nuanced understandings of food security during precarious times of crisis. Furthermore, the results answer the most critical question/s of the research – that social innovation can intimately address food (in)security in the context of an epidemic natural disaster, and that changemakers can promote positive change. However, these novel solutions to the pressing social challenge of food insecurity must be coupled with other systematic interventions. Moreover, various measures of social innovation implemented to mitigate the challenges of the COVID crisis, as well as measures implemented to address the challenges of the Day Zero crisis

are reflected upon. The findings are presented in the form of 11 questions – parallel to the structure of the interview guide. These questions are translated into seven themes in the following chapter.

5. Chapter Five. Discussion and Recommendations

5.1. Introduction

This chapter presents the findings of the qualitative study in relation to the literature reviewed. Seven themes emerge during data analysis – I. Challenges of Food Security in South Africa; II. Reimagining the South African Food System; III. Food (In)Security During Times of Crisis; IV. Social Innovation During Times of Crisis; V. National Food Security/Disaster Management Regulations; VI. Social Problem-Solving: COVID/Day Zero Crises and VII. Food for Thought: Potential Role of Social Innovation in the South African Context. Moreover, the chapter offers actionable technical, governance and policy recommendations.

5.2. Discussion of Findings

5.2.1. Theme I – Challenges of Food Security in South Africa

This theme discusses that all 15 study respondents, in some capacity, express that the major challenges of food (in)security in the South African milieu are poverty, inequality and unemployment. Drawing on Respondents D, E, H and J's responses, as well as Battersby et al (2014) and Black (2018), the food security equation has a supply side and a demand side. The structural/systemic challenges of poverty, widening inequality and insecure employment are interconnected and interdependent. With 30-40% of the working-age population unemployed, adults are depending on child grants or their parents and grandparents to survive. These social security grants are meant for one recipient and not to be spread among a whole household (Battersby, 2015). Respondent J explains how social grants are a really great system – but that they are not adequate to cope with the huge problem that is created by poverty and unemployment. And that in-turn, leads to food scarcity and insecurity.

According to Boatemaa et al (2018), and reiterated by Respondent D – on the supply side, the problems are seemingly not so bad in South Africa. Respondent J concurs and describes that there is an efficient and effective farming system, supermarkets are always full of food, there are markets on the street, and spaza shops everywhere. Thus, food availability is not a problem. Food accessibility is the issue – not physical access, but economic access (McLaren et al, 2015).

On the supply side, the issues are more to do with bad quality food and heavily processed food, leading to obesity and non-communicable diseases. Respondent J clarifies how the average South African has a very bad diet – eating too much McDonald's, drinking too much Coke, consuming too much sugar and fat, which is a different problem of food security. Devereux and Waidler (2017) explicate that food insecurity has three dimensions: undernourishment, over-nourishment and vitamin/mineral deficiencies. In the South African context, there are problems of diet for the 'wealthy' (middle class and elite), and problems of not enough food for the indigent (lower and working class).

Reflecting on Respondents D, H, I and L's responses, as well as the sentiments of Ericksen (2008) and Haywood (2020), the disastrous nutritional outcomes of a large percentage of the population are a result of poor and vulnerable people not having access to nutritious whole food, as it is simply too expensive. Respondent H explains how the country produces more than enough food to feed its population, yet people have minimally adequate access to it.

Greenberg (2017) elucidates that access to land and the ability to grow food is another challenge. Respondent F echoes that there are historical factors to this, where land was taken from large parts of the population. According to Philander (2015), it is easier to access cheap, processed (often ultra-processed) food than better quality whole food, which people may be able to access and utilise if they were able to grow their own fresh produce.

Respondent K explains that the most critical issue is the high unemployment rate in South Africa. The reality is a situation where people do odd jobs here and there, and hence, buy food as and when they have the money to do so. Pereira and Drimie (2016) describe that access to food is directly linked to economic activity and having disposable income. Individuals who are

formally employed and have a stable income are able to purchase food at specific and relevant intervals, unlike their unemployed/disenfranchised counterparts.

Respondent O purports that a lot of the value in the process accrues to the food supply chain, and the people and intermediaries within supply chains. Evidently, the distance between food and people is becoming bigger and bigger (Pikoli, 2022). In general, South Africans are unaware and ill-informed as to the origin of their food. According to May (2017), there is an opaqueness about the link between food production and how processes in the food system work – which does not make it easy to address food (in)security.

Respondents A, D, E, G, M and N stress the importance of doing and supporting urban agriculture, and other home-grown, bottom-up interventions, more effectually. These participants respectively explain that food security challenges can be solved in communities by community members themselves, and in the process, other environmental and social challenges could be addressed too. However, unfortunately, these processes and practices often come up against many different barriers. Institutional, governmental barriers, as well as imbalances in the system, exacerbate and entrench these challenges.

5.2.2. Theme II – Reimagining the South African Food System

This theme discusses how in addition to the traditional four pillars of food security (availability, accessibility, utilisation and stability), the High Level Panel of Experts on Food Security and Nutrition have integrated two more pillars – agency and sustainability (HLPE, 2020). Respondent B describes how these pillars are particularly useful in helping to think through how to make the food system/ecosystem better. Agency is about where power resides in the system and how people are able to exercise power, and it cannot be a good food system, if it is not sustainable and resilient. According to FAO et al (2021), resilience does not just come in having an efficient system that works. As seen with the Day Zero drought and COVID-19 pandemic, as seen with any systemic shock or crash, the most effective system in the world can still be vulnerable (May & Mentz-Coetzee, 2021).

Respondent B draws on their research on the Cape Town food system, and Respondent C on their work on food systems transformation, and sheds light on where people get their food from and whether they are able to exercise a degree of choice. Informal traders, superettes, supermarkets, etc have different modalities, resilience's and vulnerabilities (Battersby & Watson, 2018). Respondent B describes that there may be a time when an individual is particularly vulnerable, because of a lack of cash/income, and that makes the informal sector more viable. Another individual may have a concern about their safety and security, and therefore the formal sector is more appropriate. According to Battersby et al (2016), there are personal vulnerabilities and personal resilience's, by having multiple options.

Respondents B, E and K confer that a resilient food system is one that allows diversity to prevail. These participants respectively explain that one of the challenges with how government has responded to the food system has been primarily privileging the large-scale formal sector. Battersby (2017) argues that government needs to find ways to maintain that diversity, as it allows for greater agency and potentially allows greater sustainability in the system.

Respondents C, G and N emphasise the importance of building from the local level upwards. The South African food system is very top-down, and the problem is that the country is linked into a broader complex global system – and it is difficult to undo that. According to Greenberg (2017), the state should regulate the corporate sector and cap its size. This is not to say that the large-scale formal sector is not significant or essential, as it is currently producing 95% of South Africa's food, but a transitionary approach is urgently needed. Respondent G advises that 'Big Food' (large industrial food producers) needs to be controlled at the state level, and spaces need to be opened up on the ground. Respondent N agrees and describes how local dialogue on what is needed and the support required within localities is vital.

Respondents E and H stress that no department, agency or entity has a formal mandate to look at the food system. National government does not take on a food systems mandate, and the Department of Agriculture primarily sees the problem as one of food production, when there is clear evidence that accessibility of available food is the issue. Provincial and local governments

look at the health system level and nutrition (pregnant mothers, unborn babies, first thousand days of the life cycle, diets, education, etc), but not food in and of itself (Pereira et al, 2020). Respondent H explains that government operates in terms of legal mandates – and that this is from National Treasury to stop thieving, state capture, rent-seeking and corrupt practices, which is good, but it has made public officials obsessed with sticking rigidly to their mandates.

According to Battersby et al (2014), and reiterated by Respondent F, for a food system to be resilient, there is the discussion of whether it is economically resilient and competitive on international markets. In South Africa, there is agricultural resilience and even excellence; however, what is more important is the guarantee of food security and whether its citizenry is provided with adequate whole foods (Aguera et al, 2020). In sum, the nation is struggling with a legacy of a disempowered majority of the population (in terms of education, access to land and resources, etc) and poor South Africans (chronic and transient) are unable to control their own life situations. This harsh reality leaves a lot of people vulnerable and dependent on handouts and charity, and this is not a resilient and equitable food system.

5.2.3. Theme III – Food (In)Security During Times of Crisis

This theme discusses that all 15 study respondents, to some degree, reflect on the COVID crisis and the consequences of hard lockdown on food security, when asked about natural/national disaster and times of crisis in general. Respondent C explains that those who are most vulnerable and marginalised, become even more so during a crisis, as disaster exacerbates an already broken system – no longer able to cope. Respondent B describes that in the early days of lockdown, the immediate crisis was the shutdown of the informal sector, and the mixed messages about who could operate and who could not. Reflecting on the Food Dialogues Report 2020, and the sentiments of Respondents A, E, F, L and N, small-scale and informal traders do not have a lot of buffer or insurance. Many went out of business, even when they were able to re-open. As the port of call for the most vulnerable, this is critical. Throughout the global pandemic, the collapse of incomes has been a major challenge. Scholars acknowledge that most people are buying and

procuring their food (not growing their own), so any disruption to disposable income is a significant issue (Battersby, 2020).

Food (in)security can be considered on an individual basis about how households are able to respond, as well as how people leverage social networks to see them through. Respondents B, K and N respectively explain the practice of how aunty so-and-so will add more potatoes and carrots to her pot, so children in the community can have a meal – those social networks are in place. People curate their social networks, sometimes they choose to go hungry, sometimes they get food from others, but they cannot do it too often, as they risk eroding that network. According to Moseley and Battersby (2020), there is a complex set of relationships that people are managing to procure their food. With COVID, there was this sudden, widespread, covariate shock, where everyone in the locality was in the same boat. Respondents B, D, E and J stress that disruption to the food system, economic livelihoods and social networks come together in a devastating way.

Respondent D describes how COVID demonstrated how well civil society could respond. There was a lot of mobilisation of community groups, who responded faster and more equitably than government, to reach the most needy and vulnerable. Despite the huge divides in South Africa, people managed to pull together. This happened in many parts of the country, where citizens were willing to donate time and resources. Pietersen (2020) expresses how the government's response during times of crisis is often disappointing. It is over-bureaucratised and over-concerned with standardisation. Respondents D, G, H, J and K admit their disappointment of some of the attempts to regulate civil society responses during the height of the pandemic/food crisis.

Respondents A, D, J and N respectively explain how government/s are relatively good at responding to community-wide shocks, like shack fires or floods. Though, far less equipped to respond to what is termed 'slow violence' in the Child Gauge Report 2020. Government can address and deal with something short and sharp, but the underlying chronic problems (endemic violence, substance abuse, inadequate public transport systems, etc) persist, as government lacks

the backbone and committed support among key decision-makers to directly address these stunting challenges (CCT, 2019).

Prior to COVID, national government was feeding seven million people a day, through the NSNP. Respondent H describes how provinces are funded and how the Education Department carries this programme out. In addition, the Department of Social Development funds and supports registered ECDs. There was already food relief pre-pandemic, which recognises that South Africa was already in 'crisis mode'. When the pandemic struck, schools were closed and the feeding scheme was shut down. The response of government at the beginning of lockdown exacerbated the enduring cost-of-living crisis. People could not work, people lost their jobs, traders could not operate, the informal economy suffered livelihoods, and farmers growing produce for cafés, restaurants, etc struggled, as the hospitality/tourism industry collapsed (EDP, 2020; Oliver, 2020). The efforts of the larger NGOs (Gift of the Givers, Community Chest, Red Cross, etc) and grassroots groups (CANs, community kitchens, etc) played a major role in staving off hardship and hunger in the poorest and most vulnerable communities.

The EDP (2021) presents the three C's (Connect, Communicate and Collaborate) that should be promoted during times of crisis, no matter the nature of the disaster. Respondent H expands and explains: Connect – because people tend to panic, retreat and withdraw into themselves. Communicate – in a crisis, there is fake news, misinformation and conspiracy theories. During COVID, the virus does not exist, it is Bill Gates, etc. Back in the drought days in Cape Town, the water crisis was a creation of Coco-Cola to sell more bottled water, etc. Collaborate – people need to team up and work together. The social sector (civil society) delivered 60% of all food aid and relief, and this should not go unnoticed. In its Food Forum, the EDP is facilitating the development of local food ecosystems, in Langa, Gugulethu, Worcester, etc (Trialogue, 2021). The organisation is working with people who are not just in the food sector, but coming at the problem of food security from different angles, realising that food is foundational.

Reflecting on Respondents A, D and G's responses, critics of urban agriculture say that people will never be able to feed themselves with a small bit of land. And that in fact, it might take more effort to grow food than to rely on handouts. Despite that, Respondent D is in favour of the

gardening projects that sprung up during COVID. The primary reason for this is that such an intervention gives people a sense of agency. They are able to do something and take some control of their own lives. It has to do with self-respect. According to Kroll et al (2021), people who grow food become better, more mindful consumers. They choose more carefully what to eat. Respondents C, D and L describe food justice/advocacy groups that are somewhat 'claiming back' cities across the country. It has become resistance that goes beyond agency. It is essentially making a political statement, and often linked to claiming back the land or pushing back on an unfair system. Respondent N explains that a community that can organise to grow/procure food is also a community that can participate in local elections or manage GBV. Anything that mobilises a community for the common/greater good is a positive thing.

Respondent E reasons that when it came to water and Day Zero, government locked down the national grid. It controls the overarching centralised resource, so citizens needed and relied on government. With COVID and the ensuing food crisis, it was not that way. Governmental distribution of food through parcels/vouchers was bankrolled by the private sector, through the Solidarity Fund (Odendaal, 2021). Depending on the crisis or situation, communities need to be resilient and have a much greater diversity of partners to work with. They cannot rely on government to protect or 'save' them.

5.2.4. Theme IV – Social Innovation During Times of Crisis

This theme discusses that all 15 study respondents, in some capacity, ruminate on innovations and initiatives that were conceived and implemented during the COVID pandemic, when asked about the social innovation landscape and times of crisis in general. Respondent B describes the EDP's Food Forum and the working groups coming out of that – that are trying to development a nascent network that can feed into government directly. It is about generating space to not just talk about food issues, but connect actors in the food system. Yebo Fresh and Umthunzi Farming Community can also be read as forms of social innovation. However, despite Umthunzi being heralded as a viable solution space in the early days of lockdown, it unfortunately folded (Adelle & Haywood, 2021). Respondents A, B, I and J respectively explain that people often get caught

up in an overly joyful articulation of these 'solutions'. The big, novel project of the day collapses and then the same model is replicated again. Respondents B and G believe that the most interesting spaces are more community-driven, as opposed to NGO-driven. The challenge is power and how to stop community voices from getting co-opted.

Respondent C has a broader social ecological outlook when thinking about seed or niche initiatives, and describes some interesting work coming out of the University of Pretoria on the use of indigenous grains, like sorghum. According to Pereira et al (2020), innovation often develops from bricolage. Simply put, combining different things together on one side and seeing what emerges on the other. Respondent C offers an example of an innovation that came out of the T-Labs (transformation labs) in Khayelitsha. Adding fresh produce (plants and herbs) from school/community gardens into sourdough bread, and baking it in available low-input ovens, so people in the community have access to a healthier alternative to super processed white bread – a staple in South Africa.

Respondents A and F see social innovation as being more present in the discourse. The participants respectively and similarly describe that someone doing something new today would be more likely to call it an 'innovation' than someone doing the exact same thing 20 years ago – whether referring to new technologies, AI, GMOs, etc. Nonetheless, they agree that South Africa is on the edge of a precipice and drastic changes are necessary, and social innovations need to be part and parcel of that. According to Matsimela (2017), government has been struggling to engage with innovation that emanates from local communities. However, society stands to gain from home-grown resolves. Respondent F claims that what is of utmost importance is determining how to combine top-down and bottom-up solutions, and implementing a package of intervention.

Respondent J delves a little further afield and explains that in Ethiopia, in the horn of Africa, there are droughts every few years and crop-destroying desert locusts – and food aid comes in. Massive amounts from Europe and North America that keep people alive and going. Yet, it is short-term relief and not sustainable. Mishra et al (2021) purport that one thing is to move away from food transfers towards cash, as it is more flexible and less presumptuous. Another is the

shock responsive idea. Respondents D and J describe that this is having a permanent social protection system in place, which scales up during times of crisis, but the baseline is always there. Poor, vulnerable and marginal populations in South Africa would benefit from such a system, as seen with the need and uptake of the COVID-19 TERS and SRD grants – inaugurated to cushion the blow of the pandemic. Respondents E, H and J consider the innovative use of social media platforms for registration of these grants as innovation. Pre-pandemic, people would need to queue at the SASSA office – it is a long, tedious, paper-based process. During the height of the pandemic, everything was conducted on WhatsApp. However, the platform did crash. But in the end, millions registered and those grants went out.

Reflecting on Respondents G, H and K's responses, as well as the sentiments of Murray et al (2010) and Soko (2017), the broader social system can be conceptualised as a set of technologies that build up over time and interconnect. Mulgan et al (2007) see social innovation/s as being central to the whole story. Changemakers or champions, individuals who just go out there and push their agenda, are desperately needed in a country like South Africa, with its ever-expanding poverty and policy inertia. Respondent H strongly believes that those who can respond most adaptively and flexibly during precarious times of crisis produce the best value. If one cannot innovate during a crisis, then one fails in their response. Respondent E asks and answers, what is social innovation but new ways of doing things in a short turnaround? Not three years to design and then deep dive. Respondent H agrees and thinks that talk shops, deep diving, etc is fine in peace time, but in war time, there needs to be action on the ground within days. It is doing things quickly and responding flexibly, responding to new intelligence coming back through the system, simple technologies and simple systems (EDP, 2021).

In terms of addressing food (in)security during an epidemic natural disaster and in general, Respondent C relays that quite often people talk about addressing the food issue at the national level – but what about local ideas or interventions within communities, that are actually producing results and making a positive impact? Respondents C and G are of the opinion that instead of a broader, uniform, one-size-fits-all governmental project being scaled in all communities, these localised interventions should be embraced and supported. Different solutions are appropriate in different places, and there needs to be a move away from the scale

everything notion (Pereira et al, 2020). Respondent C urges government to support the things that are really and feasibly working in various localities.

To varying degrees, Respondents B, C, D, E, G, H, K, L, M, N and O reason that changemakers and social innovation/s are critical during times of crisis and disaster. These participants respectively and some more harshly than others clarify how South Africa's is a government that is either powerless or reluctant to act. Contributors to the Food Dialogues Report 2020, and reiterated by Respondent F, explain how changemakers will often be a lot faster to react than the average governmental response. By virtue of being new and emerging for the purpose of a certain crisis, there will be a quicker reaction and more context-adapted solution. Respondents G and H describe how these responses may not be better in the long run, and may even be counter-productive or not take the broader picture into account; but in the moment, it is necessary and even lifesaving. When there is a crisis and something happens quickly, it might be the best way to solve the most urgent parts of the problem. In some capacity, all 15 study respondents confer that various forms of social innovation can and need to play a part in a broader palette of responses in South Africa. While COVID becomes a distant memory, the hardships the pandemic brought with it, remain. Pikoli (2022) illustrates that government needs to salvage these tough few years, and not just be intentional about mitigating and healing the country's social ills, but working towards a food, water, health, energy and climate-wise future.

5.2.5. Theme V – National Food Security/Disaster Management Regulations

This theme discusses that upon reflection of the 15 study respondents' responses, more participants are familiar with the NPFNS (2013), although not too abreast, as opposed to the DMA (2002) and NDMF (2005). Respondents B, C, D, H and K elucidate that the NPFNS is very systematic and comes from the food system perspective. These participants do not see the national policy as inclusive – as there was a complete lack of participation when it was conceived and written. On paper, it looks decent, but it is un-implementable in the current configuration of silo decision-making governance structures. Respondent C firmly believes that government is not fit for purpose, but that this is a global phenomenon, not just South Africa.

The policy is not set up in a way to deliver on the promises that it makes. According to Pereira et al (2020), without doing some of the broader departmental buy-in, it is difficult to get it going any further. Respondents B and C explain how it misses a lot of the 'soft' approaches – why and how people eat food, the stigmas people attach to food, etc. Overall, the document is good at exposing natural hazards, at building a more resilient food system, etc but it does not take those important societal/cultural components into account.

Respondents C, E, G and H expound how policy should be more enabling to work that is being done on the ground, and how it needs to be devolved to where the work is. The Western Cape and Gauteng should lead the way and put in effective procurements, and employ clear frameworks and demarcate urban planning zones – making way for community gardens, giving people access to space, allowing people to sell in the informal market, etc. If these things are in place, people's resilience to a threat like COVID would have been a lot better. As seen under the pandemic, there was a complete reliance of government on large-scale retailers. It was forcing the dominant system, rather than looking at and to some of the alternatives that may have been more fit for purpose. Respondent C emphasises how national government was reinforcing the system that is considered problematic and unjust, rather than embracing and supporting alternatives.

Respondent G explains that in South Africa, there is a fragmented food policy landscape. The NPFNS touches on important elements, but there are scores of policies in the Health, Social Development, Agriculture, Land Trade Industry and Competition, and Small Business Development Departments. However, these departments are operating in silos and doing their own things (Delport, 2019). Respondent H concurs and describes that when looking at overall strategies, there is a lack of coordination, but more importantly, a lack of political will to work together. People have their fiefdoms and strict mandates, and they do not want to collaborate. Respondents G and K stress that what is needed is something that operates from the local level, to provincial, to national and then is integrated into regional and global agreements. Greenberg (2017) clarifies that the ideal situation is to start at the local, have a niche model and multi-level perspective, build that up and create momentum, and then use that as the base to start impacting on the institutional level.

Shifting focus to the DMA and NDMF, Respondent C explains that what the Act does is endow the powers to perpetuate an emergency State of Disaster. It is an old piece of legislation, written in the 1990s (van Niekerk et al, 2018). The main aim of the regulation is to give government/s the power and consent to do what needs to be done, during an epidemic disaster. Respondent G is unfamiliar with the regulations, but gives their take on effective response to disaster. If government wants to respond successfully to natural disaster/s, it needs to prepare beforehand. Organisations, networks, redundancy and resilience, etc – the interconnections are essential during times of crisis. Respondent G reflects on their work on the hurricanes in Mozambique and Zimbabwe, and how seed systems get broken. So, if there is a national network of seed producers, then farmers can easily mobilise the appropriate types of seed for their various localities, post-disaster.

Respondents H and K explain how policy frameworks are always meant to be comprehensive and inclusive, but that these policies do not take the reality on the ground into account. In South Africa, decision- and policy-makers generally adopt a Eurocentric view. They go to wealthy nations and global cities, review their legislation and plans, and write up these documents. But who was consulted in the local context? Is there an understanding of how and where people procure their food? The NPFNS is outdated and partial in focus, and lacks a comprehension of the informal economy and localised food systems, in the same way the DMA/NDMF lack local capacities, skills development and institutional commitment. According to Van Niekerk (2014), the disaster management regulations are not only outdated and ambiguous, they have reached a point at which explicit amendments are urgently needed in order for disaster risk reduction/mitigation to become a reality for at-risk communities. Respondents F, G and H clarify that political will, implementation capacity, intergovernmental relations and community participation are the most debilitating challenges facing not only the food ecosystem, but the management of natural hazards/disasters in South Africa.

5.2.6. Theme VI – Social Problem-Solving: COVID/Day Zero Crises

This theme discusses the various measures of social innovation that emerged during the COVID crisis in the South African milieu, as well as the Day Zero crisis – with a particular focus on the procurement and security of food. Respondent B raises the CAN movement and how it is a distinct form of social innovation, but that after months of success and collaboration, some of these networks have run out of steam. However, the CANs have been exceptionally dynamic, especially the Muizenberg, Seaboard, Khayelitsha, Langa and Gugulethu CANs. With committed and sustained action, the CANs can be an especially productive mechanism (van Niekerk, 2020). Respondent B reflects on FoodFlow (who have been careful in thinking through the sustainability questions) and Yebo Fresh (who pivoted during COVID and responded with the creative use of ICT). Respondents B, D, E, G, L and N describe how the Cape Town Together Growers network has been building up energy, as well as community structures like the EDP's Food Forum. Respondents A, B, C, D, H and J are wary and concerned though, and respectively pose various similar questions – how sustainable are these networks, platforms, etc? What needs to be put in place to make these sustainable entities? How do they pivot from emergency to transformative solutions? Respondents B, E and H explain how relief thinking is vastly different to rebuild thinking, and how the management of relationships is at the centre of taking these entities forward.

Food, particularly safe, healthy, nutritious and culturally appropriate food is the fuel that keeps people going, it feeds souls and satisfies minds – allowing individuals to function and focus (Pikoli, 2022). Respondent C emphasises that hard lockdown measures and restrictions were causing exacerbated food insecurity and hunger. There was a big mismatch between where there was food in existence and where the people who needed access to it were. UCOOK and other socially aware businesses were trying to make that connection, looking at excess waste, soup kitchens, etc. Respondents C, D and J clarify that there was a big societal response, because government was failing. South Africa's is a financialised food system – very few people, particularly in urban areas, grow their own food. During the height of the pandemic, people were hungry because they were not able to access jobs and incomes, to purchase and procure food. Thus, a lack of earnings automatically translates into food insecurity.

Respondent N explicates that the CANs were trying to recognise that there were needy and vulnerable people in local communities, and rally citizens to help provide access to available food. Many CANs have stopped running, but some are still operational and provide much-needed food relief. Respondents B, C, E and H reason that the connections and collaborations that were created through the solidarity networks are still ongoing, if they are useful. Odendaal (2021) explains that the social cohesion that comes from these processes is important to hone and take forward. Respondent D was directly involved in the feeding scheme programme in McGregor. McGregor is a village of four thousand people in the mountains of the Western Cape, of which roughly 3,500 are relatively poor. Five hundred people raised about R200,000 and it was reported on the community Facebook page. Respondent D, affiliated to the CoE-FS, explains how people were able to draw on their networks to help design what went into the food relief package – avoiding high-sugar porridge, providing fresh produce, etc. This happened in many communities, as people were able to bridge gaps and plug into networks. Respondents D and E stress the importance of the Food Forum. Through the platform, community groups are voicing that they are starting to see fighting in soup kitchen queues, which is testament to South Africa's longstanding, meagre food security (EDP, 2021). The Food Forum allows diverse actors to communicate to government that violence is not far away, and offers an early warning system if government is willing to listen.

Respondent F elucidates that most of the local level responses, whether food dialogues, forums or digital vouchers, have been to deal with the consequences of lockdown, rather than the virus itself. There is a similarity with the Day Zero drought. There was the water crisis and then the consequential response from the city/province. In essence, people are dealing with both the lack of water or presence of a deadly disease, as well as with the restrictions that government put in place, on their lives and behaviour. In the case of the most marginalised, these individuals do not have the capacity to stay home and live off savings. For the indigent, crisis mode is the norm – finding daily meals, shelter, etc. With a disruption, their main priority is not avoiding the virus or mitigating the drought, but continuing to find food/income for the day. From this perspective, government directives are an obstacle, and social innovations can help address the more urgent and immediate food needs of the most vulnerable (Kroll et al, 2021). Respondent J reflects on the CoP around food governance in the Western Cape, within the GovInn programme at the CoE-FS.

Respondents E, I and J explain how these monthly meetings with provincial and local government representatives, civil society organisations, academics, activists, etc can be read as social innovation, much like the efforts of the Food Dialogues and Food Forum (Adelle et al, 2021).

Living in an agricultural area, Respondent K describes the exacerbated plight of farmworkers during the heaviest lockdowns. For instance, when the hospitality/tourism industries were not operating, the flower industry collapsed. There were no big corporate events, weddings, conferences, and therefore no floral arrangements were needed. Farmworkers became quite food-insecure. Respondents G and K explain how farmers put together a Gauteng food platform that looked into assisting low-income communities, i.e. Eldorado Park, Diepsloot, Orange Farm, Meadowlands, etc. In addition, government released some inmates serving light sentences. During the height of the pandemic, food and jobs were scarce, so some parolees were destitute and in need of assistance. Respondent K, affiliated to African Marmalade (an organic farming enterprise), explains how customers would pay more than necessary for their fresh produce orders. The extra cash would then go to donations of veggie boxes and the making of soup, as soup stretches, to feed needy people. Respondents D, E, G, H, K and N emphasise how there was no manual to deal with the devastating consequences of COVID and lockdown, and how people, of all social classes, needed to think out of the box.

Shifting focus to the Day Zero drought, Respondent C clarifies that the kinds of behavioural change that was needed during the water crisis still perpetuates – the realisation that the city/province is drought-prone and that people needed to band together to overcome the crisis. It was important for the CCT to go through that narrative process, as it is vital when it comes to disaster response. However, reflecting on the sentiments of Parks et al (2019) and Respondents B, C and E, with a crisis like a drought, it is a lot more difficult to mobilise from the ground. There are logistics that just need to be handled at a governmental, municipal and city level. The CCT was trying to do that, for better or worse in some instances. Respondent H describes that the water scarcity crisis drove social innovation in middle class areas, as opposed to lower and working class areas. Middle class areas are the big consumers of water and had to make the most

change to bring consumption down. However, drilling boreholes is not necessarily social innovation, but rich households opting out of the public system.

Respondents A, I, L and M explain how there were embryonic innovations emerging – hybrid systems of collecting rainwater through JoJo tanks, etc. The trouble is that as soon as the drought was declared over, the CCT rapidly moved to re-establish the status quo, that they are the sole supplier. Respondent H clarifies that municipal revenue is determined by how much water is sold for to how many people. The city needs to fund a system of complex pipes (water delivery and sanitation), so if households are going off-grid, it is great cause for concern. Respondent J concurs and explicates that the Day Zero drought experience exhibited that Capetonians are good at adapting, taking shorter showers, flushing toilets less, etc but as soon as it started raining again, it was back to business-as-usual.

Respondent B sheds light on how people, particularly middle class suburbia, realised how much of Cape Town had been living Day Zero for a long time anyway. Across the city/province, there was a call to try and learn from what communities that have lasted without reliable water supply have already been doing to cope and survive. Respondents A and F explain how there were water dialogues and forums, and enhanced neighbourhood engagement. Respondent B, affiliated to the African Centre for Cities, describes some of their work during the height of the drought. In Masiphumelele, they were investigating how water affects food security. Navigating the choke system, collecting water at standpipes, tapping into unsafe water meant to be used by the Fire Service, get-arounds, negotiations, etc. In view of local level responses, Respondent B poses, how do we work with community-led solutions, which may have negative externalities, without imposing a set of knowledges from beyond?

Respondent F describes how during the peak of the water crisis, there was urgency and panic, and how they were active in the local civic association in Observatory. A census was conducted to identify vulnerable households in the area, with either elderly or sick citizens who were unable to collect water themselves. The community prepared a schedule of who would collect for whom if it came to Day Zero. Respondents B, C, E, G and J explain how people were helping each other save water – sharing tips on how to use less, i.e. putting bricks in toilet cisterns, using low-

flow shower and tap heads, recycling greywater, etc. With regards to agriculture, Respondent O reflects on initiatives that were getting feed to farmers. These happened organically and at scale fairly quickly. Tons of feed was redistributed across the country, however, some of it under the radar.

In some capacity, all 15 study respondents convey how it was not one single innovation or new technology that made a difference, but the constant messaging/communication from local government. Respondent E clarifies that if people's (an integrated network of state and non-state actors) effort can be harvested in one direction for one purpose, a lot can be done. According to Parks et al (2019), and reiterated by Respondent O, the biggest takeaway from the water crisis is the sustainable, lasting change in water consumption. Not necessarily the water-wise technologies or water-saving gadgets, but the decision to budget for these innovative measures. Considering the local level responses to the COVID/water crises, Respondent J poses, how can we institutionalise social innovation, so we do not have to continuously be innovating? Respondents B, D, E, G and H respectively ruminate on a similar thought – how to build an institutional architecture that lasts beyond the immediate crisis to prepare for the next one. Thinking through if there was another pandemic or drought, would people have learnt anything from these recent years, or continue panic-buying toilet paper, bottled water, etc.

5.2.7. Theme VII – Food for Thought: Potential Role of Social Innovation in the South African Context

This theme discusses that all 15 study respondents, to some degree, deem social innovation as critical in a world where climate change is ratcheting up the pressure; and in a society where there is a disjuncture between the intention, outcomes and impact of national policy. Respondent D affirms that many people, particularly of their generation, have the TINA (there is no alternative) mindset. However, social innovation allows the questioning and challenging of the insular narrative. It allows the realisation that there are alternatives to expecting government to solve everything and accepting that the status quo must apply. According to Soko (2017), and reiterated by Respondent D, social innovation allows the mould to be broken. Respondent J

elucidates that South Africans are resourceful and innovative – good problem-solvers and quick to spot an opportunity. Social innovation has to be part of the landscape in a turbulent, inequitable country like South Africa. But it needs to be enabled and adequately supported. Social innovations could be more important than they already are if government was not so regulatory. Respondents B, D and J explain how there needs to be more streamlined cooperation, coordination and collaboration between government and civil society. Ideally, local government should take hands with civil society/activist groups to ideate and find workable solutions.

Respondent F purports that social innovation is faster to mobilise than most other options and how that has immense value, particularly during times of crisis. Home-grown initiatives and interventions can be an insightful way of learning, at the local level, what works in a certain context. Respondent C describes how there is a need for a bit of experimentation, and trial and error, and how these novel practices need to be linked to the municipal and national level. In South Africa, there is a disconnect between government and municipalities doing their job – delivering services in a manner that is based on people living some kind of middle class life, and not necessarily in a highly informal context. Government officials need to learn how to develop solutions that are better suited and adapted to these situations. ANDE (2017) clarifies how community responses and local initiatives are a source of knowledge and social learning. In the national milieu, there is a need to see/frame informal settlements not only as something bad or undesirable, but as the lived reality and where people are surviving, in need of services (Pikoli, 2022). Until there is enough trust in the formal system, people are going to continue to rely on more informal options, social networks and non-profits they know locally, as these entities have been more dependable so far. Respondents A, C, E and G explain how there are no perfect, fixed or final solutions, so OK solutions and temporary steps should be embraced and sustained.

Respondent K describes that social innovation is desperately needed in a food-stressed society (where millions are unable to afford enough nutritious food) to find new creative ways of meeting basic needs – applying lo- and hi-tech solutions (Sulcas, 2022). Respondents A, E, K and N respectively pose similar questions – how do we use innovation to make sure more people are food-secure? Do we create some form of a localised database where people indicate their food preferences, how much food they consume, how much they spend on food, etc?

Respondent K reflects on Standard Bank and OneFarm Share. During hard lockdown, Standard Bank realised that farmers were stuck with produce and losing income, as crops were not getting to retail outlets, restaurants, schools, feeding schemes, convention centres, airlines, etc. Hence, they tried to get farmers to sell their excess produce at discounted prices on a digital platform. FoodForward SA collaborated with the bank and tons of food was redistributed across the country to where people needed it most. Many farmers would have faced financial ruin if the bank did not allocate its Corporate Social Investment towards nationwide food security, by launching the programme. This is a COVID response by a financial institution. Government, big business and civil society (public, private and social sectors) need to regroup and find innovative approaches to move forward in a climate-stressed world – battered by overlapping crises.

Respondent O explicates how social innovation can shift the dial, and be a good approach to addressing inequality and breaking vicious cycles. At its core, it is about creating sustainable changes through pioneering solutions. It is both marrying the innovation and the novelty with sustainability and scalability. According to Mulgan et al (2007), social innovation can empower people in positive ways and at the same time, make economic sense and safeguard the environment. Respondent E describes how there needs to be some flow of value and an embedded process of change for a new practice to be a social innovation, whether disruptive, sustaining or breakthrough. In the social sector, innovations are commonly new products or services. However, they can be technical or process-related constructs (like the CANs, Food Forum, etc) created in order to meet unmet needs more effectively. Respondent H clarifies that all in all, and with the benefit of hindsight, social innovation has the potential to change the way community resilience, disaster management and the climate crisis are engaged in South Africa.

5.3. Recommendations

Deriving from the researcher's analysis of the study findings, the recommendations are grouped into three sections: 5.3.1. Recommendations for Government, 5.3.2. Recommendations for Business, and 5.3.3. Recommendations for Civil Society.

The COVID and Day Zero crises, investigated in this study, provide invaluable lessons for the public, private and social sectors. Although food/water supply and demand issues are highly localised, the lessons are translatable to cities and countries across the world.

5.3.1. Recommendations for Government

i. Enhance the informal food sector – employ implementable strategic frameworks that protect, capacitate and support the informal food economy (informal food vendors, unregistered ECDs, etc)
ii. Validate and promote healthy foodways – especially responsive to the capabilities of poor, vulnerable and marginal populations, derived from inclusive food value chains
iii. Acknowledge and leverage networks like the Cape Town Together Food Growers Initiative for knowledge co-generation and potential cooperation
iv. Acknowledge and support FoodFlow, UCOOK, Yebo Fresh, etc who leverage e-commerce and smartphone technology, and enable local small-scale food producers to sell and deliver their produce/protein
v. Develop and invest in crisis response and resilience – integrate public, private, social and informal representatives in disaster risk planning processes
vi. Acknowledge and support initiatives like the Food Forum, as they improve visibility, communication and coordination between seemingly disparate groups
vii. Create enabling conditions for civil society and social innovation – forgo heavy-handed regulations and arduous compliance procedures
viii. Grasp how inter- and multi-sectoral partnerships contribute to structural change through scaling out (reaching more people), scaling up (impacting regulations) and scaling deep (impacting cultural roots of social behaviour)
ix. Convene a governance structure to monitor the food system (formal and informal economies) and evaluate how food flows across the country
x. Invest in food and water supply capacity, in harmony with a holistic understanding of climate change, natural disasters and diseases outbreaks, to avoid and minimise food and water crises in the future

5.3.2. Recommendations for Business

i. Incentivise food start-ups and help remove barriers that prevent digital platforms and other innovations from entering the food industry
ii. Partner with provincial and local government/s to combat food waste – thinking through how to salvage food, and prevent it from rotting and going into landfills
iii. Acknowledge and understand whether corporate initiatives enhance or undermine the availability, accessibility, utilisation capacity, stability, agency and sustainability of the food system for all
iv. Partner and collaborate with urban agriculture, CSOs, community networks like the CANs, informal traders associations, etc to gage local issues and grievances
v. Sponsor and support innovation centres and hubs in universities, particularly historically disadvantaged institutions
vi. Partner and work with government to help make data and smart devices more accessible to small-scale food producers
vii. Improve access to finance for emerging farmers, by harnessing the benefits of alternative finance solutions, i.e. microfinance, crowdfunding, etc
viii. Stop encouraging the overconsumption of unhealthy foods – driving a triple burden of malnutrition, a range of associated diseases and increasing healthcare costs
ix. Prove that Big Food can make progress and be transparent – publicly report product portfolios against nutrient profile models
x. Play a much more prominent role in shining a light on healthy diets and improve the lack of accountability in industry – consumers remain largely in the dark about what is in their food and what it means for their health

5.3.3. Recommendations for Civil Society

i. Sustain non-partisan bridge-building intermediaries to help build relationships of trust between the top-down 'authorising' and bottom-up 'mobilising' environments
ii. Use advocacy innovations brought in by the COVID pandemic, i.e. the adoption of virtual events and consultations, decentralised forms of organising, etc – to ensure the meaningful participation and involvement of grassroots and affected communities

iii. Embrace local action and support social innovation at every stage of the food system, from production to consumption, and within the policy environment – that could positively influence nutrition, food, health, community development and agriculture

iv. Emphasise the need for urgent transformation of the structural inequities of the food system – the national food system both reflects and exacerbates inequality, with a few large companies dominating every node of the food value chain

v. Advocate the building of food sovereignty pathways – so at localised levels, community members could control how food is produced and distributed

5.4. Summary

The most applicable findings of the study are presented in this chapter. As seen with the COVID and Day Zero crises, government was ill-prepared and too slow to act. The findings reveal that social innovation, whether technical, technological, digital or otherwise, offer many potential benefits in promoting food security, efficient food chains, inclusive economies, social cohesion and sustainability. However, while social innovation can intimately address food (in)security, it needs to be coupled with other systematic interventions (Kroll et al, 2021). The chapter extends recommendations to actors and role players in public, private and social sectors.

6. Chapter Six. Conclusions

6.1. Summary of Findings

It is clear from this research that shocks and crises, such as disease epidemics or drought, disproportionately affect vulnerable communities and excluded populations – already in the gaps where there are market failures and governments do not work well (Mishra et al, 2021). The results of this study demonstrate that it is high time for changemakers who have been filling the gaps to be valued, heard and supported, by government and industry stakeholders.

The study underscores that a crisis is an opportunity to establish new ways of working, new kinds of leadership and networks, and rebuild broken systems. In terms of addressing food (in)security and the chronic hunger crisis in South Africa, there is no silver bullet, cure-all or surefire method. Even a universal basic income can only be one part of a much broader response (May, 2021). Civil society and business, alongside government, are obliged to play their part, reflect on these past few tumultuous years and forge a new way forward – where the most vulnerable populations have physical and economic access to sufficient, high quality lean proteins, whole grain starches, vegetables, fruits and healthy fats – promoting good health and well-being, and allowing greater sustainability and agency in the food system.

This threefold study examines how the COVID and Day Zero crises adversely, albeit uniquely impacted the availability, accessibility, utilisation, quality and safety of food, as well as the stability of food supply, and analyses social innovations and community responses implemented to relieve food scarcity and insecurity. Central findings indicate that social innovation, whether the CANs, FoodFlow, CoCare vouchers, Aquatraps or hydroponics, can promote food security, efficient food chains, inclusive economies, social cohesion and sustainability – inspiring social, climate and food justice. Nonetheless, while social innovation can address and achieve food security during war and peace time, it needs to be implemented in tandem with other systematic, top-down interventions.

6.2. Study Limitations

This research endeavour is a limited qualitative study, and these findings are not generalisable per se, but are positively transferable to comparable contexts, situations, times and populations. The insights the research participants convey in the interviews may be influenced by recollection bias and/or the temptation to offer socially desirable responses (Velapi, 2021). The lack of diversity of respondents, as well as similarities between perceptions, may perhaps not be a true reflection of reality, rendering the results ungeneralisable. Hence, caution should be applied when deducing and generalising the study findings to other settings, by considering possible variations of all influences at play. Despite a multi-perspective exploration of the central phenomena via various methods, the study is a delimited sample of 15 participants reflecting on the South African context, and the qualitative validity of the investigation may be limited by this (Duze, 2016). Nevertheless, the study offers an information-rich and meaningful point of reference for future researchers, diverse stakeholders, community role players, etc.

6.3. Areas for Future Research

The findings of this study suggest that future research should investigate the complexities of the growing changemaking landscape, focusing on emerging economies and marginal communities. Potential empirical studies should analyse the dynamics of the social innovation process, to gain a better understanding of its stages and the various factors that may enhance its success. This research focuses on the views of experts and community role players on social innovations that emerged during the COVID and Day Zero crises. Though, it may be of keen interest to study the reach and capacity of these novel practices from the beneficiary's perspective. The outcomes of this study allow for deeper thinking, reflecting on the way forward with regards to how central findings could be used. A hopeful next step could be to engage how food security/local food pathways and social innovation/design thinking can be integrated into development planning at the local government level.

The researcher identifies possible research questions, beyond the scope of this study, that require exhaustive investigation:

i. When and how do immediate social innovation/s transform into lasting solutions to wider social problems?

ii. What infrastructures are needed to transform crisis-related social innovation into longer term, permanent solutions?

iii. How can social and informal sectors tap into public and private sectors for funding, support and partnership opportunities?

iv. How can government be more intentional about bringing all voices in, and create enduring systems that do not actively exclude people?

v. Why is community-led change and local action so stifled by bureaucratic checks and balances?

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8. Appendices

8.1. Appendix A – Consent Form

To participate in an interview for the research study conducted by Shehaam Moosa, entitled 'A Critical Analysis of the Influence of Social Innovation in Addressing Food (In)Security in the Context of Natural Disaster'

I …… , have read the information regarding this study concerning food (in)security and social innovation in the context of natural disaster.

I have had the opportunity to ask any questions related to this study, and received satisfactory answers to my questions and any additional details I required.

I understand that my participation in this study is voluntary. I am free not to participate and have the right to withdraw from the study at any time, without having to explain myself.

I am aware that the information I provide in this interview might result in research which may be published.

I understand that any written output resulting from this interview will not use my name and my identity will not be revealed.

I agree to answer the questions to the best of my ability.

I may also refuse to answer any questions that I do not want to answer.

I understand that this interview will be video and audio recorded.

By signing this form, I give free and informed consent to participate in this interview for the purposes of this study.

Date: ……

Participant name: …….

Participant signature: ……..

Interviewer name: ……....

Interviewer signature: ……..

This research is being conducted by **Shehaam Moosa**, a Master's candidate at the University of the Western Cape. Her contact details are as follows:

Cell. 072 269 1917 Email: 3856790@myuwc.ac.za

If you have any questions about the study itself, please contact **Dr. Lwando Mdleleni**, at the Office of the Deputy Vice-Chancellor: Research and Innovation, University of the Western Cape. His contact details are as follows:

Tel. (021) 959 4187 Email: lmdleleni@uwc.ac.za

This research project has received ethical approval from the Humanities and Social Sciences Research Ethics Committee of the University of the Western Cape.

Tel. (021) 959 2988
Email: research-ethics@uwc.ac.za

University of the Western Cape

Private Bag X17, Bellville 7535, Cape Town, South Africa
Telephone: (021) 959 3858/6 Fax: (021) 959 3865
Email: pkippie@uwc.ac.za or mdinbabo@uwc.ac.za

8.2. Appendix B – Information Sheet

For Interview: Experts, Academics, Project Leaders and Changemakers in the South African Context

Project title:

A Critical Analysis of the Influence of Social Innovation in Addressing Food (In)Security in the Context of Natural Disaster

What is this research study about?

This research project is being conducted by Shehaam Moosa, a Master's candidate at the University of the Western Cape. The purpose of this study is to provide a critical analysis of the influence of social innovation in the context of an epidemic natural disaster. It aims to unravel measures of social innovation that can be imperative in addressing the threat posed by national and natural disaster on food security. You are invited to participate in this research because of your expertise, experience, insight, local knowledge and community engagement.

What is the interview about?

In South Africa, many households experience food insecurity, particularly those in highly informal and marginalised communities. The indigent do not have access to adequate nutritious food, as a result of their socio-economic realities. These social inequalities are exacerbated in the context of natural and human disaster. In times of crisis, various state interventions are implemented to address hardship and hunger. However, the impact and sustainability of these

efforts are widely criticised. In recent years, it has been advocated that social innovation can enhance food security. The interview seeks to engage the influence of social problem-solving during times of crisis.

Would my participation in this study be kept confidential?

All participation will be treated with confidentiality and integrity. All personal information will be kept confidential and will remain anonymous. You will be required to sign a consent form before partaking in the study to protect your privacy and confidentiality. The researcher shall not reveal the identity of participants and will safeguard the confidential information obtained in the course of the study.

What are the risks of this research?

There are no risks anticipated from participating in the study.

Is any assistance available if I am negatively affected by participating in this study?

There are no negative effects that could arise from participating in the study.

What are the benefits of this research?

There are no material benefits for study respondents.

Do I have to complete the whole interview proceeding or may I withdraw from the process at any time?

Your participation in this research is completely voluntary. Should you feel the need to withdraw from the study, you can do so at any time.

How long will it take to complete the whole interview process?

The interview session will require approximately 45 minutes to complete.

What if I have questions?

This research is being conducted by **Shehaam Moosa**, a Master's candidate at the University of the Western Cape.

If you have any questions about the study or if you have any questions regarding your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact the student's research supervisor, **Dr. Lwando Mdleleni**, at the Office of the Deputy Vice-Chancellor: Research and Innovation, University of the Western Cape.

Dr. Lwando Mdleleni
Senior Researcher
(021) 959 4187
Office of the Deputy Vice-Chancellor: Research and Innovation
University of the Western Cape
Private Bag X17
Bellville 7535

This research project has received ethical approval from the Humanities and Social Sciences Research Ethics Committee of the University of the Western Cape.

Tel. (021) 959 2988

Email: research-ethics@uwc.ac.za

8.3. Appendix C – Email Invitation

Dear …….. ,

My name is Shehaam Moosa and I am a Master's student at the Institute for Social Development. For my thesis, I am exploring the influence of social innovation in addressing food (in)security in the context of natural disaster. I aim to unravel measures of social innovation that can be imperative in addressing the threat posed by natural and human disasters, like the Day Zero drought or COVID-19 pandemic, on food security. My study seeks to determine the extent to which social innovation can address food (in)security during times of crisis, if at all. Because of your expertise and experience, I am inviting you to participate in my research, by partaking in a semi-structured interview.

The interview seeks to engage the influence of social problem-solving during precarious times of crisis. The interview will require approximately 45 minutes to complete. There is no compensation for participation, nor any anticipated risks.

This research is affiliated to the DSI-NRF Centre of Excellence in Food Security (co-hosted by the University of the Western Cape and the University of Pretoria) and the Special Projects Unit (Office of the Deputy Vice-Chancellor: Research and Innovation, UWC).

If you would like to connect and participate in my study, please advise on your availability, and we can schedule a virtual interview (Zoom meeting) at a convenient time.

It would mean so much if you could assist in my educational endeavours.

Sincerely,
Shehaam

8.4. Appendix D – Interview Guide

1. Introduction
1.1 Can you tell me about your life and career path? What are some of the projects you are currently working on?
2. Food (In)Security in South Africa
2.1 What are the challenges of food security in South Africa?
2.2 How can South Africa's food system be reshaped to be more resilient and sustainable?
3. Food Security in the Context of Natural Disaster
3.1 What are the challenges of food security in the context of natural disaster?
3.2 How can vulnerable communities be more food-secure during times of crisis?
4. Social Innovation in South Africa
4.1 How does the social innovation landscape look in the South African context?
5. Social Innovation in the Context of Natural Disaster
5.1 Can social innovation address food (in)security during times of crisis? Are changemakers critical during unpredictable times, and can they promote positive change?
6. Food Security Framework
6.1 Is the national food security framework comprehensive and inclusive?
7. Disaster Management Framework
7.1 Is the national disaster management framework comprehensive and inclusive?
8. COVID Crisis
8.1 What kind of social innovations have been implemented to mitigate the challenges of the novel coronavirus/hard lockdown? How effective have they been in addressing the threat posed by COVID-19 on food security?
9. Day Zero Crisis
9.1 What kind of social innovations have been implemented to mitigate the challenges of the recent drought in Cape Town/Western Cape? How effective have they been in addressing the threat posed by drought on food security?
10. Conclusion
10.1 What is the role of social innovation in society? What can the role of social innovation be in South Africa? In general and with regards to the food ecosystem

Thank you so much for your time.

Interviewer's comments, if any:

_____

_____

_____

_____

_____

_____

_____

_____

Interviewer: I hereby certify that this interview was conducted in accordance with instructions received during training. All responses recorded here are those of the respondent, who was chosen by the appropriate selection method.

Interviewer's signature: _____

Supervisor's comments, if any:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Supervisor's signature: _____

UNIVERSITY of the WESTERN CAPE

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15 April 2021

Ms S Moosa
Institute for Social Development
Faculty of Economics and Management Sciences

HSSREC Reference Number:	HS21/2/11
Project Title:	Critical analysis of the influence of social innovation in addressing food (in)security in the context of natural disaster.
Approval Period:	15 April 2021 – 15 April 2024

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report by 30 November each year for the duration of the project.

The permission to conduct the study must be submitted to HSSREC for record keeping purposes.

The Committee must be informed of any serious adverse events and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

Director: Research Development
University of the Western Cape
Private Bag X 17
Bellville 7535
Republic of South Africa
Tel: +27 21 959 4111
Email: research-ethics@uwc.ac.za

NHREC Registration Number: HSSREC-130416-049

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8.5. Appendix E – Ethical Clearance

8.6. Appendix F – UWC Permission

The University of the Western Cape is a Public Higher Education institution established and regulated by the Higher Education Act, No. 101 of 1997 (Republic of South Africa), with the language of instruction being English. The University is duly accredited by the Council on Higher Education and its degrees and diplomas are registered on the National Qualifications Framework in terms of the South African Qualifications Authority Act, No. 58 of 1995.

REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE UNIVERSITY OF THE WESTERN CAPE

This serves as acknowledgement that you have obtained and presented the necessary ethical clearance and your institutional permission required to proceed with the project referenced below:

Name of Researcher
SHEHAAM MOOSA

Research topic
Critical Analysis of the Influence of Social Innovation in Addressing Food (In)Security in the Context of Natural Disaster

Period permission is valid for
20 April 2021 – 15 April 2024
(or as determined by the validity of your ethics approval)

Reference code
UWCRP200421SM

Ethics reference
University of the Western Cape HS21/2/11

You are required to engage this office in advance if there is a need to continue with research outside of the stipulated period. The manner in which you conduct your research must be guided by the conditions set out in the annexed agreement: *Conditions to guide research conducted at the University of the Western Cape*.

Please be at liberty to contact this office should you require any assistance to conduct your research or require access to either staff or student contact information.

Yours sincerely

DR AHMED SHAIKJEE
DEPUTY REGISTRAR
UNIVERSITY OF THE WESTERN

UWC
UNIVERSITY OF THE WESTERN CAPE
ACADEMIC ADMINISTRATION
20 APRIL 2021
This document contains a qualified electronic signature and date stamp. To verify this document contact the University of the Western Cape at researchperm@uwc.ac.za.

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DEPUTY VICE-CHANCELLOR
RESEARCH AND INNOVATION

60 YEARS of hope, action & knowledge

Professor Josè Frantz
Private Bag X17, Bellville
7535
South Africa
Tel: +27 21 959 3245/4057
Fax: +27 21 959 2587

16 May 2022

Dear Delegate

The University of the Western Cape in Collaboration with the Department of Science and Innovation will be hosting an SDG Indaba on 6th June 2022 at the Cape Town City Hall. UWC has positioned itself as an intellectual base for solving challenges set out in the Sustainable Development Goals (SDGs) such as inequality, climate change, food and water insecurity, unemployment, safe cities amongst others. These are global grand challenges, but Africa is at the frontline of their impact.

We therefore seek to bring together key role players (Government, Community, Organisations and Universities) who will contribute in the production of high-impact, cross-cutting research through multi-disciplinary teams and approaches. Ultimately, this research can be transferred to the communities to have a meaningful impact in bettering the livelihoods of the marginalised.

Key objectives of the SDG Indaba

- Is to set out foundation for partnerships
- Establish a shared agenda
- Develop a basis of understanding to pursue research and innovation from a multi-stakeholder perspective
- How do we form part of a multi-stakeholder agenda that advances sustainable development through a clear set plan of action?

You are hereby invited to be a delegate in the SDG Indaba.

Date: 06 June 2022
Venue: Cape Town City Hall, Cape Town, South Africa
Time: 08:30 – 16:30
Please send RSVP (*together with your dietary requirements*) to: zmvelase@uwc.ac.za/ dvcresearch-innovation@uwc.ac.za by the 24th of May 2022.

Yours sincerely

Prof J Frantz
DVC: Research and Innovation

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8.7. Appendix G – Inaugural SDG Indaba