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THE IMPACT OF EXPANDED PUBLIC WORKS PROGRAMME (EPWP) ON FOOD SECURITY IN SOUTH AFRICA

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Abstract

This thesis aims to investigate the food security impact of public works programmes. Using the Expanded Public Works Programme (EPWP) as a case study in South Africa, the design, implementation, and operation of public works are evaluated to determine how the programme contributes towards individual and household food security. A convenience sampling method was used to identify research participants from EPWP projects. In the study, a sample of 112 participants was interviewed to collect primary data from EPWP projects. To gather as much information as possible, the researcher captured data using a semi-structured questionnaire as well as open-ended interview questions from participants and other key informants. A mixed methods approach of analysis is used and the results are discussed using the theory of change of public works and food security via three impact channels: the wage vector, the skills vector, and the asset vector. Key programme issues identified as fundamental factors that affect the programme's food security impact include payment of low wages, delays in the actual date of payment (resulting from delays in the programme's administrative process and inspection by park rangers), undesired frequency of payment, lack of microenterprises for participants, the provision of less competitive skills training, and the creation of assets that do not have a direct or indirect benefit to participants. Policy implications of these issues are discussed and recommendations on how to increase the food security impact of public works are discussed. Recommendations include adjusting the design features of public works as well as linking participants to other livelihood strategies that will increase household income and food security so that beneficiaries are equipped with more resources that can provide them sustainable access to food at all times, even after they exit public works.

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List of Acronyms

2SLS	Two-stage least squares
CBPWP	Community-Based Public Works Programme
CS	Community Survey
CV	Curriculum Vitae
CWP	Community Works Programme
DDS	Dietary Diversity Score
DEA	Department of Environmental Affair
DOA	Department of Agriculture
DoW	Department of Women
DPRU	Development Policy Research Unit
DPW	Department of Public Works
DSS	Department of Social Development
ECD	Early Childhood Development
EPWP	Expanded Public Works Programme
ETQA	Education and Training Quality Assurance
FANTA	Food and Nutrition Technical Assistance Project
FAO	Food and Agriculture Organisation
FBO	Faith-Based Organisation
FISP	Fertilizer Input Subsidy Programme
FSP	Food Security Programme
GHS	General Household Survey
HCBC	Home Community-Based Care
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
HIV/AIDS	Human Immune Deficiency Syndrome/Acquired Immune Deficiency Syndrome
IDS	Institute for Development Studies
IES	Income and Expenditure Survey
ILO	International Labour Organisation
LCS	Living Conditions Survey

MASAF	Malawi Social Action Fund
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act 42 of 2005
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NDPWI	National Department of Public Works and Infrastructure
NEDLAC	National Economic Development and Labour Council
NGO	Non-governmental Organisation
NIDS	National Income Dynamic Study
NPO	Non-profit Organisation
NPWP	National Public Works Programme
NSNP	National School Nutrition Programme
PEP	Public Employment Programme
PSNP	Productive Safety Net Programme
PWC	Public Works Classic
PWE	Public Works Expanded
QLFS	Quarterly Labour Force Survey
SA	South Africa
SALDRU	South African Labour and Development Research Unit
SANParks	South African National Parks
SPL	Social Protection and Labour
Stats SA	Statistics South Africa
UIF	Unemployment Insurance Fund
UNICEF	United Nations Children's Fund
VUP	Vision 2020 Umurenge Programme
WFP	World Food Programme

List of codes used to conceal the identity of participants

To protect the anonymity of participants included in the study, the researcher generated a list of codes used as a reference to qualitative data provided by respondents throughout the study. Every EPWP participant from the sampled group was assigned a reference number by the researcher, numbers between p1 and p112. These numbers were assigned randomly according to how the data was captured. The code of identification for each participant was their identification number (from p1 to p112), together with their gender, either male (m) or female (f), and the programmes in which they worked. There were 3 projects included in the study, Working for Ecosystems (wfe), Working for Water Central (wfwc), and Working for Water South (wfws). For instance, the identification code for the 87th participant (p87), who is female (f) and worked on a project under Working for Ecosystems (wfe) is (p87, f, wfe).

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

The purpose of this research is to assess the impact of public works programmes on participants' individual and household food security. The public works programme is one of the social protection instruments implemented in Europe, Latin American, North America, Asian, and African countries in the fight against poverty, inequality, unemployment, and food insecurity. The programme creates intensive labour work opportunities[1] for targeted poor and vulnerable beneficiaries who create assets in exchange for income transfer (either cash or in-kind) from the programme. The overall objective of public works is to enhance social protection amongst members of the economically active population group who are poor and unemployed but still capable of providing their labour for work.

Based on the aims of the programme, our a priori expectation is that, as a social protection programme, public works must provide sufficient support to targeted participants to reduce their vulnerability to economic challenges. The thesis focuses on the food security impact of public works and explores its impact channels using relevant analytical and theoretical framework models. The research also uses international literature on public works to substantiate the arguments around the impact channels of the programme. Using secondary national data as well as original primary survey data from a selected case study of public works in South Africa, the Expanded Public Works Programme (EPWP), the research evaluates the programme, and empirical results generated on key issues are discussed using the analytical and theoretical framework. A discussion on the food security impact of EPWP is provided based on the empirical work and recommendations from the author as well as international experience on public works is given on how public works, as a social protection programme, can increase their food security impact amongst participants and their households.

[1] A work opportunity is defined as "Paid work created for an individual on an EPWP project for any period of time" (DPW, 2018).

1.2 Core definitions of the study

For a better understanding of the study, important definitions of key concepts used in this research are provided in this section. These include *social protection and labour interventions*, *social assistance, public works programme*, and *food security*.

Social protection and labour (SPL) interventions are well-recognized systems, policies, and instruments that promote resilience, equity, and opportunity for individuals, households, and societies to manage risk and volatility and protect them from poverty and destitution (World Bank, 2018a: 5). There are generally three categories of SPL interventions and these are *social assistance programmes (*also known as *a social safety net), social insurance programmes* and *labour market programmes. Social assistance programmes* are "regular, non-contributory payments of money provided by government or non-governmental organisations to individuals or households, to decrease chronic or shock-induced poverty, addressing social risk and reducing economic vulnerability" (Samson, van Niekerk & Mac Quene., 2010: 3). Such income support can be universal or targeted to specific groups of people who meet a particular criterion.

On the other hand, s*ocial insurance programmes* are formal or informal contributory interventions designed to reduce exposure to poverty risk and vulnerability amongst individuals and households (World Bank, 2015: 7: World Bank, 2018a: 6). Such programmes protect the vulnerable group of people from unexpected livelihood shocks resulting in sudden changes in income which may result from one of the nine branches of social security contingencies[2] under Convention 102 of the International Labour Organisation (ILO) of 1952 (Myers, 1952).

Labour market initiatives are a combination of contributory and non-contributory labour market interventions designed to protect labour market participants against loss of income resulting from unemployment or providing access to skills development and opportunities to participants within the labour market (World Bank, 2018a: 5 - 6).

[2]These include (1) Access to medical care (2) Sickness (3) Unemployment (4) Old age benefit (5) Employment injury (6) Family benefit (7) Maternity benefit (8) Invalidity benefit and (9) Survivor's benefit.

The research considers public works as a social protection programme with a social assistance function. It adopts the definition by McCord (2009: 3) who defines PWPs as:

> all activities which entail the payment of a wage (in-kind or cash) by the state, an agent acting on behalf of the state, or NGOs, … in return for the provision of labour, to i) enhance employment and ii) produce an asset (either physical or social), with the overall objective of promoting social protection.

The definition of food security adopted in this thesis implies a condition when all targeted beneficiaries of public works "at all times, have … economic access to sufficient food which meets their dietary needs and food preferences for an active and healthy life" (FAO, 2003: 28).

1.3 Background of the study

For the researcher's master's dissertation (Satumba, 2016), the author evaluated the impact of social grants and EPWP on poverty reduction in South Africa. During the research process, it was noticed that extensive research existed on the impact of social grants on socioeconomic variables such as poverty reduction and child nutrition (Barrientos & DeJong, 2006; McCord, 2009; Barrientos & Hulme, 2009; Armstrong & Burger, 2009; van der Berg & Siebrits, 2010; van der Berg & Siebrits & Lekezwa, 2010; Slater, 2011; Gutura & Tanga, 2015). However, fewer studies existed on the impact of public works. Furthermore, the available dataset for public works that the researcher accessed was only high-level administrative data collected by the Department of Public Works (DPW). This data was not publicly available; the researcher requested it from DPW. It mostly contained information on the different types of projects implemented (such as project names, location, sector, number of work opportunities created, and duration, amongst others). However, no information was available on how EPWP affected socio-economic factors amongst beneficiaries. Such factors motivated the researcher to explore more into EPWP. With several studies conducted on the impact of EPWP on poverty reduction, this study aims to focus on the food security impact of EPWP. The study sought to fill this knowledge gap by closely investigating the design, implementation, operation, possible outputs, and benefits derived from the programme and their contribution to individual and household food security. This research also aims to use the empirical results to increase the attention of government and policymakers on public works as a social protection programme that has the potential to significantly contribute

towards the reduction of food insecurity, poverty, unemployment, and inequality if well-designed and well-integrated with other social protection interventions.

There have been several studies that have examined the impact of public works programmes. A study by Wittenberg et al. (2013) examined the impact of public works on employment, earnings, and poverty reduction. The study found that public works had a significant impact on increasing employment and earnings, especially for women, although the impact on poverty reduction was relatively small. Maharaj (2014) evaluated the effectiveness of public works in providing work experience and skills development for unemployed youth. The study found a positive impact of the programme on enhancing the employability of youth, although the quality of work experience and skills development varied across projects. Another study by Yu (2017) assessed the impact of public works in China on poverty reduction and social stability. The study found a positive impact of the programme on reducing poverty and improving social stability for participants, especially in rural areas. A study by Chakravarty and Dutt (2015) evaluated the impact of public works on employment generation and poverty reduction in India. The study found that the PEP had a significant impact on increasing employment and reducing poverty, especially among the rural poor. Overall, the literature suggests that public employment programmes can have a positive impact on employment, earnings, and poverty reduction, especially for vulnerable groups. However, the effectiveness of these programmes may vary depending on factors such as programme design, implementation, and monitoring.

1.4 Problem statement

South Africa is one of the countries in sub-Saharan Africa with a high prevalence of food insecurity, particularly in rural areas. The Expanded Public Works Programme (EPWP) is a government initiative aimed at reducing unemployment and poverty through job creation. While the EPWP has a broad range of objectives, including addressing basic services delivery, infrastructure development, and environmental management, the extent of its impact on food security in the country is not clear. Therefore, this study seeks to investigate the impact of EPWP on food security in South Africa.

Most public works programmes are implemented to provide income support to vulnerable members of the working-age population. Due to factors such as poverty and unemployment, certain members of society are unable to access sufficient food for themselves and their households. The government of South Africa implemented public employment programmes as a social protection measure aimed at providing income support and skills training to this vulnerable group of people in exchange for their labour. However, most of the targeted beneficiaries are victims of structural unemployment and they suffer from chronic poverty. Furthermore, people within the working-age population are mostly head of their households with responsibilities of providing for all needs of their dependents. Hence, these targeted beneficiaries require access to a sustainable source of sufficient income, for not only short-term consumption smoothing but also access to income and other livelihood strategies that have a long-run impact.

In South Africa, income-related food insecurity is a significant problem in the country. In 2021, the national average for household food insecurity was 26.4%, with a higher prevalence in rural areas (34.3%) than in urban areas (22.8%) (Department of Planning, Monitoring, and Evaluation, 2021). The same report also notes that the COVID-19 pandemic has exacerbated the problem, with an estimated 7 million people experiencing food insecurity due to loss of income and disruptions to food supply chains.

Research studies have also shown the extent of income-related food insecurity in South Africa. For example, a study conducted in the Western Cape found that nearly 60% of households experienced some level of food insecurity, with the highest rates among female-headed households, the unemployed, and those with lower levels of education (Crush et al., 2020). Another study in Gauteng found that 63% of households experienced food insecurity, with a higher prevalence among black and coloured households (Mosavel et al., 2017).

However, there seem to be a disjunction between the nature of the economic challenges and the objectives of public works. Chronic poverty, structural unemployment, and severe levels of food insecurity cannot be eradicated permanently by short-term unguaranteed work opportunities that provide a wage transfer that is below the labour market minimum wage. Additionally, skills received by participants have been criticised as less competitive within the labour market and

not all assets created from the programme have a direct food security benefit to participants. As such, given the nature of the programme, how can public works have a sustainable impact on socioeconomic challenges, particularly food insecurity? Moreover, what programme strategies can be implemented to optimise food security benefits amongst participants and their households? This thesis aims to address these issues using the case study of EPWP.

1.5 Research question

The main research question of this study is as follows:

> What is the food security status of participants of EPWP and how does the programme contribute towards ensuring that participants and their households have sufficient economic access to food at all times to meet their dietary requirements and food preferences for an active and healthy life based on existing data, methodologies, and metrics?

1.6 Objectives of the study

The main objective of the study is to better understand the design, implementation, operation, and benefits derived from EPWP in South Africa and determine how the programme can contribute more towards food security for participants and their households.

Sub-objectives include:

- To analyse all possible impact channels of public works and how they can affect food security
- To determine whether income transfer from EPWP provides sufficient economic access to food for participants and their households
- To investigate the medium and long-term food security impact of the skills and asset vector of public works and determine whether they ensure food stability for participants and their households
- To recommend possible adjustments to design features of the programme as well as strategic partnerships between EPWP and other economic inclusion programmes to enhance the food security impact of the programme

1.7 The rationale of the study

According to Section 27(1)(b) and (c) of the Constitution of South Africa, "Everyone has the right to have access to … sufficient food … and social security, including, if they are unable to support themselves and their dependants, appropriate social assistance" (Constitutional Assembly, 1996). This section provides a duty on the State to provide economic support to vulnerable members of society of all age groups. Such support may also include appropriate social assistance to people who did not contribute towards these State funds.

South Africa has a well-established social security system with a significant budget allocated towards social grants. During the 2020/21 financial year, 4.5% (which is roughly R256 billion) of South Africa's Gross Domestic Product was allocated towards 18 million beneficiaries (National Treasury, 2021: 61). The system provides social protection coverage to poor children, the elderly and people with disabilities. However, other poor, unemployed, and vulnerable members of society within the working-age group (who are not beneficiaries of the disability grant) do not receive any social grants to assist them with livelihood challenges. In the context of social grants that are consistent and predictable, these vulnerable individuals appear to be 'left behind' from receiving such an income transfer. The public works programme is the social protection programme for the poor working-age population who can provide their labour for work.

This study is significant as it provides a closer analysis of the design, implementation, and operation of public works in South Africa (using the case study of EPWP) and how they contribute towards ensuring that participants and their households have sufficient access to food at all times. The research also provides recommendations on how the programme can increase its food security impact amongst participants. It is anticipated that these strategies will develop self-sustaining people who are better able to support themselves and their dependents through increased household income generated from diversified livelihood strategies engaged in partnerships with economic inclusive programmes. Moreover, these participants are more likely to graduate from poverty and not rely on government support after exiting from public works.

1.8 Structure of the Thesis

This study is structured as follows:

Chapter 1 introduces the study by giving a background, rationale, and objectives of the research.

Chapter 2 provides the theoretical and analytical framework that guides this study. First, the definition of food security is presented, and how it has been developed and improved over time. In this section, the definition of food security used in this study is identified. Second, the food security framework under its four pillars (food availability, food accessibility, food utilisation, and food stability) is presented and the discussion narrows down the food security pillars that mainly govern this study. Third, the chapter presents the theory of change in public works and food security. The discussion provides the origins, development, and conceptualisation, together with the pros and cons of the theory. Fourth, the theory of change is developed and explained in the context of the study. The chapter is then concluded.

Chapter 3 conceptualises public works as part of social protection. In this chapter, several definitions of social protection are discussed and the definition mostly applicable to this study is identified. The chapter describes the evolution of public works in the South African context and the discussion narrows down to the case study, the Expanded Public Works Programme (EPWP). The objectives of the programme are discussed followed by an explanation of the different sectors in which EPWP is implemented. The chapter then provides a review of empirical work conducted on how public works have contributed towards food security in the global context before concluding the chapter.

The methodology of the study is presented in Chapter 4. First, the type of method used in the study (mixed methods approach) is discussed. Second, for the quantitative section, different national secondary datasets consulted in search of the most feasible national dataset to evaluate in the study are presented. In this section, the pros and cons of each national dataset are highlighted and the required variables of analysis are identified. The most relevant national dataset is explained in depth: how the data is collected (data collection method as well as the sampling techniques), the frequency of data collection, together with the limitations of the data.

Furthermore, the quantitative methods that are used to assess the level of food security amongst participants of the public employment programmes as well as the contribution of the programme towards food security are also discussed. These quantitative methods include the Household Dietary Diversity Score (HDDS), the Household Food Insecurity Access Scale (HFIAS), and the 2-Stage Least Squares (2SLS) regression model. Third, primary data collected from the case study is presented and a discussion of the variables of EPWP that the primary data aim to collect (fundamental programme variables that are not captured by the national secondary data used) is provided. In this section, data collection, sampling method, challenges encountered during data collection, and the limitations of the primary data are discussed. Quantitative and qualitative methods used to evaluate the primary data are also presented before the chapter is concluded.

Chapter 5 presents the results of the quantitative methods used to analyse the secondary national data. These are the results of PEP participants' HDDS, HFIAS, and the 2SLS regression model. For HDDS, household food insecurity is analysed according to three categories: those with low dietary diversity score, those with medium HDDS, and those with high dietary diversity score. For the modified version of HFIAS, food security is evaluated using two indicators: the hunger indicator and the food adequacy indicator. For the 2SLS model, the first stage model is the PEP model with individual and household factors that determine participation in public employment programmes. A predicted PEP variable is derived from this model and used in the second regression, the household food insecurity model. The correlation between PEP and household food insecurity is determined and a discussion around this correlation is provided before the chapter is concluded.

The results from the quantitative techniques used to measure food security from the case study are provided in Chapter 6. Sample descriptives of EPWP participants included in the study are presented first followed by the analysis of household food security using HFIAS, HDDS, and the food expenditure approach. Some qualitative data is also mixed with these results to present a more detailed discussion of the results as well as provide possible meaning to some of the quantitative results. Additionally, a section that compares the results generated by all indicators

to assess if they align with each other and the researcher's a priori expectation follows. Possible reasons for inconsistent results are also explained and the results considered by this study are discussed in the conclusion section of the chapter.

Chapter 7 discusses possible strategies of how the implementation and operation of EPWP could be done differently to increase the efficacy of the programme amongst its beneficiaries. This chapter is based on the qualitative data collected from the case study and these are strategies and issues raised by the participants. The discussion is aligned according to the theory of change presented in chapter 2. Such issues include complaints against low wages, frequency of payment, mode of payment, lack of microenterprises for participants, and lack of asset creation for food security befit for participants.

Chapter 8 concludes the study. First, the chapter provides a summary of the main findings of the study. Second, the chapter provides recommendations of what could be done differently to the programme to increase its food security impact amongst the poor and vulnerable members of the working-age population in South Africa. These recommendations include data issues (improving data capturing by Stats SA as well as data captured by EPWP), design features of EPWP (these include the wage rate, targeting of the programme, employment design, and other operations of EPWP), and linking EPWP to other livelihood strategies (such as microenterprises, rotation training, and practice of urban farming). Third, the chapter answers the research questions and discusses the contribution of this study to the global empirical literature on public works as well as relevant theories of food security, social protection, and public works. The chapter is concluded and recommendations for future studies are provided.

CHAPTER TWO: THE THEORETICAL AND ANALYTICAL FRAMEWORK

2.1 Introduction

This chapter provides the theoretical and analytical framework of public works and food security. The theoretical framework is fundamental as it guides the discussion of the study. Initially, the chapter introduces the concept of food security: how it is defined differently, and the definition adopted in this study. A discussion of the food security pillars, food availability, food accessibility, food utilisation, and food stability, follow and the pillars relevant to this study are identified. The social protection framework is also discussed and the type of social protection and function it provides to targeted beneficiaries are highlighted. A discussion of the theory of change is provided together with how it applies to this study.

2.2 Food security

2.2.1 Defining food security

The international food problems and the global food crisis around the mid-1970s led to the development of the concept of food security. The concept of food security primarily revolved around *food supply issues*, with an emphasis on national and international *food availability* (Clay, 2002: 1). There was also a focus on stabilising the price of basic food items. From the Proceedings of the 1974 World Food Summit, food security was defined as, '*availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices'* (FAO, 2006: 1).

In 1983, a report by the Director General of the Food and Agriculture Organisation presented a shift in the definition of the concept of food security, from focusing only on supply-side factors to also considering demand-side factors of food security (FAO, 1984). Although there was adequate global and national food supply, some countries still experienced famines, food crises, and hunger in some regions and among certain vulnerable groups of people (Clay, 2002: 1). A close analysis of famines, food crises, and hunger during the mid-1970s indicated that the behaviour of potentially vulnerable and affected people (which also include their access to food) was also a crucial aspect that required significant considerations, hence, the inclusion of demand-

side factors into the definition of food security. Food security was redefined as a state when '*all people at all times have both physical and economic access to the basic food that they need*' (FAO, 1984: 14). The Committee on World Food Security emphasised that food security must aim towards three objectives: "*ensuring adequate production of food, maximizing the stability of food supplies, and ensuring access to them, particularly on the part of those in greatest need*" (FAO, 1984: 14).

A World Bank policy study introduced the element of *nutrition* in the definition of food security in 1986 (Reutlinger, 1986). This fundamental factor emerged when levels of poverty and malnutrition kept increasing while there was increasing adoption of Green Revolution technology in Asia (Clay, 2002: 1). Food security was defined as '*access of all people at all times to enough food for an active, healthy life'* (Reutlinger, 1986: 1). Although there was sufficient food available for all, the levels of malnutrition continued to increase. During the 1990s, concern increased over the *nutritional components* of available food: whether it provided all nutritional components (nutritional balance). Furthermore, concerns were raised about diets that provide an active and healthy life. Additionally, because people are diverse and have different tastes and food preferences*, food preferences* (whether caused by cultural or social factors) had to be considered when defining food security. The 1996 World Food Summit redefined food security in the following terms, "*Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life*" (FAO, 1996). Food security was to be achieved at all individual levels household, national, regional, and global levels.

Although there was physical and economic access to food, it was observed that some groups of people were still food insecure because of certain social structures. For instance, some people could not access food because they belonged to a certain tribe, because of their gender, or due to their racial group. As such, the social aspect of human livelihood was considered in the definition of food security. The definition was adjusted as, "*Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life*" (FAO, 2003: 28).

This definition of food security is adopted in this thesis although the study does not consider the physical and social access to food as well as food safety and nutrition.

2.2.2 The Food Security Framework

There are four pillars of food security namely food availability, food access, food utilization, and food stability (World Food Summit, 1996; World Food Programme, 2005; Leroy, Ruel, Frongillo, Harris & Ballard, 2015). These food dimensions are explained below.

2.2.2.1 Availability

The World Food Programme (2005: 32) defines food availability as, "the amount of food that is physically present in a country or area through all forms of domestic production, commercial imports, and food aid". Food availability is the total supply of "food production, stock levels, and net trade" (FAO, 2008: 1). Crop production, animal husbandry, fisheries, and food aid affect food availability and a country is regarded as food secure if its food supply matches population (Burchi & De Muro, 2016: 11). If otherwise, (i.e., total food supply is less than total population), the country is considered food insecure. With this approach, the growth in food availability should be more than the growth in population so that there is always enough food supply for all.

Factors and policies that affect food production have an impact on food availability and these effects can be global, national, or regional (Devereux, 2015: 15). On one hand, mechanisms such as targeted input subsidies (for instance, giving fertiliser or coupons for farming inputs) have a significant impact on increasing aggregate food availability. With such instruments, poor and vulnerable groups of farmers (such as women farmers) can receive these inputs and increase crop yields on their farms depending on the adequacy, timely supply, and efficient utilisation of these inputs. These targeted input subsidies are a more effective and cheaper direct measure of increasing food security amongst specific vulnerable groups. On the other hand, measures to increase aggregate national food production (such as subsidising farming inputs for all farmers and promoting capital-driven intensification) tend to be more expensive and much more exploitable by the non-poor farmers in the end, only the commercial farmers benefit significantly more than the smallholder farmers (Devereux, 2015: 15).

Food availability can also be presented in terms of the 'food balance sheet' at the national level (FAO, 2001). The food balance sheet presents a comprehensive picture of the pattern of food supply and food *utilisation* during a specified reference period (Jacobs & Sumner, 2002: 9). Sources of food supply and food utilisation for primary and processed commodities available for consumption are provided. Total food supply can be expressed as:

Food available for consumption = starting stocks + (quantity imported + quantity produced) – (quantity exported + seed + animal feed + waste + other non-food uses) - ending stocks (FAO, 2001).

2.2.2.2 Access

Food access is the ability of individuals and households to acquire adequate food regularly for an active and healthy life (World Food Programme, 2009: 32; Leroy et al., 2015: 169). Food can be acquired from one of the following sources: 1) own stock and home production, 2) purchases from food stores and markets, 3) food acquired through barter trading, 4) food that is borrowed, 5) food received as gifts or through food aid programmes, 6) or food received from Food for Work projects. Sen (1981:2) classifies such means of accessing food into four categories namely trade-based entitlement (this includes market purchases or multilateral exchanges with willing parties), production-based entitlement (such as farming or any other food production using owned resources), labour-based entitlement (such as employment) and transfer-based entitlement (such as inheritance).

Food access can be categorised under physical access, financial or economic access, and sociocultural food access (Napoli, 2011: 20). Physical accessibility occurs when food is readily available in shops and markets accessible to everyone. Economic access to food is a position when people have the financial resources to buy food. Although food can be physically accessible in shops, certain members of society are unable to purchase them (or adequately as they need) because of limited financial means. The socio-cultural dimension of food access exists when some groups of people, despite having physical and economic access to food, are unable to access the food due to religious prohibitions and cultural practices (Napoli, 2011: 20). For instance, some

religious groups only eat meat if it is halal and they do not eat certain types of meats (like pork) at all.

Factors that affect food accessibility include household characteristics as well as market factors. Household factors include the level of poverty within the household; household location; available household assets (such as land and labour); household size; gender of household head; education level of household members; and religious beliefs. Well-off households have better access to food; households in urban areas have access to more food from multiple food stores than those in rural areas have fewer shops; households with more land can engage in agriculture and able-bodied people can work and earn income; smaller households with a male household head can access more food and household heads with better education can also access more food (DoW, 2015: 103; Tibesingwa & Visser, 2016: 39; World Bank, 2018b: 13; Stats SA, 2019a: 21). Market factors include mainly food availability; food prices; location of shops from consumers and operation hours, amongst others (Parvathamma, 2015: 4).

There are certain measures that households and governments can take to ensure food access. People who can work present their labour for income in the labour market and they can use this income for food. Other households with land exercise their production-based entitlement and engage in agricultural activities, thus producing more food. Vulnerable people rely on transfer-based entitlements (which are social protection programmes[3] as well as humanitarian relief) to access food. Some of these government support programmes include public works programmes, social grants, school feeding schemes, and targeted food price subsidies, amongst others (Devereux, 2015: 16).

2.2.2.3 Utilization

Food utilization has been defined by the World Food Programme (2005: 32) as, '…(a) households' use of food to which they have access, and (b) individuals' ability to absorb nutrients – the

[3]The World Bank (2015: 16) has defined social protection and labour as, "the set of policies and programmes aimed at preventing or protecting all people against poverty, vulnerability, and social exclusion throughout their life cycles, with a particular emphasis on vulnerable groups". Further discussion of the concept is provided in Section 2.3.

conversion efficiency of food by the body'. Food utilization also includes the ability of households to store, prepare and cook food. Additionally, the concept considers the appropriate preparation of food (World Food Programme, 2009: 102). At the World Food Summit of 1996, it was also described that 'availability of and access to food on their own are not enough, people have to be assured of safe and nutritious food' (World Food Summit, 1996). The type of food that is found in the household's consumption basket should provide adequate energy and nutrition that enables all members of the household to carry out routine physical activities. Devereux (2015: 16) explains that there should be a coordinated link between any social protection transfers and health and nutrition education, or in some cases, awareness-raising sessions. Such activities contribute significantly towards the change in household behaviour towards proper storage and preparation of food that leads to an improvement in their health and nutritional status. World Food Programme highlights three important aspects of food utilisation.

The first aspect of food utilization concerns the facilities within the households that individuals and families use for storing and processing food (Napoli, 2011: 20). Food supplies must be stored in a safe place where they cannot be contaminated. Also, households should ensure that they have safe drinking water, and adequate sanitary facilities and practice hygiene (such as washing hands) to avoid the spread of disease (Napoli, 2011: 20).

The second aspect of food utilisation is that household members should be educated and advised on how to properly prepare food and ensure that all groups of people within the household (which includes children, those that are sick, and the elderly) are adequately fed. Such education on good feeding practices also includes good feeding practices, such as exclusive breastfeeding for infants up to 6 months. Although food might be available in food stores and markets and households can access it, its nutritional value is low if people are unable to prepare it well for all household members to ingest and digest it (World Food Programme, 2009: 102).

The third aspect of food utilization is the equitable sharing of food within the household (World Food Programme, 2009: 102). All members of the household, both children and adult members, should receive sufficient food proportion depending on their needs. Furthermore, the need for specific food requirements and nutrition demands by certain individuals within the households

(i.e., those that may be sick and require special diets) must also be considered within the household.

2.2.2.4. Stability

Food stability refers to the ability of individuals or households to consistently access and utilise available food over time. At the World Food Summit (1996), it was emphasised that food availability, food access, and food utilization must be present at all times for people to be food secure. Some factors that affect food stability include, “adverse weather conditions, political instability, or economic factors such as unemployment or rising food prices” (FAO, 2008:1).

Interruption in supply, access, and utilisation of food by households can result from transitory shocks (when food is unavailable for a short period), seasonality (which are predictable patterns of food interruptions), or chronic shocks (which are long-term and persistent lack of adequate food). Transitory periods of food insecurity can result from events that cause a momentary loss of income (such as temporary job loss) hence, reducing the access and utilisation of food. Seasonal food insecurity can be caused by food production seasonality (which undermines the stability of food availability) and employment seasonality (for seasonal workers such as farm workers and agricultural labourers). Such seasonal interruptions in income also weaken the stability of food access, especially for people with no alternative forms of income or food access. Production seasonality also affects food prices, which in turn, affects food access and food utilisation. Chronic food insecurity can result from long periods with no income, which is the case for people in poverty (Napoli, 2011: 20; Parvathamma, 2015: 4).

All dimensions should be stable over time and the government should implement measures if there is instability in any one of the food security dimensions to prevent food insecurity. Such absence of any of these food security dimensions can lead to food insecurity with the poor and vulnerable individuals and households suffering the most. Hence, government measures to mitigate when any of these components are lacking is a significant socioeconomic measures to provide social safety nets to vulnerable people.

This thesis evaluates the food access pillar of food security as applicable to the investigated social protection initiative. Income received from public works increases disposable income, which in turn increases a household's ability to acquire more food. The other pillars, food availability, food utilisation, and food stability, are beyond the scope of this research. Food availability does not apply in the context of EPWP as it relates to the amount of food physically present at the country level or a particular designated area and not at the household level. The total food supply in food stores and markets within communities of EPWP participants may be classified under food availability and this was beyond EPWP and the scope of the case study. In the context of EPWP, food utilization pertains to the use of accessed food by households, participants' ability to absorb nutrients, and issues around the conversion of food by the body. Furthermore, food utilization also includes the ability of EPWP participants and households to store, prepare, and cook food within their households. Particular household information on food storage and processing was not collected by the study. Such information may include the place where food is stored (to avoid food contamination), safe drinking water, adequate sanitary facilities, and practice hygiene within households of EPWP participants. Additionally, the assessment of whether EPWP participants were educated and advised on how to properly prepare food was not conducted by the study. Food stability is also not considered in this study due to the study's limited timeframe. To collect comprehensive information on these variables, the researcher felt that he had to ask these questions within the households of the respondents, to ask, for example, "Where do you store your food?" A detailed explanation of data collection is provided in Chapter 4.

Section 2.3 discusses the conceptual frameworks of social protection.

2.3 The social protection framework

This section provides the different definitions, types, and functions of social protection. A conceptual framework of the initiative is given. The definition adopted in this study is indicated as well as the specific social protection aligned with this research. The social protection function relating to this study is provided and the relevant logical pathways to change are tested in the following chapters.

2.3.1. Social protection programmes

The World Bank (2018a: 5) defined social protection and labour interventions as well-recognized systems, policies, and instruments that promote resilience, equity, and opportunity for individuals, households, and societies to manage risk and volatility and protect them from poverty and destitution. Social protection programmes are classified under three categories: social assistance (also known as social safety nets or social transfer programmes), social insurance, and active labour market programmes (World Bank, 2015: 7 – 8; World Bank, 2018a: 5 - 6).

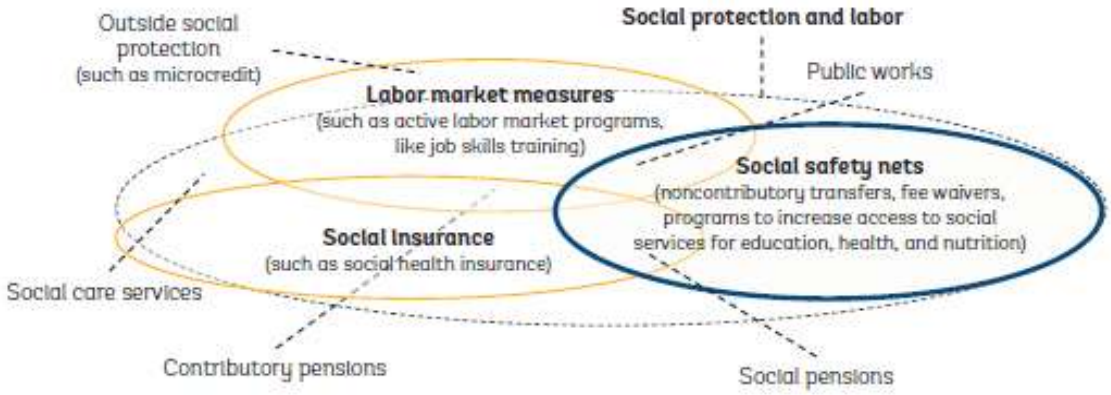
Social assistance programmes are "regular, non-contributory payments of money provided by government or non-governmental organisations to individuals or households, to decrease chronic or shock-induced poverty, addressing social risk and reducing economic vulnerability" (Samson et al., 2010: 3). Social assistance programmes provide regular and predictable support to their targeted members (World Bank, 2015: 7) so that they can cope better with the impact of poverty and deprivation (Devereux & Sabates-Wheeler, 2004: 8). These programmes, which can be both formal and informal programmes, can be universal or targeted to specific groups of people who meet a particular criterion (such as the elderly, children, or people who are poor). Examples of such safety net programmes include "unconditional and conditional cash transfers, non-contributory social pensions, food and in-kind transfers, school feeding programmes, public works, and fee waivers" (World Bank, 2018a: 5). According to the World Bank (2015: 7), other "measures that provide access to various essential public services, including basic services such as health, education, and housing through fee waivers" are also considered as social assistance programmes. Although the consideration of public works as a social assistance programme has been contested, this study considers it as a social assistance programme as its aims to reduce poverty and other livelihood challenges (such as food insecurity), beyond just creating employment opportunities.

Social insurance programmes are formal or informal contributory interventions designed to reduce exposure to poverty risk and vulnerability amongst individuals and households (World Bank, 2015: 7). Such programmes protect the vulnerable group of people from sudden livelihood

shocks resulting in sudden changes in income which may result from one of the nine branches of social security contingencies under Convention 102 of ILO (1952) (Myers, 1952). Beneficiaries from this programme should contribute to the initiatives to be eligible for benefits and contributions for such a programme can be done through insurance premiums or mandatory deductions from income to an insurance scheme (World Bank, 2018a: 5). Beneficiaries, and their employers, and the State contribute together towards formal social insurance programmes such as disability pensions, or health insurance benefits and contributory old-age benefits (World Bank, 2018a: 5) whilst, for informal programmes (such as funeral policies), beneficiaries mostly contribute themselves (Devereux & Sabates-Wheeler, 2004: 8).

For labour market initiatives, these programmes can be a combination of both non-contributory and contributory programmes related to the labour market (World Bank, 2018a: 5 - 6). The initiatives protect labour market participants against loss of income resulting from unemployment or provide access to skills development as well as opportunities to participants within the labour market. The former initiatives are passive labour market policies and the latter are active labour market policies. Examples of passive labour market initiatives include unemployment insurance and early retirement incentives and active labour market policies include skills development through training as well as wage subsidies, amongst others. Figure 1 shows these different types of social protection programmes as explained by the World Bank.

Figure 1: Social protection and labour systems



Source: The World Bank (2015: 8)

Figure 1 shows the different types of social protection programmes. The figure also indicates that overlaps exist between these programmes. Some programmes have characteristics of both social safety nets and labour market measures (such as public works). Others such as contributory pensions have both labour market and social insurance characteristics and social pensions have both social assistance and social insurance features. On the other hand, other initiatives do not fall within the three main branches of social protection (such as social care services[4]) or are a component of labour market measures although they are not social protection initiatives (such as microcredit) (World Bank, 2015: 8).

The ILO (2003: 22) highlighted the following objectives of a broader concept of social protection:

> First, it should assure minimum well-being through a guarantee of essential goods and services that protect against life contingencies for all people. Second, social protection should adopt proactive strategies and policies to prevent and protect against risks. Third, social protection should promote individual and social potentials and opportunities. The foundation of these objectives would be to promote poverty reduction and sustainable development.

Key social protection functions deduced from these objectives include protective, preventive, and promotive functions. Devereux and Sabates-Wheeler (2004: 10) indicated another function of social protection: transformative function. FAO (2015: 15) explain these functions as follows:

> Social protection can play a protective role in providing means (cash or in-kind) to access food and mitigate the impact of shocks. It can have a preventive function in averting deeper deprivation by strengthening resilience against shocks and preventing loss of income and assets. It can support the accumulation of resources to sustain livelihoods (e.g. through asset transfers and public works). Social protection can also play a promotive function by directly supporting investments in human resources (nutrition, health, education, and skills development) and by reducing liquidity constraints and income insecurity to induce investments in farm and non-farm activities. It can also have a transformative function in the lives of the poor through reorienting their focus beyond day-to-day survival towards investments for the future, by shifting power relations within households (as social protection can empower women), and by strengthening the capabilities and capacities of the poor to empower themselves.

[4] Social care services are supporting services provided to people with physical disabilities, learning disabilities and mental illnesses for them to live comfortably.

As stated by FAO (2015), protective social protection measures play a protective role in providing relief to poor members of society. Public works is also an example of a protective social protection programme as the provides income relief to poor members of the working-age population. Such people are usually chronically poor and "are unable to work and earn their livelihood" (Devereux & Sabates-Wheeler, 2004: 10). Such protective measures include both social assistance and social services that are usually financed using income from taxes. These measures can also be financed by NGOs or by international donors. Targeting is commonly practiced for social protective measures (to provide relief to the poorest members of society) as resources are insufficient to cover all. Such vulnerable groups include underprivileged children, the elderly, and people with disabilities, amongst others.

Social protection can also have a preventive function through measures that seek to avert deprivation amongst the affected members of society by strengthening their resilience against livelihood shocks. Such resilience can be supported through income diversification or the accumulation of additional resources (either food or assets) to sustain livelihood. Public works also have a preventive function as income and skills received from the programme can be used in other income-generating microenterprises which may lead to the accumulation of other resources. Part of the income received can also be saved for future consumption. Through social insurance programmes, economically vulnerable people are cushioned from the impact of a sudden loss of income and the formal or informal contributory interventions avert the distress sale of accumulated assets thus preventing the affected individuals and households from falling into poverty.

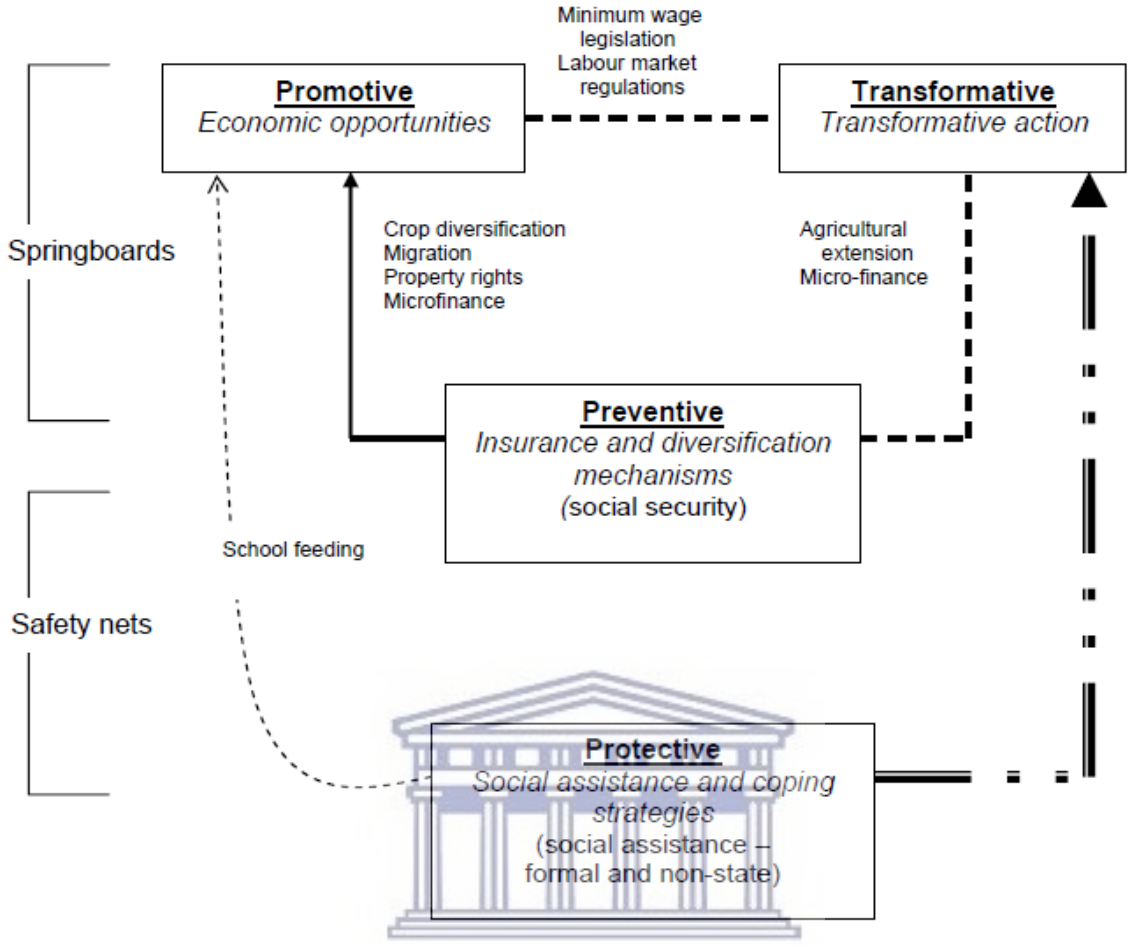
"Promotive measures aim to enhance real incomes and capabilities, which is achieved through a range of livelihood-enhancing programmes targeted at households and individuals, such as microfinance and school feeding" (Devereux & Sabates-Wheeler, 2004: 8). Public works are also a promotive programme that enhances real incomes and capabilities of participants. Social protection programmes with a promotive nature are designed to increase the support and access to resources by targeted beneficiaries (such as skills, health, and finance) so that they can use these resources to propel themselves out of poverty. Promotive measures also aim to create

citizens that are not entirely dependent on the State to support their livelihood all the time, but citizens who will graduate themselves out of poverty by engaging in activities that stabilise individual and household income in the medium and long run (Devereux & Sabates-Wheeler, 2004: 8).

Social equity and social exclusion are the focus of transformative social protection measures. Programmes that transfer resources to poor beneficiaries provide economic support. Such support may include cash transfers to the elderly or school feeding programmes for children. However, there is another vulnerable group of people in need of social support and not only economic support. These socially vulnerable people include victims of domestic violence, members of minority ethnic groups who are vulnerable to discrimination, people with disabilities, or poor members of the working-age population (who, according to public beliefs and attitudes, are considered as people with the capability to work, and as such, should not be poor) (Devereux & Sabates-Wheeler, 2004: 11). The transformative function of social protection aim to "transform the attitudes and behaviour" of society towards this socially excluded group of people to equitably considered these marginalised people in social policies, beliefs and practice Devereux & Sabates-Wheeler, 2004: 11). Furthermore, such transformative change also includes regulatory frameworks of social programmes and policies towards these vulnerable people. The implementation of public works also provides a transformative function as it changes the perception of societies towards poor people within the working-age group who are able-bodied but are not working. Transforming the structure of such a regulatory framework facilitates the engagement of socially vulnerable people in social and economic activities thus reducing exclusion and increasing equity in society. The effect is an increased social protection impact amongst poor and vulnerable members of society.

The conceptual framework of these social protection functions can be presented in Figure 2.

Figure 2: A conceptual framework of social protection



Source: Devereux & Sabates-Wheeler (2004: 11)

Figure 2 presents the different functions of social protection. Depending on the design of the initiative, protective social protection programmes provide a cushion against the impact of harsh economic conditions. The programmes, such as unconditional cash transfers, aim "at smoothing consumption in the face of income variability" (Devereux & Sabates-Wheeler, 2004: 24), and the likelihood that recipients can graduate themselves out of poverty is low.

The other social protection functions (preventive, promotive, and transformative) can be considered as "springboards": recipients can use the benefits received from these programmes to facilitate their movement out of economic and social challenges (Sabates-Wheeler & Devereux, 2007: 26). Benefits may include conditional cash transfers, crop diversification, skills development or social policy transformations that empower recipients to advocate for change.

Social protection programmes can have overlapping functions depending on how they are designed. Some initiatives have a clear protective as well as a promotive function (such as conditional cash transfers). Other programmes can have protective, preventive, promotive, and transformative functions (such as public works).

This study evaluates public works as a social protection programme in the context of South Africa. The protective (income transfer from the programme), preventive (possible income diversification from part of the income received from the programme), and promotive function of public works are assessed using the theory of change of public works and food security. Public works provide a protective function through income relief to poor members of the working-age population. Additionally, the programme also has a preventive function as income and skills can be used in other income-generating microenterprises that may lead to the accumulation of more income or other opportunities that provide more household income. Public works also provide a promotive function as it enhances the real incomes and capabilities of participants through income and skills training provided by the programme. The implementation of public works also provides a transformative function as it changes the perception of societies towards poor people within the working-age group who are able-bodied but are not working. Through these functions of public works, analysis is conducted on all impact channels of the programme (income, skills, and assets) to determine to extent to which the social protection provides food access and stability amongst participants. Furthermore, policy recommendations are provided on the transformative function of public works, a movement from just creating public infrastructure to a social protection programme that protects the wellbeing of the vulnerable, promotes them out of poverty, empowers them to not solely rely only on government support all the time when they are in need, and prevents them from falling into the poverty trap again.

2.4. The Theory of Change

"A theory of change is a predictive assumption about the relationship between desired changes and the actions that may produce those changes" (Connolly & Seymour, 2015: 1). Theory of change is estimated to have emanated around the 1970s (James, 2011: 2). During this period, theories of social change were criticised as individuals and organisations sought to explain

economic growth that took place during a period of rising inequality. Although development projects were implemented, the sustainable impact was low and this led to questions about the theories of social change.

Different methods of assessing and addressing poverty were introduced and arguments were presented to combine theory and action to create social change. With the development of multiple theories that sort to explain development, it became increasingly challenging to evaluate complex projects that did not have a clearly defined framework of assessment. Although the theoretical long-term outcome was to facilitate economic growth as well as reduce poverty and inequality, some objectives of development programmes were often not clear. Furthermore, strategies and intended methods to achieve these objectives were also ambiguous and it was unclear whether such objectives were achieved or not.

During the 1990s, theory-driven methods of evaluation came to prominence intending to critically assess development programmes and progress further beyond a simplistic input-output method of assessment (Chen, 2012; Coryn et al., 2011). These methods of evaluation emphasised programme clarity: clear desired outcomes and impact and clear measures of achieving these outcomes (Connell & Kubiscsh, 1998). This increased the understanding of the programme that was implemented, the rationale behind its implementation, and its objectives. Furthermore, there was clear implementation, programme evaluation, and revision to better align it with the theoretical objectives and outcomes. The term "theory of change" itself was popularized by Weiss, through the work of the Aspen Institute and the Roundtable on Community Change (Weiss, 1995; Clark & Anderson, 2004).

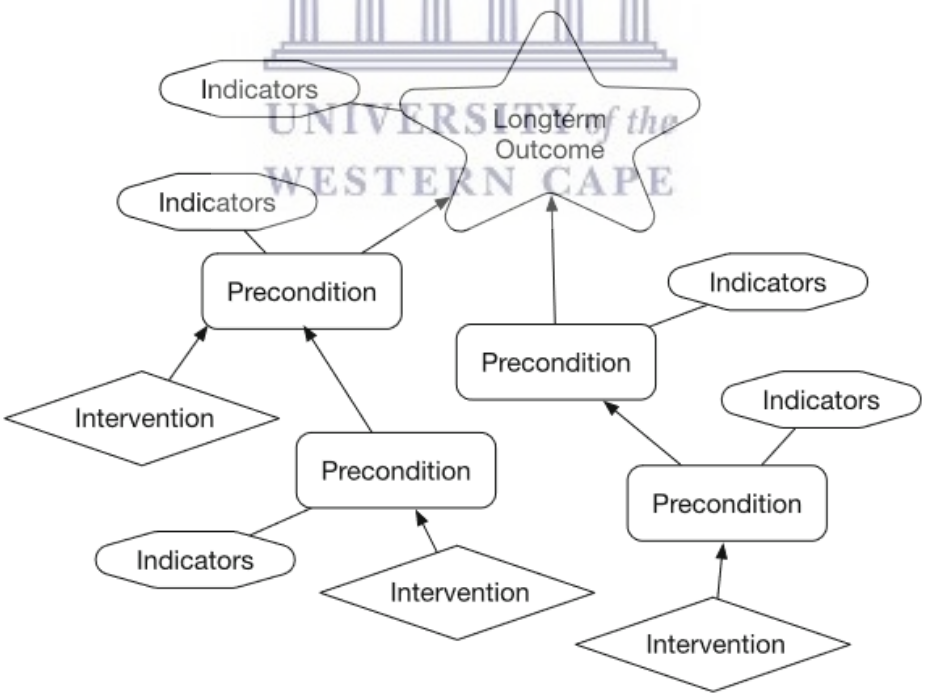
The Theory of Change has been commended for being a simple and less complex visual representation of a programme method analysing different elements of a programme. The approach is comprehensive: all programme elements on all impact channels are interrogated in the assessment process. The theory can be used for planning, monitoring, evaluation, and learning of complex programmes (Chetty, 2018: 14). All pathways to change are clear and attention is given to each pathway during evaluation. Programme design and implementation can be closely analysed to determine whether targeted objectives are met. A rigorous

assessment of interdependency between elements is also feasible and the theory highlights key areas that may be underperforming or failing to meet the desired outcomes. Additionally, beyond the evaluation of a programme, the Theory of Change provides a critique of other theories and hypotheses that describe the design, implementation, and operation of a programme, thus creating a framework for learning and evaluation of the programme. One criticism of the theory of change is the lack of uniformity in the meaning and application of the theory. Some researchers confuse the theory of change with "log frames or other approaches which do not fully represent the complexity of the Theory of Change approach" (Chetty, 2018: 17).

2.4.1. Theory of change framework

The theory of change differs from other analytical approaches in that it presents a clear causal pathway of how a programme can achieve its outcomes; hypotheses can be articulated, tested, and measured; and there is an improvement in the way of analysing programmes. Figure 3 shows a sample diagram of the theory of change framework.

Figure 3: A sample figure of the Theory of change



Source: Reinholz & Andrews (2020: 4)

Figure 3 shows that the theory of change is made up of interventions, preconditions, indicators and the outcome, arranged graphically in a causal framework. The intervention is an implemented programme or service provided that is intentionally aimed at solving the particular challenge (or providing the missing service). It can also be described as the "activity required to achieve a particular outcome" (Reinholz & Andrews, 2020: 5). Preconditions are short-term and medium-term outcomes created by the intervention. They are also referred to as intermediate steps taken before achieving the outcome. Indicators are measurements used to determine whether the set preconditions and long-term outcomes are achieved. Another important element of the theory of change is the underlying assumptions of the framework. Underlying assumptions must be articulated to describe how change is to occur: how interventions will lead to preconditions and what short and medium-term outcomes are required, necessary, and sufficient to meet the long-term outcome. Additionally, assumptions can also describe the conditions that can prevent the achievement of the intended goals. Assumptions also facilitate a better understanding of the flow of the framework. The intervention can be a single programme (or single service) or they can be multiple interventions or services provided. These interventions can lead to various preconditions. However, all interventions and preconditions must lead to a long-term outcome. Usually, the design of a theory of change is backward: long-term outcomes are set and identified, short and medium-term outcomes are set and an intervention that meets these preconditions is designed and implemented (Reinholz & Andrews, 2020).

2.4.2. Challenges of the Theory of Change

To construct a strong representation of the Theory of Change, it is important to take into consideration the management of two competing fundamentals. On one hand, the Theory of Change should be easy to read and use ensuring that it is simple. Several authors have argued that the Theory of Change should avoid excessive complexity that makes it impossible to be read and understood by its intended beneficiaries (Funnell & Rogers, 2011; Green, 2012). On the other hand, the second requirement is for the Theory of Change to present enough detail to guarantee that linkages between inputs and outputs correspond with the complexity of the real world. Such a prerequisite has not always been the case as some real-life situations cannot be adequately

captured in this model. Furthermore, some events are always changing due to the dynamics of the world. Such a continuous change of events implies that this model may not sufficiently explain all series of events. This is crucial if the Theory of Change is to be used for evaluation. According to the OECD-DAC (2010), a good Theory of Change concept can be considered necessary but insufficient, when put to the test, based on project evaluability.

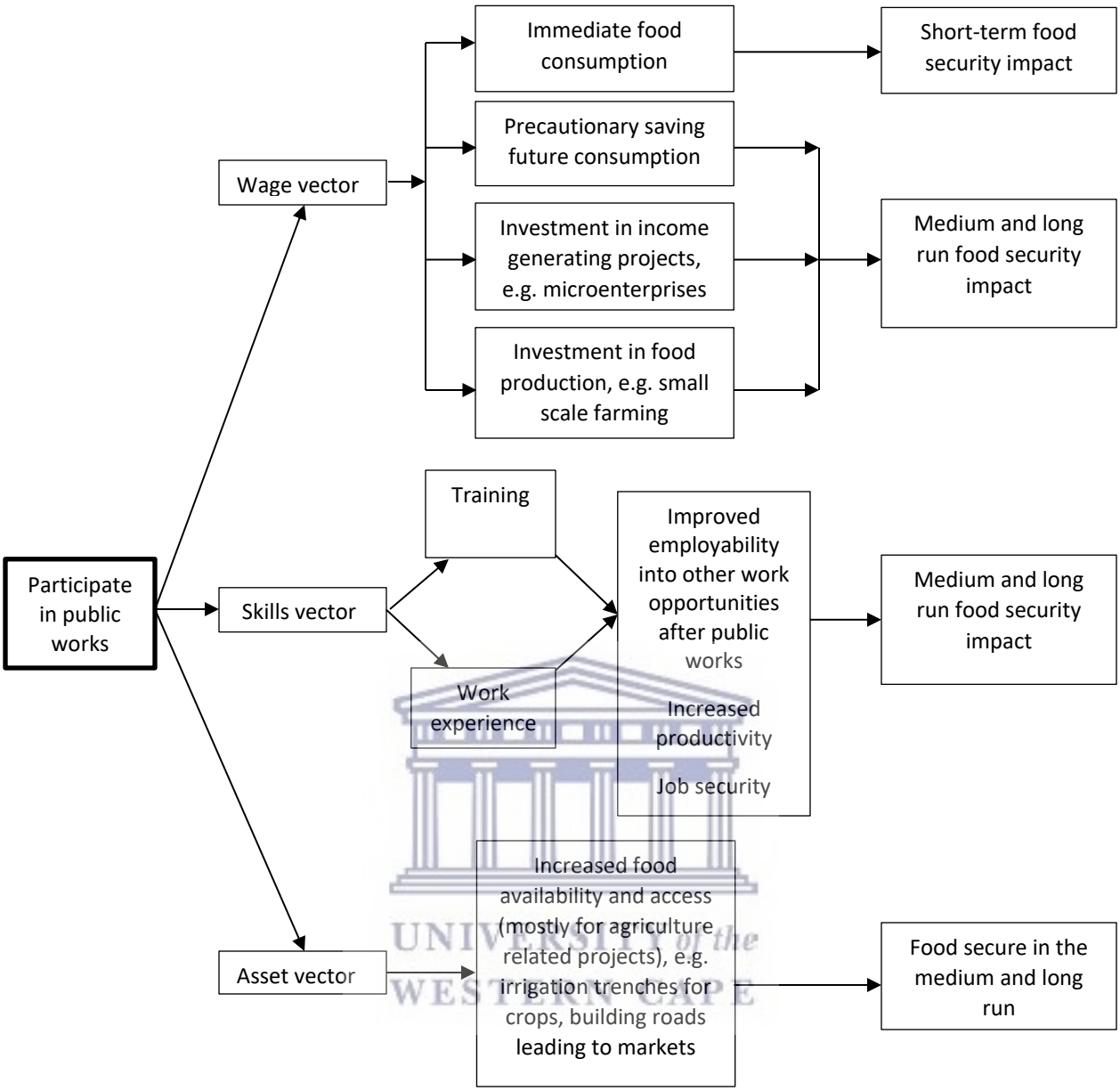
Another challenge experienced in the Theory of Change design occurs when there are missing links, pathways, or connections. These are frequently encountered in chain models (although not in all cases) that demonstrate the relationship between events that have numerous links and connections. This issue can also be observed in narrative descriptions, especially in strategic plans where the lists are characterised as vision, mission, strategies, themes, focal areas, outcomes, impact areas, and various other abstractions, described sequentially. According to Davies (2018), the challenge of missing links or connections poses a similar drawback just as a case that has too many links, pathways, or connections. The model may not be clearly understood either from such missing links or from connections that are massively intertwined. Before any of them could be reviewed in a reasonable amount of time, a much more detailed explanation and clarification would be required.

Feedback loops are another source of challenge in a theory of change design. Although they are typically rare, theories of change with feedback loops can occasionally be found in chain models. According to Mayne (2017, when there are no feedback loops, the process of change follows a linear trajectory and it is predicted to change at a constant rate in the future. This might theoretically be evaluated because expected results at a specific period may be predicted. However, when feedback loops are present, then the relationship of events may not be easily predictable especially when there is missing information regarding the likely impact of the feedback loops. This limits the use of the Theory of Change. However, for this study, the use and application of this model are justified in section 2.4.3.

2.4.3. The Theory of Change: public works and food security

The study uses the theory of change to investigate the contribution of public works to individual and household food security. According to the theory of the programme, public works have three impact channels: (1) the wage vector, (2) the skills vector, and the (3) the asset vector. Food security amongst participants and their households is the long-term outcome and the public works programme is the intervention. The three vectors (wage, skills, asset) and other benefits that emanate from them are the preconditions. The theory is easy and simple to understand it avoids excessive complexities. There are no missing links, pathways, connections, or feedback loops between the programme and food security. Figure 4 shows these impact channels and the impact vectors are explained in the following sections.

Figure 4: The theory of change of public works and food security



Source: Author's compilation from various sources (DPW, 2013; DPW, 2015b; EPWP, 2018)

2.4.3.1. The wage vector

As participants give their labour to the programme, they earn a wage, received as cash, electronic transfer into their bank accounts, or in-kind payment (food). Income received can be consumed immediately (spent on food and other household expenses) or it can be saved. The amount of wages received determines the magnitude of the amount saved and the amount consumed. Lower levels of income are more likely to have a higher marginal propensity to consume (and

hence, a lower marginal propensity to save) as more income is allocated towards food and other household expenses. With such income, there is increased food consumption within the household and such consumption can be an increase in food quantity, food quality, or both. Such households with an immediate increase in food consumption are considered to be food secure in the short run: these households will continue to have such food access and utilisation if they consistently receive the income transfer from the programme. With no income from the programme, the households no longer have access to food.

On the other hand, if income is not consumed, it is saved and households save if they can afford to save. Saved income comes with an insurance function for times when income transfer from the programme (or other opportunities) is absent or inadequate to cater to all household expenses. Either income saved can be precautionary savings (kept usually in the bank account, accessed when needed) or it can be invested into other income-generating initiatives. Precautionary savings usually have a very small rate of return (or none at all) as they are not kept for long. As such, they have a short – medium-term impact, depending on the amount saved.

Income invested into other income-generating initiatives has the potential to have a long-term impact. The such impact depends on the type of investment made and the success of the initiative. As income saved is quite low, the income-generating projects are usually small with minimal returns although they have the potential to grow over time. Some arguments have been presented over these microenterprises in that due to the small returns generated out of the projects, they are not sustainable initiatives that can graduate poor households out of poverty and food insecurity. However, it was also mentioned that small investments from only the savings of public work participants generate small returns. With higher investments, these microenterprises can generate additional household income that could significantly reduce poverty and household vulnerability.

2.4.3.2. The skills vector

The other channel of impact is the skills vector (Devereux & Solomon, 2006). This vector is usually for public works programmes that comprise repeated or ongoing employment creation together with other additional measures to complement the income transfer from the programme. The first pathway of change is skills development through training where participants acquire life skills as well as technical skills. Life skills are more generic and they are made available to all participants. Such skills include health and safety, HIV/AIDS, drug and alcohol abuse, and financial management, amongst others. Technical skills are more sector-specific and they depend on the design of the programme: whether it is implemented in multiple sectors or not. For instance, skills training in the infrastructure sector is related to the construction and maintenance of infrastructures (such as small-volume roads, pavements, bridges, and storm drains) and those aligned to environmental projects include land rehabilitation training. Training can both be on job and off-job training (McCord, 2012: 4).

The other pathway of the change via the skills vector is through skills and work experience received as participants work in the programme. Such skills and work experience make participants more marketable in the labour market and theoretically, these participants with work experience are more likely to have a competitive advantage in the labour market when compared to other job seekers with no work experience. The assumption is that people with work experience are more productive and fewer resources will be used in training them to perform the required task. Although participants do not require any working experience to be enrolled in public works, the work experience they receive from the programme can give them access to other better-paying jobs.

The skills training and work experience received from public works can be used to increase work productivity, job security, self-reliance (by facilitating entrepreneurship), or seeking other work opportunities. These benefits are more likely to increase household income and hence, access to more food leading to medium to long-term food security impact within the household.

However, the unskilled or semi-skilled work that EPWP participants do must give them a competitive advantage over millions of other unskilled job seekers within the labour market. If work opportunities created by EPWP do not increase the competitiveness of participants once they exit from the programme in search of other work opportunities, then the skills vector weakens and the impact channel may not provide the intended impact amongst participants. Additionally, skills training provided by EPWP must be aligned with skills missing in the labour market. If there is no alignment between the skills training provided by EPWP and the skills demanded in the labour market, participants of the programme will possess redundant skills, skills that can only be implemented in EPWP. In such a case, perhaps a labour market assessment will be required so that more appropriate training can be offered, skills training that increases the likelihood that EPWP participants that exit from the programme will find jobs afterwards.

2.4.3.3. The asset vector

The other channel of impact for public works is the asset vector. Assets created or services provided from public works depend on the type of project. PWP projects can be infrastructure, environmental, agricultural, or social. Additionally, the location in which projects are implemented as well as the demanded asset or service in each community determines the asset created. Examples of assets created from PWP include small-scale roads and bridges (infrastructure assets); park beautification, protecting biodiversity and environmental rehabilitation (environmental assets); irrigation trenches and farm roads (agricultural assets); and home-based care and early childhood development programmes (social services).

Assets created from agricultural projects are more likely to have a direct impact on food security as they can increase food production and productivity, leading to increased food availability. Participants in these projects can also receive food items as secondary benefits for working on the projects, which also increases their household food security. Additionally, communities close to the agricultural assets and projects can also receive food security benefits as produce from these projects can be sold to households in these communities.

The provision of food items as secondary benefits may be particularly important for EPWP participants who are facing food insecurity and may not have enough resources to meet their basic needs. By providing food items, EPWP projects can help to alleviate hunger and improve the well-being of participants and their households. Additionally, the provision of food items may also help to incentivize participation in EPWP projects, as it provides an additional form of support to participants beyond the wages they receive.

In South Africa, outputs from other programmes such as the national school feeding programme also affect food security (Devereux et al., 2018: 16). Crops and vegetables that feed the school children are grown at the schools (by participants of public works) and children from poor households benefit from this food and they no longer carry food from home. Thus, limited household resources that had to feed these children at school are saved which increases food security within the household. Furthermore, any excess food produced from these school gardens can be sold in community food markets, thereby also increasing food availability to households.

The Taylor Committee, also known as the Committee of Inquiry into a Comprehensive System of Social Security for South Africa, was established by the South African government in 2000 to develop recommendations for a comprehensive social protection system for the country. The Taylor Committee was tasked with examining the existing social security system in South Africa and making recommendations for its improvement. The committee's report, which was released in 2002, made several recommendations for a comprehensive social protection system, including the establishment of a national social security fund to provide a safety net for vulnerable groups such as the elderly, children, and disabled people.

The Taylor Committee's report also called for the reform of the existing social security system, including the consolidation of the various social security programs under a single agency, the improvement of administrative systems, and the simplification of eligibility criteria. The recommendations of the Taylor Committee were taken into consideration by the South African government in the development of its social protection policies. The government has implemented several reforms to the social security system in recent years, including the

establishment of the South African Social Security Agency (SASSA) and the introduction of several new social security programmes.

2.5. Evidence of wage, assets, and skills vectors from experiences in other countries

2.5.1. Wage vector

The impact of wages on the success of public works can vary depending on the country and context. In some countries, higher wages have been associated with increased worker motivation and better project outcomes, while in others, low wages have resulted in low worker morale and reduced program effectiveness.

In India, the National Rural Employment Guarantee Act (NREGA) provides 100 days of guaranteed wage employment to rural households. A study by Bhalla and Das (2019) found that increasing NREGA wages led to improved worker productivity, increased worker participation, and reduced migration of workers to urban areas. In Ethiopia, the government has implemented a range of public works programmes aimed at creating job opportunities for the poor and vulnerable. A study by Kedir et al. (2017) found that low wages in public works have resulted in low worker morale and reduced program effectiveness. The authors suggest that increasing wages could lead to increased worker motivation and better project outcomes. In the Philippines, the government has implemented the Sustainable Livelihood Program (SLP), which provides livelihood support and skills training to poor households. A study by Ignacio and Mariano (2019) found that SLP workers who received higher wages reported higher levels of job satisfaction, which led to increased productivity and better project outcomes.

The impact of wages varies depending on the country and context. Higher wages have been associated with increased worker motivation, better project outcomes, and reduced migration of workers to urban areas in some countries, while low wages have resulted in low worker morale and reduced program effectiveness in others. Governments must find a balance between the need for adequate wages and program affordability to ensure the sustainability and success of public works.

2.5.2. Asset vector

The concept of the "asset vector" refers to the set of assets, skills, and resources that individuals and households possess, which can be mobilized to improve their economic opportunities and well-being. Public Works Programmes around the world have used asset-based approaches to target the most vulnerable and disadvantaged groups and enhance their asset vector.

In Ethiopia, the government has implemented various public works programmes to provide job opportunities to the poor and vulnerable. A study by Tafere and Saito (2017) found that the asset-based approach used in public works resulted in improved access to productive assets, increased food security, and enhanced social networks among the participants. In the Philippines, the Sustainable Livelihood Program (SLP) has used an asset-based approach to enhance the asset vector of poor households. A study by Demonteverde and Medina (2018) found that the asset-based approach used in SLP resulted in increased access to financial services, improved health outcomes, and enhanced social networks among the participants. In conclusion, the asset vector is a critical determinant of the success of public works programmes.

2.5.3. Skills Vector

There have been various studies on the impact of skills development on the effectiveness of public works. These programmes are designed to address unemployment and poverty by creating temporary jobs, typically in the public sector, with a focus on infrastructure development, environmental management, and social services.

A study on the impact of skills development in the United Kingdom found that training programmes increased the chances of programme participants securing employment after completing the programme, especially in the private sector (Taylor-Gooby et al., 2018). These studies suggest that skills development initiatives are crucial for the success of public works and can lead to better employment outcomes for participants. However, it is important to note that the impact of skills development on public works can vary depending on the context and implementation of the programs.

2.6. Conclusion

This chapter has presented the theoretical framework that guides this study. The impact of public works on food security, particularly on food access and food stability, is analysed using the theory of change. The theory-driven evaluation is conducted on the impact channels of public works, namely the wage vector, skills vector, and asset vector, to determine whether they sufficiently achieve the long-term outcome of food security amongst the targeted members of society. The protective, promotive, preventive, and transformative functions of public works are analysed in this thesis to determine whether they provide enough social protection to participants. A brief overview of examples of public works with wage, skills, and asset impact channels is provided. Detailed assessments of international experiences together with the South African case study are presented in Chapter 3.

CHAPTER THREE: A REVIEW OF PUBLIC WORKS PROGRAMMES

3.1. Introduction

The main objective of this study is to better understand how public works contribute towards food security for participants and their households. This chapter seeks to conceptualise public works within the ambit of social protection. The chapter also aims to understand empirical literature on how public works have contributed towards household food security from international experience. The chapter is structured as follows: Section 3.2 describes how public works have contributed towards food security in the international context. Section 3.3 gives the origin of public works in the South African context while Section 3.4 explains the implementation of EPWP. The different sectors of EPWP as well as their achievements thus far in terms of work opportunities are given in this section. Section 3.5 concludes the chapter.

3.2. International evidence of public works programme that had an impact on food security

Public works programmes have been implemented in different countries to target people with different unemployment circumstances. Some programmes are aimed at able-bodied people who are temporarily poor, unemployed, and moderately food insecure which may be caused by seasonal or cyclical factors. These programmes are mostly short-term to provide income support to beneficiaries during a time when they need support from the programme. Conversely, other PWPs are designed to provide long-term benefits to chronically poor people who are structurally unemployed and severely food insecure. These are mostly programmes with long duration to provide significant social protection impact to beneficiaries. This section presents empirical evidence on the effectiveness of public works in reducing poverty, unemployment, and food insecurity in different countries. The literature review is based on the MGNREGS in India, PSNP in Ethiopia, VUP in Rwanda, and the Malawi Social Action Fund, as these are some of the largest public works programmes where lessons on programme design and implementation can be derived for better programme efficiency.

3.2.1. The Mahatma Gandhi National Rural Employment Guarantee Scheme MGNREGS) in India

In India, the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is a national anti-poverty programme in India (Li & Sekhri, 2020: 6). The programme was implemented in 2005 and it is a rights-based public works programme grounded in an Act of Parliament, the Mahatma Gandhi National Rural Employment Guarantee Act 42 of 2005 (MGNREGA) (Deininger & Liu, 2019: 99). A rights-based public works programme (Subbarao et al., 2013: 236) "establishes a legal right for households to be employed for up to 100 days per year; individuals who apply but do not receive work within two weeks are entitled to unemployment compensation". Additionally, a rights-based public works programme also guarantees the Constitutional right to food in India for all households in rural areas. Another important feature of the programme is that all participants, both males, and females, receive the same minimum wage rate stipulated by the State. Additionally, the programme aims to create productive infrastructure within the rural areas to enhance productive capacity and increase the sustainability of the programme in the long run. Examples of projects that create such productive assets include land improvements, minor road construction, and the development of irrigation systems (Subbarao et al., 2013: 236).

The programme was made available to all households in both rich and poor districts in rural areas. The programme is self-targeting; the nature of the programme in itself selects able-bodied people who desperately need income transfer. The programme requires participants to conduct physically demanding manual work at a predetermined low wage rate, thus discouraging people from non-poor households who might have other means of survival.

For MGNREGS, households that want to participate in the programme register at the village level and receive a job card. The name of the household seeking employment is registered on the muster roll where all names of job seekers are registered. Workers are required to open bank accounts (if they do not have them) and local authorities are required to also ensure that all necessary programme operations at their worksites (such as work plans, site supervision, and pay orders) are in place for workers to commence operation (Subbarao et al., 2013: 236).

After all administrative issues have been resolved by participants and local authorities, the MGNREGA states that employment shall be provided "to every household whose adult members volunteer to do unskilled manual work not less than one hundred days of such work in a financial year following the Scheme made under this Act" (MGNREGA, 2005). Once workers have completed the assigned task, the MGNREGA stipulates that "the disbursement of daily wages shall be made every week or in any case not later than a fortnight after the date on which such work was done" (MGNREGA, 2005). Additionally,

> If an applicant for employment under the Scheme is not provided such employment within fifteen days of receipt of his application seeking employment or from the date on which the employment has been sought in the case of an advance application, whoever is later, shall be entitled to a daily unemployment allowance following this section. (MGNREGA, 2005)

The passing of the MGNREGA, which guarantees employment, and the payment of unemployment allowance, set MGNREGS apart from other public works, programmes. Households in rural areas who register for the programme receive continued income transfer at all times which makes them food secure and increases their likelihood of graduating out of poverty.

Evidence reported by MGNREGS participants in Andhra Pradesh indicated different benefits amongst participants depending on how long the programme had been implemented in the different districts. Beneficiaries exposed to the programme for longer duration periods reported higher levels of impact (such as the accumulation of assets) than those who had been in the programme for a short period (impact was mostly increased nutritional outcomes from enhanced food consumption) (Deininger & Liu, 2019: 99).

The programme provided significant income improvements mostly for poor households, thus confirming the effectiveness of the targeting method. The impact of increased income was more during the dry season when income from other sources, especially farming, was low. The significant positive impact was reported predominantly from female participants and households with unskilled labour although there is variation across different areas (Liu, Barrett, Chau, Das, Deininger, Gustafson, Narayanan, Sheahan, & Soundararajan, 2020). Additionally, other

program-induced effects were noticeable such as enhancement in consumption and asset accumulation for most beneficiaries (Bose, 2017). Several small farmers also reported an increase in production as they used the extra income from public works (which was now a predictable source) to increase cultivated land and produce other diverse commercial crops. There were also reports of increased farming productivity, even during the dry season, as families were less likely to migrate to other regions during the lean season since other household members would now seek employment in public works (Liu et al., 2020).

One of the main challenges facing MGNREGS is that there are huge differences in programme performance between States, with some States performing much better than how others. Such disparities in performance lead to questions and uncertainty about the design of the programme, and why the same programme with the same design produce different outcomes. A possible reason for programme failure in some states like Bihar (Dutta et al., 2014) is the inability of the programme to meet all labour demands. Several reports of unmet demand for work were observed as well as a clear gender dimension in this state: there seemed to be a household rationing, and certain household members that wanted to work (mostly from female-headed households) could not get the work. Liu et al. (2020: 3) described this as administrative inefficiencies where the programme fails to provide jobs to applicants who have the right to work. For this reason, some households lost confidence in the programme. Additionally, there were also wage gaps reported in the Bihar state, discrepancies between the stipulated wages that workers were to receive under the scheme and the actual wages they received (Dutta et al., 2014). There were also reports of payment delays when provided work had been completed. These factors limited the impact of MGNREGS.

3.2.2. The Productive Safety Net Programme (PSNP) in Ethiopia

In Ethiopia, the PSNP is one of the government's initiatives against chronic food insecurity (Welteji, Mohammed & Hussein, 2017: 2). As hunger and poverty levels continued to increase in Ethiopia, the government decided to implement proactive measures to provide social protection to vulnerable households. The Poverty Reduction Strategy was implemented to assist households that were chronically food insecure (Bahru, Jebena, Birner & Zeller, 2020: 2). The strategy aimed

to ensure that such vulnerable households could also have sufficient access to enough food for an active and healthy life, thus moving out of food insecurity (Subbarao, del Ninno, Andrews & Rodríguez-Alas, 2013: 272). The Poverty Reduction Strategy comprised a Food Security Programme which was made up of "PSNP, the Household Asset Building Program, Complementary Community Investments, and the Resettlement Program" (Lukas & Mandado, 2018: 53).

PSNP was launched in 2005, with donor support, with the aim of "ensuring food consumption and preventing asset depletion in a way that stimulates markets, improves access to services and natural resources, and rehabilitates and enhances the natural environment" (Welteji et al., 2017: 3; Bahru at al., 2020: 1). The programme has two main components, 1) public works programme and 2) the direct support component. Public works programmes provide work opportunities for poor households with able-bodied people, mostly in rural areas where opportunities are limited. Examples of public works projects include land rehabilitation projects and rural infrastructure development projects. Poor households with no able-bodied members who can work in public works receive direct support from PSNP. Such unconditional transfers to vulnerable households can be in the form of cash or food transfers (Subbarao et al., 2013: 270 – 271). In addition to these two main components, "the programme also provides credit and technical support to households based on tailored business plans" (Welteji et al., 2017: 2).

PSNP uses community-based, geographical, and administrative targeting methods to select beneficiaries (Subbarao et al., 2013: 276). Although the programme was designed to target mainly households that are chronically food insecure, households that are transitory food insecure also benefit from the programme (Lukas & Mandado, 2018: 53). Beneficiaries are assigned to public works if there is an able-bodied household member who can work in public works. If not, the household receives direct support. Chronically food-insecure households are considered as having one or more of the following characteristics:

- Households that have faced continuous food shortages (usually three months of food gap or more) in the past three years and received food assistance before the commencement of PSNP
- Households that have suddenly become more vulnerable as a result of a severe loss of assets and are unable to support themselves

- Any household without family support or other means of social protection support. (Subbarao et al., 2013: 271; Welteji et al., 2017: 3)

Once households have sufficient food or they can sustain themselves for 12 months in a year without the assistance of PSNP, they are expected to graduate from the programme (Lukas & Mandado, 2018: 53). Households that graduate out of PSNP should also be able to withstand modest shocks on their own without transfers from the programme (Subbarao et al., 2013: 272).

The PSNP recorded positive impacts on income, food security, and asset acquisition amongst beneficiaries. Significant income growth was noted for the majority of the participants, both those that were currently enrolled in the programme and those that had graduated from the programme (Devereux, Sabates-Wheeler, Slater, Tefera, Brown & Teshome, 2008). Additionally, income growth for PSNP participants that were also receiving benefits from other food security programmes was considerably higher than those under PSNP alone, an indication of the importance of having multiple pro-poor programmes (or economic inclusion programmes) working simultaneously to eradicate poverty. On their own, public works or other food security programmes have minimal impact on poor people. However, when jointly implemented, the impact of both programmes combined is more (Subbarao et al., 2013: 286).

With the income transfer from PSNP, beneficiaries reported an increase in food security within their households (Lukas & Mandado, 2018: 57). The likelihood of food shortages for households with public works participants was low and these households were less likely to have low-calorie intake when compared to non-beneficiaries (Subbarao et al., 2013: 290). However, other significant factors that also contributed to the impact of the programme include the timing of the programme, the level of transfer to beneficiaries, and whether households receive other benefits from other food security programmes (Subbarao et al., 2013: 290). Public works should be implemented when they are most needed to have an optimal impact on participants. For chronically food-insecure households with no other sources of income, work opportunities must always be available. For those who are transitory food insecure due to seasonal or cyclical factors, work opportunities must be available during the lean period when they are most needed. Additionally, the amount of transfer determines the social protection impact of the programme.

Small transfers weaken the social protection impact of the programme: “cash or food are more likely to be consumed than invested” (Welteji et al., 2017: 9), and this was the case for several participants in Bale Zone, Southeast Ethiopia. With low transfers, beneficiaries are less likely to graduate from the programme, as they will always be dependent on government support for food. However, arguments have been presented against having higher transfers as it limits the coverage of the programme: only a few households would benefit from the programme and the exclusion error will be high. A possible solution to this debate includes linking public works programmes to other livelihood programmes so that the low transfers received from public works are complemented by other benefits received from other livelihood support systems.

Income received from PSNP was also used to secure more assets for households and the establishment of small off-farm businesses (Subbarao et al., 2013: 285). These developments came mostly from households that were in PSNP as well as beneficiaries of other food security programmes or the household asset-building programme. Most assets were in the form of livestock and productive assets or tools (Subbarao et al., 2013: 285). Furthermore, beneficiaries were less likely to engage in the distress sale of assets due to deprivation, all positive impacts of PSNP.

The impact of the programme differed from one region to another. Although “a total of 495,995 households graduated from PSNP between 2008 and 2012” (Welteji et al., 2017: 2), evidence from some beneficiaries in PSNP indicated that dates of payment remained uncertain: some payments would be received 21 days after project completion whilst others would delay for 60 days (Subbarao et al., 2013: 272). Timely delivery of transfers was highly correlated with high levels of food security and payment delays undermined the impact of the programme as beneficiaries were left vulnerable to hunger. Households had limited food consumption and limited investments in seeds or livestock, and some resorted to the distress sale of assets to access enough food (Subbarao et al., 2013: 289). An analysis by Bahru et al. (2020: 7) also “found no impact of PSNP on household food security and child dietary diversity despite its positive impact on increasing child meal frequency”. For households that received payment on time in other regions, the impact of the PSNP transfer was highly significant: beneficiaries had sufficient

access to enough food at all times during the time they were in the programme. However, although a positive impact on food security was noted, an analysis by Berhane, Hoddinott, Kumar, and Taffesse (2011: 14) indicated that "receiving public works payments for five years yields an increase of 1.05 months of food security…and the results were statistically significant in all regions". Additionally, the food security impact for households that received joint benefits from PSNP and other food security programmes was far greater than when households were receiving income from PSNP alone. This signified the importance of linking social protection programmes and other economic inclusion programmes (Bahru et al., 2020; Andrews, de Montesquiou, Sánchez, Dutta, Samaranayake, Heisey, Clay & Chaudhary, 2021).

3.2.3. The Vision 2020 Umurenge Programme (VUP) in Rwanda

Rwanda implemented the VUP as part of its plan to eradicate poverty (Zimmermann, 2014; Gehrke & Hartwig, 2018; Williams, Nzahabwanayo, Lavers & Ndushabandi, 2020; Habimana, Haughton, Nkurunziza & Haughton, 2021). The main goal for the government of Rwanda was to use the VUP to eradicate poverty by the year 2020 by creating and promoting a "more permanent pathway to sustainable livelihoods" (Habimana et al., 2021: 1). Using a community-based participatory approach, the national standard of household wealth categories, as well as "a proxy means test introduced in 2016 to verify the initial selection" (Williams et al., 2020: 6), the programme provides benefits to well-deserving people through public works, direct support grants and financial services (Mujawase, 2017: 11 – 12; Roelen, Delap, Jones, & Chettri, 2017). The public works component of VUP aims to provide off-farm infrastructure work opportunities for extremely poor people who can work. These labour-intensive projects are mostly for building community assets such as "radical terraces and road construction and maintenance" (Roelen et al., 2017). For households with members who are unable to work and do not qualify for the credit packages, the VUP provides a direct unconditional income support grant. The financial services of VUP provide various loans for small and medium businesses to promote entrepreneurship and the creation of other off-farm work opportunities (Mujawase, 2017: 12).

The VUP has two categories of public works: 1) 'Public Works Classic' (PWC) and 'Public Works Expanded' (PWE) (Williams et al., 2020: 6). PWCs are construction projects where able-bodied

participants provide their physical labour to construct infrastructure which may include roads and terraces. These are the common types of public works projects since the launch of VUP in Rwanda. Participants in these projects can travel to worksites that are far. On the other hand, PWEs are recently launched projects "for individuals with some labour capacity but who have caretaking responsibilities that would prevent them from traveling to faraway worksites" (Williams et al., 2020: 6). It observed by programme implementers that some participants, although they were willing to work in projects, were unable to travel to the far location from their homes. Hence, projects such as street sweeping and working in communal gardens were projects for this group of participants.

A study by Murphy-McGreevey, Roelen, and Nyamulinda (2017) showed that wages received from public works had a significant impact on the well-being of the family. Income from the programme was used to purchase household food, pay for education fees for children within the household and provide for other health-related expenses (Murphy-McGreevey et al., 2017: 3). Additionally, participants also use part of their income from public works to engaged in informal savings groups within their communities. Several participants also invested a portion of their income in livestock, although beneficiaries of direct income support bought more livestock than public works participants (Mujawase, 2017: 14). Other female beneficiaries in the Eastern and Southern provinces of Rwanda also used part of their income to invest in livestock as well as using part of their income to venture into microenterprises (ILO, 2017). Such engagement in savings groups and investments in livestock is an indication of sufficient income: after catering for other essential expenses (such as food) participants can afford to save part of their income and invest in other income-generating initiatives. However, a study by ILO (2017) showed that only a minority of female beneficiaries reported having investment output from the income they received from public works. The majority of participants still experienced high levels of food insecurity due to fewer working days as well as delays in the actual payment dates (ILO, 2017).

3.2.4. The Malawi Social Action Fund

Labour-intensive public works projects in Malawi, under the Malawi Social Action Fund (MASAF), were designed to provide income transfer to support poor beneficiaries (Zimmermann, 2014).

The programme also aimed “to provide short-term labour-intensive activities to poor, able-bodied households to enhance their food security, mainly through increased access to farm inputs at the time of the planting period” (Beegle, Galasso & Goldberg, 2015: 5). Farming inputs were mainly fertilizer. The programme has been implemented since the mid-1990s and projects are mostly in remote areas where work opportunities are limited. MASAF was designed to align with the implementation of Malawi's large-scale fertilizer input subsidy programme (known as FISP) so the poor participants in public works can also have access to subsidised fertilizer which they can use to boost production (Beegle et al., 2015: 5). Construction and road rehabilitation projects were mostly implemented as well as irrigation and afforestation projects.

However, evidence showed that employment opportunities created by these labour-intensive public works projects were insufficient for all poor people within the working-age population. Most vulnerable people who were eligible to work could not participate in these projects. For treated households (those who participated in the programme), evidence indicated that the income received from the programme was insufficient to cater for all household expenses and that the impact on food security during the lean season was minimal (Beegle et al., 2015: 14). Such findings go against the wage vector on the theory of change (as presented in Chapter 2), as the intervention (public works) and the precondition (wages received) are supposed to achieve a long-term outcome (food security). In the case of public works in Malawi, the inadequacy of the income received weakened the impact of the wage vector leading to poor outcomes. Furthermore, other households with no participants in public works did not receive any other indirect food security benefits from the public works projects. The absence of any spillover effects on non-participants in these poor communities is contrary to expectation, as assets from public works should provide some benefits to community members near the project location, according to the theory of change. One of the arguments presented against public works in Malawi was its mismatch between the problem it targeted to resolve (chronic poverty and seasonal under-employment) and the benefits received from the programme (McCord, 2005). Low wages have limited or no impact on chronic poverty and food insecurity. However, arguments have also been presented on how increasing wages leads to lower programme coverage, that only fewer participants will be enrolled in public works (Devereux & Macauslan, 2006). Hence, there should

be a match between the design of the programme and the problem it aims it resolve as well as a balance between coverage and the amount of wages provided by the programme.

3.3. The origins of public works programme in South Africa

Public works programmes (PWPs) were launched in South Africa during the 1920s and 1930s. The labour-based employment programme was part of the government's initiative to alleviate poverty amongst White people. It aimed to create productive labour and provide income relief to targeted beneficiaries through labour-intensive employment opportunities in both public and private sectors (Korb, 2012: 48 - 49).

During the 1970s, PWP in South Africa effectively provided multiple work opportunities in the construction industry although these opportunities were only for the selected racial group. During the late 1980s, the government sought to use alternative methods of construction as the cost of constructing public infrastructure, such as government buildings, roads, and bridges kept increasing. The objectives of the government were to eradicate poverty, stimulate development and create employment and entrepreneurial opportunities while keeping the cost of construction at its lowest (Korb, 2012: 46).

Around 1991, concerns over the affairs of workers began to emerge. Such concerns pertained to wages, working conditions, and the provision of decent work to participants. As debates over the affairs of workers intensified from the labour representatives between 1991 and 1993, it was fitting to have negotiations between the labour unions (the Congress of South African Trade Unions), the National Committee for Labour-intensive Construction, and the South African National Civic Organisations (Ofori, Hidle & Hugo, 1996: 213). Labour representatives wanted full labour rights and decent working conditions for participants under the public works programme. Labour use in these industries was minimal and labour-intensive methods in use were not fully utilised. Training of labour was also insufficient (Korb, 2012: 53). On the other hand, representatives of the South African National Civic Organisations were also contesting the extensive use of labour-intensive methods of construction, as they wanted to defend the quality of the assets they constructed. The other concerning issue was whether substituting capital for

labour (and the use of labour-intensive production methods) was economically viable and whether such a construction mechanism would produce the same outcome.

After-extensive discussions and research, temporary employment governing principles were passed in the Interim Framework Agreement for labour-intensive construction systems, signed in 1992 (DPW, 1997). An agreement was reached that labour-intensive production methods were just as viable as equipment-based methods. Hence, these principles sought to maximise the use of labour-intensive construction methods through public works and to contribute towards the viability, growth, and stability of the construction industries (Ofori et al., 1996: 213). Furthermore, the guidelines also sought to develop and engage more local contractors, train more workers through these programmes to equip them with labour market skills and increase community involvement in these public works projects (Korb, 2012: 52 - 53).

As part of economic development, a trade union movement put together a negotiating forum in 1992, which came up with a proposal for a National Public Works Programme (NPWP) in 1993 (Adato, Hoddinott & Haddad, 2005: 6). The NPWP was part of the manifesto of African National Congress and it differed from the already existing PWP in that it promised to create jobs, build houses and provide better sanitary facilities at all poor people of South Africa and not just whites (Ofori et al., 1996: 206). This team was also part of the National Economic Forum. After 1994, the NPWP was approved and it had an objective to "promote transformation in the construction and property industries and to contribute to meeting community infrastructure needs through labour-based projects" (National Treasury, 2004:127). The programme had the objective of providing infrastructure needs in order "to reverse some of the ills of apartheid" (DPW, 2016: 162). The Department of Public Works implemented the programme and it was to operate for 10 years as the government sort to create more long-lasting labour-based work opportunities with a more sustainable impact on poverty reduction (DPW, 1997; National Treasury, 2004). The government focused more on the reconstruction and development of the economy and the creation of more work opportunities for the alleviation of poverty amongst all poor people (and not just poor White people) as it had inherited high levels of poverty and unemployment (Adato et al., 2005: 6). As such, the NPWP was included in the Reconstruction and Development

Programme with a critical role to facilitate the creation of labour-intensive employment opportunities in government's effort to construct the infrastructural needs of the South African people (National Treasury, 2004; DPW, 2016: 8). The programme had a target of creating a minimum of 300 000 jobs per annum (Adato & Haddad, 2002).

The NPWP mainly focused on increasing the use of labour-intensive methods of construction (which was a long-term strategy) as well as increasing the engagement of communities in public works, which was a short-term strategy (DPW, 1997; DPW, 2016: 8). For community engagement, the Community-Based Public Works Programme (CBPWP) was the major national employment creation instrument implemented under NPWP. The scale of the programme differed from province to province and community-based organizations in these different provinces administered these CBPWPs (Adato et al. 2005: 5). Although the programme was a government programme, the community-based organisations (who represent the community) had full control of the project: who will work in the programme, the wage rate, the kind of work to be done, the kind of asset to be created and where it will be created. This programme was "aimed at poverty alleviation through job creation, skills training, delivery of needed assets, and capacity building" (DPW, 1997: 8). Using community targeting, the community would select the poorest members of the community to be included in the project, thereby ensuring income flow to these vulnerable individuals and families. Such a mechanism would ensure better targeting of the programme and the efficacy of the programme on poverty alleviation. The CBPWP was not the only public works programme implemented in South Africa, there were other smaller programmes implemented in different provinces. Examples include the Working for Water project, which was an environment project (implemented by the Department of Water Affairs and Forestry in 1995), and the Zibambele[5] project implemented by the Department of Transport in KwaZulu-Natal (DPW, 2016: 9). However, these projects were quite small, relative to the CBPWP.

Between 1996 and 2002, the CBPWP created around 116,000 jobs with the period 2000/1 having the most work opportunities (about 33,500) and 1997/8 having the least (around 13,000)

[5] This was a household-based project implemented in the rural areas of KwaZulu-Natal that was a maintenance programme for roads.

(McCord, 2003: 11). Although some assets were created and participants received training that increased their human capital skills, according to DPW (2016: 9), "the programme was too small to make a significant impact". Although work was created and income was passed through to poor individuals and families of participants, the magnitude of the programme in comparison to the level and type of unemployment in South Africa was heavily criticised. South Africa is faced with structural unemployment and between 1996 and 2001, approximately a figure of 3.5 million people was officially unemployed (and about 6 million under the broad definition of unemployment) (McCord, 2003). Short-term employment with insufficient skills development and low wage payment to participants was not the optimal solution to the problem of structural unemployment and poverty alleviation in South Africa, given the figures of the unemployed and poor people in the country. The programme was however discontinued in 2004/5 (National Treasury, 2004: 129) although it "became one of the main pillars of the EPWP at the beginning of Phase 2, in the form of the Community Work Programme" (DPW, 2016: 9).

3.4. Expanded Public Works Programme (EPWP)

As South Africa continued to have economic and development challenges, executive members of the National Economic Development and Labour Council (NEDLAC) from all constituencies came together at the Growth and Development Summit in 2003 to devise strategies on how to tackle these challenges. A vision for growth and development was agreed upon and among the national priorities was the creation of more jobs to ensure the eradication of poverty (NEDLAC, 2003). 'More jobs, better jobs, decent work for all' was among the themes of the summit, and the Expanded Public Works Programme was considered an immediate intervention that was not only going to create jobs but also ensure income relief that will lead to poverty reduction and the development of basic and essential infrastructure. Furthermore, participants were going to receive 'relevant and marketable skills' through the training component of EPWP. Such training and work experience from the programme was also going to be designed to increase participants' likelihood of getting other jobs in the future, hence, creating both a short-term, medium, and long-term impact on employment and poverty reduction (NEDLAC, 2003).

EPWP in South Africa was launched in 2004. This programme was a continuation of the NPWP although its objectives and design slightly differed from one another. The NPWP aimed at facilitating the creation of labour-intensive employment opportunities in the government's effort to construct infrastructure in South Africa. The programme also aimed to increase the empowerment of communities in public works programmes (DPW, 1997). A report from the National Treasury (2004: 119) also indicated that the measurable objectives of NPWP were to "Stimulate and regulate the built environment to empower the previously disadvantaged, and alleviate poverty by creating community assets and jobs through labour-based construction projects". EPWP was an expansion of the already existing public works in South Africa. The programme combined them and created 4 sectors in which different projects were to be implemented. The programme was to be implemented in different phases with each phase lasting for 5 years (DPW, 2016: 162). Contrary to EPWP, the NPWP had a 10-year timeframe. Additionally, NPWP had debates around the extensive use of labour-intensive construction methods (and the acquisition of full labour rights by labour representatives), and for EPWP, these issues were no longer debated (possibly because this was now a known labour-intensive government job creation programme).

There have been 4 different phases of the programme and the programme is still implemented in South Africa. Phase 1 of EPWP was between 2004 and 2009, phase 2 from 2009 – 2014, phase 3 between 2014 and 2019, and phase 4 between 2019 and 2024 (National Department of Public Works and Infrastructure, 2019). At the commencement of the programme, EPWP was implemented in four sectors namely the Infrastructure Sector, the Environment and Culture Sector, the Social Sector, and the Economic Sector (DPW, 2012: 4; NDPWI, 2019: 15). According to a report by the National Treasury (2004: 127), these sectors were the "main areas of expenditure with potential benefit to the community". Additionally, having different sectors enabled the creation of more work opportunities (and not just construction-based jobs), which would facilitate the programme in meeting its targeted work opportunities. Furthermore, more work opportunities in the different sectors require different levels of labour intensity, hence creating work opportunities for members of the target group (women, youth, and people with disabilities) (DPW, 2016: 165).

With different sectors, several government departments also implement different projects. For the infrastructure sector, the Department of Public Works leads projects in collaboration with the following departments: "Departments of Transport, Housing, Provincial and Local Government, Water Affairs and Forestry, Public Enterprises, Minerals, and Energy and Education" (DPW, 2004: 15). The Independent Development Trust, in addition to these other government departments, was also selected to assist with the implementation of infrastructure projects on behalf of government within this sector. For projects in the Environment and Culture Sector, 4 departments implement these projects: the Department of Environmental Affairs and Tourism, the Department of Arts and Culture, the Department of Water Affairs and Forestry, and the Department of Agriculture. The Department of Environmental Affairs and Tourism leads the implementation of projects in this sector. The Department of Social Development, together with the Department of Basic Education and the Department of Health, implement EPWP projects in the social sector (DPW, 2004: 16). The DSD is the lead department in this sector. For the economic sector, the Department of Trade and Industry was to implement these projects. The title of this sector changed to Non-State sector and Non-Governmental Organisations, Faith-Based Organisations or Non-Profit Organisations implemented projects. Budget allocations are conducted at the national level (mainly under the Ministry of Transport and Public Works) and transferred to provincial governments and further to different municipalities. Allocation is made concerning targets and needs in each sector as well as the different levels of government.

3.4.1. EPWP sectors

As noted above, EPWP projects are implemented under 4 sectors: the Infrastructure Sector, Environment and Culture Sector, Social Sector, and Non-state Sector. This section provides an overview of each sector and such discussion includes the leading department in this sector as well as the type of projects implemented.

3.4.1.1. Infrastructure Sector

As explained in Section 3.3, the Department of Public Works is the leader of projects in the infrastructure sector. Projects in this sector are labour-intensive construction projects of public

infrastructure. In these projects, workers use mostly physical effort and an appropriate combination of labour and machinery will be used to maintain the standard quality of output within the industry (DPW, 2004: 15; DPW, 2009: 22). Examples of such provincial and municipal labour-intensive infrastructure projects include the construction of rural roads as well as sidewalks and low volume roads in municipal areas. Additionally, improving water drains and pipelines in municipalities are other examples of EPWP projects in the infrastructure sector. Work opportunities are also created to maintain such infrastructure.

Participants also receive training and skills development related to construction and infrastructure development. Such training includes basic training in concrete construction, balancing, steel re-enforcements, tar mixing, and technical skills on the correct way to maintain roads, amongst others (DPW, 2012: 6).

The stipulated average duration of employment opportunities for projects in the infrastructure sector is 4 – 6 months based on the average duration of constructing infrastructure such as a small volume road (DPW, 2004: 16). Once the project is completed, the work opportunity also ends. Examples of other infrastructure in this sector include the construction of stormwater drains and sidewalks. Only one member per household is registered to work in the programme at a particular period (for income to be distributed to more households) although each participant is allowed to enroll for more than one project at the same time (as long as they can provide their labour sufficiently for all work opportunities). There is no restriction on how many times a participant can work in the programme. Table 1 shows the performance of the Infrastructure Sector from phase 1 to phase 3 of the programme.

Table 1: Performance of the Infrastructure Sector, 2004 – 2019

Phase	Period	Total targeted WO of EPWP	Total WO created	Targeted WO of Sector	Actual WO created in Sector	% (Actual/Target)	% (Actual/Total WO created)
1	2004 - 2009	1,000,000	1,347,000	750,000	752,000	100,3%	55,8%
2	2009 - 2014	4,500,000	4,071,292	2,374,000	1,647,379	69,4%	40,5%
3	2014 - 2019	6,000,000	4,389,516	2,451,003	1,414,209	57,7%	32,2%

Source: Meth, 2009: 32; DPW, 2014a: 5; DPW, 2019: 5

Table 1 shows that EPWP had a target of creating 1 million work opportunities during phase 1 (2004 – 2009). From this total, 750,000 (75% of the total) work opportunities had to be created within the infrastructure sector. During this period, the programme exceeded its target by creating 752,000 (100.3%) work opportunities (Meth, 2009: 32). The Infrastructure Sector had the most work opportunities during phase 1 (56% of work opportunities were created in this sector). During phase 2 (2009 – 2014), Table 1 shows that the programme had a target of creating 4.5 million work opportunities with 2,374,000 targeted for the infrastructure sector. A 69% (1,647,379) success rate was achieved (DPW, 2014a: 5). For phase 3 (2014 – 2019), 6 million jobs were targeted by EPWP, and 2,451,003 had to be within the infrastructure sector. The sector managed to create 1,414,209 (57.7%) work opportunities (DPW, 2019: 5).

3.4.1.2. Environment and Culture Sector

The Department of Environmental Affairs and Tourism leads EPWP projects in the Environment and Culture Sector (Kobokana, 2007: 22). Projects in this sector aim to improve the local environment by protecting biodiversity, rehabilitating and promoting natural resources management, and promoting tourism. Examples of opportunities in this sector include refuse collection, area clearing, street cleaning, and clearing of invasive alien plants, amongst others (Mtapuri, 2014: 547). Projects in this sector are also labour intensive but the intensity and effort required are less than the effort required in the Infrastructure Sector. Skills development for work related to environment and cultural activities are also provided to participants. Programmes within this sector include the land care programme, people and parks, coastal care, sustainable land-based livelihoods, cleaning up SA, growing a tourism economy programmes, working for water, wetlands, and fire programmes (Meth, 2011: 9). The stated average duration of work opportunities in this sector is 12 months (DPW, 2004: 16).

Table 2: Performance of the Environment and Culture Sector, 2004 – 2019

Phase	Period	Total targeted WO of EPWP	Total WO created	Targeted WO of Sector	Actual WO created in Sector	% (Actual/Targeted)	% (Actual/Total WO created)
1	2004-09	1,000,000	1,347,000	200,000	425,000	212.5%	31.6%

2	2009-14	4,500,000	4,071,292	1,156,000	817,588	70.7%	20.1%
3	2014-19	6,000,000	4,389,516	1,151,504	919,572	79.9%	20.9%

Source: Meth, 2009: 32; DPW, 2014: 5; DPW, 2019: 5

Table 2 shows a summary of the performance of the Environment and Culture Sector during all phases of EPWP. From a targeted 200,000 work opportunities in the Environment and Culture Sector, 425,000 (212.5%) were reported. Of all work opportunities created during phase 1, 31.6% were created in the Environment and Culture Sector. During phase 2 (2009 – 2014), 817,588 (70.7%) of the targeted 1,156,000 work opportunities were created. These work opportunities were 20.1% of all jobs created by EPWP during phase 2. For phase 3, about 80% of the planned work opportunities were created (919,572 out of 1,151,504) and this was also a fifth of the total work opportunities created during 2014 – 2019.

3.4.1.3. Social sector

The Department of Social Development, assisted by the Department of Basic Education and the Department of Health, are the coordinators of EPWP in the social sector (DPW, 2009: 22). In this sector, work opportunities are created through social development projects and community protection services. Projects in this sector target people who do not possess the manual labour capabilities that are required in the infrastructure or environment and cultural sectors. Some of the services in this sector include Early Childhood Development (ECD), Home Community Based Care (HCBC), School Nutrition Programme, Community Crime Prevention, and School Mass Participation (Meth, 2011: 9; Larsson & Nybom, 2006: 10; Mtapuri, 2014: 547).

Participants in this sector undertake mandatory training and skills development courses before they are allocated to different care facilities. The programme produces workers such as childcare workers, school clerical workers, nutrition workers, cooks, vegetable gardeners, administrators, community health workers, health officers, and others (Mtapuri, 2014: 547). After receiving training from EPWP, participants in the ECD and HCBC areas provide caring services for terminally ill people, child care, and the creation of a clean and nurturing environment necessary for the physical and psychological development of children. The duration of opportunities in the social sector ranges between 12 and 18 months (DPW, 2004: 16). These opportunities have a prolonged

duration as significant investment is made in training participants. Furthermore, the people who work with the EPWP participants are sensitive (mostly children) and they cannot continually interact with different people all the time. Table 3 shows the performance of this sector between 2004 and 2019.

Table 3: Performance of the social sector, 2004 – 2019

Phase	Period	Total targeted WO of EPWP	Total WO created	Targeted WO of Sector	Actual WO created in Sector	% (Actual/Target)	% (Actual/Total WO created)
1	2004-09	1,000,000	1,347,000	150,000	152,000	101.3%	11.3%
2	2009-14	4,500,000	4,071,292	750,000	866,246	115.5%	21.3%
3	2014-19	6,000,000	4,389,516	1,151,504	844,655	81.3%	19.2%

Source: Meth, 2009: 32; DPW, 2014: 5; DPW, 2019: 5

During phase 1, the social sector had a 101.3% success rate as 152,000 work opportunities were created instead of the targeted 150,000. These work opportunities were 11.3% of all jobs created during phase 1 of EPWP. For phase 2, 21.3% of work opportunities were created in the social sector, and work opportunities created (866,246) were 15.5% more than anticipated (750,000). At the end of phase 3, work opportunities delivered in the social sector (844,655) were close to 20% less than the target (1,151,504) and these work opportunities constituted 19.2% of all jobs created by EPWP during phase 3.

3.4.1.4. Non-State Sector

The Department of Cooperative Governance (together with the Department of Public Works) manages the implementation of EPWP projects in the non-State Sector. This sector was formerly the Economic sector during phase 1 of EPWP. In this sector, the government aimed to create job opportunities through small to medium-sized businesses and promote entrepreneurship. Additionally, the government also wanted to create and promote community-based projects for the new small business owners (Heradien, 2013: 50). These projects targeted mainly poor and unemployed people with disabilities (who can work although the disability limits their labour market capabilities). Through these projects, people with disabilities were included in economic activities. An example of these projects is the New Venture Creation Learnership Programme

(Meth, 2011: 9). In this programme, participants received training and were provided with funding to create their businesses. Such businesses became instruments to generate more income for the implementers and become a source of livelihood for them and their families (Heradien, 2013: 50).

At the end of phase 1 of EPWP, only 1.3% of total work opportunities were created in the economic sector although work opportunities created (18,000) were 50% more than the targeted 12,000. Due to its limited overall scope and magnitude, the government sort to expand projects in this sector by collaborating with other non-governmental organisations in creating jobs. The non-state sector was launched in 2009 when phase 2 of EPWP commenced. Projects were not only limited to business ownership and entrepreneurship but also any community development initiatives that these non-state entities developed. The non-State sector comprises projects that are implemented under two programmes: the Non-Profit Organisation (NPO) and the Community Work Programme (CWP). In this sector, the government provides wage support (through subsidies) to community development initiatives implemented by NPOs in local communities. The initiative to provide wage support to these non-State sector programmes is to act as a "catalyst to increase the creation of work opportunities in communities" by these organisations to engage many poor and unemployed members of society in the programme (DPW, 2014a). Some of these non-state entities include Faith-based Organisations (FBOs), Community-based Organisations (CBOs), and Non-Governmental Organisations (NGOs). CWPs are area-based programmes and participants are determined by CBOs. CWP creates predictable and regular work for participants (2 days of employment per week) thereby ensuring a minimum level of income from the programme (Andersson & Alexander, 2016: 157). CWPs are created to supplement other livelihood strategies for poor community members of the community who are deemed to require extra income. These opportunities were created within multiple areas to increase community development through services such as agriculture, community safety, public infrastructure maintenance, education support, and local innovation. Table 4 shows the performance of the non-state sector during phases 2 and 3 of EPWP.

Table 4: Performance of the Non-state Sector, 2009 – 2019

Phase	Period	Total targeted WO of EPWP	Total WO created	Targeted WO of Sector	Actual WO created in Sector	% (Actual/Targeted)	% (Actual/Total WO created)	
2	2009-14	4,500,000	4,071,292	256,000	180,154	70.4%	4.4%	NPO
				384,000	559,925	145.8%	13.8%	CWP
3	2014-19	6,000,000	4,389,516	267,000	288,986	108.2%	6.6%	NPO
				1,470,000	922,094	62.7%	21.0%	CWP

Source: Meth, 2009: 32; DPW, 2014a: 5; DPW, 2019: 5

As indicated in Table 4, NPO projects had a 70.4% completion rate when 180,154 work opportunities were created during phase 2. In phase 3, NPO projects generated more work opportunities (288,986), 8.2% more than their target (267,000). For CWP, the programme outperformed its target when 559,925 (145.8%) work opportunities were created instead of the 384,000 targets. During phase 3, total CWP work opportunities increased to 21.0% of all EPWP jobs although the 922,094 work opportunities created were 37.3% less than the target (1,470,000).

3.5. Conclusion

This chapter has provided empirical evidence of the impact of public works on food security from international programmes such as PSNP in Ethiopia, VUP in Malawi, MGNREGS in India and in Malawi, and the Social Action Fund. Fundamental principles, such as having a rights-based public works programme and a programme that is demand driven not supply driven, such as the Mahatma Gandhi National Rural Employment Guarantee Scheme in India, have been identified as some of the measures that increase the effectiveness of public works on food security. Such a programme provides guaranteed employment days and hence, the guarantee of the Constitutional right to food for all people targeted by the programme. Other important issues of public works include the timing of the programme, the administrative capacity of the programme (administrative inefficiencies were highlighted in some areas of India where the programme failed to provide jobs to applicants who had the right to work), timing of payment of work done (as explained by evidence in PSNP in Ethiopia), amount of income received, and duration of employment (as explained by MGNREGS participants in Andhra Pradesh who worked in a

programme that had a longer duration). These were identified as having a significant contribution to the impact of public works on food security. These factors are considered in the assessment of the case study, EPWP, to determine how the operation of the programme is similar or differs from other international programmes that also aim to increase household food security. The chapter has also explained the origins of public works in South Africa and its implementation in different EPWP sectors. The programme has made significant progress in creating work opportunities although, in some sectors, work opportunities created less than the targeted numbers. This study goes beyond the evaluation of work opportunities created and assesses the food security impact of the programme, a gap this study aims to fill. The methodology implemented in this study which connects EPWP and household food security is discussed in the following chapter.

CHAPTER 4: METHODOLOGY OF THE STUDY

4.1 Introduction

This study uses a mixed methods approach of analysis in its endeavour to answer the research question and meet all research objectives. Both primary and secondary data are used in this study to conduct a detailed assessment of the research problem. Integration of data from both qualitative and quantitative methods provides a more detailed and comprehensive analysis of the research problem as the qualitative data provides a description and substantive possible explanation and argument for (or against) the outcome of the quantitative methods (Wisdom & Creswell, 2013: 1).

The rest of this Chapter is structured as follows: Section 4.2 describes the type of data and variables required to investigate the research problem. This includes EPWP as well as household food security variables. Within this section, an explanation of the different secondary data sources that were consulted to ascertain the best dataset to be used in the analysis is also provided. Such datasets include the Quarterly Labour Force Survey (QLFS), the National Income Dynamics Study (NIDS), the Living Conditions Survey (LCS), and the General Household Survey, amongst others. A description of the indicators available in the GHS is provided in Section 4.3 together with why this dataset was selected and others were left out. The limitations of this secondary data are also discussed in this section. The methods of analysis implemented on this secondary dataset are also provided in this Section. Section 4.4 explains the primary data used in the study. This section describes the study area, sample size, and sampling techniques together with a description of the instruments used to collect the data. Additionally, the methods of analysing this data are also explained. Section 4.5 concludes the Chapter.

4.2 National secondary data sources consulted

The main objective of this study is to assess the food security contribution of public works at an individual and household level; how the programme has ensured that the participants (and their families) have enough access to safe and nutritious food that would meet their dietary requirements. As such, variables of interest include (but are not limited to) the nature of work

done, duration of work, wages from the programme, date of payment, frequency of payment, nature of employment, training or skills acquired from the programme, type of assets created from the programme, and any other direct or indirect food-related benefits derived from the programme. For the food security assessment, variables such as the quality of food consumed by participants, changes to food quantity consumed, anxiety or uncertainty over food within the household, and hunger experiences, will be required.

For a critical assessment of the programme's contribution towards household food security at a national level, it was best to work with a nationally recognised and credible dataset. Several nationally recognised datasets were evaluated to determine which data was best suited (contained more comprehensive variables of analysis) to answer the research question. Some of these datasets include the National Income Dynamic Study (NIDS), the Income and Expenditure Survey (IES), the Living Conditions Survey (LCS), Community Survey (CS), the Quarterly Labour Force Survey (QLFS), and the General Household Survey (GHS). A discussion of each of these datasets together with the suitability of each for the analysis is provided below.

The NIDS data is a national sample survey data that is conducted on an individual as well as household level for people living in South Africa. The data is collected by Southern Africa Labour and Development Research Unit (SALDRU), under the University of Cape Town. The survey is conducted every 2 years, with its first wave (when the first round of the NIDS survey was initially conducted) in 2008. NIDS is a face-to-face longitudinal data that traces the social and economic well-being of people in South Africa over time (Data First, 2020). The data is for both children and adults that are living in the household. Some of the issues that the data targets include individual and household access to cash and social transfers, education and employment dynamics, income and expenditure dynamics, and the impact of live events, amongst others (Data First, 2020).

As a panel dataset, the NIDS would have been the perfect data for analysing the research problem as changes in the welfare of the same individuals and households are traced over time. However, the dataset does not have detailed food security variables. Furthermore, there are no specified variables of people working under the public works programme. Hence, the data could not be

used to conduct a critically robust assessment of the individual and household food security impact of public works.

The IES is a national sample survey data that is conducted after every 5 years in South Africa. The data is collected by Statistics South Africa and it is conducted at a household level. The survey is mainly designed to provide information on the average expenditure patterns of households to determine, "the basket of consumer goods and services used for the calculation of the Consumer Price Index" (Data First, 2020). Using the diary method, households record all of their weekly expenditures together with their incomes for the duration of the survey. Such information is collected from households in different areas of the country. The survey commenced in 1990 and its last round was in 2010/2011. Although the survey collects information on the amount of expenditure on food it fails to provide other information on food security. In addition, income received from public works is also not captured amongst the types of household income received. Hence, the lack of such vital information renders the IES a less suitable dataset to thoroughly answer the research question and meet all its study objectives.

The LCS is also a national sample survey data (collected by Statistics South Africa) that aims to measure and better understand the living standards of both individuals and households living in South Africa. The data is also aimed at monitoring poverty levels over time. This survey is collected over 1 year. Household income, expenditure, and subjective poverty indicators are collected using both the diary and the recall method. An overall questionnaire was also used by Stats SA to collect such information. One of the elements that are collected by the LCS is food security. Comprehensive questions on household food security conditions are incorporated in the questionnaire but there are no variables for household participation in public employment programmes. Hence, this dataset was omitted from the analysis.

The QLFS is also another national household-based sample survey conducted by Stats SA. This data set was a continuation from when the Labour Force Survey was discontinued (in September 2007). The QLFS has more labour variables and it is collected after every 3 months within the year since 2008 (the LFS was collected twice yearly). Its main aim is to collect information on labour market activities amongst the economically active population in South Africa. Some of

these activities include, “labour market activity, labour preferences, labour market history, demographic characteristics, marital status, employment status, education, grants, tax” (Data First, 2020). A significant number of questions regarding EPWP participation are asked in the QLFS including questions on knowledge of the programme, participation, duration of work opportunity, prior activities before working under EPWP, training or skills acquired while participating in the programme, and all benefits derived from the programme (Stats SA, 2020: 21). However, although the QLFS captures detailed EPWP participation information, it does not have any information on food security and thus, making it unsuitable for food security assessment.

The General Household Survey is the only dataset that has both public works and food security variables. As such, it is used in this study. A detailed description of the GHS data is presented in Section 4.3.

4.3 The General Household Survey Data

The GHS is a national annual cross-sectional survey collected by Stats SA using a master sample general-purpose sampling frame that was developed by Stats SA (Data First, 2020). The master sample was a development from the previous sample, designed to improve the precision of the GHS estimators. Its sampling is based on a stratified two-stage design with probability proportional to size. The survey mainly aims to collect information on various individual and household-based characteristics to measure the living circumstances of people (Data First, 2020) and assess the progress of development in the country (Stats SA, 2015: 10). The survey also measures the performance of programmes (regularly) and tracks the quality of service delivery in key sectors within the country. Some of these sectors, among others, include health and social development, agriculture, education, household access to services and facilities, housing, and food security (Stats SA, 2017a: 1).

4.3.1 Why use the GHS 2018 data

The researcher intended to conduct a multiple-year analysis (2013 – 2018) to critically investigate the year-to-year changes in PEPs, such as programme coverage and programme components,

and how such changes correlate with the food security status of participants. These datasets from 2013 – 2018 were compatible with each other and they have similar questions regarding households' food security and information regarding their participation in PEPs. However, preliminary investigation and assessment of data showed no statistically significant differences between years, except between 2013 and 2014. There was a correlation between the change in the number of PEP participants between 2013 and 2014 and the change of EPWP from Phase 2 to Phase 3 in 2014. Targeted work opportunities increased from 4.5 million during Phase 2 to 6 million for Phase 3 (DPW, 2012: 13; DPW, 2017: 7; DPW, 2018: 1). As such, a noticeable increase in participants was observed during this period and the change was statistically significant. However, for other years, there were no statistically significant differences in participants that participated in PEPs from one year to another. As PEP was our main variable of concern, no detailed analysis was conducted on other potential food security variables. Preliminary assessments only observed a change in the phrasing of some food security variables and the addition of other variables in different years. These findings were not reported in the study. Hence, statistically, there was no need for multiple-year analysis and only GHS 2018 data were included in the study.

The GHS data contains both food security and PEPs variables, hence making it the ideal secondary dataset to be used for analysis[6]. The data contains food insecurity questions that are similar to the conventional 9 food insecurity questions of the Household Food Insecurity Access Scale (HFIAS) indicator developed by the Food and Nutrition Technical Assistance Project (FANTA) (Coates et al., 2007: 5). Households were asked child and adult hunger questions, dietary quality as well as food quantity adjustments questions, and whether a household lacked adequate resources to provide food for every member of the household (Stats SA, 2018b: 42). These occurrence questions have a recall period of 12 months. However, the structure of these questions is the different structure of the questions developed by FANTA. Furthermore, other questions (such as questions of uncertainty or anxiety over food) were not included in the GHS

[6] It would have been more appropriate to use panel data to monitor household food security trends amongst public works participants from one year to another. However, as indicated in Section 4.2, there are no national panel datasets that contain detailed food security and public works programme variables.

data. Also, respondents are not asked whether any household member had to spend the entire day or the entire day and night without food because there was nothing to eat within the household (the severe food insecurity questions on the HFIAS list of questions). More so, the adult and child hunger questions did not have to follow up frequency-of-occurrence questions. In addition to this, the follow-up frequency-of-occurrence questions on 4 of the food insecurity questions are also different from the structure of FANTA's frequency-of-occurrence questions (Coates et al., 2007). Although they all have a recall period of 30 days, questions under the GHS data ask whether the food insecurity occurred 5 or more times in the last 30 days while FANTA's frequency-of-occurrence questions have a scale of occurrence: "rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks" (Coates et al., 2007: 5).

The GHS data also captures different types of food (as well as their frequency of consumption) consumed within the household during the past 24 hours (Stats SA, 2018a: 42). A recall period of 24 hours was also used by Stats SA, similar to other studies such as Swindale and Bilinsky (2006) and FAO (2008) that explain that various foods[7] consumed by households may be recorded as accurate as possible. The different foods are classified under 10 food groups, slightly different from the conventional 12 food groups used for determining Household Dietary Diversity Score (Kennedy et al., 2011; Chakona & Shackleton, 2018).

For PEP, only one question was captured by the GHS data. The question was asked to every member of the household, whether they "participated in a Government or municipal job creation programme or Expanded Public Works Programme in the past 6 months" (Stats SA, 2018a: 30). As stated in the question, a recall period of 6 months was used and the question also included any work that could have been done by community development workers as well as home-based care workers, amongst others. It should be noted that not all government job creation programmes are EPWP and not all work done by community development workers is public

[7] Various types of food encompasses all types of food that are consumed during all different meal times, both day and night, and this comprise of any food consumed before breakfast, breakfast, snacks before lunch, lunch, snacks before dinner, dinner, and snacks after dinner (Swindale & Bililnsky, 2006: 3; Chakona & Shackleton, 2018: 4).

works related. Hence, in this study, this programme under the GHS data is referred to as a public employment programme (PEP), as stated by Luka (2005: 9) and Stats SA (2017b: 67).

4.3.2 Limitations of the GHS data

The main advantage of using the GHS dataset is that it is a credible national dataset that is collected by Statistics South Africa. The data has a weighted sample size of about 71,000 respondents is representative of 16.7 million households and 57 million people in South Africa in 2018 (Stats SA, 2019a: 2 – 3). The data can be used for national assessments of multiple elements such as health and social development, agriculture, education, household access to services and facilities, housing, and food security (Stats SA, 2019a: 1).

However, the dataset has limited information on public employment programmes. The available question only asks whether any of the household members "participated in a Government or municipal job creation programme or Expanded Public Works Programme in the past 6 months" (Stats SA, 2018a: 30). Other important issues of the programme such as the duration of work opportunity, the amount of wages received from the programme and the sector in which they participate in, amongst others, are not included in the data. These are paramount key features of public works that significantly influence their design, implementation, and impact on participants. Some of the challenges and implications of using this variable are its timeframe, which is 6 months. Given that employment in this programme is not guaranteed and the duration of work opportunities varies from one project to another, a household member could have worked in the programme for a month or two and then exit the programme for possibly another job or they are unemployed again. At the time of the survey (4 months later), the person would indicate that they worked in PEPs in the last 6 months when they are working another job or are unemployed. Hence, inferring the causal relationship between these variables would lead to biased outcomes as household income could be coming from other sources other than PEPs. The food security impact of PEPs is more meaningful for participants that are currently working in the programme. However, this information is not captured in the GHS.

Furthermore, the HFIAS questions incorporated in the questionnaire are fewer than, and different in structure, from the conventional 9 HFIAS questions by Coates et al. (2007). Stats SA (2019a: 3) explained that they use a shortened version of the HFIAS which is a modified version of the indicator. Such a modified indicator explains why fewer food insecurity questions are included in the GHS data. This version of the HFIAS limits the use of this food insecurity indicator as one cannot make any cross-country comparisons of the level of food insecurity between 2 groups of people in different countries.

In addition to HFIAS, the 10 food groups captured by Stats SA in the GHS data can be used to determine household dietary diversity although the captured food groups are less than the conventional 12 HDDS food groups (Kennedy et al., 2011; Chakona & Shackleton, 2018). However, household dietary diversity can still be assessed using this indicator. Detailed information on this indicator is provided in Section 4.3.3.1.

The GHS is a useful tool for gathering data on the living conditions of households in South Africa. Although there are some limitations to using the GHS, the use of the data in this context is justified as it provides a link between public works and household food security. One of the key areas covered by the GHS is food security which captures detailed data on household food consumption, food sources, and food expenditure. The inclusion of the PEP variable, although limited, creates that nexus between public works and food security within the household allowing for the assessment of how these two variables correlate with other.

4.3.3. Quantitative methods of assessing household food security using the GHS data

Amongst the different quantitative techniques used to measure food security, this study uses the household dietary diversity score, the modified version of the household food insecurity access scale, and a 2 stage least squares regression model. A discussion of these indicators is provided below.

4.3.3.1. Household Dietary Diversity Score (HDDS)

The HDDS is an instrument that can be used to measure a household's food consumption which reflects its economic ability to access a variety of foods (Kennedy, Ballard & Dop, 2011). It is a

simple summation of food groups that are consumed by individuals and households during a particular reference period (Kennedy et al., 2011: 5). Individual DDS is mainly used to assess nutrient adequacy whilst HDDS is associated with socio-economic status and food security levels of a household.

To determine the HDDS, the person primarily responsible for preparing meals for the household is asked to recall all food consumed in the past 24 hours[8]. Such food should also include food prepared in the household but consumed outside the household (FAO, 2008: 5). All food consumed is grouped under 12 food groups commonly used for assessing household dietary diversity (Kennedy et al., 2011: 23). Different food groups may be used for different purposes[9]. The 12 food categories are:

> (1) Cereals; (2) white tubers and roots; (3) vegetables; (4) fruits; (5) meat; (6) eggs; (7) fish and seafood; (8) legumes, nuts, and seeds; (9) milk and milk products; (10) oils and fats; (11) sweets; and (12) spices, condiments, and beverages (Kennedy et al., 2011; Chakona & Shackleton, 2018: 4 – 5).

The information on food consumption is recorded in a binary format: "0" if no food from the specified food group has been consumed and "1" otherwise. The sum of the foods from the different food groups (out of 12) determines HDDS (Kennedy et al., 2011).

However, with HDDS, there is no determined cut-off point, in terms of the number of food groups, which distinguishes the food secure from the food insecure households (Kennedy et al., 2011: 26). Studies such as Daniel, Coates & Vaitla (2013: 5) have only indicated that the higher the HDDS score, the more food secure a household is considered to be. These are however only extremes with no determined cut-off point. Some analysis of dietary diversity (Kennedy et al., 2011: 26) was done on the mean score or distribution of scores. On the other hand, households can also be classified into different food insecurity groups, depending on the various types of

[8] The commonly used recall period is 24 hours (as it is argued that it provides a more accurate dietary diversity score as participants are more likely to remember all the food consumed the previous day). Other studies however, have used a recall period of 48 hours as they argue that different days might have different menus, hence, a recall period of 48 hours more of the different foods that a household might have consumed within the household.

[9] Some food groups are for calculating scores for certain groups of people (like women) while others are for individual scores (to determine nutrient adequacy).

food and the number of food groups consumed within their households (Chakona & Shackleton, 2018; Devereux & Tavener-Smith, 2019).

Due to this ambiguity, several different approaches have been used to determine appropriate thresholds to determine the level of food insecurity within households (Maxwell et al., 2013: 7). The true nature of food security amongst the targeted population might be under-or-over reported leading to an inaccurate policy recommendation. An approach developed by the FAO (Kennedy et al., 2011) is the most commonly used method implemented by many countries when analysing dietary diversity. Under this approach, households consuming 3 food groups or less are classified as having a low dietary diversity; 4 or 5 food groups are considered as medium dietary diversity and 6 food groups or more are categorised under the high dietary diversity group (Kennedy et al., 2011: 29).

For more rural countries like Ethiopia, Somalia, and Sudan, the FAO thresholds (Kennedy et al., 2011) better measure the food security status of people as the majority of them are more likely to consume food from fewer food groups (Huluka & Wondimagegnhu, 2019). For South Africa, a study by Chakona and Shackleton (2018) has argued differently regarding the food group thresholds. Their argument is based on the notion that South Africa has more food available to residents, with most of them residing in urban areas. Such people in urban areas can access many food markets and food stores in most communities. As more people tend to eat more food varieties, Chakona and Shackleton argue that the use of the FAO classification (Kennedy et al., 2011) may not be the best approach to determine the cut-off points. This approach, for instance, the use of only 3 or fewer food groups as a cut-off, may under-report the accurate level of people with low dietary diversity as most consume more food varieties. Hence, using the same food group thresholds in different countries with different socio-economic well-being as well as different rural-urban demographics may over-report the food security status in one country and under-report in another.

The food group thresholds developed by Chakona and Shackleton (2018) in the South African context indicated that households that consumed 5 food groups or less are considered as having a low dietary diversity; those that consume 6 or 7 food groups are classified as having a medium

dietary diversity and those consuming 8 or more food groups are categorised as having a high dietary diversity food consumption (FAO, 2008: 8; Chakona & Shackleton, 2018: 5). This approach has more food groups under each category when compared to the food groups developed by Kennedy et al. (2011).

Some advantages of using the HDDS indicator of food security are that is it simple, less time-consuming to compute (thus, making it an inexpensive method) and it is easy to understand (FAO, 2008: 4). Furthermore, the indicator can be used easily for comparing the food security status between two groups of people. The dietary diversity score, however, does not have any frequency information of how many times a certain food type has been consumed or any weighted categorical cut-offs (Daniel et al., 2013: 4). There might be the overconsumption of one particular food group leading to poor diet quality for the household. It is also important to keep in mind that when interpreting the dietary diversity score, the quantity or quality of the actual food consumed is not indicated. Dietary diversity looks at the total "number of different foods or food groups consumed over a given reference period" (Ruel, 2003: 3). However, it fails to indicate the type of foods that are needed to provide energy and all essential nutrients (Thornton, Leibbrandt & Ardington, 2016). For some households, although they consume more foods from multiple food groups, because of poor diet quality, they are nutritionally insecure. Also, HDDS does not consider any seasonal variations which may take place for only a short period (Sibhatu & Qaim, 2017). Furthermore, geographical differences are also not considered by dietary diversity. Some people reside in rural areas and they, for example, are more likely to consume tubers and roots than bread because they grow tubers and roots themselves whilst the nearest stores that sell bread are far (Kennedy et al., 2011: 27). These are some of the criticisms of assessing household food security conditions using dietary diversity.

In this study, the thresholds used by Chakona and Shackleton (2018) will be used for analysing food access amongst PEP participants. The GHS data has 10 recorded food groups which slightly differs from the conventional 12 food groups stipulated by FAO. In collecting information on foods consumed within households, Stats SA combined beef, goat, poultry (chicken), pork, fish, eggs, and lamb, to be categorised as "MEAT". However, the FAO has 3 food groups from the

MEAT variable by Stats SA; (1) meat, poultry, offal (which consists of any beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, or other organ meats), (2) eggs and (3) fish and seafood (any fresh or dried fish or shellfish) (Swindale & Bilinsky, 2006: 4). It is difficult to decompose the MEAT variable in the GHS dataset into 3 food groups ((1) meat, poultry, offal (2) eggs and (3) fish and seafood). Hence, this study assesses HDDS (from the GHS secondary datasets) using 10 food groups as captured by Stats SA. As such, the HDDS will have a maximum of 10.

4.3.3.2. Using the modified Household Food Insecurity Access Scale (HFIAS) indicator

Stats SA (2019a:3) explains that a modified version of the HFIAS is one of the main indicators to assess household food insecurity. The computation of this indicator and the food insecurity questions asked in the questionnaire slightly differ from the questions and computation method explained by Coates et al. (2007). Unlike the HFIAS indicator by FANTA which only computes one HFIAS score for a particular household, the modified version of the HFIAS by the GHS has a hunger indicator as well as a food adequacy indicator.

For the hunger indicator, the GHS includes 2 hunger questions, an adult hunger question for anyone who is 18 years and above who is in the household and a child hunger question for any person 17 years or younger (Stats SA, 2018a: 42). These questions have a recall period of 12 months with each question having 5 possible responses with increasing intensity: '1' (never), '2' (seldom), '3' (sometimes), '4' (often), or '5' (always). From these questions, the hunger indicator is computed: "households that reported 'sometimes', 'often', or 'always' going without food are classified as having experienced hunger" (Stats SA, 2019a: 3).

Hence, for adult hunger:

$$Adult\ hunger = Yes\ (code = 1)\ if\ adult\ hunger\ experience\ is \{Sometimes\ Often\ Always$$
$$Adult\ hunger = No\ (code = 0)\ if\ adult\ hunger\ experience\ is \{Never\ \ Seldom$$

And for child hunger:

$$Child\ hunger = Yes\ (code = 1)\ if\ child\ hunger\ experience\ is \{Sometimes\ Often\ Always$$
$$Child\ hunger = No\ (code = 0)\ if child\ hunger\ experience\ is \{Never\ \ Seldom$$

Therefore,

$$Household\ hunger\ =\ Yes\ (code = 1)\ if\ \{Adult\ hunger = 1\ and/or\ Child\ hunger = 1$$

The GHS also captures other food insecurity questions which are used to determine the food adequacy indicator (Stats SA, 2019a: 3). An extract of these questions is provided in Table 5 below.

Table 5: Questions on food adequacy extracted from the GHS

Q1. Did your household run out of money to buy food during the past 12 months?
Q1a. Has it happened 5 or more days in the past 30 days?
Q2. Did you cut the size of meals during the past 12 months because there was not enough food in the house?
Q2a. Has it happened 5 or more days in the past 30 days?
Q3. Did you skip any meals during the past 12 months because there was not enough food in the house?
Q3a. Has it happened 5 or more days in the past 30 days?
Q4. Did you eat a smaller variety of foods during the past 12 months than you would have liked to because there was not enough food in the house?
Q4a. Has it happened 5 or more days in the past 30 days?

Source: Stats SA (2018a: 42); Stats SA (2019a: 3)

Each of these questions is binary: '0' (no) and '1' (yes). The modified HFIAS score is determined by summing the responses to these questions. Assigning numbers to these occurrence and frequency-of-occurrence questions, the HFIAS can be determined as follows:

$$Modified\ HFIAS\ score\ =\ Q1\ +\ Q1a\ +\ Q2\ +\ Q2a\ +\ Q3\ +\ Q3a\ +\ Q4\ +\ Q4a$$

Unlike HFIAS by FANTA (which has a maximum score of 27), the food inadequacy indicator has a maximum score of 8 and a minimum of 0. Furthermore, the score from this indicator is an outcome from both occurrence questions as well as frequency-of-occurrence questions (yet with the conventional indicator, only outcomes of the frequency-of-occurrence questions are considered). Like Chakona and Shackleton (2018), the determination of the level of household food insecurity from this indicator is based on scores and not the categorisation method implemented by Coates et al. (2007). Respondents with a score that is less than 2 are categorised as having adequate access to food; those with a score between 2 and 5 are considered as having inadequate access to food; and those whose score ranges between 6 and 8 are regarded as

having severe inadequate access to food (Stats SA, 2019a: 3). This modified instrument will be used to assess the level of food insecurity amongst PEP participants.

4.3.3.3. Analysing household food insecurity using a 2-Stage Least Squares model

A 2-Stage Least Squares regression model will also be used to assess the contribution of PEP towards household food security. This model was implemented to control for the problem of having endogenous variables (Srivastava & Singh, n.d; Rassen, Schneeweiss, Glynn, et al., 2009) which are variables that affect the decision to participate in PEPs but do not necessarily affect household food insecurity. If uncontrolled, the coefficient of the PEP variable in the household food insecurity model will be associated with the error term of that model, making its coefficient biased and unreliable in the regression model (Mishra, 2017).

The first model is on individual and household factors that are associated with the decision to participate in public employment programmes. This model contains a set of endogenous variables and it can be represented in the following equation (Johnston, 1963: 58):

$$P_{en} = \alpha_{ex} X_{ex} + \alpha_{iv} X_{iv} + E$$

Where:

n: sample size
X_{ex}: matrix of exogenous regressor variables
X_{iv}: matrix of instrumental variables
P_{en}: matrix of endogenous regressor variables
$\alpha\{\alpha_{ex}\alpha_{iv}\}$: matrix of parameters
$\mathbf{E}$: matrix of errors

In this first model, $P_{en}$is the dependent variable that contains some exogenous regressor variables (X_{ex}) which in this case, is a set of household-level variables that may affect one's decision to participate in PEPs, as well as a matrix of instrumental variables (X_{iv}) which is a set of individual-level variables that also affect one's decision to look for a work opportunity in PEPs. $\alpha\{\alpha_{ex}\alpha_{iv}\}$ are the parameters of the model and $\mathbf{E}$ is the error term which is a collection of all other unobserved variables that may affect PEP participation (Johnston, 1963: 58).

As the dependent variable is binary, a probit regression model (Cappellari & Jenkins, 2003) is used and a set of regressors (both exogenous and instrumental) were tested and selected to be

incorporated in the PEP model. These variables were tested using the chi-squared assessment method to determine whether there was any statistically significant difference between PEP participants and non-participants. These regressors include individual as well as household-level variables. Individual level variables include *age* (a continuous variable measured in years), *gender* (a dummy variable with 1 for male and 0 for female), *race* (dummy variables of African and Coloured groups), *marital status* (a dummy variable with 1 for married or cohabitating spouse and 0 otherwise), *head of household* (a dummy variable), *education* (decomposed under 4 dummy variables representing the level of education: no schooling, primary, incomplete secondary education, and completed matric), and *disability* (a dummy variable of whether a person had any disability or not). Household variables included in the model *are household expenditure* (measured in Rands), *household size* (the total number of people in the household), *presence of another working household member* (dummy variable), *having a flush toilet* (dummy variable), *area of residence* (with urban as a dummy variable) and *province* representing the 9 provinces in South Africa (with Western Cape as the reference group). A discussion is provided of how each of these variables is correlated with the PEP covariate. The parameters of these regressors will be analysed concerning a priori expectations.

From the outcome of the first model, an estimated value of the dependent variable (participating in PEP) was created and included as an independent regressor in the second model of the 2SLS regression analysis (the household food insecurity model) (Johnston, 1963: 259; Srivastava & Singh, n.d). An evaluation of possible proxy variables to represent household food insecurity was conducted on the following variables as captured by the GHS data:

Adult hunger experience within the household
Child hunger experience within the household
Running out of money to buy food with the household
Cutting the size of meals within the household
Skipping any meals within the household
Eating a smaller variety of foods within the household[10] (Stats SA, 2018a: 42).

[10] These questions are a summary of the food security questions asked in the 2018 General Household Survey questionnaire.

A test was conducted on these variables to determine the most appropriate proxy variables. Variables with more responses are an indication of less severe food insecurity encounters within the household and those with few responses show more severe food insecurity experiences. The variable 'Running out of money to buy food' had most responses than all other variables, an indication that the food insecurity experience within households began during this period. Hence, this variable was the most ideal proxy variable to represent household food insecurity.

The second equation of the 2SLS regression model (household food insecurity) can be represented by the following equation (Cappellari & Jenkins, 2003: 279):

$$y = \beta_{ex} X_{ex} + \beta_{en} P_{en} + e$$

Where

n: sample size
$\boldsymbol{y}$: vector dependent variable
X_{ex}: matrix of exogenous regressor variables
P_{en}: matrix of endogenous regressor variables
β_{en}: vector of endogenous regressor parameters
β_{ex}: vector of included exogenous parameters
$\boldsymbol{e}$: vector of errors

In this model, the dependent variable ($\boldsymbol{y}$) (household food insecurity) is regressed on various exogenous covariates (X_{ex}) which are household variables that are correlated with household food insecurity together with the predicted outcome of the first regression (P_{en}) which is the predicted PEP variable. β_{en} and β_{ex} are the parameters of the model and $\boldsymbol{e}$ is the error (Johnston, 1963; Cappellari & Jenkins, 2003).

To assess how PEPs are correlated to household food security, the following set of exogenous covariates is included in the model:

> Head age; Marital status; Female head; Race (African, Coloured, Indian); Household expenditure; Area of residence (urban); Use tap water; Use flush toilet; Education (No schooling, Primary, Incomplete sec, Matric); Household hold size; Children under 17yr; Receiving remittances; Receiving social grants; Presence of another working household member; Agricultural activities; Province

These variables were also tested using the chi-squared analysis to determine whether there was any statistically significant difference between households that are food secure and those that are not. The coefficient of the PEP covariate is of interest to this study and an assessment is conducted on whether it aligns with the a priori expectation of this study or not.

4.4. Primary data collection

Although the food security contribution PEPs will be done using the GHS 2018 data, other fundamental elements of public works are not captured by the national dataset. As such, a detailed and thorough investigation of PEPs' contribution to household food security was limited. Some of the indicators of PEPs required include how long the participant has been working in PEPs, the duration of the current employment contract, the amount of wages received, frequency of payment, the sector in which they are working, the nature of the work done, the type of training received from the programme and the type of assets they created from their current project. Additionally, information for other food security indicators (such as the Household Food Insecurity Access Scale, Household Dietary Diversity Score, and Food Expenditure share method) is also collected from the primary data collection. To provide a more detailed analysis of the food security contribution of PEPs, primary data was collected from a currently ongoing EPWP project in Cape Town, Western Cape Province.

4.4.1. Data collection

Primary data was collected from EPWP projects in the Environment and Culture Sector implemented in Tokai and Simons Town areas, in Cape Town, Western Cape province. EPWP participants enrolled under the Working for Ecosystems (in the Tokai area), Working for Water South, and Working for Water Central projects (in Simons Town) were included in the study.

4.4.1.1. Pilot interviews

To test and improve the data collection instruments developed, the researcher conducted pilot interviews[11]. Pilot interviews have been recommended by many authors including Rimando, Brace, Namageyo-Funa, Parr, Sealy, Davis, Martinez & Christiana (2015: 2030) to test and improve the data collection instruments. The interviews were conducted in the Tokai area, under the Working for Ecosystems project. 4 participants were interviewed with 3 respondents completing the structured questionnaire and 1 discussing the open-ended questions. Only 4 participants were included in the pilot interviews as these were the only participants (from the available group of participants) that indicated being comfortable being interviewed in English (the researcher was fluent in English and not Xhosa or Afrikaans, the other languages amongst the participants).

The researcher planned to have participants gather together and complete the structured questionnaires (with the researcher present to assist those that may need it). This procedure was intended to save time and resources by collecting data from more participants in a short space of time. One of the project managers also agreed to this suggestion and further indicated that such a gathering would be regarded as a training day. However, a training day could not be scheduled on any particular day. Due to the nature of the work under the EPWP Working for Ecosystem project, the best training day is a rainy day when participants are unable to work in the field because of bad weather. All sunny days were optimal working days for participants to meet their set targets. As such, the project manager stated that scheduling a training day during an optimal day would never be approved by their superiors. Furthermore, if any other day would have been set for the interviews, for instance, a few hours on a Saturday, the manager explained that participants would expect to be paid a day's wage even if it was for a short period. However, no payment would be made for this day as it will not be a scheduled working day by EPWP which

[11] The word interview is used in this study as referring to any interaction between the researcher and the participants to collect information about the study. Such information can be gathered through the completion of a structured questionnaire or an open-ended discussion between the interviewer and the interviewee.

might cause misunderstanding around payments for participants as they may claim that as a working day[12].

The only feasible option for data collection was to conduct the interviews in-field, whilst the participants were working. The researcher had to go to the sites where the participants were working and call out one participant at a time to interview whilst the others continued to work. This was the optimal option: it was a working day and participants were paid; participants still met their daily targets as others continued with work when one participant was being interviewed; the researcher also managed to collect their data.

During the pilot interviews, the first and the second participants were given the questionnaire to complete on their own with the assistance of the researcher, should need be. The researcher observed that participants struggled to understand most of the terms and phrases on the structured questionnaire (albeit written in standardised and simple English). Although the interviewees completed some questions on their own, there was more engagement among the interviewer in completing the questionnaires. More time was taken to complete these two interviews (almost 40 minutes each instead of the estimated 20 – 25 minutes). Additionally, participants were confused with some questions (when they read them alone without some elaboration from the researcher) and they would answer them incorrectly. Questions such as, "*How long have you been working for EPWP?*" and, "*How long have you been working for this project?*" were some of the confusing questions. Furthermore, some questions were not answered in the most accurate way (such as the food security questions); one of the participants felt ashamed to keep on asking questions for elaboration from the researcher.

With the third participant, the researcher decided to read out the questions to the participant and fill in their responses, instead of them filling in themselves. This method was faster and more efficient. The researcher was also able to use examples to ask some questions which made it easier for the participant to easily understand the questions and respond promptly. This

[12] The manager explained that, to participants, any directive from EPWP, to leave their homes for any activity related to EPWP, is regarded as being called in for work. As such, they will claim it as a working day and expect to be paid a day's wage.

interview took close to 20 minutes, as estimated by the researcher. All areas on the structured questionnaire that required attention (either addition or deletion) were noted and adjusted accordingly to ensure that the instrument effectively captured all the required data during the actual fieldwork.

The fourth interview was open-ended and the researcher sought to attain a detailed explanation of how the participant perceived the food security impact of EPWP. Also, the researcher sought to understand other factors within the public works programme that participants regard as best practices that would ensure a higher food security impact. Such factors include how the programme was implemented, working conditions, the preferred method and date of payment, preferred wage rate, and preferred duration of employment, amongst others. Such detailed explanation was expected to last for 30 – 45 minutes, depending on how the participant responded to the questions.

However, the interview was less than the anticipated length. The researcher observed that there was a language barrier. The participant, although they indicated to be comfortable with English, was not. The respondent failed to understand the questions asked by the interviewer although the interviewer tried to present them simply. Most of the responses were not related to the specific questions asked and the respondent gave short answers. In addition, the respondent would mix English with Afrikaans in their responses. Such responses indicated that the interviewee was not completely comfortable with English and perhaps, it would have been best to interview them in Afrikaans. Furthermore, all questions had to be written in simple English to avoid confusion. An example was, "*Why do you think you are always food insecure even though you are working for EPWP?*" The participant did not understand the meaning of "food insecure" and the phrase had to be changed to, "*Why do you think that you don't have enough food to eat at all times even if you are working for EPWP?*"

4.4.1.2. Questionnaire design

A semi-structured questionnaire was designed to attain as much food security and EPWP information as possible from the respondents. First, the questionnaire captures demographic

information to uniquely identify each respondent. This included respondents' gender, age, area of residence, race, level of schooling, household size, and whether they are the household head or not. Second, the questionnaire captured information about EPWP participation. This included the project name, duration of the contract, paid wage rate, frequency of payment, and the sector in which the project is implemented. Third was the section on household income and expenditure. The section aimed to capture all sources of household income. These include income from social grants, income from EPWP, income from any other working household member, and income from any other source such as remittances, stokvel, or any other source. Household expenditure mainly income food expenditure and other household expenses[13]. Fourth, the questionnaire collects information for the household food insecurity access scale. this includes questions of whether households are anxious about not having enough food to eat, any changes in diet quality, and inadequate food consumption within the household that is caused by insufficient food access. Fifth, the questionnaire also captures the specific types of food consumed within the household, information that can be used to create a household dietary diversity score. Income and expenditure information as well as questions on the HFIAS indicator had a recall period of 30 days[14] whilst DDS information had a recall period of 24 hours, as it is difficult to recall all food consumed over a long period, such as the last 30 days.

4.4.2. Sampling method

The researcher intended to have discretion over the projects to include in the study when the full list of EPWP projects implemented in Cape Town, Western Cape Province, is made available to him. The purposive sampling technique would have been used to select projects from all EPWP sectors. Etikan, Musa & Alkassim (2016: 2) defined purposive sampling as the method of deliberately choosing a participant as part of the sample. This is a non-probability sampling technique which implies that all participants from the population do not have an equal chance of being included in the sample Etikan et al., 2016: 1). EPWP projects and participants with specific

[13] Household expenses include rent, transport, membership fees, clothes and shoes, toiletries, cigarettes and alcohol, airtime, household items (like furniture) medical, and school fees, amongst others.
[14] A recall period of 30 days is used to increase the precision of information provided (Yu, 2008: 9).

qualities were to be chosen as part of the sample to thoroughly assess the programme and its contribution to household food security.

However, the researcher could not attain the list of EPWP projects in Cape Town from the Western Cape EPWP provincial offices. When the call for interviews was sent to various EPWP projects for them to participate in the study, only the Environment and Culture Sector projects responded to the call. The researcher changed the sampling method from purposive sampling to convenience sampling (availability sampling, Accidental Sampling, or Haphazard Sampling technique). The method collects data from a sample of the population that is conveniently available. It is also a non-probability sampling technique.

Convenience sampling is a simple and less complex method of finding respondents when compared to other probability sampling techniques such as random sampling (Etikan et al., 2016: 1). Less time and fewer resources are used to collect data making it a cheaper method for data collection (Etikan et al., 2016). The data collection method has also been criticised as being highly vulnerable to selection bias. Conveniently available respondents may not be a true representation of the entire population. There is a very high risk of sampling error, hence, drawing a statistical inference of the entire population from a single convenience sample may result in incorrect conclusions for the entire population. However, although the type of work and duration of each contract differs from one EPWP sector to another, programme principles and guidelines for recruitment, employment conditions, and benefits to participants are the same across all sectors. Convenience sampling could also be used for data collection as significant information from the programme (although limited to one sector) was also collected and analysed to determine the programme's contribution to household food security. Additionally, the researcher had limited time and resources for data collection. As such, EPWP projects within his proximity (Cape Town area) were included in the study for easier accessibility. Furthermore, no other EPWP projects from other sectors responded to the call to participate in the study. Hence, the researcher had to use convenience sampling (from the only available EPWP projects) and maximise on information they could acquire from the programme. Further research could

be conducted to determine the food security contribution from other EPWP sectors which will require more time, and resources, and the availability of more EPWP projects from other sectors.

4.4.3. Challenges faced during data collection and limitations of the primary data

Fieldwork was conducted in October 2018, January 2019, and May 2019. Several challenges were encountered by the researcher in conducting fieldwork. These challenges are explained below:

i. Traveling arrangements and logistics

Data was collected in the Tokai area (Working for Ecosystems project) and Simon's Town area (Working for Water South and Working for Water Central) in Cape Town. These areas were far from the researcher's area of residence and it was quite difficult (and expensive) to travel there. There were no convenient means of transport available to travel to the project site offices. Additionally, Table Mountain project areas are large (with other teams working up the mountain) and participants worked far from the offices (except for participants working under Working for Ecosystems). Furthermore, other project sites were unsafe for the researcher to travel alone (some areas were close to high-crime areas). Hence, alternative means of transportation had to be made by the researcher and his team or enumerators. Fortunately, the project managers graciously offered to provide transportation to the researcher to the specific site where participants were working. However, on some scheduled interview days, no transport was available and interviews had to be canceled. On other days, park rangers would suddenly be available for inspection[15] and interviews could not be conducted. This prolonged the data collection period by the researcher, thus deviating from the thesis completion timeline.

ii. Language barrier

The language barrier was a challenge for the researcher. Participants were mostly Xhosa and Afrikaans, with a few Pedi-speaking people. Most participants preferred speaking in their vernacular language. A few understood English whilst others did not (or were reluctant to

[15] An inspection day was described as a day when the contractors and the park rangers (SANParks environment officers) would thoroughly inspect the site where the participants were working to determine if the prescribed task was completed to the satisfaction of park rangers.

communicate in English). To avoid any bias during data collection, fluent Xhosa and Afrikaans enumerators assisted with the interviews. Enumerators were trained on how to collect data and participants were interviewed in a language they preferred. This practice, as observed and learnt from the pilot interviews, was important to reduce the likelihood of biased estimates from participants who provide inaccurate information from misunderstanding questions asked in a language they are uncomfortable with.

iii. Issues with the enumerators

As mentioned earlier, enumerators were trained by the researcher, and follow-up meetings were conducted after every fieldwork to discuss and provide solutions to challenges experienced during the interview process. The researcher ensured that the enumerators' data-capturing skills were constantly improved so as not to leave out any valuable information from participants. Initially, enumerators rushed through the interview process and they were not welcoming to shy participants who were reluctant to speak and give out all the information about their food insecurity circumstances within their homes. Rimando et al. (2015: 2031) explain that a proper approach to communication was required from the enumerators to ensure that the participants feel comfortable speaking and did not hold back on relevant information. Further training on communicating with participants was provided and enumerators were reminded to always assure participants that any information they shared during the interview was strictly confidential and would not be used against them. Furthermore, the enumerators were to always remind participants of the main objective of the study, which is to improve the programme so that the participants will benefit more.

iv. Unwillingness to participate

Contact was made to the project manager and a directive was passed to the contactors that a researcher will be coming to conduct interviews around EPWP and participants' food security. Several participants felt compelled to take part in the interviews although they seemed unwilling to participate. It was however clearly stated in the consent form and read to every participant that the interview was entirely voluntary and participants were free to withdraw at any time, should they wish to do so. The researcher made sure that this statement was read to every

participant before they sign the consent form. Furthermore, the enumerators were instructed to do the same. However, it appeared that some participants did not have the desire to participate noted by how they responded. Some participants would answer "YES" or "NO" to every question in a particular section (which would be contrary to some of the answers they provided in the preceding section), or respond even before the interviewer finished asking the question. For some, it seemed they only wanted to rush through the entire process (Rimando et al., 2015: 20131). Also, for some, it showed that they only participated in the interviews not to be stigmatised by their fellow workmates or by their contractors. Such an act made some responses questionable and more susceptible to bias. Several participants were asked if they would like to withdraw from the interview, but they refused to withdraw.

V. The desire for incentives or rewards for participation by the respondents

There was a frequently asked statement by the participants, "*So how am I going to benefit from this?*" This statement was a sign that some participants, once they heard, "food security study", expected to receive an immediate direct gain, either financially or in kind. However, the researcher (and the enumerators) explained clearly to the participants that the main aim of the study was to try and improve the food security impact of the programme amongst all participants in a similar field. Furthermore, although there might not have been any immediate financial or in-kind benefits, the researcher (and the enumerators) also explained that the results from the study were to be used to try and lobby the government to increase their wages, for EPWP to improve the structure and nature of the programme to ensure maximum participant benefits and any other feasible measure that the programme might be improved so that current and future participants in the similar position may benefit more from the programme, mainly with regards to participants' household food security status. Such statements provided some form of ease and comfort to most participants and when the researcher asked, "So, are you willing to participant in the survey?" many would gladly respond with a resounding "Yes".

vi. Intimidation of participants by contractors

Contractors recruit participants. They decide whether a participant works on the next project or not. Hence, it is in the best interest of participants to be on the positive side of the contractor at all times. Some contractors had good working relationships with their teams whilst, for others, the relationship seemed frictional. During the interview process, it was observed that some contractors intimidated their team members as others felt like they were unable to express themselves during the interview. Several participants even mentioned (once the contractor stepped away) that they were told not to say everything about the programme; to "*know what to and what not to say*"; or to answer some questions in a certain way (a form of confirmation bias) which is not necessarily the true reflection of what occurs. In the presence of the contractor, some participants provided limited responses but they would provide detailed responses on some elements of the programme in the absence of the contractor. Rimando et al. (2015: 2030) describe such an issue as "location challenge" where the location of the interview influences the responses by respondents. In this study, the location challenge was experienced if interviews were conducted at any place within the vicinity of contractors. The researcher and the enumerators strategically moved away from the allocated place of interviews provided by the contractors. This made respondents more relaxed and willing to share more information knowing that their contractor did not hear what they said during the interview.

vii. Shame by some participants

Several participants had to be interviewed during their lunch break. This was the only time available for interviews. Three Pedi-speaking participants requested to be interviewed together at the same time[16]. It was quite difficult to work with all participants at the same time as the responses of the first participants seemed to influence the responses of those that followed. Two participants (who answered first) came from affluent backgrounds whilst the other came from a poor background. The first respondents would laugh at some of the responses of the less affluent participant. As this continued, the less affluent participant felt ashamed by his household food insecurity condition and as the interview progressed, he became quieter and would agree to

[16] The participants mentioned that after their lunch break, they had to be taken to another working site, and as such, there was not enough time to work with them one at a time. All participants agreed to be interviewed at the same time; the interviewer would read out the question and each person would respond accordingly.

whatever the other participants said which was contrary to their initial responses. Such a situation was quite difficult to control; it highlighted the importance of interviewing one participant at a time and away from others.

viii. Sampling issues

Initially, it was the intention of the researcher to select randomly EPWP projects in different areas around Cape Town to select participants to include in the study. In addition, different projects in different sectors would also highlight any sectorial variations. Randomized sampling would generate estimates that closely reflect the entire population of EPWP participants. The researcher made effort to establish a relationship with the Provincial EPWP offices to acquire access to all EPWP projects in Cape Town. However, a list of all projects in Cape Town for all EPWP sectors was not provided; a few projects were provided by the EPWP Provincial offices. The researcher was only limited to the projects provided and a call to take part in the study was sent to the EPWP projects provided. However, after a long wait with multiple follow-ups, only projects in the Environment and Culture Sector of EPWP responded and the researcher pursued these projects. The sampling method was adjusted from random sampling to convenience sampling.

These are some of the issues and challenges that were encountered during the data collection process.

4.4.4. Limitations of the primary data

The main limitation of the primary data is that EPWP participants were conveniently selected into the sample from only one of EPWP's sectors, the Environment, and Culture Sector. Initially, it was the intention of the researcher to randomly select projects from all EPWP projects under different sectors within Cape Town. The researcher thought that he will be granted complete autonomy by the provincial EPWP directors (at the Department of Transport and Public Works) to randomly select projects to include in the study. The researcher was referred to consult directly with individual project managers for EPWP projects under The Department of Social Development, Department of Agriculture, Department of Education, and The Department of Environment, Forestry & Fisheries and purposefully select projects from all EPWP sectors

(Infrastructure Sector, Social Sector, Environment, and Culture Sector and the Non-State Sector). However, when the invitations to participate in the study were sent to different EPWP projects, only projects in the Environment and Culture Sector responded and agreed to participate in the study. There was no response from projects in other sectors. As such, the researcher had to use convenience sampling. Thus, the results generated from the study cannot be generalized to all EPWP participants in different sectors of the programme.

The other limitation is the small sample size. A sample size of 112 participants was included in the study and the results from the analysis are limited and can only explain a small change in household food security. Additionally, all primary data collected was subjective as it was self-reported by participants. Some studies have favoured the use of objective data more than subjective data in that self-reported data is biased as respondents over-report their level of food insecurity (Tadessea, Abateb & Zewdiea, 2020). However, some studies have explained that self-reported food insecurity data is as valid as objective data as these are the real perceptions of those affected (Ballard et al., 2013). Maxwell et al. (2013: 5) also supported the use of subjective indicators of food security in that they "capture something about the multidimensional nature of food security".

Furthermore, the researcher is not looking at training-related impacts or asset impacts. The focus area of the study is wage transfer, which is the key vector of food security impact. EPWP provides training to participants to increase their likelihood of finding better employment after participating in EPWP. This is a long-run impact of the programme and although there is an indirect food security impact, it is quite challenging and time-consuming to track participants after they exit from EPWP. As the researcher had a limited timeline for the project, only participants currently employed in EPWP were included in the study. The long-term impact of EPWP through the skills vector is beyond the scope of this study.

4.5. Quantitative methods of assessing household food security using primary data

In this study, 3 food security indicators are used to conduct a robust assessment of the food security status of the sampled EPWP participants. The indicators are the Household Food

Insecurity Access Scale (HFIAS), Household Dietary Diversity Score (HDDS), and the Food Expenditure Share indicator. These were the food security indicators used given the available data collected from the sample of EPWP participants. These are discussed below.

4.5.1. The Household Food Insecurity Access Scale

The Household Food Insecurity Access Scale (HFIAS) is one of the instruments[17] that can be used to assess the socio-economic level of a household. The HFIAS was designed to capture the household level of food insecurity from different food insecurity experiences that can be quantified, summarised, and measured on a scale (Coates et al., 2007: 1). Information for this indicator is based on how respondents feel and perceive themselves as food insecure based on how they can access food, and any changes to the quality and quantity of food consumed within the household (Maxwell et al., 2013: 4). The indicator has a recall period of 30 days (4 weeks).

HFIAS has 9 food insecurity occurrence questions with each question having a subsequent frequency-of-occurrence question. With the food insecurity occurrence questions, the intensity of food insecurity increases as one moves from one question to the other. These questions initially ask about the feeling of anxiety or uncertainty about food access within the household questions about insufficient diet quality and lastly questions about inadequate food consumption (Coates et al., 2007: 1; FAO, 2008: 5; Devereux & Tavener-Smith, 2019: 4). Each frequency-of-occurrence question has 3 options: whether such experience occurred *rarely (1)*, *sometimes (2)* or *often (3)*. When households are *"rarely"* food insecure, the food insecurity occurrence would have happened once or twice in the past 4 weeks. Respondents that are "*sometimes"* food insecure have had a 3 to 10 times food insecurity occurrence within their households in the past 4 weeks. "*Often"* food insecurity experience takes place more than 10 times in the past 30 days (Coates et al., 2007: 10). Respondents that do not affirm the food

[17] Maxwell, Coates & Vaitla (2013: 3) have indicated 7 possible measures of food security amongst households. These include (1) Coping Strategies Index (CSI); (2) Reduced Coping Strategies Index (rCSI); (3) Household Food Insecurity and Access Scale (HFIAS); (4) The Household Hunger Scale (HHS); (5) Food Consumption Score (FCS); (6) Household Dietary Diversity Scale (HDDS); and (7) a self-assessed measure of food security (SAFS).

insecurity occurrence question are not asked the frequency-of-occurrence question and it is coded as 0 (*none* occurrence) (Devereux & Tavener-Smith, 2019: 4).

The HFIAS score is determined by summing the responses from the frequency-of-occurrence questions (Coates et al., 2007: 9). This can be expressed as:

$$HFIAS\ score\ = Q1a\ +\ Q2a + Q3a\ +\ Q4a\ +\ Q5a\ +\ Q6a + Q7a + Q8a + Q9a$$

Where $Q1a$ to $Q9a$ represent the response from the frequency-of-occurrence questions. The HFIAS score ranges between 0 and 27 (FAO, 2008: 5). Households that have an HFIAS score closer to 0 are regarded as being more food secure and the higher the score, the more food insecure the household is.

Using the HFIAS score, the level of household food insecurity can be analysed using the mean of the score (FAO, 2008: 7; Becquey et al., 2010) or using the household food insecurity access prevalence. For the HFIAS mean score, the sum of HFIAS scores in the sample is divided by the total number of households in the sample (Coates et al., 2007: 19). The method is a continuous measure of the level of food insecurity within households and it is calculated as:

$$HFIAS\ mean\ score = \frac{\sum_{i=1}^{n} HFIAS\ score}{n}$$

where n represents the number of households in the sample.

In addition to the HFIAS mean score, the household level of food insecurity can also be assessed using the household food insecurity access prevalence. This approach was developed since there is no distinguished cut-off point when using the HFIAS score to differentiate the food secure from those that are food insecure (Daniel et al., 2013: 4; Devereux & Tavener-Smith, 2019: 6). With the household food insecurity access prevalence method, households are categorised according to different levels of food insecurity based on their HFIAS score. According to this indicator, households are categorised into 4 groups of food insecurity: food secure, mildly food insecure, moderately food insecure, and severely food insecure (Coates et al., 2007: 19).

Different approaches with different thresholds have been designed to categorise the household food insecurity access prevalence indicator. Coates et al. (2007) propose cut-offs where respondents are grouped according to their responses as they respond more to the food insecurity questions. According to this approach, households that worry rarely about not having sufficient food to eat are categorised as food secure. Households that are mildly food insecure worry about not having enough food for all members of the household sometimes or often[18]. These households may (or may not) be unable to eat some of the food they preferred or desire and/or they might also experience eating the same type of food for most days, but this should only occur rarely (Coates et al., 2007: 19). In addition, these households neither reduce the quantity of food that they eat nor experience any of three most severe conditions[19]. A household with a moderate food insecure condition eats the same type of food sometimes or more often. Furthermore, these households are more likely to eat undesirable foods and the quality of food is sacrificed more frequently. In addition, cutting back on the number of meals consumed in the households together with skipping some meals, occurs rarely and sometimes but any of the three most severe food insecurity conditions are not experienced in these households (Coates et al., 2007: 19). Last, households that are severely food insecure often cut back on meal sizes, they often skip meals during the day, and/or run out of food within the household. Furthermore, these households may even go to bed hungry or spend an entire day and night without eating any food. Households that experience these conditions (even once or twice in 3 days) are characterised as being severely food insecure (Coates et al., 2007: 20). This approach of categorisation is used in many countries.

Another approach that has been used in the South African context was developed by Chakona and Shackleton (2018). These authors proposed to use scores to determine cut-offs for different food insecurity occurrences as done by Coates et al. (2007). Under this approach, people that had an HFIAS score of 0 – 1 are categorised as being food secure; those with a score between 2 and 7 are considered as being mildly food insecure; those with a score of 8 to 11 are moderately

[18] Worrying about food sometimes is not having enough food 3 to 10 times in the last 30 days. Often worrying about not having enough food occurs more than 10 times in the last 30 days.
[19] The severe food insecurity conditions are running out of food, going to bed hungry, or going a whole day and night without eating (Coates et al. 2007: 19).

food insecure and households that have a score more than 11 are categorised as being severely food insecure (Chakona & Shackleton, 2018: 5).

This study follows the approach developed by Chakona and Shackleton (2018) as the research adds to the body of literature in South Africa. To analyse and compare local studies that have used the HFIAS indicator of food security, a similar approach to assessment should also be used.

4.5.2. Measuring food security using Household Dietary Diversity Score

The Household Dietary Diversity Score (HDDS) is also used to assess the food security contribution of EPWP. A detailed explanation of the instrument has been provided in the Section as this instrument is also used to assess dietary diversity among PEP participants. Unlike the GHS which had 10 food groups, data collected from the case study was captured using the conventional 12 food groups.

4.5.3. Measuring food security using the food expenditure approach

Another method of assessing food security is to investigate the share of household expenditure allocated for food. Food expenditure is analysed in comparison to total household expenditure (Smith & Subandoro, 2007: 79), and the greater the allocation towards food, the more food insecure the household is considered to be. Conversely, households with smaller food expenditure share are regarded as more food secure (WFP, 2017: 16). This method is also used by the World Food Programme (WFP) together with other food security indicators (WFP, 2017). According to Smith and Subandoro (2007: 79), the food expenditure share is determined as follows:

$$Percentage\ of\ expenditure\ on\ food = \frac{Expenditure\ on\ food}{Total\ household\ expenditure} \times 100$$

Under this method and together with another categorisation from Crush, Caesar, and Haysom (2018: 20), respondents are classified under 5 distinct groups: food secure, low level of food insecurity, medium level of food insecurity, high level of food insecurity, and very high level of food insecurity (Smith & Subandoro, 2007: 82; INDDEX Project, 2018: 1; Crush et al., 2018: 20).

Table 6 shows guidance to these groups together with the portion of food expenditure allocation in each category.

Table 6: Guidance to interpreting the food expenditure method

Guidance for Interpretation	Percentage of expenditures on food
Food secure respondents	<20
Low level of food insecurity	20 - 50
Medium level of food insecurity	50 - 65
High level of food insecurity	65 - 75
Very high level of food insecurity	75+

Source: Smith & Subandoro (2007: 82); WFP (2017: 17); Crush et al. (2018: 20)

From Table 6, households that allocated less than 20% of total household income to food are categorised as food secure; those that allocate between 20 and 50% have a low level of food insecurity; households with a medium level of food insecurity spend between 50 and 65% on food; those that spend 65 – 75% are considered as having a high level of food insecure while those with a very high level of food insecurity spend more than 75% of income on food (WFP, 2017: 17).

Arguments have been presented that household expenditure is a better reflection of well-being and a better proxy variable than income (Meyer & Sullivan, 2003: 2; INNDEX Project, 2018: 71). It is also explained that income is more volatile and most people tend to under-report their income (Meyer & Sullivan, 2003: 4). With this method, the amount of total household expenditure is assumed to be equivalent to total household income. Furthermore, it is also assumed that all household income is spent on expenses and no income is saved (INDDEX Project, 2018: 2). This is one of the limitations of this method. Additionally, although a provision is made to assign value to all food produced and consumed within the household, such as tomatoes and onions grown from a home vegetable garden, at times it is difficult to evaluate such food items. Furthermore, the value of such homegrown vegetables is not always included in the value of household food expenditure. Hence, such a limitation also underestimates the household's food expenditure share and limits the precision of this method.

4.6. Conclusion

This Chapter has presented a description of the different datasets as well as the methods of analysis implemented in this study. With the GHS secondary data, the study creates a food security profile of PEP participants by evaluating their food security status using the HDDS indicator as well as the modified version of the HFIAS. Furthermore, a 2SLS regression model is used to identify the correlation between PEPs and household food security status. These assessment methods will enable the study to profile the level of food insecurity amongst PEP participants and assess whether the programme has a noticeable impact on the reduction of household food insecurity.

However, the analysis from the secondary data remains limited as the GHS data has limited information about PEPs in South Africa. Such information included the amount of wages paid, project duration, frequency of payment, training provided EPWP, and type of assets created by the projects, amongst others. Rich and comprehensive primary data collected from currently ongoing EPWP projects will provide empirical evidence to validate or contradict the findings of the GHS data at the national and provincial levels. The data also contained other information about the programme not captured by the GHS dataset. Limitations of the primary data are discussed in this Chapter. The available data and the methodology developed in this chapter are synthesised together using the theoretical and analytical framework developed in Chapter 2 to ascertain the food security contribution of the public works programme in South Africa. The results are presented in Chapters 5, 6, and 7.

CHAPTER 5: FOOD SECURITY AMONGST PEP PARTICIPANTS USING THE GENERAL HOUSEHOLD SURVEY

5.1. Introduction

This chapter aims to understand the food security status of PEP participants using the General Household Survey (GHS) (2018) secondary data. An analysis of food security amongst EPWP participants using primary data follows in Chapters 6 and 7. GHS 2018 data was used as it also coincides with the period when primary data was collected amongst EPWP participants. The rest of this chapter is structured as follows: Section 5.2 describes the food security and PEP indicators that are collected by Stats SA using the General Household Survey. Section 5.3 describes the characteristics of PEP participants in the GHS (2018) data. The food security status of PEP participants is provided in Section 5.4 and this included the analysis of security using the household dietary diversity score, the modified version of the household food insecurity access scale, and a multivariate 2-stage least squares regression analysis. Section 5.5 concludes that chapter.

5.2. Food security and public employment programme indicators in the General Household Survey, 2018

PEPs are any government or municipal job creation programme or Expanded Public Works Programme, which also includes any community-based work opportunities (Stats SA, 2017b: 67). The GHS further describes people who work while based in their communities as participants of these public employment job creation programmes and these include home-based care workers and community development workers, among others. The researcher intended to conduct a multiple-year analysis (2013 – 2018) to critically investigate any changes in PEPs and how such changes affected the food security status of participants. These datasets were compatible with each other and they have similar questions regarding households' food security and information regarding their participation in PEPs. However, preliminary investigation and assessment of the data showed no statistically significant differences between years over time, except between 2013 and 2014. The change between these years was attributed to the ending of Phase 2 of EPWP and the beginning of Phase 3 of the programme in 2014. This change brought a change to the

targeted work opportunities which increased from 4.5 million during Phase 2 to 6 million during Phase 3 (DPW, 2012: 13; DPW, 2017: 7; DPW, 2018: 1). As such, a noticeable increase in participants that was statistically significant was observed during this period. However, for the years that followed, there were no statistically significant differences in participants that participated in PEPs from one year to another. Hence, only GHS 2018 data was included in the study.

Amongst some of the broad areas of household aspects captured by the GHS national dataset, food security and PEP engagement are also included. For food security, households were asked child and adult hunger questions, dietary quality as well as food quantity adjustments questions, and whether a household lacked adequate resources to provide food for every member of the household (Stats SA, 2018a: 42). These questions were asked on a 12-months recall period. Furthermore, questions on household dietary diversity were also asked based on a 24-hour recall period. The food security questions are similar to the questions designed by Coates et al (2007) for the Household Food Insecurity Access Scale (HFIAS) indicator (Stats SA, 2019a: 66). However, the GHS questions differ in structure from the conventional HFIAS questions developed by Coates et al (2007). The GHS data do not ask the question of whether a household is anxious about not having enough food (questions of mild levels of food insecurity on the HFIAS list of questions) or whether any household member had to spend the entire day or the entire day and night without food because there was nothing to eat within the household (the severe food insecurity questions on the HFIAS list of questions). Additionally, the questions for insufficient food for any adult or child in the household do not have to follow up frequency-of-occurrence questions. Furthermore, the structure of the frequency-of-occurrence questions is different from the conventional questions. Each frequency-of-occurrence question has an increasing scale of intensity structured as none for '0 times', rarely for '1 – 3 times', sometimes for '4 – 10 times', and often for 'more than 10 times' in the last 30 days (Coates et al., 2007: 4). On the other hand, the GHS only asks whether such food insecurity occurrence happened 5 or more days in the last 30 day (Stats SA, 2018a: 42). As such, although proportions under each question can be determined (Stats SA, 2019a: 66), an HFIAS score cannot be computed from the GHS data, limiting the data's feasibility to thorough assess household food security using this method. Furthermore,

the GHS captures 10 food groups instead of the conventional 12 under the dietary diversity score. Also, it captures the number of times a particular food has been consumed within the household during the reference period (Stats SA, 2018a: 42). The conventional DDS, on the other hand, only asks when a particular food from a food group was consumed or not in the last 24 hours (Kennedy et al., 2011: 23).

For PEP, only one question was captured by the GHS data. The question asked every member of the household, whether they "participated in a Government or municipal job creation programme or Expanded Public Works Programme in the past 6 months" (Stats SA, 2018a: 30). As stated in the question, a recall period of 6 months was used and the question also included any work that could have been done by community development workers as well as home-based care workers, amongst others. It should be noted that not all government job creation programmes are EPWP and not all work done by community development workers is public works related. Hence, they are referred to as public employment programmes in this study (Luka, 2005: 9).

Although the GHS data determines whether any household member participated in PEP or not, other important information about these programmes such as duration of work and the respective wages received, and the sector of employment are not captured in the GHS. Such lack of fundamental programme information is one of the limitations why the GHS cannot thoroughly assess the contribution of PEPs towards household food security and other socioeconomic aspects.

5.3. Characteristics of participants in the public employment programmes

Table 7 presents the characteristics of participants that took part in public employment programmes. The results are based on the GHS 2019 data.

Table 7: Characteristics of PEP participants from GHS 2018

		Mean (SD)/Proportion
Age of participants		
	≤35 (youth)	0.43
	>35	0.57
Gender of participants		
	Male	0.31
	Female	0.69
People with disabilities		0.10
Race of participant		
	African/Black	0.87
	Coloured	0.09
	White	0.04
Household size		4.3 (0.1)
Marital status		
	Married	0.40
	Unmarried	0.60
Head of household		
	Yes	0.50
	No	0.50
Education		
	No schooling	0.04
	Primary	0.00
	Incomplete secondary	0.51
	Complete secondary	0.31
	Post matric	0.14
Province		
	Western Cape	0.06
	Eastern Cape	0.13
	Northern Cape	0.07
	Free State	0.09
	KwaZulu-Natal	0.19
	North West	0.07
	Gauteng	0.23
	Mpumalanga	0.06
	Limpopo	0.11
Total monthly household expenditure		R3,768.37 (127.91)

Source: General Household Survey data (2018). Notes: N = 619,564, Rand in 2018 prices, where means are reported Standard Deviation (SD) in brackets.

Table 7 shows that 43% (267,838) of the participants were youth, i.e. people between the ages of 16 and 35. Phase 3 of EPWP aimed at creating 55% work opportunities for self and

geographically targeted poor, unemployed, and food insecure people belonging to this age cohort (DPW, 2012: 5; DPW, 2018: 5). DPRU (2017: 13 – 14) indicated that there was a severe unemployment situation amongst young people in South Africa who were within the 15 – 34 age cohort[20]. According to their report, 62.5% (which was 28 percentage points higher than the national average) of young people aged 15 – 24 and 39.3% of those aged between 25 and 34 were unemployed. The only social protection programme available for this vulnerable group of young people is public employment programmes. However, from their target of creating 55% work opportunities for young people, EPWP seems not to have created the targeted opportunities at a national level using the GHS 2018 data.

Table 7 also shows the gender distribution of PEP participants. Such a distribution amongst participants indicated that women constituted 69% of PEP participants compared to 31% of men. For Phase 3, EPWP also implemented a gender quota of 55% of work opportunities to be created for women (DPW, 2018: 5). Stats SA (2018b) indicated that unemployment was higher amongst women than men during 2018. During Quarter 2 of 2018, 29.5% of women in South Africa were unemployed and this figure was 4.2 percentage points higher than the unemployment rate amongst men (Stats SA, 2018b: 11). The Department of Women (DoW, 2015: 71) also reported significantly high levels of unemployment amongst women in South Africa than men. Additionally, various studies (Fuwa, 2000; DoW, 2015; Stats SA, 2017c; DPRU, 2017) have explained that women were reportedly more vulnerable to poverty (than their male counterparts) as they face challenges in the labour market and productive activities. As such, priority in recruiting participants was given to women, especially those coming from poor female-headed households (DPW, 2018: 5) as they are poor and food insecure. At a national level, the target seems to have been achieved from the distribution in Table 7.

Table 7 also indicates that among the PEP participants, 10% were people with disabilities. A person with disabilities has a recurring or long-term mental or physical impairment that significantly reduces their advancement or prospects of working (Monama, 2107: 12). People

[20] These were results from the Quarterly Labour Force Data (quarter 3 of 2016) under the broad definition of unemployment.

with disabilities are often socially marginalised and discriminated against in labour markets. Some of the reasons for such discrimination in the work place include discriminatory practices or attitudes from other workers, unsupportive work environments, and lack of skills from these people. The government has implemented several Acts to ensure that such people also have a better chance to participate in the labour market. For EPWP, the programme was designed to ensure that at least 2% of the participants are people with disabilities. As noted in Table 7, EPWP performed significantly well in enrolling 63,877 people with disabilities into the programme as this figure was 8 percentage points higher than its targeted percentage.

A racial decomposition of participants presented in Table 7 shows that only Black, Coloured, and White people were working in EPWP. No Asian/Indian people participated in PEPs in 2018. At a national level, 536,790 African/Black participants (87%) participated in the programme whilst 9% (56,442) were Coloured participants. The proportion of White participants was the least with about 26,270 (only 4%) working in PEPs. An assessment of the incidence of poverty in South Africa reveals that 9 out of 10 poor South Africans are black people (Stats SA, 2017c: 81; Wilkinson, 2018). Coloured people are the second highest group of poor people (about 6.5%) and the proportions of Asian and White people are the least among poor South Africans (less than 1% for each racial group). As such, it is equitable to create more work opportunities for more Black people and the employment proportions decrease as more Coloured, Asian, and White people are employed in the programmes, respectively. There seems to be a correlation between the racial proportions of participants in PEPs and the racial composition of poverty in South Africa.

Table 7 also shows that 3% of PEP participants have no schooling, 16% only completed primary school, 43% attained Grades 8 – 11, and 26% of the participants completed Grades 12. High poverty incidences are recorded among people with no schooling and those with only a primary level of education (Stats SA, 2017: 84 – 85). The recruitment of EPWP (DPW, 2018: 6) gives priority to eligible participants who are head of their households and have less than a primary level of schooling. People who complete their Grade 12 are more likely to purse post-matric qualifications or look for better-paying jobs within the labour market. However, finding better employment or pursuing a post-matric qualification is less likely without Grade 12. Surprisingly,

there was 12% of participants had acquired post-matric education. Although poverty levels should be low for this group of people (Stats SA, 2017c: 85), it is possible that due to the structural levels of unemployment in South Africa, members of this group (although well-educated) tend to seek any form of employment to earn an income for themselves and their families to escape the pool of unemployment, poverty, and food insecurity. They end up pursuing work opportunities in PEPs.

A provincial decomposition of PEPs indicated that participants predominately came from Gauteng, followed by KwaZulu-Natal, Eastern Cape, and Limpopo provinces. 23% (approximately 142,500), 19%, 13%, and 11% of PEP participants came from these respective provinces in 2018. Western Cape, Northern Cape, and Mpumalanga provinces had about 37,174 PEP participants in each province which were the least shares of participants (6%).

It seems that PEP work opportunities were created according to the provincial share of poverty in South Africa than the poverty headcount in each province. Gauteng, although it is one of the richest provinces (together with Western Cape), had the highest number of participants. The province has the highest poverty share because of its large population size (Stats SA, 2018c: 16). KwaZulu-Natal was also another populous province in South Africa and it was highly likely for this province to also have a large share of poverty (Stats SA, 2017: 88). However, a comparison of work opportunities that were created and the actual number of people who were poor and needed such social protection from the government through public works (comparing work opportunities and poverty headcount within each province) indicates a poor coverage of the programme. For Gauteng province, about 142,500 participants took part in the programme when close to 4.5 million people were in poverty (Stats SA, 2018c: 15). Other provinces such as Northern Cape, although they are the least populous provinces (of 1, 23 million), had 37,174 in PEPs when 667,890 of them are poor (Stats SA, 2018c: 15). Hence, only about 7.5% of the poor and vulnerable people who required such social protection from government benefited from it.

5.4. Food security amongst PEP participants

The section assesses the food security status of PEP participants at an individual as well as household level. Due to the limitations of the GHS data, the Household Dietary Diversity Score is used to assess the prevalence and distribution of food insecurity amongst the target group. The analysis is done at a national level. Additionally, a 2-staged least squares (2SLS) probit regression analysis is used to also assess how participating in PEPs correlates with the level of food insecurity within households. The second model is based on a proxy variable (representing food insecurity within households) selected from the food insecurity questions available in the GHS data.

5.4.1. Food security amongst PEP participants using Household Dietary Diversity Score

One method of assessing household food security status is to examine the number of different food groups consumed within a household. As explained in Chapter 4, the Household Dietary Diversity Score (HDDS) is a measure that can be used to evaluate a household's economic access to food (FAO, 2013: 23). The assumption is, if the HDDS score is high, then the household has better access to food and hence, more likely to be food secure. Conversely, the lower the score, the more food insecure a household is likely to be.

As explained in Chapter 4, the different food categories can be grouped according to:

> (1) Cereals; (2) white tubers and roots; (3) vegetables; (4) fruits; (5) meat; (6) eggs; (7) fish and seafood; (8) legumes, nuts, and seeds; (9) milk and milk products; (10) oils and fats; (11) sweets; and (12) spices, condiments, and beverages. (Kennedy et al., 2011: 8; Chakona & Shackleton, 2018: 4 – 5).

The conventional score of the HDDS is 12[21] whilst the GHS data has only 10 food groups. The calculated HDDS score does not have any frequency information of how many times a certain food type has been consumed or any weighted categorical cut-offs (Daniel et al., 2013: 4). However, there seems to be no determined cut-off point, in terms of food groups, that may indicate an adequate or an insufficient dietary diversity for a food secure or food insecure household (FAO 2013: 26). Studies such as FAO (2008) and FAO (2013) have analysed household

[21] The HDDS is derived by summing all the food groups that the household affirms to have consumed in the past 24 hours (Kennedy et al., 2011).

dietary diversity using the average mean score on a sampled group. With no specified cut-off, the average mean HDDS score is interpreted differently from one study to another.

It is important to keep in mind that when interpreting the dietary diversity score the quantity or quality of the actual food consumed in the household is not indicated. Also, the score does not consider any seasonal variations (Sibhatu & Qaim, 2017). A certain type of food may be consumed frequently (or daily) within the household because it is abundantly available and in season. On the other hand, another type of food may not be consumed in the household because it is off-season. Furthermore, geographical differences are also not considered by dietary diversity. Some people reside in rural areas and they, for example, are more likely to consume tubers and roots than bread because they grow the tubers themselves and they have to buy bread (FAO, 2013: 27). These are some of the criticisms of assessing household food security status using dietary diversity.

As stated before, he GHS data has 10 recorded food groups which slightly differs from the 12 conventional food groups by FAO (Kennedy et al., 2011). In collecting information on the foods consumed within the households, Stats SA combined beef, goat, poultry (chicken), pork, fish, eggs, and lamb, as "MEAT". However, the FAO has 3 food groups from the MEAT variable used by Stats SA. These groups are (1) meat, poultry, offal (which consists of any beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, or other organ meats), (2) eggs and (3) fish and seafood (any fresh or dried fish or shellfish) (Swindale & Bilinsky, 2006: 4). It is difficult to decompose the MEAT variable in the GHS data into the different 3 food groups by FAO. Hence, this study will assess HDDS using 10 food groups.

Instead of using the mean HDDS score, food groups can be combined to assess different levels of food insecurity amongst a target group. FAO (2008: 5) and FAO (2010: 29) uses the following food groups thresholds: those that consume 3 food groups or less are classified as having a low diverse diet; households that consume 4 – 5 food groups are considered as consuming a medium diverse diet; and households that consume 6 food groups or more are considered as households with a high diverse diet. These thresholds have been used by many countries.

However, in the context of South Africa, Chakona and Shackleton (2018) developed different thresholds in their assessment of dietary diversity in the South African context given the high consumption and diversified range of foods in South Africa (Chakona & Shackleton, 2018: 4). For these authors, households that consumed 5 food groups or less are considered as having a low diverse diet; 6 or 7 food groups are classified as a medium diverse diet and 8 or more food groups are categorised as a highly diverse diet (Chakona & Shackleton, 2018: 5). This approach has more food groups under each category when compared to the food groups developed by FAO (Kennedy et al., 2011). Table 8 presents the number of PEP participants in each HDDS category.

Table 8: Proportion of PEP participants at national level using the dietary diversity categories, 2018

	Categories of Dietary Diversity	Number of participants	Proportion
National level	Low [a*]	171,000	27.6%
	Medium [b**]	213,750	34.5%
	High [c***]	234,815	37.9%

Source: Own compilation using the General Household Survey (2018) data. Notes: N = 619 564. Chakona & Shackleton's (2018) cut-off scores are [a] 0 – 5, [b] 6 – 7, [c] 8 – 12. * corresponds to severely food insecure, ** moderately food insecure, *** food secure.

An assessment of the dietary diversity amongst PEP participants was conducted and Table 8 was produced. On a national level, 169,141 (27.3%) of PEP participants were categorised as having a low-diverse diet as they consumed food from 5 or fewer food groups. Furthermore, 212,511 (34.3%) participants were categorized as having a medium diverse diet whilst 237,913 consumed food from 8 or more food groups (thus, categorized as having a high diverse diet).

At a national level, the category of high dietary diversity had the highest number of people. Although they are arguments and critics against the low wage rate set by public works (which is less than the market minimum wage), it is possible that the income received from the programme was sufficient for 38.4% of the participants to at least buy enough food for their households. Furthermore, programmes such as the CWP have guaranteed regular part-time work (Philip, 2013: 7) on a weekly (2 days per week) and monthly (8 days) basis. Hence, there was a consistent

receipt of income which ensured that participants and their households have sufficient access to buying enough food at all times. However, with limited programme information captured by the GHS data, no evidence supports or contradicts this claim.

Other variables may also affect the number of food groups that are consumed within households. These include household size, the presence of another household member who is working, and access to another source of income support such as social grants. Our a priori expectation is that households with more family members require more food to eat and with limited resources, they will have low dietary diversity as the available food has to be shared amongst many. Also, households with more than one working family member will have more access to a variety of food and hence, have high household dietary diversity. Additionally, households receiving additional income from social grants will also consume more food groups although it depends on the type of social grant received. An analysis of these household variables based on the number of food groups consumed by households is presented in Table 9.

Table 9: Household characteristics for PEP participants based on their level of dietary diversity

DDS categories	Proportion	Mean HH size (SD)	Social grants	Income from work
Low [a*]	27.3%	4.5 (0.2)	17.5%	19.3%
Medium [b**]	34.3%	4.2 (0.2)	21.5%	21.2%
High [c***]	38.4%	4.3 (0.1)	23.5%	23.2%

Source: Own compilation using the General Household Survey (2018) data. Notes: N = 619,564. Chakona & Shackleton's (2018) cut-off scores are [a] 0 – 5, [b] 6 – 7, [c] 8 – 12. * corresponds to severely food insecure, ** moderately food insecure, *** food secure.

Table 9 shows that there was a correlation between the level of dietary diversity within a participant's household and its household size. A pairwise correlation test was performed which showed a negative correlation coefficient between the 2 variables (-0.0115). The higher the number of food groups consumed within households (as we move from low to high dietary diversity category), the smaller the household size became. 27.3% of the households with a low diverse diet had an average mean household size of 6.2 people. On the other hand, households

that had high dietary diversity had fewer household members (5.5) with the difference in household sizes being statistically significant between these groups.

Social grants were also correlated with the level of dietary diversity within households. As the number of grant recipients increased from 30.0% to 35.5%, the level of dietary diversity also increase from low to high. However, the contribution of social grants towards food security depends on the type of grant received. Grants like the old age grant and the disability grant (with high monetary values) have a greater impact than child support which has a lower monetary value.

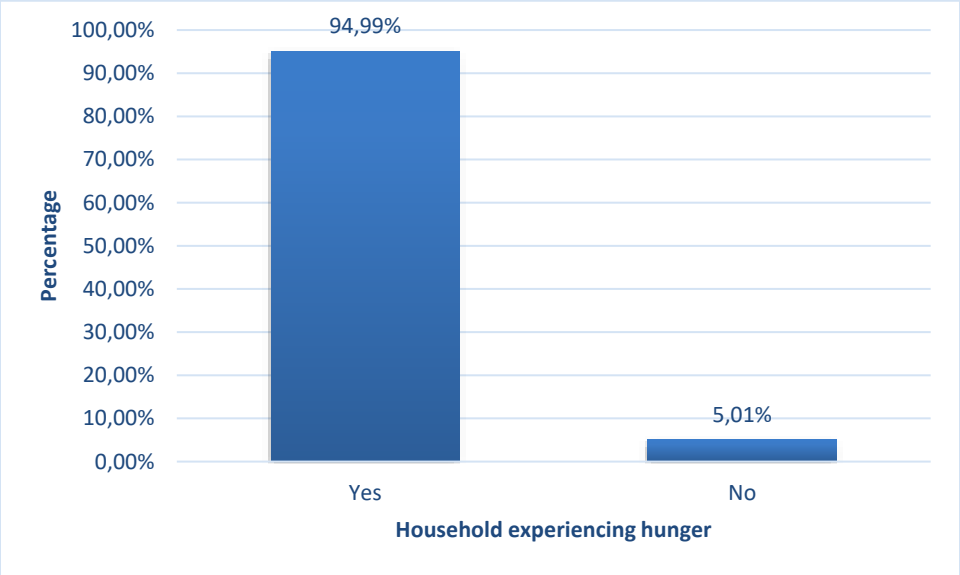
There was also a correlation between household dietary diversity and having more than 1 household member working. Around 40% of respondents that reported having another person working within their household were consuming a high dietary diversity. As this proportion decreased, so did the number of food groups consumed within the respective households as total household income decreased.

5.4.2. Food security amongst PEP participants using the modified Household Food Insecurity Access Scale (HFIAS) indicator

The modified version of the HFIAS indicator slightly differs from how Coates et al. (2007) calculate and compute their indicator. Stats SA (2019a:3) uses two indicators to measure food security using their HFIAS: a hunger indicator and a food adequacy indicator, unlike the HFIAS indicator.

Using the adult hunger and the child hunger variable, a household hunger variable was computed from households that reported to have experienced hunger 'sometimes', 'often', or 'always' for any person within their household during the reference period (Stats SA, 2019a: 3). Hunger experience was for any adult, child or both going without food because there was not enough food to eat within the household (Stats SA, 2018a: 42). This indicator focused on households that reported to have participated in any public employment programme during the last 6 months. Figure 5 shows the response of PEP participants regarding the experience of household hunger within their households.

Figure 5: Household hunger indicator for the modified version of HFIAS, 2018



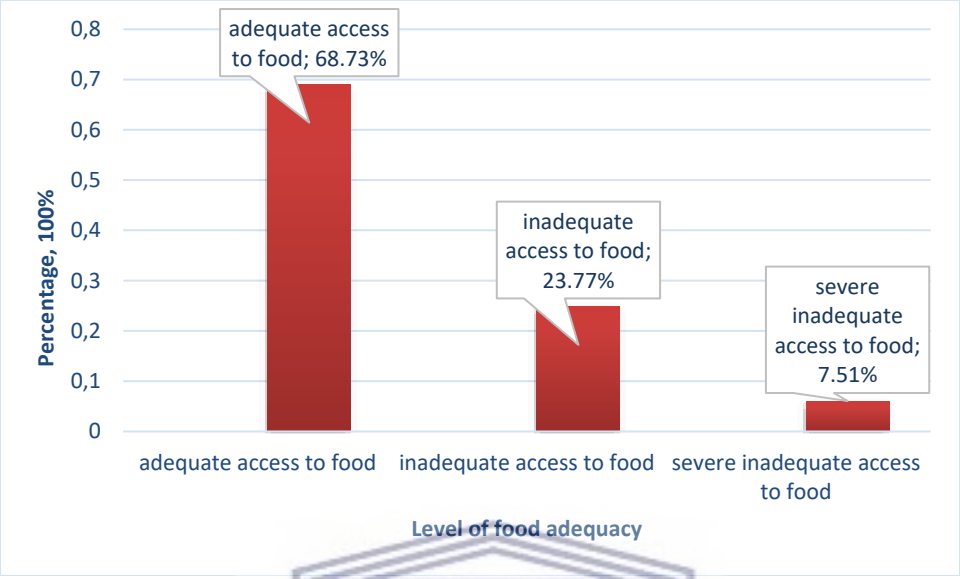
Source: Own compilation using the General Household Survey (2018) data. Notes: The population sample size of PEP participants was 619,564.

Figure 5 shows that 95% of PEP participants (about 588,586) reported having experienced hunger within their households. Only 5% of the sampled population did not experience hunger during the reference period. As indicated before, the hunger experience could be either of a child, an adult, or both, as long as they are living within the same household. These results are concerning, as we expect the income transfer from PEPs to reduce poverty and thereby prevent hunger within the households of participants.

The other part of the analysis for the modified version of the HFIAS is the food adequacy indicator. As explained in Chapter 4, the scores from the four food security occurrence questions as well as their four frequency-of-occurrence questions are summed together to create a food adequacy indicator. Since the four food security questions (running out of money to buy food, cutting meal size, skipping meals, and eating a small variety of food) and their respective frequency-of-occurrence question are binary, an indicator with a maximum score of 8 (and a minimum of 0) is created. Households are classified under three categories: those with adequate access to food (with a score of less than 2), those with inadequate access to food (whose score is

between 2 and 5), and those with severely inadequate access to food (whose score more than 6) (Stats SA, 2019a: 3). Figure 6 presents the level of food adequacy amongst PEP participants.

Figure 6: Household food adequacy indicator for the modified version of HFIAS, 2018



Source: Own compilation using the General Household Survey (2018) data. Notes: The population sample size of PEP participants was 618,840.

Figure 6 shows that 66% of PEP participants were categorised as having adequate access to food with about 25% and 6% having inadequate and severe inadequate access to food. The results from the food adequacy indicator are contrary to a priori expectations given that 95% of PEP participants reported having experienced hunger within their households. Households of PEP participants were more likely to have experienced inadequate or severely inadequate access to food. As such, combining the results from the hunger indicator and the food adequacy indicator, the food security status of PEP participants is uncertain using the modified version of HFIAS.

5.4.3. Analysing household food insecurity using a 2SLS model

The 2SLS regression model was run on variables: participating in PEPs and household food insecurity. The first model was run on individual and household factors that were associated with one's decision to participate in public employment programmes. The second model was on household factors that were likely to affect household food insecurity. A 2SLS regression model

was used to control for the problem of having endogenous variables (variables that affect one's decision to participate in PEPs but do not necessarily affect household food insecurity). If uncontrolled, the coefficient of the PEP variable in the household food insecurity model will be associated with the error term in that model, making its coefficient biased and unreliable. For a 2SLS regression model, the first model (on determinants of participating in PEPs) is run and a predicted outcome value from this model is generated and used in the second regression (regression of household food insecurity). The predicted outcome value controls for the effects of other determinants that affect the decision to participate in PEPs. Additionally, probit regression models were used as the dependent variables were binary.

A set of regressors are used as determinants of participating in PEPs. These variables were tested to determine whether there was any statistically significant difference between PEP participants and non-participants. These include individual as well as household-level variables of participants. The individual level variables include *age* (a continuous variable measured in years), *gender* (a dummy variable with 1 for male and 0 for female), *race* (decomposed into dummy variables African and Coloured groups as no Indian people participated in PEPs and White people were the reference group), *marital status* (a dummy with 1 representing a person who is married or cohabitating with their spouse and 0 otherwise), *head of household* (a dummy variable), *education* (decomposed under 4 dummy variables representing the level of education, those with no schooling, those with only a primary level of education, those with an incomplete secondary education and those who completed their matric), and *disability* (a dummy variable of whether a person had any disability of not). Household variables that were included in the model *are household expenditure* (measured in Rands), *household size* (which is the total number of people in the household), *presence of another working household member* (dummy variable), *having a flush toilet* (dummy variable), *area of residence* (with urban as a dummy variable) and *province* representing the 9 provinces in South Africa (with Western Cape being the reference group). Table 10 shows the results generated from the PEP probit regression model.

Table 10: Regression output on determinants of participating in PEPs

		Linearized			
pep	Coef.	Std. Err.	t	[95% Conf.	Interval]
Age	0.0087***	0.0019	4.46	0.0049	0.0125
male	-0.2945***	0.0400	-7.37	-0.3729	-0.2162
African	0.2520**	0.1141	2.21	0.0284	0.4756
Coloured	0.2880**	0.1239	2.33	0.0452	0.5307
married	-0.0483	0.0421	-1.15	-0.1308	0.0342
Working	0.4332***	0.0443	9.78	0.3464	0.5200
HH_head	-0.0072	0.0458	-0.16	-0.0971	0.0826
education					
Primary	0.1618	0.4227	0.38	-0.6667	0.9902
Incomplete Secondary	0.1809*	0.0948	1.91	-0.0048	0.3666
Matric	0.1550	0.1006	1.54	-0.0422	0.3523
Tertiary	0.1468	0.1117	1.31	-0.0720	0.3657
urban	-0.0957*	0.0505	-1.89	-0.1947	0.0033
chld5yr_hh	-0.0812**	0.0274	-2.96	-0.1348	-0.0275
hh_expenditure	0.0000***	0.0001	-5.12	-0.0001	0.0000
hholdsz	0.0249**	0.0088	2.82	0.0076	0.0422
PwD	0.0991	0.0732	1.35	-0.0443	0.2425
flush_toilet	-0.0945**	0.0498	-1.90	-0.1922	0.0031
prov					
Eastern Cape	0.2431**	0.0903	2.69	0.0660	0.4201
Northern Cape	0.6849***	0.0890	7.70	0.5105	0.8593
Free State	0.5378***	0.1111	4.84	0.3201	0.7556
KwaZulu-Natal	0.1560**	0.0904	1.73	-0.0213	0.3333
North West	0.2863**	0.1032	2.77	0.0840	0.4886
Gauteng	0.2455**	0.0859	2.86	0.0771	0.4139
Mpumalanga	0.0981	0.1034	0.95	-0.1046	0.3009
Limpopo	0.2103**	0.0987	2.13	0.0168	0.4038
_cons	-2.8777***	0.1926	-14.94	-3.2552	-2.5002

Source: Own calculations using the General Household Survey (2018) data. Notes: n = 34,325 (N= 27,401,548), p-values reported in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.001.

The results from Table 10 are similar to the characteristics of PEP participants presented in Table 7. Table 10 shows that older people, mostly women, from the Black African and Coloured racial groups were more likely to participate in PEPs. Additionally, unmarried people from large household sizes who were not the head of their households were also more likely to work in PEPs. Surprisingly, people who resided in a household that had more household expenses as well

as other working household members were more likely to participate in PEPs and these results were statistically significant at all levels of confidence. Perhaps the presence of other working household members served as motivation to other members to also look for work. Also, people from households that spend more are encouraged to work to them to be able to keep spending more. All education variables were statistically insignificant probably because PEPs do not consider the level of education in their recruitment process (work is labour-intensive and requires more physical strength than years of schooling). People residing in urban areas and those that had access to better sanitary facilities were less likely to participate in PEPs. Urban areas are associated with more work opportunities for better income (compared to rural areas) and people with access to better sanitation facilities are more likely to have a better standard of living and hence, less likely to participate in labour-intensive work opportunities. People with disabilities and in general, people from all provinces, were also more likely to participate in PEPs.

From the outcome of Table 10, an estimated value of participating in PEP was created (labeled PEP_hat) and included in the household food insecurity model. An assessment of possible proxy variables that could represent household food insecurity was conducted on the following variables as captured by the GHS data:

> Adult hunger experience within the household
> Child hunger experience within the household
> Running out of money to buy food with the household
> Cutting the size of meals within the household
> Skipping any meals within the household
> Eating a smaller variety of foods within the household[22] (Stats SA, 2018a: 42).

A test was conducted on these variables to determine the most appropriate proxy variables. Variables with more responses are an indication of less severe food insecurity encounters within the household and those with few responses show more severe food insecurity experiences. The variable 'Running out of money to buy food' had the most responses compared to other variables, an indication that the food insecurity experience within households began during this period. Hence, this variable was the most ideal proxy variable to represent household food insecurity. Based on the theory of change, a household with a PEP participant benefits from the

[22] A summary of the food security questions asked in the 2018 General Household Survey questionnaire.

programme through the wage vector, skills channel, or asset channel. Although the information on the variable (or household income) is limited, the identified output variable closely relates to the wage vector. Wages received from the programme add to the total household income used to buy food.

The assessment of the contribution of PEPs towards household food security is conducted together with other covariates as they are also significant factors that affect the level of food insecurity within a household. The regressors are listed below:

> Head age; Marital status; Female head; Race (African, Coloured, Indian); Household expenditure; Area of residence (urban); Use tap water; Use flush toilet; Education (No schooling, Primary, Incomplete sec, Matric); Household hold size; Children under 17yr; Receiving remittances; Receiving social grants; Presence of another working household member; Agricultural activities; Province

These variables were also tested to determine whether there was any statistically significant difference between households that are food secure and those that are not. Table 11 presents how household characteristics are correlated with the likelihood of experiencing food insecurity.

Table 11: Regression output on factors affecting household food insecurity

		Linearized			
FIS	Coef.	Std. Err.	t	[95% Conf.	Interval]
head_age	-0.0027***	0.0006	-4.47	-0.0039	-0.0015
female_head	0.1249***	0.0189	6.59	0.0878	0.1620
married	-0.0116	0.0194	-0.60	-0.0497	0.0265
African_head	0.3708***	0.0539	6.88	0.2652	0.4764
Coloured_head	0.0040	0.0564	0.07	-0.1064	0.1145
Indian_head	-0.0287	0.0892	-0.32	-0.2034	0.1461
urban	0.0347	0.0271	1.28	-0.0184	0.0879
hh_expenditure	-0.0001***	0.0000	-29.90	-0.0001	-0.0001
grants	0.0823***	0.0223	3.70	0.0386	0.1259
education					
Primary	0.0091	0.1723	0.05	-0.32864	0.346932
Incomplete Secondary	-0.1299***	0.0319	-4.07	-0.1924	-0.0674
Matric	-0.2439***	0.0347	-7.03	-0.3118	-0.1759
Tertiary	-0.3713***	0.0435	-8.54	-0.4566	-0.2861
hholdsz	0.0568***	0.0033	17.18	0.0503	0.0633
Working	-0.0844**	0.0244	-3.45	-0.1323	-0.0365
flush_toilet	-0.1316***	0.0254	-5.17	-0.1814	-0.0817

rec_remittances	0.0031	0.0228	0.14	-0.0416	0.0479
farming	0.1184***	0.0223	5.32	0.0748	0.1621
prov					
Eastern Cape	-0.6589***	0.0369	-17.84	-0.7313	-0.5865
Northern Cape	-0.0408	0.0493	-0.83	-0.1375	0.0559
Free State	-0.5485***	0.0541	-10.15	-0.6545	-0.4426
KwaZulu-Natal	-0.55603***	0.035762	-15.55	-0.62613	-0.48594
North West	0.035876	0.041425	0.87	-0.04532	0.117071
Gauteng	-0.7166***	0.033818	-21.19	-0.78289	-0.65032
Mpumalanga	-0.55255***	0.039697	-13.92	-0.63036	-0.47474
Limpopo	-1.47786***	0.045261	-32.65	-1.56657	-1.38915
pep_hat	**-2.18495****	**0.681865**	**-3.20**	**-3.52142**	**-0.84848**
_cons	-0.02616	0.077382	-0.34	-0.17783	0.125513

Source: Own calculations using the General Household Survey (2018) data. Notes: n = 39,520 (N= 30,826,491). p-values reported in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.001.

Table 11 shows that households with an older head of households were less likely to be food insecure compared to households with a younger head. Additionally, households with married or cohabiting spouses were also less likely to run out of money to buy food. It is possible that head of households who are older are more responsible and can better manage household finances and resources to secure enough food for all household members. Also, married people are more likely to assist each by contributing more to total household income. As such, there is more food for the household. However, female-headed households were more likely to experience food insecurity within their households and this finding is similar to the findings and reports by DoW (2015: 103), Tibesingwa & Visser (2016: 39), World Bank (2018b: 13) and Stats SA (2019a: 21) who reports high levels of poverty, food insecurity and unemployment amongst female-headed households in South Africa.

In addition, compared to White people, African and Coloured households were more likely to experience food insecurity. Africans, followed by Coloured people, constitute the greatest share of poverty within South Africa and it is no surprise that they are highly likely to experience food insecurity within their households. Indians were less likely to run out of money for food. Similar results were also found by Stats SA (2019a: 24) of Black African and Coloured-headed households having less adequate access to food compared to Indian/Asian and White-headed households.

People with more household expenditures were less likely to run out of money for food as families with better living standards and more income are more likely to spend more. Also, residents in urban areas were more likely to experience food insecurity within their households than rural dwellers. A study[23] by Devereux and Tavener-Smith (2019: 17) observes that residents in urban areas were more food secure than those in rural areas as they can access more sources of food and income in towns than in rural areas. However, it is possible that in rural areas, families can grow food themselves and hence, they have more food to eat. However, people in urban areas are less likely to participate in farming activities as farming land is not easily available. Additionally, almost all food supplies in urban areas have to be bought from shops and local markets and without an adequate source of income, families in this geographical area of residence are more likely to experience food insecurity. Frayne, Battersby-Lennard, Fincham & Haysom (2009: 6) also noted severe levels of food insecurity among poor households in urban South Africa. Furthermore, Stats SA (2019a: 22) also noted a correlation between urban dwellers who reside in informal settlements and high levels of food insecurity.

Households that had an access to tap water and those that used a flash toilet system were also less likely to be food insecure. Having access to better sanitation facilities as well as having water from a tap are associated with better living standards Regarding education, it was expected that people without a post-matric level of education would be more likely to experience food insecurity compared to their reference group (people with a post-matric qualification). Higher levels of education are associated with easy entry into the labour market and the attainment of better-paying jobs.

Also, bigger families were more likely to be food insecure as any available food has to feed many people. This finding was also confirmed by Stats SA (2019a: 24) when they explained that "households with larger household sizes were more likely to have inadequate or severely inadequate access to food compared to those with smaller household sizes". Food insecurity experiences occur in large families especially if most of the household members are dependent on income from one family member. Such a situation can emerge when children are sent to live

[23] This study was based on farm workers within the Northern Cape Province of South Africa.

with their grandparents whilst the parent/s (mostly single mothers) are working in town. The guardian will receive support for the children for some time until it stops. They will not receive any support from the parent nor will they receive the child support grant. These children will have to live off the old-age pension of the grandparent who is also no longer working. In such a household, the chances of experiencing food insecurity are high. However, should the household be receiving any remittances, then their chances of experiencing food insecurity are low as they can use the additional income from remittances to buy extra food when needed. Furthermore, if the child support grants for all children under 18 are received, the better chances of securing more food for the household. Although the monetary value of this grant is low, grants from more than 1 child can add up to a substantial amount which can buy more food. Moreover, households with working household members are less likely to run out of money to buy food.

It was however surprising for households that engaged in agricultural activities to be more likely to experience food insecurity. We would expect people engaged in farming to be food secure as they produce their food. Based on the theory of change, if these PEP participants were working on farm-related projects, they should benefit from the assets they create (benefiting through the asset channel). Stats SA (2019a: 23) reported that most of the households that engaged in agricultural activities resided in poorer provinces like Limpopo, Eastern Cape, and KwaZulu-Natal, and they were mainly engaged in agricultural activities as a way to supplement food for the household. Furthermore, these households were mainly dependent on the income from social grants for household needs. Hence, it should not be surprisingly for these households to be more likely to experience food insecurity.

Provincial coefficients were also contrary to expectations. Households in all other provinces (except North West) were less likely to be food insecure when compared to households in the Western Cape Province. What would have been expected is for these coefficients to correlate with the incidence of poverty in each province. Provinces such as Limpopo and Eastern Cape are the poorest provinces in South Africa (Stats SA, 2017c: 86) with poverty headcounts of 55.4% and 54.3% in each province respectively. However, only 25.3% of the households in the Western Cape are poor hence, residents in Limpopo and Eastern Cape should be more food insecure when

compared to households in the Western Cape. However, concerning access to food, Stats SA (2019a: 24) reported that "Limpopo (93,6%) and Gauteng (84,0%) had the highest proportion of households that reported adequate food access whilst North West (64,0%) and Northern Cape (66,5%) recorded the lowest proportions of households that had adequate food access". Surprisingly for Limpopo, despite being one of the poorest provinces, it recorded the highest number of households that indicated adequate access to food.

With regards to PEPs, our a priori expectation is that holding other things constant, households that participate in PEPs should be less likely to experience food insecurity. Given the proxy variable selected in this model, households that participate in PEPs should be less likely to run out of money to buy food within their households. This expectation will have a positive impact on the programme on food security. If not, then the participants would still be food insecure despite their participating in the programme. Such an experience would imply that there is no significant impact of the programme on ensuring that participants have sufficient access to food. From Table 11, the PEP_hat variable indicated that households that reported to have participated in PEPs were less likely to have run out of money to buy food within their households. As some of the PEPs include the Community Works Programme that provides regular part-time work (Philip, 2013: 7), it is possible that participants from that programme were also receiving regular wages from the programme and hence, they constantly had sufficient access to food during the reference period. Additionally, it is also possible that the income received from these programmes was enough to buy food for household consumption although it might not have been sufficient to cover all other non-food household expenses.

Table 12: A comparison of coefficients for households with a PEP participant and those without

FIS	Coefficient if PEP=1	Coefficient if PEP=0
head_age	-0,0038	-0,0030***
female_head	0,1299	0,1109***
married	-0,0846	-0,0117
African_head	-0,64470*	0,3921***
Coloured_head	-0,8392**	0,0142
Indian_head	0,0000	0,0119
urban	0,0311	0,0470*

hh_expenditure	0,0000	-0,0001***
grants	0,0556	0,0775***
education		
Primary	0,0000	0,0095
Incomplete Secondary	-0,1041	-0,1235***
Matric	-0,3574	-0,2303***
Tertiary	-0,6623*	-0,3560***
hholdsz	0,0385*	0,0574***
Working	-0,2107*	-0,1351***
flush_toilet	-0,5055***	-0,1170***
rec_remittances	0,2750*	-0,0085
farming	-0,0241	0,1162***
prov		
Eastern Cape	-0,3974	-0,6924***
Northern Cape	-0,0242	-0,1459***
Free State	-0,0889	-0,6461***
KwaZulu-Natal	-0,4224	-0,5794***
North West	0,2842	0,0020
Gauteng	-0,9271***	-0,7400***
Mpumalanga	-0,2609	-0,5649***
Limpopo	-1,1563***	-1,5120***
_cons	1,1466**	-0,0552

Source: Own calculations using the General Household Survey (2018) data. Notes: n = 699 when PEP=1 (N= 38,510 when PEP=0). p-values reported in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.001.

In Table 12, a comparison of household characteristics between households with a PEP participant and households that do not have a PEP participant does not show much significant difference. Most of the coefficients for households that have a member participating in PEP are statistically insignificant compared to the other category (possibly because of a smaller n). For both categories, households with an older head of households are less likely to be food insecure, female-headed households are more likely to be food insecure and households with married people (these people can be legally married or cohabitating) are less likely to be food insecure. These findings are in line with our a priori expectations. Surprisingly, households with an African and Coloured head of household were less likely to experience food insecurity within their households than households that had a PEP participant. This finding was not the same for the other category of households. Income from PEPs may have a significant impact on household food security compared to their counterparts.

The other difference was in household expenditure. For households with a PEP participant, the more they spent on food, the more likely they were to experience food insecurity (although these results were statistically insignificant). A possible reason for this finding could be that income for such households is low and households might not be receiving income from other sources. Hence, spending more on current consumption implies that there is less to spend in the future, increasing the chances of experiencing food insecurity within that household.

Households that engaged in farming activities for households with a PEP participant were less likely to experience food insecurity. It is possible that food and income from the farming activity complemented the income from PEP, increasing the household's access to food. This finding highlights the importance of having economically inclusive programmes, PEPs complemented with other programmes such as farming or small businesses.

5.5. Conclusion

The objective of this Chapter was to provide a quantitative assessment of the contribution of public employment programmes to household food security using the GHS 2018 data set. Although the data is a nationally representative data set that aims to measure the quality of services (such as PEPs) towards the well-being of recipients within a country, it fails to capture other fundamental elements of the programmes. This limited the use of other methods of assessment that would have been implemented to critically evaluate the contribution of PEPs to household food security. Additionally, differences in the structure of some of the instruments (such as the HFIAS instrument) from the conventional questions also limited the use of the instrument to assess household access to food amongst PEP participants. HDDS and the 2SLS probit regression model were used to provide a quantitative analysis of food security amongst PEP participants. There seems to be some correlation between the outcomes of these methods showing a contribution of PEPs towards ensuring that participants and their households have enough food access, as indicated by the negative sign of the estimated PEP variable in the household regression model (households that participate in PEPs were less likely to experience food insecurity within their households). HDDS indicated that the highest proportion of participants has a high level of dietary diversity within their households as the consumed food

from more than 8 food groups in the past 24 hours. It could be argued that income from PEPs contributed significantly towards household food security as the reported participants and their households were categorised as food secure. However, this category of participants also had the smallest household sizes with the highest number of households that were receiving grants and had other working household members. Hence, it is also possible that PEPs were much more efficient in smaller households and the magnitude of their impact was also enhanced by income from other sources.

In the 2LSLS model, the coefficient of PEP in food insecurity was negative, an indication that households that participated in the programme were less likely to experience food insecurity within their households. The result was statistically significant at a 99 percent confidence level. However, the magnitude of the association with food security was not determined. Nonetheless, this result is indicative of the positive contribution of PEPs towards reducing household food insecurity. If only all PEP programmes had regular work opportunities that provide consistent income support to participants, then PEPs can be a significant programme that can ensure sustainable access to food for households. There is, however, a limit regarding the assessment of the programme via all impact channels of the theory of change. Some fundamental programme information is not captured to clearly distinguish the food security benefits coming from each channel of the programme's theory of change. Some information is also qualitative and could not be captured in the GHS. Chapter 6 provides the assessment of food security amongst an ongoing EPWP project in the Environment Sector. More detailed information about the programme is gathered as 3 different approaches to food security assessment are used to critically assess the programme's contribution to household food security.

CHAPTER 6: CASE STUDY OF EPWP PROJECTS IN THE ENVIRONMENT AND CULTURE SECTOR IN SIMONS TOWN: ANALYSING FOOD SECURITY USING QUANTITATIVE METHODS

6.1. Introduction

Due to limitations in the national GHS data on information about public works, primary data from a sample of EPWP participants was collected. As explained in Chapter 4, the primary data aimed to attain an in-depth understanding of the programme from information that the national datasets do not capture. Such information includes the wages (income) from the programme, project duration, sectorial differentiation between projects, and the nature of work done in EPWP, amongst others. Using such data from the sampled population, this study provides a more detailed assessment of the food security status amongst EPWP participants.

The rest of this Chapter is outlined as follows: Section 6.2 describes individual and household characteristics among the sampled participants. Section 6.3 presents results from some of the food security indicators of the participants. These indicators include the Household Food Insecurity Access Scale (HFIAS), the Household Dietary Diversity Score (HDDS) index, and the food expenditure method (which is the percentage of total household expenditure spent on food). A comparison of these food security results is also presented in this section. Section 6.4 concludes the Chapter.

6.2. Sample descriptives

The characteristics of the sampled population are summarised in Table 13. The sample was collected from EPWP projects that were implemented under the South African National Parks (SANParks). According to the Department of Environmental Affairs (DEA), SANParks (established in 2003) has a "mandate to oversee the conservation of South Africa's biodiversity, landscape and associated heritage assets through a system of national parks" (DEA, 2020). Amongst the services they provide [24], SANParks also provides poverty alleviation programmes in which work

[24] Other services provided by SANParks include the promotion of conservation, natural and cultural heritage (by managing its parks) as well as the provision of research mainly in the field of biodiversity and conservation (DEA, 2020).

opportunities are created in communities and areas close to their parks. Poor and unemployed people in these communities can take part in these projects and earn an income for themselves and their families. SANParks has further collaborated with the Department of Water Affairs and the Department of Environmental Affairs in creating work opportunities for the poor. Such work opportunities have also become part of EPWP. These work opportunities have contributed significantly towards improving the livelihoods of many poor and vulnerable members of the working-age population (DEA, 2020). Using the benefits received from EPWP (which are mainly income and skills training), participants can graduate from poverty and food insecurity.

As explained in Chapter 4, it was challenging to attain the required authorisation and permission to survey various EPWP participants from the provincial EPWP head office. Although the researcher intended to conduct purposive sampling after receiving permission to interview different projects from different sectors, convenience sampling was conducted on participants from the Environment and Culture Sector projects. This was the only sector that responded to taking part in the study. As such, with convenience sampling, all available participants from the different EPWP groups present on the day of the interviews were asked to participate in the study.

The sampled population was derived from projects implemented under the Table Mountain National Parks. All projects were in the Environment and Culture Sector of EPWP, hence there is zero variation in the sectorial distribution of projects. A total of 112 participants were included in the study. Their individual and household characteristics are presented in Table 13.

Table 13: Sample characteristics of participants of the Expanded Public Works Programme

		Mean (SD)/Proportion
Age of participants		
	≤35 (youth)	0.63
	>35	0.37
Gender of participants		

	Male	0.44
	Female	0.56
Race of participant		
	African/Black	0.81
	Coloured	0.19
Household size		4.2 (2.2)
Marital status		
	Married	0.42
	Unmarried	0.58
Head of household		
	Yes	0.54
	No	0.46
Education		
	Grade 1 - 7	0.17
	Grade 8 - 11	0.77
	Grade 12	0.04
	Post matric	0.02
Years working in EPWP		
	1 year or less	0.32
	1 - 2 years	0.13
	3 years	0.16
	4 years	0.16
	5 or more years	0.24
Monthly household food expenditure		R1,030 (R711)
Total monthly household expenditure		R3,055 (R2,617)

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019). Notes: N = 112, Rand in 2019 prices, where means are reported Standard Deviation (SD) in brackets.

Table 13 presents the individual and household characteristics of the sampled EPWP participants. Phase 3 of EPWP aimed to create 55% of work opportunities for youth participants aged between 16 and 35 (DPW, 2012: 5; DPW, 2018: 5). Surprisingly, for Western Cape, the GHS 2018[25] dataset showed that only 25% (approximately 9,268) of the respondents were youth participants in PEPs. 43.2% (approximately 267,837) was the proportion of youth participants at a national level. However, amongst the sampled participants in the case study, Table 13 shows that 63% of the respondents were youth, an indication that EPWP for these small projects was achieving its targeted work opportunities for people between the ages of 16 and 35. It appears that at a micro

[25] The General Household Survey 2018 is a national dataset collected by Statistics South Africa. A total of 71,137 respondents were included in the survey with about 26,000 households.

level (environment projects in Simons Town), EPWP succeeded in creating the targeted work opportunities although at a national level and using a larger and more representative dataset, the programme is failing. From the case study, it was interesting to note that despite the nature of EPWP (labour intensive), one of the oldest respondents amongst the participants was 62 years of age. This also indicates the importance of EPWP to poor and unemployed members of society who desperately need an additional income (on top of the old-age pension) to sufficiently provide for themselves and their families despite their old age[26].

On gender distribution, phase 3 of EPWP aimed to create 55.0% more work opportunities for women participants than men (Stats SA, 2018b: 13). In Western Cape, the GHS 2018 indicated that 48.0% (approximately 17,879) of participants in PEPs were female. At a national level, 68.7% (425,764) of the participants were females. From the case study, Table 13 indicates that 63 (56.0%) participants were women with 49 (44.0%) being men. It is possible that more work opportunities were created for women than men as the programme implementers aimed to meet the stipulated gender quota. One of EPWP's project managers also emphasised that contractors were given the guidelines of EPWP gender quota and they were to strictly adhere to it when recruiting participants into their teams. Additionally, DPW (2018: 5) also states that priority should be given to women especially those from female-headed households when recruiting participants. In South Africa, ILO (2018: 2) and the World Bank (2018b: 13) also report high levels of poverty and unemployment amongst women from female-headed households and EPWP is one of the government's social protection programmes designed for the benefit of more women to address these socio-economic challenges.

For the racial decomposition, the surveyed group of participants only had African/Black and Coloured participants with the former constituting the majority of the participants (81.0%) than the latter (19.0%). There were 91 Black and 21 Coloured sampled participants. Such proportions of the racial decomposition amongst participants were also similar to the findings obtained from the GHS 2018 data where 86.6% (536,790) of the PEP participants were African/Black and 9.1%

[26] The participant reported living in a household of 5 and receiving the old-age grant as well as the child support grant for one of the children. 60% of this participants' household expenditure was allocated to food and groceries.

(56,442) were Coloured at a national level. In Western Cape, 47.7% (17,764) were Black participants and 39.9% (14,847) were Coloured. As EPWP aims at "drawing a significant number of unemployed South Africans in a productive manner that will enable them to gain skills and increase their capacity to earn income" (DEA, 2020), most EPWP projects are implemented in areas closer to these poor communities as the strategy is to enhance the accessibility of such social protection programme to Coloured and African working-age members of society. In itself, recruitment for EPWP is aligned with self-targeting, geographic, categorical, and administrative targeting (DPW, 2018: 5). The Department of Environmental Affairs works with EPWP and communities to identify local environmental work opportunities for the benefit of local community members who may decide to participate in the programme (DEA, 2020). Such targeting methods enable more members of people from the working-age population to access and participate in this social protection programme (Adato & Haddad, 2002: 17).

A description of the recruitment process by the project managers indicated more administrative targeting and categorical targeting. It seems to be administrative targeting because contractors look for EPWP participants from a list of names of people who registered as unemployed and work seekers on a website of the municipal ward (the municipal job seekers database). Information captured on this website includes the person's name, surname, identification number, home address, and contact number. There seems not to be any designed formula or strategy for choosing participants from the list of names on the website as the contractors to go through the list of names and select people who can join their team of EPWP participants. Most contractors prefer people who reside closer to them (as it will be more convenient for them when picking up and dropping these people to and from work). The contractor makes a follow-up on these prospective participants (through phone calls using the provided phone numbers) and those they can reach and are still available for work are invited to join the contractor's team. Furthermore, part of those decisions is based on quotas. The quotas for gender, people with disabilities, and youth are categories that also govern the decision of who gets selected (or not) on the available list of names. As indicated by the managers, contractors have to ensure that they adhere to these quotas, hence, indicating that there is also categorical targeting in the recruitment process.

The managers stipulated that not everyone who registers on the municipal website is guaranteed employment in EPWP. Some are not employed because there are not enough contractors to provide work opportunities for all of them. Others, at the time of the recruitment process, were unreachable: either they do not answer the call or the number they submitted was unreachable at the time of the call (went to voicemail or the number was unavailable). Should this happen, the contractor would just move to the next name on the list. Others do not join EPWP as they might be engaged with other part-time work. Furthermore, project managers highlighted that they strongly emphasise to contactors to strictly adhere to EPWP's demographic targets when recruiting participants, that is, 55% women, 55% youth, and 2% persons with disabilities (DPW, 2018).

Although all applicants on the website are eligible to work in the programme, some people are poorer than others and they deserve priority when being considered for employment in EPWP. EPWP indicates that priority should be given to the poorest members of society from households:

i. where the head of the household has less than a primary school education,
ii. that have less than one full-time person earning an income, and
iii. where subsistence agriculture is the source of income. (DPW, 2018: 6)

Furthermore, when participants are more than the available work opportunities, a lottery system should be used to select participants. A lottery system is random and provides an equal likelihood for all members to be selected. However, with administrative targeting, some participants have an unequal advantage over others and poorer participants have no guarantee of first preference into employment. Hence, there is no income transfer to these poorest households and they continue to be in poverty and experiencing severe food insecurity. Where most of the unemployed people are chronically poor, targeting becomes challenging, as all applicants are desperately in-need of social protection (Beierl & Grimm, 2018: 14). Any targeting mechanism implemented should avoid both inclusion (including non-eligible people into the programme) and exclusion error (leaving out the eligible people) (Welteji et al., 2017: 10).

From Table 13, 65 (58.0%) participants were unmarried and were residing in a house of 4 – 5 people. 60 (54.0%) of them were head of their households and 86 (77.0%) of the participants had an incomplete secondary level of education. An incomplete Grade 12 is a barrier for many to

purse any post-school education (Branson, Hofmeyr, Papier & Needham, 2015). They are more likely to enter the labour market in search of possible work opportunities. However, from the labour supply side, with low levels of education, no work experience, and no labour market skills, it is quite challenging to acquire a good work opportunity that earns you a sustainable income (De Lannoy, Graham, Patel & Leibbrandt, 2018). Additionally, from the demand side of labour, with factors such as a mismatch of skills and slow economic growth, there are not enough jobs to absorb the abundant lowly-skilled labour supply (Bhorat, Lilenstein, Oosthuizen, & Thornton, 2020). Such unemployed and unskilled labour who possess an incomplete high school education is more likely to take up employment in public works as it is quite difficult to live without any source of income (they will no longer be beneficiaries of the child support grant).

An assessment of the work history of the participants indicated that 36 (32.0%) had only enrolled in the programme for less than 1 year. 50 participants (45.0%) had been working in EPWP between 1 and 4 years and 27 (24.0%) of the respondents had worked in the programme for more than 5 years. It was also interesting to note that 11 (10.0%) participants had worked in EPWP for more than 10 years. Longer project durations seem desirable for participants as they are guaranteed a consistent flow of income to their households (FAO, 2012). With such continuous income flow to participants, they become less anxious about what they will eat within their household and they are better able to make household plans and other coping strategies to ensure that they always have food to eat within their households.

However, although a longer project duration seems desirable, it should be noted that the intention and design of EPWP are to develop human capital skills (together with income relief) so that participants can have better job security, find other better employment elsewhere, and be self-reliant rather than depending only on EPWP. One of EPWP's project managers stated the following:

> *Our desire is to have participants also being developed as we offer training. They are not supposed to work with us for like six years, not that they are not allowed to. We are not employing to keep but we are developing. So if you're being developed then you need to move on to private companies, non-governmental organisations, or even to governmental posts because now you have your basic first aiding or you even have like level two first*

aiding health and safety training. You can even set up your own, you can become an entrepreneur so that your own business and even be outsourced. [Project manager]

Hence, a careful strategy should be designed to ensure that for the period that participants are in the programme, their labour market skills are sufficiently developed so that they can acquire better opportunities elsewhere. Such a strategy will ensure that participants have access to enough food when they are in the programme (as they benefit from the income relief) as well as after they exit EPWP and enroll in other work opportunities using the skills they received from EPWP.

The following section provides the food security profile amongst the sampled population.

6.3. Food security profile amongst EPWP participants

This section provides an assessment of food security amongst the sample group of EPWP participants using 3 different indicators, namely the Household Food Insecurity Access Scale (HFIAS), Household Dietary Diversity Score (HDDS), and the Food Expenditure method.

6.3.1. Measuring food security using Household Food Insecurity Access Scale (HFIAS) indicator

As explained in Chapter 4, the HFIAS consists of 9 questions about food access within a household. The questions are based on a 30-day recall period and pertain to anxiety about food, changes in diet quality, and inadequate food consumption within the household that is caused by insufficient food access (Coates et al., 2007: 1; Devereux & Tavener-Smith, 2019: 4). Households affirming to more of the survey questions indicate the severity of food insecurity within their households.

This study attempted to investigate the contribution of EPWP towards ensuring that participants and their households have enough food at all times. As such, information on participants' hunger prevalence before and while they enrolled in EPWP was collected. Table 14 presents the proportion of participants that affirmed the experience of the HFIAS survey questions within their households before they participated in EPWP.

Table 14: Participants that experienced the HFIAS occurrences BEFORE participating in EPWP

	Number (Proportion)
Worried don't have enough food to eat	49 (43.8%)
Had to eat less preferred food	47 (42.0%)
Ate a limited variety of food	46 (41.1%)
Ate some food not really wanted	48 (42.9%)
Ate smaller sized meals than needed	50 (44.6%)
Ate fewer meals in a day	50 (44.6%)
The was no food of any kind in the household	33 (29.5%)
Had to sleep at night hungry	38 (33.9%)
Spent whole day and night without eating anything	21 (18.8%)

Source: Own compilation using the Expanded Public Works Programme and food security survey data (2019). Notes: Only participants who affirmed to these questions are reported in this table.

Table 14 indicates the prevalence of hunger in participants' households before they participated in EPWP. According to a priori expectation, since EPWP is considered an employer of last resort (Meth, 2011; DPW, 2012: 13), participants should be in their worse-off state, in terms of food insecurity, as they are unable to secure any other income-generating job. During this period, the targeted members of society are more likely to have insufficient income to provide for all food (and non-food) needs as they will be unemployed.

Table 14 indicates that before participating in EPWP, less than 50% of the participants were anxious about food and experienced changes in their diet quality while less than 35% of participants experienced hunger (which are periods of not having anything to eat at all) within their households. Higher figures would have been expected (according to a priori expectation) as only 9.8% of the respondents reported having another household member working. Hence, the food insecurity circumstances within households should have been worse.

However, it is also possible that these figures represent the experiences of food insecurity amongst participants as people implement various coping strategies within their households to try and ensure that a limited and available food supply lasts longer before they experience hunger. Additionally, 53.6% of the respondents were receiving income from one of the social grants. As such, the income from grants could have been used to provide food for all household members. Evidence from countries such as Ethiopia, Malawi, and Zambia also indicated that

social grants (mostly the old age grant) significantly increased household food security (Waidler & Devereux, 2019: 680). Recipients had increased food expenditure, food consumption, and household dietary diversity that resulted from this income which benefited the entire household (Chakona & Shackleton, 2019: 90; Waidler & Devereux, 2019: 680).

As people enroll in EPWP, they start receiving wages from the programme and our a priori expectation is for them to have better food access and hence, less likely to experience food insecurity within their households. The proportion of participants that affirm food insecurity occurrences should decrease from before to the time when participants are working in EPWP. Table 15 presents the proportions of participants that were experiencing food insecurity occurrences within their households while they were in EPWP.

Contrary to expectation, Table 15 indicates that more participants (compared to the time before EPWP) experienced food insecurity occurrences within their households. The number of occurrences almost doubled on all food insecurity questions from the time before (in Table 14) to when participants were in EPWP (Table 15).

Table 15: Participants that experienced the HFIAS occurrences WHILE participating in EPWP

	Number (Proportion)
Worried about not having enough food to eat	95 (84.8%)
Had to eat less preferred food	90 (80.4%)
Ate a limited variety of food	89 (79.5%)
Ate some food not really wanted	87 (77.7%)
Ate smaller sized meals than needed	86 (76.8%)
Ate fewer meals in a day	83 (74.1%)
The was no food of any kind in the household	62 (55.4%)
Had to sleep at night hungry	62 (55.4%)
Spent whole day and night without eating anything	42 (37.5%)

Source: Own compilation using the Expanded Public Works Programme and food security survey data (2019). Notes: Only participants who affirmed to these questions are reported in this table.

While 43.8% of the sampled participants reported having experienced anxiety over food in Table 14, Table 15 shows 84.8% of the respondents being anxious about food while they were working in EPWP. Additionally, about 80% of the respondents adjusted their household diet while 37.5%

spend the entire day and night without anything to eat. Table 15 seems to present that many participants became worse off, off in terms of food security, despite working in EPWP. As mentioned earlier, such findings are contrary to expectations as participants should have increased access to food since they are receiving wages from EPWP.

Such high and unexpected results may be a result of response bias from participants as the received benefits from EPWP may be less than what they expected. It is likely that when participants enrolled in the programme, they expected all household challenges of unemployment such as poverty, hunger, and food insecurity, to be resolved immediately by income from EPWP regardless of other household factors, such as household size. As such, given that only a single member from each household participates in EPWP, income received from the programme may not be enough to sufficiently provide food for all household members at all times. Also, some programme inefficiencies, such as delays in payment[27], might contribute to participants' negative perceptions of the programme's contribution towards household food security. To these participants, EPWP would have failed to meet their expectations and to them, they feel worse off compared to the time before they participated in the programme.

However, these results might be a true reflection of the food insecurity experience of participants particularly if they rely on income from EPWP as their main or only source of household income. Before participating in EPWP, it is possible that some people would be dependent on income from other household members (such as parents or guardians). As they are employed by EPWP, they will no longer be dependent on income from other household members. However, they might be expected to contribute towards household expenses like buying food and paying rent. Although they will be earning their income, they will feel overwhelmed by other expenses they have to cater for, and eventually, feel worse off than they did before they participated in EPWP.

Another possible explanation of why findings in Tables 14 and 15 differ significantly from each other might be due to the difference in the recall periods between the times before and while participating in EPWP. Yu (2013: 13) has explained that recall bias might contribute significantly

[27] Further details of this issue and others are provided in Chapter 7.

toward biased estimates. The author further mentioned that with longer recall periods, respondents end up overstating or understating occurrences. For HFIAS, Coates et al. (2007: 5) have designed a recall period of 30 days. During this period, respondents are still able to precisely recall the occurrence of any events within their households. As mentioned earlier, longer recall periods reduce the preciseness and accuracy of information provided by respondents (if such information is not kept elsewhere, say, in a diary). In this study, data collected from participants' food insecurity circumstances while they were in the programme had a recall period of 30 days. However, for the time before they participated in EPWP, no recall period was set as participants had different duration periods when they started working in EPWP. This is one of the limitations of the data before participants were in the programme.

To further investigate the food security status of participants who are currently in the programme, the following section presents results derived from the HFIAS score.

The HFIAS Score

After asking each food security occurrence question presented in Table 15, follow-up questions of frequency-of-occurrence were asked to the respondents who affirmed the food insecurity experience. As explained in Chapter 4, all follow-up frequency-of-occurrence questions have 3 categories, whether such experience occurred *Rarely, Sometimes,* or *Often*. A *Rare* occurrence transpires once or twice in the past 4 weeks while *Sometimes* occurs 3 to 10 times in the past 4 weeks. An *Often* occurrence is any food insecurity experience that takes place more than 10 times in the past 30 days (Coates et al., 2007: 10).

The frequency-of-occurrence responses are coded accordingly; a *Rare* occurrence is coded as 1, *Sometimes* as 2, and *Often* as 3. Respondents that do not experience food insecurity occurrence are coded with *None*, which is 0 on their frequency-of-occurrence question. All outcomes of the frequency-of-occurrence questions are summed together and the Household Food Insecurity Access Scale (HFIAS) score is derived ranging from 0 to 27 (Coates et al., 2007: 18). Households that have an HFIAS score that is closer to 0 are regarded as being more food secure and the higher the score, the more food insecure the household is.

Some studies (FAO, 2008: 7; Becquey et al., 2010) have used the average HFIAS score to analyse the overall level of food insecurity amongst respondents when considering HFIAS as a continuous variable. The average score is the sum of HFIAS scores in the sample divided by the total number of households in the sample (Coates et al. 2007: 19). The mean HFIAS score of the sampled participants is presented in Table 16 below.

Table 16: Mean HFIAS score of the sampled EPWP participants

Variable	Obs	Mean	Std. Dev.	Min	Max
HFIAS	112	13.6696	7.6032	0	27

Source: Own compilation using the Expanded Public Works Programme and food security survey data (2019).

From Table 16, an average score of (13.7 ± 7.6) was determined from all of the sampled participants and this score was slightly above the midpoint (13.5) of the HFIAS index. Comparing the mean score of HFIAS to the midpoint of the indicator, the food security status of sampled EPWP participants is ambiguous as the mean score is very close to the HFIAS midpoint value, and well within the range of the standard deviation.

As Daniel et al. (2013: 4) and Devereux & Tavener-Smith (2019: 6) explain that there is no distinguished cut-off point when using the HFIAS score to differentiate the food secure from those that are food insecure, a different method of assessment using the HFIAS scores was implemented. The different HFIAS scores were categorised using different thresholds. Such categorisation presents the prevalence of food insecurity amongst the EPWP participants and it is not a continuous variable. According to the household food insecurity access prevalence indicator, households are categorised as food secure, mildly food insecure, moderately food insecure, and severely food insecure households (Coates et al., 2007: 19).

Different approaches with different thresholds have been designed to categorise the household food insecurity access prevalence indicator. Coates et al. (2007) propose cut-offs where respondents are grouped according to their responses as they respond more to the food insecurity questions. According to this approach, households that worry rarely about not having sufficient food to eat are categorised as food secure. Households that are mildly food insecure

worry about not having enough food for all members of the household sometimes or often[28]. These households may (or may not) be unable to eat some of the food they preferred or desire and/or they might also experience eating the same type of food for most days, but this should only occur rarely (Coates et al., 2007: 19). In addition, these households neither reduce the quantity of food that they eat nor experience any of three most severe conditions[29]. A household with a moderate food insecure condition eats the same type of food sometimes or more often. Furthermore, these households are more likely to eat undesirable foods and the quality of food is sacrificed more frequently. In addition, cutting back on the number of meals consumed in the households together with skipping some meals, occurs rarely and sometimes but any of the three most severe food insecurity conditions are not experienced in these households (Coates et al., 2007: 19d). Last, households that are severely food insecure often cut back on meal sizes, they often skip meals during the day, and/or run out of food within the household. Furthermore, these households may even go to bed hungry or spend an entire day and night without eating any food. Households that experience these conditions (even once or twice in 3 days) are characterised as being severely food insecure (Coates et al. 2007: 20). This approach of categorisation is used in many countries.

Another approach that has been used in the South African context was developed by Chakona and Shackleton (2018). These authors proposed to use scores to determine cut-offs for different food insecurity occurrences as done by Coates et al. (2007). Under this approach, people that had an HFIAS score of 0 – 1 are categorised as being food secure; those with a score between 2 and 7 are considered as being mildly food insecure; those with a score of 8 to 11 are moderately food insecure and households that have a score more than 11 are categorised as being severely food insecure (Chakona & Shackleton, 2018: 5).

This study follows the approach developed by Chakona and Shackleton (2018) as the research adds to the body of literature in South Africa. To analyse and compare local studies that have

[28] Worrying about food sometimes is not having enough food 3 to 10 times in the last 30 days. Often worrying about not having enough food occurs more than 10 times in the last 30 days.

[29] The severe food insecurity conditions are running out of food, going to bed hungry, or going a whole day and night without eating (Coates et al. 2007: 19).

used the HFIAS indicator of food security, a similar approach to assessment should also be used. Table 17 presents the household food insecurity access prevalence of participants in each category using the Chakona and Shackleton (2018) approach.

Table 17: The household food insecurity access prevalence amongst EPWP participants

	Freq.	Percent	Cum.
Food secure [a]	7	6.3%	6.3%
Mildly food insecure [b]	19	17.0%	23.2%
Moderately food insecure [c]	15	13.4%	36.6%
Severely food insecure [d]	71	63.4%	100.0%
Total	112	100.0%	

Source: Own compilation using the Expanded Public Works Programme and food security survey data (2019). Notes: Chakona & Shackleton (2018) HFIAS thresholds are used, [a] 0 – 1, [b] 2-7, [c] 8 – 11, [d] 11+

Table 17 shows that only 6.3% of the sampled participants were classified as food secure. Evidence of such findings can be shown from some participants who reported that the income they received from the programme was sufficient to feed them and their households.

> *I own my own house and I live with my child. During the week when I am working, I take my daughter to crèche which I also pay for herself… I work every month* (on EPWP) *and the salary is enough for me and my daughter. I buy enough food every month and I always make sure that my child gets something to eat every day and that she never sleeps hungry.* [p87, f, wfe].

These were the sentiments expressed by one female participant, of how she has used the income from the programme to cater for her household affairs as well as ensuring that there is sufficient food to eat at all times within the household. Another male EPWP participant, working on a Working for Water South project, also indicated that he did not have a problem with the wages from EPWP because he could buy enough food for himself to eat [p68, m, wfws]. Such sentiments from respondents are evidence that indeed, as shown in Table 17, some participants are food secure.

The responses of these participants indicated satisfaction with the a priori expectation that participating in EPWP would lead to food security. From the theory of change of EPWP and food security, participating in the programme led to food security as participants were able to access

sufficient food using the income received from EPWP. Hence, EPWP was effective in its contribution towards household food security for 6.3% of participants and their households. Nevertheless, there are other household characteristics there requires consideration which may cause other participants and their households to be food secure whilst others are categorised as food insecure. These include household size, receiving grants within the households, or receiving additional income from other sources, amongst others. Table 18 indicates some of the household characteristics that differed between food-secure and food-insecure participants.

Table 18: Different household characteristics for food secure and food insecure participants

	Freq.	Percent	Mean HH size (SD) [e]	Receiving grants	Receiving other HH income
Food secure [a]	7	6.3%	2.9 (1.2)	42.9%	28.6%
Mildly food insecure [b]	19	17.0%	4.7 (2.7)	63.2%	15.8%
Moderately food insecure [c]	15	13.4%	3.8 (1.8)	60.0%	13.3%
Severely food insecure [d]	71	63.4%	4.3 (2.2)	50.7%	5.6%
Total	112	100.0%			

Source: Own compilation using the Expanded Public Works Programme and food security survey data (2019). Notes: Chakona & Shackleton (2018) HFIAS thresholds are used, [a] 0 – 1, [b] 2-7, [c] 8 – 11, [d] 11+; [e] mean household size and standard deviation in brackets

As noted in Table 18, participants that were categorised as food secure had an average household size of 2.9 people and 28.6% of them were receiving income from other sources (other than social grants) within their households. On the other hand, participants that were food insecure had household sizes that ranged between 3.8 and 4.7 and 15.8%, 13.3% and 5.6% of the mildly, moderately, and severely food insecure participants, respectively, were receiving income from other sources. It is evident that participants who were classified as food secure had smaller household sizes than those who were food insecure, hence income from EPWP together with income from other sources could sufficiently provide enough food for all members. However, for food insecure households, the available income which was predominantly from EPWP had to provide needs for more household members. As such, the food security impact of EPWP alone was overstated as the total household income might have consisted of income from these other sources. Hence, we cannot definitively conclude that only the income received from EPWP was the main contributor towards food security within the household of participants. It seems the

income from social grants did not contribute significantly towards household food security as a majority were receiving the child support grant which is small in value. Hence, their contribution towards food security was minimal although food insecure participants seemed to be heavily dependent on them as the proportion of recipients decreased from 63.3% to 50.7%, the more food insecure the participants and they are becoming.

Several participants reported having hunger experiences within their households. "*Sometimes I spend the whole day and also go to bed without eating anything because I do not want to tell everyone that I do not have enough food to eat in my house,"* said one EPWP participant [p29, m, wfe]. This participant was residing in a house of 3 people, having access to the child support grant and they reported that their co-habitant was not working. Another female participant indicated that she and several other EPWP participants from their team were experiencing hunger within their households and delays in payment together with prolonged periods of not receiving any income[30] made them uncertain of how they were going to provide food for their children at home. She further alluded that such household hunger experiences, especially child hunger, were heart-breaking to her as a parent knowing that she was working but there was nothing else to eat in the house for her family [p104, f, wfwc]. Surprisingly, this participant was residing only with 1 child who was receiving the child support grant as well. She still experienced hunger within her household despite working in EPWP, having a small household, and benefiting from the social grants.

Another female respondent who also experienced hunger within her household stated the following:

> *Last month was very tough for me, our team was not working and I had 2 kids to feed. I also needed good food for my medication. I tried to ask for help from my contractor but they didn't help me. As a woman, it was very tough for me. Sometimes I had to sleep hungry myself because I would sacrifice my food so that my kids would eat. I would do this even if my medication did not allow me to do this, but I had no option, it was very tough for me.* [p72, f, wfwc].

[30] Several participants indicated that they had not been paid for almost 2 months of work. Detailed explanation of such issues around EPWP operation is provided in Chapter 7.

This was a mother who was living with only her 2 children and none of them were receiving any child support grant. Additionally, the respondent had no access to any other income within her household other than EPWP wages. To this participant (and others who had large household sizes and did not have access to other sources of income), EPWP's contribution towards food security is low as according to the HFIAS method of analysis, more than 90% of them are food insecure.

However, some studies have argued that due to the subjectivity of the nature of HFIAS questions (Coates et al., 2007: 22; Daniel et al., 2013: 4; Becquey et al., 2010: 2233), its responses are also subject to respondent bias. Hence, other methods of assessing food security such as household dietary diversity and household food expenditure will also be used to better understand EPWP's contribution toward individual and household food security status. Sub-section 6.3.2 presents household food security assessment using the household dietary diversity method.

6.3.2. Measuring food security using Household Dietary Diversity Score

The Household Dietary Diversity Score (HDDS) is also another tool for assessing food security. The instrument is somehow objective (Swindale & Bilinsky, 2006: 1) although it is subjective as there was no definitive recorded proof of what EPWP participants claim to have consumed (or not) within their households. According to this method, all food prepared and eaten from the household of participants by any household member during the past 24 hours[31], should be recorded under the specified 12 food groups[32]. Additionally, any food prepared in the house but consumed elsewhere was also to be included on the food list. Such food was also part of the household's diet (FAO, 2008: 5).

[31] The commonly used recall period is 24 hours (as it is argued that it provides a more accurate dietary diversity score as participants are more likely to remember all the food consumed the previous day). Other studies however, have used a recall period of 48 hours as they argue that different days might have different menus, hence, a recall period of 48 hours more of the different foods that a household might have consumed within the household.

[32] The 12 food categories are (1) cereals; (2) white tubers and roots; (3) vegetables; (4) fruits; (5) meat; (6) eggs; (7) fish and seafood; (8) legumes, nuts, and seeds; (9) milk and milk products; (10) oils and fats; (11) sweets; and (12) spices, condiments, and beverages (Kennedy et al., 2011; Chakona & Shackleton, 2018: 4 – 5).

Based on the 12 food groups, the HDDS is determined by summing the different food groups consumed by household members during the past 24 hours (Kennedy et al., 2011). Higher HDDS indicates a higher level of food consumption within the household and hence, less food insecurity for the participant and their household. On the other hand, lower HDDS scores are associated with higher levels of food insecurity as it implies that the household had less access to food (Daniel et al., 2013: 5). An evaluation of the diet of EPWP participants enables the study to assess their economic well-being. As the information on participants' food consumption patterns was collected, the mean scores of HDDS amongst participants before and while they were participating in the programme are presented in Table 19.

Table 19: Average mean HDDS amongst sampled EPWP participants before and during their participation in EPWP projects

Variable	Obs	Mean	Std. Dev.	Min	Max
Before EPWP	112	6.7232	4.2685	0	12
While participating	112	7.9554	3.1634	0	12

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019).

Table 19 indicates that from the distribution of scores, EPWP participants reported having been consuming a mean of 6.72 ± 4.3 food groups during a normal day before they were participating in the programme. However, while participating in EPWP, no statistically significant difference was reported in the number of food groups consumed by participants as the increase in consumption of 7.9 ± 3.1 food groups was still within the range before participants were in EPWP. Hence, it is unclear to decide whether there is any difference or contribution of EPWP to the number of food groups consumed.

Furthermore, for HDDS, there are no determined cut-off points, in terms of the number of food groups that may classify a household as being food secure or not (Kennedy et al., 2011: 26). With no cut-off point, it is difficult to use participants' mean scores and determine from Table 18 whether they can be classified as food secure or insecure before and while they were participating in EPWP.

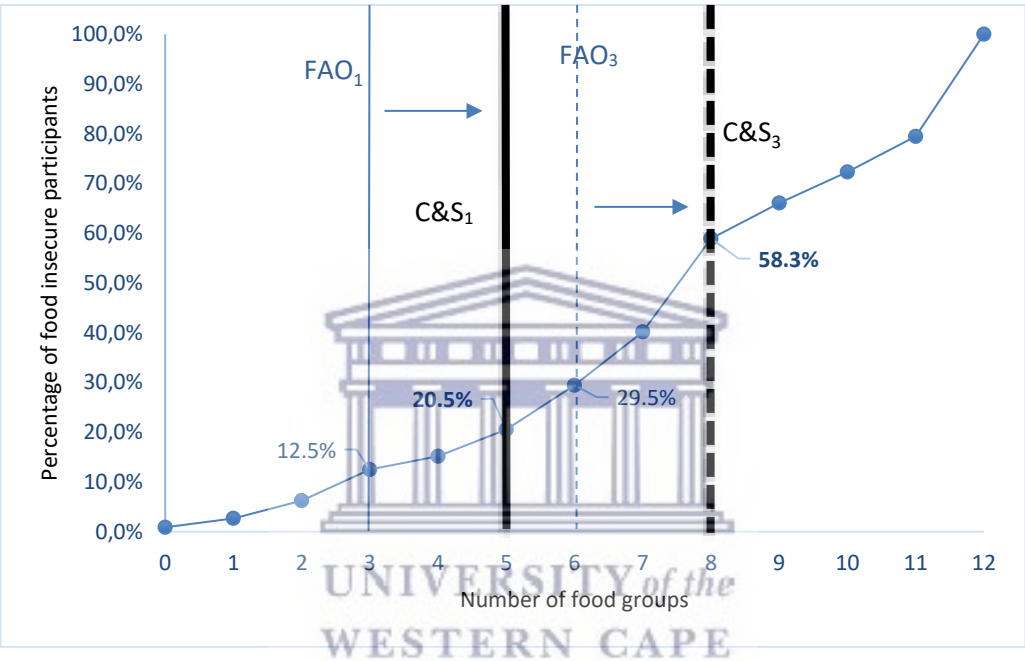
Due to this ambiguity over the number of food groups that would categorise a household as food secure or not, several different approaches have been used to determine appropriate thresholds to determine the level of food security (Maxwell et al., 2013: 7). An approach developed by the FAO (Kennedy et al., 2011) is the most commonly used method implemented by many countries when analysing dietary diversity. Under this approach, households consuming 3 food groups or less are classified as having a low dietary diversity; 4 or 5 food groups are considered as medium dietary diversity and 6 food groups or more are categorised under the high dietary diversity group (Kennedy et al., 2011: 29).

For more rural country like Ethiopia, Somalia, and Sudan, the FAO thresholds (Kennedy et al., 2011) better measures the food security status of people as the majority of them are more likely to consume food from fewer food groups (Huluka & Wondimagegnhu, 2019). For a country like South Africa, a study by Chakona and Shackleton (2018) has argued differently regarding the food group thresholds. Their argument is based on the notion that South Africa has more food available to residents, with most of them residing in urban areas. Such people in urban areas can access many food markets and food stores in most communities. As more people tend to eat more food varieties, the use of the FAO classification (Kennedy et al., 2011) may not be the best approach to determine the cut-off points. This approach, for instance using only 3 or fewer food groups, may under-report the accurate level of people with low dietary diversity as most consume more food varieties. Hence, using the same food group thresholds in different countries with different socio-economic well-being as well as different rural-urban demographics may over-report the food security status in one country and under-report in another.

The food group thresholds developed by Chakona and Shackleton (2018) in the South African context indicated that households that consumed 5 food groups or less are considered as having a low DDS; 6 or 7 food groups are classified as a medium diet and 8 or more food groups are categorised as a high dietary diversity group (Chakona & Shackleton, 2018: 5). This approach has more food groups under each category when compared to the food groups developed by FAO (Kennedy et al., 2011).

With such arbitrariness in the determination of food group thresholds, is it quite unclear which cut-offs to use as each method generates differing proportions of food-secure and food-insecure respondents. As stated earlier, the true nature of food security amongst the targeted population might either be under-or-over reported which may lead to an inaccurate policy recommendation. An indication of how sensitive the food group threshold is on the assessment of food security is presented in Figure 7 where the FAO (Kennedy et al., 2011) and the Chakona and Shackleton (2018) cut-offs were applied to the EPWP data set.

Figure 7: Sensitivity test of different cut-offs on household dietary diversity



Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019). Notes: Solid lines are FAO cut-offs and dotted lines are Chakona & Shackleton's (2018) cut-offs.

Figure 7 shows how different people are categorised as food insecure when different cut-offs are used on a cumulative distribution line graph. Low and high dietary diversity cut-offs were used on the same EPWP group of participants under the FAO (Kennedy et al., 2011) and Chakona & Shackleton (2018) thresholds. Using FAO's lower DDS cut-off point of 3 food groups or less, Figure 7 shows that 12.5% of participants were categorised as having a low dietary diversity. However, a classification of the same group of people using the Chakona and Shackleton cut-off constituted 20.5% of participants who had a low dietary diversity (8.04% more than the FAO proportion) as

this approach uses 5 food groups as its cut-off point. The differences under each HDDS using these 2 different approaches are shown in Table 20. Those with a low dietary diversity can be considered as being severely food insecure. Those under the medium dietary diversity category have a mild and moderate food insecurity level and those with a high dietary diversity score are food secure participants.

Table 20: Different proportions of food-insecure participants using different cut-off points

	Low dietary diversity [a]	Medium dietary diversity [b]	High dietary diversity [c]
FAO	12.5%	8.0%	79.5%
C&S (2018)	20.5%	19.6%	59.8%
% Difference	64%	145%	-25%

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019). Notes: [a] corresponds to the severely food insecure group of participants, [b] mildly and moderately food insecure, [c] good secure participants.

Table 20 shows a summary of the different proportions of EPWP participants that were considered food insecure under the different categories of HDDS. The percentage differences in each category are an indication that the determination of the cut-off points and their use is an important element for the DDS method of analysis. Compared to the Chakona and Shackleton cut-offs, the FAO cut-offs appear to underreport the level of food insecurity for those who have low and medium dietary diversity within their households. The proportion of participants with low and medium dietary diversity increased by 64 and 145 percentage points when Chakona and Shackleton's cut-offs were used. However, more respondents were classified as having a high dietary diversity under the FAO approach compared to the Chakona and Shackleton approach.

Nonetheless, this study follows the Chakona and Shackleton cut-offs as this approach is more applicable to the South African context. The results of these dietary diversity food groups for EPWP participants before and while participating in EPWP are presented in Table 21.

Table 21: Proportions of sample classified in each dietary diversity category before and while participating in EPWP

Period	Categories of Dietary Diversity	Number of participants	Proportion of sample
Before participating in EPWP	Low dietary diversity [a]	36	32.1%
	Medium dietary diversity [b]	23	20.5%
	High dietary diversity [c]	53	47.3%
While participating in EPWP	Low dietary diversity [a]	23	20.5%
	Medium dietary diversity [b]	22	19.6%
	High dietary diversity [c]	67	59.8%

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019). Notes: N = 112. Chakona & Shackleton's (2018) cut-off scores are [a] 0 – 5, [b] 6 – 7, [c] 8 – 12.

Table 21 indicates a shift towards higher dietary diversity across the sample from the time before to when participants were participating in EPWP. About 12% of participants moved out of low to having medium dietary diversity (a decrease from 32.1% to 20.5% in Table 21) from the time before to when participating in EPWP. Similarly, there was also an increase in the proportion of participants that were consuming high dietary diversity; 12.5% moved from medium to high dietary diversity. Hence, according to the HDDS method, these findings indicate that EPWP did contribute towards the improvement of food security amongst participants and their households as there was a shift towards higher dietary diversity across the sample when participants were EPWP. However, the extent of the impact may not be accurately quantified.

Although the methodology to assess HDDS amongst EPWP participants was desirable, it had some limitations. It is important to keep in mind that when interpreting the dietary diversity score, the quantity or quality of the actual food consumed is not indicated. Dietary diversity looks at the total "number of different foods or food groups consumed over a given reference period" (Ruel, 2003: 3). However, it fails to indicate the type of foods that are needed to provide energy and all essential nutrients (Thornton et al., 2016).

A key concept that the HDDS fails to capture is diet quality. Diet quality has been explained by Ruel (2003: 3 – 4) as a healthy consumption of foods that provides energy and essential nutrients and it "limits the amount of fat, saturated fat, cholesterol, sodium, and refined sugars, and incorporates many servings of fruits, vegetables, and whole grain products" (Ruel, 2003: 4). The diet quality in South Africa has been criticised as South Africa consumed a high level of processed foods (Mchiza et al., 2015; Holmes et al., 2018). Much of the food consumed in South Africa is genetically enhanced. An example of such foods includes some meat products (like some imported chicken meat) as well as some cooking oil products. Such products like too many fats, sodium, and refined sugars (obesogenic diets) increase the chances of non-communicable diseases such as diabetes, most heart diseases, chronic kidney disease, and high blood pressure, amongst others.

Most processed foods are sold at relatively lower prices in food stores (when compared to organic non-processed foods) and they are mostly consumed by poor members of society who have limited income. As such, there is an overconsumption of such highly processed foods amongst this vulnerable group of people thereby increasing their likelihood of having non-communicable diseases such as diabetes, most heart diseases, chronic kidney disease, and high blood pressure. Hence, many South Africans, particularly poor ones including EPWP participants, might consume more foods from multiple food groups, as they are nutritionally insecure. Although close to 60% of EPWP participants are eating food items from more than 8 food groups, poor diet quality might imply the consumption of more additives, fats, and sugars amongst this group of people. Perhaps, consuming food from fewer food groups such as fruits, vegetables, and whole grain products together with limited amounts of fat, cholesterol, sodium, and refined sugars might have long-term food and nutrition security amongst the participants and their households. However, the assessment of diet quality amongst EPWP participants is beyond the scope of this study.

Also, HDDS does not consider any seasonal variations (Sibhatu & Qaim, 2017). A certain type of food may be consumed frequently (or daily) within the household because it is abundantly available and quite affordable during a particular season. On the other hand, another type of

food may not be consumed in the household because it is off-season. Furthermore, geographical differences are also not considered by HDDS. People who reside in rural areas, for example, are more likely to consume tubers and roots than bread because are more likely to grow roots and tubers themselves. Bread might not always be easily accessible, stores that sell bread might be far (Kennedy et al., 2011: 27) and if they want bread, they have to buy it. As such, they will consume a type of food from one food group more than the other. For people in urban areas, bread is cheaper and easily accessible than roots and tubers. Thus, they are more likely to consume the bread. Nonetheless, HDDS does not consider geographical differences in its analysing of food security. Although the method is objective, these are some of its criticisms for assessing household food security conditions. Sub-section 6.3.3 analyses food security using the food expenditure approach.

6.3.3. Measuring food security using the food expenditure approach

Another method of assessing food security amongst EPWP participants is to investigate the share of household expenditure allocated for food. Food expenditure is analysed in comparison to total household expenditure (Smith & Subandoro, 2007: 79), and the greater the allocation towards food, the more food insecure the household is considered to be. Conversely, households with a smaller portion of food expenditure to total household expenses are regarded as more food secure (WFP, 2017: 16). This method is also used by WFP together with other food security indicators (Smith & Subandoro, 2007: 79).

Arguments have been presented that household expenditure is a better reflection of well-being and a better proxy variable than income (Meyer & Sullivan, 2003: 2; INNDEX Project, 2018: 71). It is also explained that income is more volatile and most people tend to under-report their actual level of income (Meyer & Sullivan, 2003: 4). Evidently, income determination amongst EPWP participants was challenging during data collection. Although the programmes' wage rate was known, working days were not fixed and project duration differed from one project to another. As such, total monthly wages could not be determined. Also, although several participants were aware that other household members were working and bringing in additional income, they were unaware of its value or range. Hence, a total household income variable could not be generated.

However, more household expenditure information was provided and such information was used to create the expenditure variable which was used in this study.

Under the food expenditure method, the amount of total household expenditure is assumed to be equivalent to total household income. Furthermore, it is also assumed that all household income is spent on expenses and no income is saved (INDDEX Project, 2018: 2). This is one of the limitations of this method. Additionally, although a provision is made to assign value to all food produced and consumed within the household, such as tomatoes and onions grown from a home vegetable garden, at times it is difficult to evaluate such food items. Furthermore, the value of such homegrown vegetables is not always included in the value of household food expenditure. Hence, such a limitation also underestimates the food expenditure share and limits the accuracy of this food security assessment method.

According to Smith and Subandoro (2007: 79), the share of household spending on food is determined as follows:

$$Percentage\ of\ expenditure\ on\ food = \frac{Expenditure\ on\ food}{Total\ household\ expenditure} \times 100$$

Under this method and together with another categorisation from Crush et al. (2018: 20), respondents are classified under 5 distinct groups: those that are food secure, low level of food insecurity, medium level of food insecurity high level of food insecurity, and very high level of food insecurity (Smith & Subandoro, 2007: 82; INDDEX Project, 2018: 1; Crush et al., 2018: 20). Table 22 shows guidance of food expenditure allocation and the different levels of food insecurity amongst the participants using their self-report household expenditure[33] values.

[33] Information on participants' household expenditure values before they participated in the programme was not reported in the thesis as most of the participants had forgotten these figures due to long recall period.

Table 22: Distribution of food insecurity amongst EPWP participants using the food expenditure method

Guidance for Interpretation	Percentage of expenditures on food	Number of participants	Percentage of participants
Food secure respondents	<20	11	9.8%
Low level of food insecurity	20 - 50	66	58.9%
Medium level of food insecurity	50 - 65	19	17.0%
High level of food insecurity	65 - 75	2	2.0%
Extremely food insecure	75+	14	12.5%
Total		112	100%

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019). Notes: Smith & Subandoro (2007: 82) and Crush et al. (2018: 20) guidelines used; [a] <20, [b] 20 – 50, [c] 50 – 65, [d] 65 – 75, [e] 75+.

Table 22 shows that households that allocated less than 20% of their total income to food are considered food secure; those that allocate between 20 and 50% are classified as having a low level of food insecurity; households with a medium level of food insecurity spend between 50 and 65% on food; those that spend 65 – 75% are considered highly food insecure while those who are extremely food insecure spend more than 75% of income on food (WFP, 2017: 17). From the sample of participants, only 11 of respondents (9.8%) were categorised as food secure as they allocated less than 20% of their household expenditure on food. However, 66 respondents (58.9%) spent 20 – 50% of their household income on food during the reference period and these participants were classified as having a low level of food insecurity within their households. One participant from this category of participants highlighted that the wages that she was getting were sufficient to cover all her household expenses, such as electricity and other household provisions for her children [p72, f, wfwc]. This participant was spending 29% of their household income on food and she was living in a household of 3 (small household size). The participant had no complaints about the adequacy of food provisions within her house. Table 23 provides a cross-examination of households' expenditure on food together with their household sizes, whether they receive income from social grants, and whether the household receives income from other sources.

Table 23: Household characteristics of food secure and food insecure participants under the food expenditure method

	Freq.	Percent	Mean HH size (SD) [a]	Received social grants	Received other income
Food secure	11	9.8%	4.0 (2.9)	27.3%	18.2%
Low level of food insecurity	66	58.9%	3.9 (2.1)	50.0%	10.6%
Medium level of food insecurity	19	17.0%	4.7 (2.0)	57.9%	10.5%
High level of food insecurity	2	2.0%	1.5 (0.7)	50.0%	-
Very high level of food insecurity	14	12.5%	5.4 (2.2)	85.7%	-
Total	112	100%			

Source: Own compilation using the Expanded Public Works Programme and food security survey data (2019). Notes: mean household size and standard deviation in brackets

Table 23 shows that 19 participants (17.0% of the sample) allocated 50 – 65% of household expenditure to food. These participants had a medium level of food insecurity, a mean household size of 4.7 ± 2.0 and 57.9% of them were receiving income from social grants. Additionally, only 10.5% of these participants had access to another source of income within their households.

Also from Table 23, 2.0% of participants were highly food insecure as they spent 65 – 75% of their total household income on food. There were, however, 12.5% of participants that allocated more than 75% of their total household expenditure on food. These were categorised as having a very high level of food insecurity with a mean average household size of 5.4 ± 2.2. The participants indicated that they were receiving income from social grants but none of them reported having any other source of income (besides income from EPWP and social grants).

Several participants indicated that due to very high levels of food insecurity within their households, they ended up not paying for other household expenses so that they can allocate that portion of income toward food. Several participants in this category mentioned that due to the high levels of food insecurity within their households, most of the time they had to sacrifice food for the adults so that the available food may be consumed by the children so they not go to bed hungry during the difficult periods. One of these participants resided in a household of 6, with access to one of the social grants (the child support grant for one child), and spent 77% of their household income on food [p44, m, wfwc]. Coincidentally, another respondent [p47, f,

wfwc] also lived in a household of 6 and allocated 82% of household income towards food. The participant from this household further mentioned that due to food shortages, she sometimes had to skip the payment of other monthly household expenditures such as credit accounts or buying her toiletries so that she could use the money to buy extra food. Income from EPWP was not sufficient to buy enough food as well as cater to all other household expenses.

Overall, the food expenditure method has presented evidence of food security as well as low levels of food insecurity for 68.8% of the sampled EPWP participants. On the other hand, less than 15% of the participants were vulnerable to high levels of food insecurity within their households. These figures indicate that using the method, the group of sampled participants predominantly leaned towards food secure than food insecurity. The contribution of income from social grants towards food security was minimal as several people were still food insecure despite receiving social grants. There was also income from other sources although only a few were receiving it. As such, it can be deduced that during the reference period, the income from EPWP significantly contributed towards household food security as more than 67% of participants spent less than 50% of household income on food. However, one limitation of this method is that there is no decomposition of income to separate income from EPWP and income from other sources. Although not significantly large, income from other jobs by other household members as well as income from social grants, also contributed towards household income, and such collective income was used to provide for all household expenditures. Without decomposing income and isolating the separate contribution of EPWP, the method is limited in its effectiveness in thoroughly analysing and reporting the food security contribution of EPWP.

6.3.4. Comparing all methods used to analyse food security amongst EPWP participants

This study has used 3 different approaches to conduct a robust quantitative investigation of the household food security status of EPWP participants. The different categories of self-reported information collected from participants required the use of different methods to assess household food security. Information related to respondents' perception of food insecurity was analysed using the HFIAS indicator, data reported on the different number of food groups consumed within the households was measured using the HDDS method, and the food

expenditure method was used on information reported by respondents relating to household expenditures. Our a priori expectation was that when compared together, the results of these 3 different food security indicators should align with each other, as they measured the level of food security of the same group of EPWP participants.

Since the different indicators have different categories of assessment (HFIAS has 4, HDDS has 3, and the food expenditure method has 5), all categories were compressed into 3 groups. Since there is no clearly stated method of combining these categories, the researcher, together with empirical evidence from other studies (Kennedy et al., 2011; Chakona & Shackleton, 2018; Rose & Charlton, 2002; Smith & Subandoro, 2007; WFP, 2017; Crush et al., 2018) used his discretion to compress these groups and create 3 distinct groups for comparison. The compression was done in the following manner: the distinct groups of assessment are 1) people who are *food secure*, 2) those that have a *mild and moderate level of food insecurity,* and, 3) those that are *severely food insecure*.

HDDS is less complex as the category with high dietary diversity (those consuming 8 or more food groups) becomes the food-secure group. Those with a medium dietary diversity (consuming between 6 and 7 food groups) were categorised as having mild and moderate levels of food insecurity. The severely food insecure category consists of those that consume food from 5 or fewer food groups (those with a low level of dietary diversity).

For HFIAS, the researcher also uses the 0 – 1 score for the food secure group of participants as was done by Chakona and Shackleton (2018). The second (mild) and third (moderate) categories of food insecurity with scores between 2 and 11 were combined to create the mild and moderate level of food insecurity group. This category should be aligned with respondents that experienced a change in the quality of food consumed within households. Households with an HFIAS indicator of 12 or more are severely food insecure.

For the food expenditure method, different authors have different thresholds for categorising the food secure from the food insecure. These include Rose & Charlton (2002), Smith & Subandoro (2007), WFP (2017), and Crush et al. (2018), amongst others. Rose and Charlton (2002:

3239), using the IES 1995 national data, observes 30.8 ± 0.3 (mean average and standard deviation) as the share of income spent on food for food secure respondents. They further indicate that food-insecure households have a 35.2 ± 0.3 food expenditure share to income (Rose & Charlton, 2002: 3239). On the other hand, Crush et al. (2018: 20), using data collected from a survey conducted in Cape Town, report that residents in the lowest income quintile spend two-thirds of household expenditures on food while those in the fourth and fifth income quintiles spend less than 20% on food (17% and 8% respectively). Those in the second and third income quintile spend 30 - 60% on food. Considering these thresholds and others (Smith & Subandoro, 2007; WFP, 2017), this study combines food insecurity categories as follows: participants spending less than 20% on food will be categorised as food secure (as the categorisation by Crush et al. from their study in Cape Town), those spending more than 20% but less than 60% will be mildly and moderately food insecure, and severely food insecure participants will spend more than 60% of household income on food. The different scores of the food security indicators are presented in Table 24.

Table 24: Scores for each indicator under the consolidated food security categories

	HFIAS	HDDS	food expenditure
Food secure	0 – 1	≥ 8	< 20%
Mild and moderately food insecure	2 – 11[a]	6 – 7	20 – 60%
Severely food insecure	≥ 12	≤ 5	> 60%

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019). Notes: The mildly and moderately food insecure category is a combination of those that are mildly as well as those that are moderately food insecure under HFIAS.

Based on these food security indicators, households who are severely food insecure possess an HFIAS score of 12 or higher or consume food from 5 or fewer food groups or they spend more than 60% of household income on food. On the other hand, households that are food secure must be food secure in at least 2 of the food security indicators, i.e. households can record an HFIAS score of 1 or less and an HDDS of 8 or more, an HFIAS score of 1 or less and spend less than 20% on food, or have an HDDS of 8 or more and spending less than 20% of household income on

food. However, the other indicator must not record a severe level of food insecurity. Those in between these categories (who are mild and moderately food insecure) must have HFIAS scores ranging between 2 and 11 or consume 6 or 7 food groups or spend between 20 and 60% of their income on food. None of the indicators in this category must record a severe level of food insecurity. Should there be a deviation from expectation, some of the possible explanations include:

1. Respondents' bias as the received EPWP benefits are far less than what participants expected to receive from the programme; or
2. A misunderstanding of the questions by the respondents, either from how they were asked or phrased, that the gathered information is not the accurate reflection of the true food security status of the households; or
3. The method itself may be inappropriate for the subject matter under investigation that the results generated are biased due to such mismatch between the method and the subject matter; or
4. Different recall periods amongst the indicators (HFIAS and the food expenditure method consider a 30-day recall period while HDDS has a 24-hours recall period) as well as different cut-offs can generate different outcomes; or

Alternatively, the results presented, although they differ from expectations, they are a true and accurate reflection of the food security situation amongst the EPWP. In such a case, further investigation would be required to determine why such results are not conforming to expectations. The results generated under each indicator are presented in Table 25.

Table 25: Distribution of food insecurity amongst EPWP participants using HFIAS, HDDS, and percentage of expenditure on food method

	HFIAS	HDDS	% of food expenditure
Food secure	7 (6.3%)	67 (59.8%)	11 (9.8%)

Mild and moderately food insecure	34 (30.4%)	22 (19.6%)	81 (72.3%)
Severely food insecure	71 (63.4%)	23 (20.5%)	20 (17.9%)

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019).

Table 25 shows that using the 3 indicators of food security, the results of the HFIAS indicator categorise EPWP participants as being predominantly food insecure as 71 (63.4%) of them are severely food insecure. Contrary to HFIAS results, HDDS indicates that about 60% of the participant are categorised as food secure. The food expenditure method, however, categorised EPWP participants as mainly mildly and moderately food insecure as 81 (72.3%) of them belonged to this category. Hence, an overall conclusion of the precise food security status of participants could not be easily reached as the results from the quantitative indicators used to assess food security are inconsistent with one another.

The results obtained from the study show that HDDS is negatively correlated to HFIAS, HDDS is positively correlated to the food expenditure method and HFIAS is inversely correlated to the food expenditure method[34]. Table 26 also shows that not all food secure participants are categorised into the same food security group using different methods, categorisation depends on the food security measure used as well as the set cut-off points. Out of the 67 participants categorised as food secure using the HDDS, and the 11 participants categorised as food secure using the food expenditure method, only 6 participants are under both the HDDS and food expenditure method.

[34] pwcorr HDDS HFIAS, sig = -0.4747, pwcorr HDDS foodpropn, sig = 0.0744, pwcorr HFIAS foodpropn, sig = -0.1067

Table 26: Comparing the categorization of food security using different indicators

	Food expenditure method			
HDDS	Food secure	Mildly and moderately food insecure	Severely food insecure	Total
Food secure	6	51	10	67
Mildly and moderately food insecure	1	15	6	22
Severely food insecure	4	15	4	23
Total	11	81	20	112

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019).

Tiwari, Skoufias, and Sherpa (2013: 10) explained the existence of a positive correlation between household dietary diversity and food expenditure share indicators. Poor families that receive an increase in income are more likely to spend more on food and hence, increase the consumption of food varieties from multiple food groups. These 2 indicators are highly correlated with each other. However, such an association is not the same as the HFIAS indicator. Table 27 shows how the three food security indicators correlate with each other.

Table 27: Correlation coefficients between the food security indicators

	Food expenditure share	HDDS	HFIAS
Food expenditure share	1.0000		
HDDS	0.0099	1.0000	
HFIAS	-0.0323	-0.2212	1.0000

Source: Own compilation from the Expanded Public Works Programme and food security survey data (2019).

Table 27 indicates a positive correlation between the food expenditure share and the HDDS indicator (with a coefficient of 0.0099). On the other hand, the HFIAS indicator is negatively correlated with the food expenditure share as well as the HDDS (with coefficients -0.0323 and -0.2212 respectively).

Another possible reason for the inconsistencies across indicators is the measurement of food security over different recall periods. HFIAS measures the prevalence of food insecurity within

households by capturing any feelings of anxiety and experiences of insufficient food quantity and quality within the household (Coates et al., 2007: 1). It is measured on a recall period of 30 days. HDDS is the number of foods or food groups consumed by any member of the household (Swindale & Bilinsky, 2006: 6). HDDS can be used to measure the economic ability of the household to access a variety of foods (Huluka & Wondimagegnhu, 2019: 4). Its recall period is 24-hours. On the other hand, the food expenditure share method measures households' access to food in terms of the proportion of household income that is spent on food (Smith & Subandoro, 2007: 79). It also has a recall period of 30 days. Indicators with recall periods of 30 days (particularly the HFIAS) ask respondents the number of days that any of the food insecurity experiences occurred during the last 30 days. When comparing HDDS with a recall period of 24 hours, respondents could have been food insecure in the last 29 days but managed to access a variety of food from different food groups (more than 8) during the last 24 hours. Under the HFIAS indicator, they are categorised as severely food insecure for indeed, the food insecurity experience occurred for more than 10 days in the last 30 days. Additionally, the same household will also be labelled as food secure as they have a high dietary diversity score (consumed food from more than 8 food groups) in the last 24 hours. As such, the indicators will be inconsistent with each other although they are a true reflection of the food security status of respondents based on the different recall periods.

The consumption of inferior foods within households can also cause inconsistent outcomes on food security indicators. Due to limited income, households can switch from the consumption of healthy foods and start consuming inferior foods of low quality in the households. Such consumption of inferior foods can result in high HFIAS scores as household members would indicate that they often eat foods that they do not really like because of a lack of resources. However, inferior foods are usually cheaper and households can spend less and buy more variety. As such, the food expenditure share will be low and the HDDS will be high, classifying the households as food secure. On the other hand, the HFIAS indicator will consider households as food insecure as they often consume food they do not like. Also, households will be anxious about what to eat within their households. The result is inconsistent outcomes from food security indicators.

Some people can also perceive themselves as food insecure when they compare their food security status relative to other non-poor and well-off households within their neighbourhood or community. Within their households, these families will still be consuming sufficient foods from multiple food groups although not as much (in terms of both quality and quantity) as what is consumed by their fellow non-poor friends or neighbours. As such, their HFIAS scores can be very high (categorised as food insecure) whilst their HDDS classifies them as food secure as they are consuming a highly diverse diet within their households.

Another possible reason for inconsistency across indicators can be respondents' bias. Such bias can be related to perceived food insecurity concerning the benefits received from the programme. Participants' perception can be that, if they describe themselves as being in a worse-off state, an indication that the programme has minimal or no significant impact at all, then the programme designers will increase the reward (or wages) given to participants. These respondents will describe themselves as experiencing severe levels of food insecurity under the HFIAS indicator. However, their reported HDDS and food expenditure share will indicate otherwise. Hence, the HFIAS will describe households as predominantly food insecure and their HDDS and food expenditure share will categorise them as being food secure resulting in inconsistency across indicators.

Another cause of respondents' biased perception of their food insecurity status (under the HFIAS indicator) is when the outcome they expected to receive from the programme is not matched with the outcome they are receiving from the programme. To them, this was the chance to report that the programme had not provided much significant impact on their household food security. Some participants expected EPWP to be the solution to all of their household hunger problems. However, when the programme did not solve all household food challenges, participants still felt vulnerable to hunger and they saw the study as an opportunity to express their frustrations about the programme and over-report their household food insecurity condition. Nonetheless, their HDDS and household food expenditure share would indicate that these households are not as food insecure as they claim to be, thus causing inconsistent results.

The use of different cut-offs on different indicators is also another possible reason for inconsistent outputs. With no established cut-off points, different studies use different cut-off points (under different contexts and in different countries) to distinguish food secure from food insecure respondents. As such, some cut-offs can categorise a sample of respondents as overly food secure whilst other cut-offs can generate different outcomes by categorising the same group of people as predominantly food insecure.

6.4. Conclusion

This Chapter has provided an assessment of the food security status of EPWP participants. Data was collected from a sample of 112 participants working under the Working for Ecosystems, Working for Water Central, and Working for Water South projects of EPWP. Due to the different household dimensions and no single defined instrument to measure food security, 3 different indicators, namely the HFIAS, HDDS, and the Food Expenditure approach, were used to conduct a robust measurement of food security among the sampled group of participants. The HFIAS indicator categorizes almost 60% of the participants as severely food insecure whilst the HDDS indicator describes 60% of the participants as food secure. The food expenditure method, however, classified more than 70% of EPWP participants as mildly and moderately food insecure. With such inconsistency in outcomes, a definitive conclusion on the food security status of EPWP participants cannot be reached.

Although the results of the HDDS and food expenditure approach seem to lean towards an overall level of food security amongst EPWP participants (which could be regarded as the general conclusion of the study), it should be noted that these indicators might overstate the food security contribution of EPWP. Income used to buy food within the household did not solely come from EPWP. In addition to income from EPWP, several households were receiving income from social grants (mostly the child support grant) as well as other sources (such as part-time jobs from other working household members). Such aggregate income increased the number of food groups from the HDDS as well as the amount of household income spent on food, thus, more likely to overstate the food security status of households using these indicators. Assuming income from other sources was deducted from total household income, participants receiving such

income would be categorised as worse off than their status quo. Those categorised as food secure might become food insecure and those mildly and moderately food insecure may become severely food insecure, thus aligning the results on these indicators with the results of the HFIAS, which categorises EPWP participants as predominately food insecure.

Considering the results of HFIAS, it is possible that participants expressed how they perceived themselves as food insecure concerning EPWP alone. Interview questions were answered about the employment period in EPWP, thus aligning the results with the actual impact of the programme on household food security. However, an indicator with the perceptions of respondents is susceptible to confirmation bias. Participants can overstate their food insecurity status to try to increase their benefits from the programme. As such, it is difficult to ascertain fully the correct food security status of EPWP participants from contradicting indicators.

Another important issue to be investigated in the South African context is diet quality. Although some of the poor members of society perceive themselves as poor and food insecure, their HDDS indicate that they have very high dietary diversity scores, and they are categorised as food secure. However, due to income constraints, most of them substitute quality food with inferior and highly processed foods just to have enough food to feed their families. Although such highly processed foods are cheap and affordable, they are not nutritionally healthy and may lead to malnutrition, such as obesity and high blood pressure, amongst members of this vulnerable group. To further explore the food security status of EPWP participants, qualitative data shared by several participants regarding some of their household food insecurity experiences are presented and analysed in Chapter 7. Such data will also complement the quantitative assessment of food security conducted by the food security indicators used in this Chapter.

CHAPTER 7: CASE STUDY OF EPWP PROJECTS IN THE ENVIRONMENT AND CULTURE SECTOR IN SIMONS TOWN: WHAT COULD BE DONE DIFFERENTLY

7.1. Introduction

This Chapter aims to discuss fundamental programme issues, concerns, and suggestions raised by EPWP participants from the case study. Although Chapter 4 discusses the use of a mixed methods analytical approach, other rich qualitative information that was not presented in Chapter 6 could not be left out of the study. Data were synthesised and presented under different themes of what might be done differently to EPWP to improve its contribution towards individual and household food security. The discussion is provided about the EPWPs theory of change and how it is linked to food security among participants and their households. The rest of this Chapter is presented as follows: Section 7.2 gives an overview of the theory of change of EPWP and food security highlighting how participating in EPWP will lead to food security. Issues raised by participants and key informants are presented concerning this food security theory of change. Section 7.3 concludes the Chapter.

7.2. An overview of the theory of change: EPWP and food security

According to the theory of change of EPWP and food security elaborated in Chapter 3, participants of a well-designed EPWP can receive benefits from the programme in 3 different ways: through (1) the wage vector, (2) the skills vector, and/or (3) the asset vector. Under the wage vector, income received is used to purchase food for current consumption (and become immediately food secure), precautionary saved for future consumption (for food security in the medium run), and/or invested elsewhere to increase household income (which can be used to buy food for medium to long-run food security).

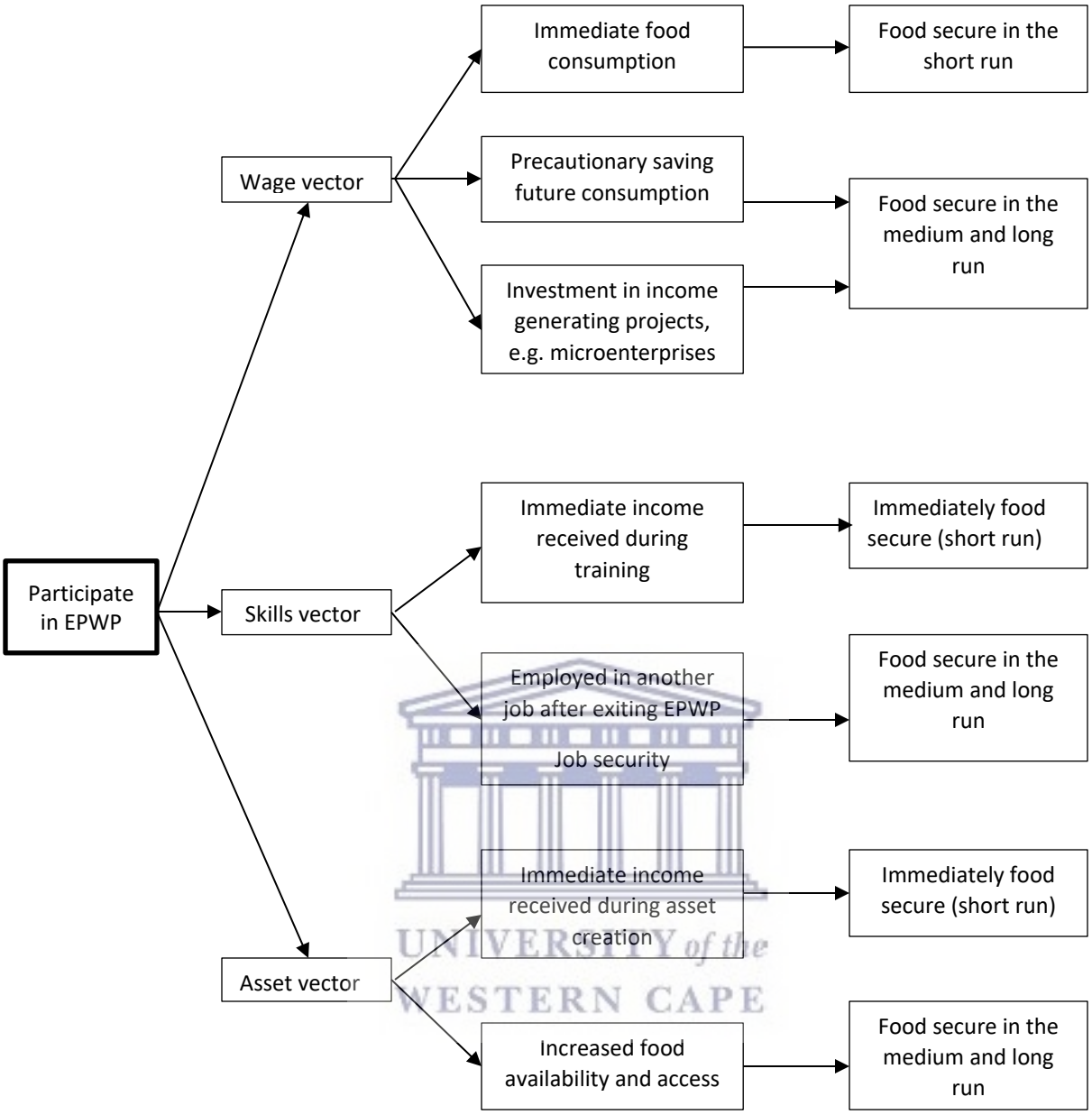
Participants also benefit from EPWP through the skills vector. The main objective of EPWP's training initiative is to equip participants with better skills that will increase their job security, create self-reliant people rather than people who only depend on government support, and improve their chances of getting better work opportunities and exit from the programme (DPW,

2013: 1). Such opportunities can be formal or informal sector employment, self-employment or entrepreneurship (McCord, 2012: 4).

EPWP provides accredited training as well as social-related training. Social-related training courses are basic life awareness and essential skills such as health and safety training. On the other hand, participants can receive accredited training through skills development programmes, learnerships, or artisan development (DPW, 2013: 1). Although the chances that participants acquire other work opportunities are depended on the quality of the skills developed as well as the demand of such skills within the labour market, these beneficiaries are more likely to have a medium and long-term food security impact from EPWP's training initiative.

The other possible route of benefit for EPWP is the asset vector. Participants can also derive food security benefits from the assets created by the programme although the benefits depend on the type of assets created. EPWP has been providing workers to participate in the National School Nutrition Programme (NSNP) in the Western Cape Province since 2012 (Devereux et al., 2018: 16). These participants have been working in the school gardens in the production of crops and vegetables. Extra produce from these gardens (after school children have been fed) has been sold to community supermarkets and other community food markets, thereby increasing food availability even within communities of those EPWP workers. Figure 8 presents this theory of change on how participating in EPWP can lead to food security amongst participants and their households.

Figure 8: The theory of change: EPWP and food security



Source: Author's compilation from various sources (DPW, 2013; DPW, 2015; EPWP, 2018)

A well-designed EPWP has the potential to increase food security amongst participants in the short medium and long run. Only adequate income (McCord, 2012: 3) can enable participants to access short, medium, and long-term food security benefits of EPWP via wage vector as participants can purchase food for consumption, can conduct precautionary savings for future consumption, and invest some of the income to increase household income. Several participants indicated that they were satisfied with the amount of income they were receiving from EPWP. "*I*

don't have any complaints. I work every month and the salary is enough for me and my daughter," said one participant [p87, f, wfe]. However, although the food expenditure method in Chapter 6 of the study indicated that 68.8% of the participants were allocated less than 50% of household expenditure towards food, the majority of the participants argued that they were not receiving a sufficient amount of income from the programme. They wanted an increase in their wages. One of the participants stated the following:

> *They* (EPWP) *should increase our pay, not by R10, that's nothing. Our pay should be between R250 to R350 per day* (currently earning R116 at 2019 prices), *and that's still not enough. I want to save some money, any amount of money, so that I can use it to buy things like food when I don't have a job. But the money is not even enough to save*. [p49, m, wfws]

As indicated by the participant, the income they were receiving was insufficient for them and they were unable to have any precautionary savings for future consumption. However, other household factors, such as household size, are important determinants of considering whether income received from EPWP is sufficient to ensure food security at all times for participants and their households.

Also, regular payments are key to accessing benefits from the wage vector. Several participants indicated that they were not receiving regular payments from EPWP. They complained that EPWP did not have a set date of payment, like for instance, the last day of the month. Payments were task-based and as such, varied from contract to contract. Some contracts were long (more than 30 days of work) whilst others were short (9 to 14 days of work). After completing a task, participants had to wait for inspection from Park Rangers, and if their work passes the inspection, only then can their work invoices be sent for payment processing. If not, participants had to redo the work[35]. Payment will then be sent through but not on a specified date of the month. One of the EPWP participants mentioned the following:

> *We want to have a specific date for payment. Either it's monthly or a fortnight, but it has to be on a specific date, like the 15th day of every month or the last day of every month. It's very hard to plan when you don't even know when you are going to get paid.* [p33, f, wfwc]

[35] Detailed explanation on inspection and the payment processes are provided in Section 7.3.2.

Other participants argued that there were irregular payments because work opportunities were not issued regularly. These EPWP participants reported that they would work for only a few months (where they receive regular payments) followed by periods of no work with no payment. Another participant [p3, f, wfe] stated the following:

> *This is our first job after not working for 2 months. During this time, we were not receiving any payment and it was very hard to keep asking for food to give to the kids when you don't even know when you will get money because you don't even know when you will start working again*.

Such elements of EPWP resulted in irregular payments to participants, limiting the programmes' ability to reduce food insecurity amongst participants and their households.

Additionally, the creation of competitive labour market skills will enable participants to find better formal or informal employment, create self-employed people or entrepreneurs with better income, and increase the food security impact. In this study, no data was available for post-EPWP participants to assess the efficacy of the skills received from EPWP in finding other work opportunities. However, skills received by participants in the Environment and Culture Sector are discussed in Section 7.3.6. Such skills are developed from accredited training as well as social-related training.

Additionally, although not all assets created by EPWP might have a food security benefit to participants, perhaps some other assets tailored to create food security benefits can be designed. No assets created in the Environment and Culture Sector in Simons Town contributed towards participants' food security. One of the project managers explained the following about the work they did:

> *We are doing land rehabilitation … or roadwork, and opening drainages … to direct water flow because there is a lot of damage due to the rain that comes down the mountain. The EDRR is the Early Detection and Rapid Response project that follows the normal alien clearing by the Working for Water teams, detecting and removing new emerging alien species.* [Project manager]

As indicated in the manager's description, their projects focus mainly on land rehabilitation in National Parks as there is a lot of land degradation from the rain. Additionally, another manager highlighted that as an alien clearing project, they focused on the eradication of alien plants within

the National Parks [Project manager]. The manager also mentioned that, in some cases, conduct management of Parks land projects where they also partner with the Working for Ecosystems teams. Nevertheless, there were no assets created in these EPWP projects that had a food security benefit to participants or their communities.

EPWP can significantly contribute towards participants' food security via the wage, skills, and/or asset vector. However, the surveyed EPWP participants highlighted some concerns regarding EPWP and how the programme's impact on their food security status might be limited. They also indicated some of their suggestions on how the programme can have a better food security impact on themselves and other future participants of EPWP. These issues are explained in Section 7.3.

7.3. Issues raised by EPWP participants: what could be done differently

As indicated in the previous section, several concerns about EPWP were raised by the participants. Some of these complaints included receiving a very low wage rate which is insufficient to provide for all household needs; inefficiencies in some EPWP and SANParks operations, such as delays in inspections, leading to participants not receiving their pay during their expected period; not having a set date of leading to inconsistencies in the frequency of payment; not receiving adequate skills training competitive enough for participants to acquire other forms of employment, amongst others. These factors are discussed below in line with the theory of change of EPWP and food security.

7.3.1. Wage vector - A complaint against low wages

The income from EPWP is the most immediate and direct link to food security for EPWP participants and their families. Income can be used to purchase food for immediate consumption, saved for future consumption, or invested elsewhere to generate more household income. EPWP wages are distinguished among three categories of workers; contractors, semi-skilled participants, and general workers. Contractors are intermediaries who are contracted by EPWP to deliver a particular service (DPW, 2012: 7; DEA, 2014: 13). To deliver their service, the contractor is expected to recruit from poor members of the working-age population within their

communities and create their team of workers (who are regarded as participants). The contractor should provide full safety clothing, reliable and safe transportation, and all necessary tools to their workers for the service to be provided to EPWP. As such, the EPWP contractors are paid more than the participants as they have more responsibilities.

On one hand, the participants are paid less than the contractors. Wage rates among participants differ according to the skills that each participant possesses. Although participants are largely unskilled when they enter into the programme, EPWP provides accredited as well as social-related skills training to its participants. All participants receive social-related skills training but not all participants receive accredited skills training. Participants that receive accredited skills training (such as Health and Safety skills and chainsaw operating skills) are considered semi-skilled workers and the others are referred to as general workers. Table 28 highlights the daily wage rate and monthly average wages for EPWP between 2018 and 2019.

Table 28: Daily wage rate and expected monthly wages for EPWP participants, 2018 - 2019

	2018		2019	
	Daily wage rate	Expected monthly wage	Daily wage rate	Expected monthly wage
Contractors	R341.50	R6,830.00	R351.50	R7,030.00
Semi-skilled participants	R117.50	R2,350.00	R123.50	R2,470.00
General workers	R111.50	R2,230.00	R116.50	R2,330.00

Source: Own compilation from EPWP and food security data. Notes: Expected monthly wages are calculated based on 20 days of work per month (DPW, 2005: 7).

According to Table 28, between 2018 and 2019, contractors were paid R341.50 and R351.50, semi-skills participants received R117.50 and R123.50 and general workers were getting R111.50 and R116.50. Assuming there is sufficient work and contractors and their teams work 40 days a month, only contractors were receiving wages that were more than the labour market minimum wage of R3,500 (National Treasury, 2016: 59) for both periods. For 2019, contractors were receiving R3 530 more than this minimum wage whilst semi-skilled participants were getting R1,030 less, and general work participants received R1,170 less than the minimum wage.

Data collected amongst EPWP participants indicated that participants do not always work all 20 days every month. It was noted by participants that some projects required 2 weeks to complete whilst others were 3-week contracts. One of the contractors even indicated that one of the projects they worked on only required 9 days of work. A project manager stated that the duration of projects was based on the size of the site that teams had to work on [Project manager]. He highlighted that the bigger the site, the more days of work it received. Additionally, the manager elaborated that payment for work done was made at the end of the task (where invoices of work take 7 – 15 days to be processed at EPWP's head office) based on the number of workdays. As such, holding other things constant, wages for 2 weeks of work could be received after 30 days. Hence, during 30 days, participants could receive wages that are far less than their expected monthly wages and yet, they still need to provide adequate food for themselves and their entire households.

Although the food expenditure method of assessing food security indicated that 68.8% of the participants allocated less than 50 percent of household expenditure towards food, several respondents highlighted that the wages received from EPWP were inadequate to meet all household expenses. They were arguing for higher wages. "*We want our wages to be increased to R200 because the money is not enough, I have to sacrifice my food for my children*", said one participant [p44, m, wfwc]. Another participant [p33, f, wfwc] also stated that "*Things are expensive and our salary is not enough. It must be increased to at least R150 per day, maybe we will be able to cope because what we are getting is just not enough*". As noted by these participants, EPWP wages were insufficient to cater to all needs of participants and their households. Perhaps a change in EPWP's wage strategy is required.

In addition to using community and geographic targeting, EPWP also uses the self-targeting mechanism of recruitment, by paying wages that are below the labour market minimum wage so that only poor unemployed members of the working-age population self-select themselves into the programme (DPW, 2018: 5). Perhaps, instead of focusing more on preventing lowly paid people from crowding out deserving poor members of society, the wage strategy should be poverty targeted like Ethiopia's Productive Safety Net Programme (PSNP) and the two

programmes in Bangladesh (Rural Maintenance Programme and the World Food Programme's Food for Assets) whose targeted mechanisms were explicitly geographic or poverty targeted (Subbarao et al., 2013: 15). A poverty-targeting mechanism might ensure that poor and food insecure participants who enter into the programme benefit more from the programme and they increased access to food within their households. The nature of the programme in itself is a sufficient mechanism of EPWP to self-select the poorest and most deserving members of society into the programme. Furthermore, as a development programme, perhaps the wages received from the programme should be set at the minimum wage as it is the nationally recognised level of income that a household should receive for a basic standard of living. Other countries that have implemented such an initiative include India in its MGNREGS. The programme paid a minimum wage that was equivalent to the agricultural minimum wage to all participants (Subbarao et al., 2013: 14).

A good wage should ensure that basic household consumption needs are met and recipients are also able to save some of their income, acquire some small assets or invest a portion of the income (Devereux & Solomon, 2006). An increase in wages may enable a higher marginal propensity to save amongst the participants, thereby increasing the food security impact of the programme as participants can use the saved income for future consumption. Additionally, saved income can also be used for other smaller microenterprises to generate more household income. Similar initiatives were practiced in Bangladesh's Rural Maintenance Programme and Malawi's Central Region Infrastructure Maintenance Program, where the women participants of the programme were required to save a portion of their wages to use as seed capital and use it to create their microenterprises in the informal sector (Subbarao et al., 2013: 16). If such an initiative worked in these countries, with an increase in wages, a similar approach can be adopted in South Africa's EPWP and improves participants' household food security status.

7.3.2. Wage vector – Delays in the anticipated date of payment

Another issue reported by EPWP participants that affected their wage vector pertained to delays in the anticipated date of payment by EPWP. Although income is low, its regular and timely payment to participants can lead to noticeable food security contributions amongst beneficiaries

as they can better plan household strategies to ensure sufficient household food supply at all times. Such strategies can range from reducing meal sizes, skipping some meals, borrowing food or money to buy food from friends or neighbours to taking small loans, just to have enough food that would last until the next pay date (Stats SA, 2018a). Any unstructured delays in payment result in uncertainty over the date of payment leading to an inappropriate coping strategy implemented within households. With no income from EPWP and limited or no income from other sources, families can experience severe food insecurity during this period of delay. Several delays were reported by EPWP participants. However, the predominant ones were delays in the issuing of work contracts and delays in the inspection. These are discussed below.

7.3.1.1. Delays in issuing work contracts

The first delay reported by participants pertains to the issuing of work contracts by EPWP to the contractors and their teams. Participants argued that the time taken by EPWP to process new work contracts for any upcoming work opportunity was too long. Contractors were also complaining about the same issue. One of the contractors explained that such delays in work contracts made it difficult for them to efficiently operate as an entrepreneur and to always retain the recruited participants if it takes too long for them to start working.

> *The delays in the contracts are not good for everyone. We just have to sit at home while contracts are being negotiated and we are not paid for this time when we are not working. Participants have to spend close to 2 months sitting at home, without work and this is not ideal for me as a contractor because I might lose workers as they decide to look for other jobs elsewhere* [Contractor].

Based on the description from the contractor, delays in issuing work contracts by EPWP meant that participants were out of work and not receiving any income for relatively long periods. This group of participants reported having spent close to 2 months not receiving any income from their employer of last resort, resulting in inadequate food supply and hunger experiences in their households.

As part of their coping strategies during some of these periods of no work, more than 75% of participants and almost half of them reported having asked for food or money to buy food from family and nearby friends respectively. Several participants reported having sacrificed their food

for other members of their household (mostly for children) as a way to cope during these long waiting periods. However, some of these strategies were short-lived, they could only be implemented and work efficiently by providing a food supply for only a few days. The delay in issuing contracts led to more uncertainty among participants and some of the coping strategies became ineffective (participants reported that they could not continuously ask for food or money to buy food from friends and family all the time).

Several participants mentioned that they were hesitant to engage in other strategies that might have longer-term food security benefits, such as looking for another work opportunity. Participants feared losing their jobs on the EPWP team. On these EPWP teams, employment is not guaranteed and with an oversupply of unskilled labour in poor communities, one can easily be replaced by another. Additionally, it was also challenging to find other paying alternative jobs for this group of EPWP participants. "*There are no jobs out there. I can't lose my job here. If I do, I don't know how I will feed my family*", said one EPWP participant [p60, f, wfwc]. Although participants were vulnerable to household hunger, the uncertainty of when they would start working again and the fear of losing their jobs (caused by the delay in issuing contracts by EPWP) made the majority of team members sit at home and wait for EPWP work.

Other participants, however, instead of just waiting to be called in when work was ready, decided to look for other work opportunities to raise extra income so that their families would not starve. One of them mentioned the following:

> *When we are not working, I go to the mall to be a car guard. I am not paid for doing this job, but at least I will get tips and this is better than not receiving anything at all. Sometimes I get up to R200 per day in tips, and I use this money to buy some extra food for their family.* [p79, m, wfe]

What could be done differently, as suggested by participants and contractors, is for EPWP to reduce the processing time of work contracts. A fixed and specified period for processing work contracts should be set and agreed upon between EPWP and contractors. For instance, it should take 5 working days to process a work contract. The contractor and the participants should be aware of this timeframe and after the 5 working days, work should commence within the next 2 – 3 working days. The agreed-upon processing timeframe must strictly be adhered to at all times.

If EPWP does not comply with the agreed processing timeframe, they should compensate contractors and their teams for all extra days of waiting. Such certainty and transparency will ensure that participants have a better impact from EPWP as they implement appropriate coping strategies to ensure that there is enough food to eat at all times within their households as they wait for the next work contract. Furthermore, waiting days can also be reduced by providing further skills training to participants during these days. A detailed explanation of skills training is provided in sub-section 7.3.5.

7.3.1.2. Delays in inspections

Another delay reported by participants regarded the inspection period by Park Rangers. Park rangers are SANParks officials who are responsible for protecting and preserving national parks in South Africa (SANParks, 2016: 36). These Rangers are also environment experts who are responsible for preserving wildlife, ecosystems and natural resources within the national parks. For every project that EPWP participants complete, Park Rangers are to inspect the site to assess whether the allocated task was completed to their satisfaction. If the work is completed well, the project is signed off by EPWP and the teams' payment invoices are sent through for payment processing. If the job was not well done, the team is supposed to rework the site as indicated by the Park Rangers until their work is approved. The project will only be signed off once the Park Rangers have approved its completion. According to one of the EPWP project managers, inspection is supposed to be conducted with Park Rangers (together with an EPWP field assistant, the contractor, and their team members) a few days after the project has been completed so that invoice processing would be done at the EPWP head offices in Pretoria [Manager]. Payment will then be sent through to the contractor who then passes through the wages to members of their team (the participants) accordingly.

However, several contractors and participants reported that Park Rangers were taking a relatively long period to come for an inspection. "*One of the issues is that we have to wait a long for inspections. If the inspection passes, then we get paid. If not, then we have to redo the work*", indicated one EPWP participant [p70, m, wfws]. Another contractor also mentioned the following:

The park rangers take time always to come and inspect the sites. You cannot even do other work during this time but just wait. And you will not be paid for the other week that you would have lost while waiting for them to come and inspect. [Contractor]

Unfortunately for the participants, such delays in an inspection by Park Rangers are unfavourable for them as they are the ones who spend more days not receiving any income while there is hunger looming in their homes.

Payment delays were also an issue raised by participants of Rwanda's VUP located in the Southern province of Rwanda. Data collected by FAO (2016: 3) indicated that 32% of the participants reported not having been paid on time. Such delays in payment weakened the programme's impact on household poverty and food security.

For the case study, perhaps a sit down between EPWP and SANParks is required where both parties agree on a clear and strict inspection period that Park Rangers have to adhere to at all times. Should any delays occur on the side of Park Rangers, since participants are not paid during that waiting period, SANParks will be contractually liable to pay wages to participants for every extra day of waiting for inspection. EPWP project durations should be communicated to SANParks during commencement and a few days closer to the end. With such information, Park Rangers are aware of the period they are expected to come for every inspection and as such, they are better planned and prepared for the site visits. When called upon, inspections will be conducted timeously with no delays. Additionally, occasional visits by Park Rangers to sites where participants are working can also facilitate pre-informal inspections where Rangers can guide contractors and their teams on how to complete their work efficiently. During the official inspections, projects will be passed and signed off swiftly and no teams will be required to re-work their sites. The clearing task will be completed efficiently and work invoices will be sent off without any delays, which is a benefit to both parties. As such, delays in EPWP must be eliminated so as not to weaken the programme's impact on food security.

7.3.2. Wage vector – "A month is too long"

Another issue raised by participants that affected how EPWP's wage vector links to food security pertained to EPWP's frequency of payment. Participants complained that as the income from

EPWP was low (even less than the R3 500 labour market minimum wage (National Treasury, 2016: 59)), it was insufficient to cater for all other household expenses as well as buying enough food that would last an entire month. The majority of them reported that the last days of the month (for instance, from 21, 22, and 23 of every month until month-end) were the most difficult. The early days of the month are the days when income from other sources, such as social grants, is received, and hence, most of the food within the household is purchased during that time. By the end of the month, they argued, food bought at the beginning of the month would have been consumed and finished.

One of EPWP's participants shared their household hunger experience during the last days of the month. They explained:

> *Sometimes I had to sleep hungry myself because I would sacrifice my food so that my kids would eat. I'd even do this even if my medication does not allow me to do this. I had no option, it was very tough for me. The situation was very hard just before month-end because most of the food will be finished.* [p72, f, wfwc]

Another participant also highlighted that days before the end of the month were the period when they were more like to experience food insecurity.

> *"When the month ends, most of us will not have food in our houses. This a very difficult time of the month because you can't ask for food from friends and family because they also don't have enough food in their houses",* said the participant [p80, f, wfwc].

Such experiences from the EPWP participants serve as evidence that hunger was predominantly experienced during these last days of the month. Participants appeared to be living from paycheque to paycheque, an indication that they had no precautionary savings for consumption.

What could be done differently, as suggested by the participants, is a restructuring of the frequency of payment. The majority of the participants argued that a month was too long for them to only receive and fully rely on a once-off monthly payment system. Such a system meant that participants were more likely to access bulk quantities of food once a month, and had to ensure that such food provision lasted until the next paycheque. However, evidence amongst the participants indicated otherwise. Food bought at the beginning of the month from the once-off payment of very low wages was insufficient to last an entire month. The majority of them,

however, indicated that if only they could receive their payments fortnightly, perhaps such a payment system would be more beneficial to their food security status. One EPWP participant stated the following:

> *As EPWP participants, we should be paid fortnightly, not monthly, as a month is too long for us; we will not have anything to eat at home during the last days of the month. The hunger situation is worse during this time of the month as there is nowhere else where we can get money or food.* [p89, f, wfwc]

Although wages are low, then at least, they might have access to income twice a month, which they can use to buy food for all days of the month.

As stated by the EPWP participants, it is evident that the last days of the month are the most food-insecure. If EPWP participants do not have any other source of income and they do not have precautionary savings for future consumption, payment of EPWP income twice a month can increase household food access for all days of the month. Buying food twice a month can significantly reduce the prevalence of hunger within households.

7.3.3. Wage vector - Payment in cash and/or food transfer

The other issue highlighted by participants revolved around their method of payment from EPWP. According to EPWP's implementation guidelines (DPW, 2005: 10), "Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker". Such payment for a completed[36] task is made available to the contractor's bank account from EPWP after a 7 – 15 day processing period at EPWP's head office in Pretoria [Project manager]. The contractor then makes individual payments to members of their team.

Due to a combination of low wages (as explained in sub-section 7.3.1) and delays in the time of payment caused by delays in the inspection as well as the 7 – 15 day processing period (as

[36] After participants finish working on a site, it has to be inspected by EPWP field assistants or project manager together with SANParks Park Rangers who will determine whether the job has been completed to satisfaction. If well done, the site is signed-off and work invoices are sent for payment processing at EPWP's head office in Pretoria. If the inspectors are not satisfied with the work, the participants have to re-work the site until satisfaction.

explained in sub-section 7.3.2), participants reported experiences of high food insecurity within their households, predominantly during periods when they are waiting for payment.

To counteract such food insecure experiences, several participants suggested a diversified payment option, to not only be paid in cash/bank transfer but to have that payment together with a food parcel. They argued that the food parcel would be an important source of food supply when participants are waiting for payment which will be a significant contribution towards the reduction of household food insecurity during those challenging times. Participants requested the food parcel days before the end of the month as the majority of them reported severe hunger experiences during these days (as explained in subsection 7.3.3). Furthermore, One EPWP participant explained the following:

> *EPWP should give the participants food parcels, not always, but maybe once a month. They should mix the pay and give us money together with the food parcel as well in addition to the income because the money is too low. Maybe EPWP should give us those food parcels later during the month when there is no more food at home and we are not yet paid.* [p88, f, wfe]

Several other participants strongly advocated for the provision of food parcels as an additional payment option. They argued that they were experiencing hunger and had no energy to work since they had not been paid their wages on time. However, they were expected to come to work all the time and additionally, *"EPWP work is hard labour which requires a lot of energy", said one participant* [p1, m, wfwc]. With the provision of food parcels, participants can have food to eat for themselves and their families, and also attain more physical energy for the labour-intensive EPWP work while waiting to be paid.

These shared sentiments indicate that indeed, for some participants, hunger is experienced from not having enough income to buy food for all household members and some delays in receiving income can be significantly mitigated by receiving food parcels, especially during the last few days of the month. Participants and their households can reduce the severity of food insecurity within their households if they can receive food parcels while waiting to receive payment.

For enhancing the food security impact of the programme, payment in food parcels can be used. Countries such as Ethiopia in its PSNP have also implemented a similar payment mechanism

where participants of public works programmes are paid with food. A study by Hirvonen and Hoddinott (2020) analysed the views of beneficiaries of PSNP on their preferred payment mechanism over some time. According to the study, for all years for analysis, the "overwhelming majority of the beneficiary households indicated that they wanted to receive payments either only or partly in food" (Hirvonen & Hoddinott, 2020: 8). FAO (2013: 10) also stated that wages for beneficiaries can be paid in the best form of payment that suits the context and is most convenient between both parties (the employer and the employed). As such, if EPWP participants are asking for their payment to party cash and party food, perhaps an option of such a payment structure should be made available to those that might require it. Such payment options cash and/or food were also indicated by Ngandu and Motala (2019) who assessed the effectiveness of the different payment methods on some of EPWP's projects and beneficiaries. According to EPWP participants in the case study, cash payments can be made available at the beginning of the month and such food parcels can be made available to participants during the last week or 2 weeks of the month (during most food insecure periods). Such a mechanism can significantly improve the programme's food and nutrition security impact.

7.3.4. Wage vector – Lack of microenterprises for participants

According to the theory of change of EPWP and food security, using EPWP wages to engage in microenterprises can significantly lead to an increase in household income which can provide medium to long-term food access for participants and their households. Due to delays in payments (as elaborated in sub-section 7.3.1) and participants not having enough food for the entire month (as explained in sub-section 7.3.2), microenterprises would be a vital tool to provide additional income for food during these vulnerable moments.

One of the contractors who had her microenterprise stated the following:

> *I have my own business. I run a shisa nyama* (a small business selling braai meat) *and I have 2 employees. The business is quite okay, it gives me extra money. I operate during the weekends and some other days when it's month-end because people have money when it's month-end and they will be spending a lot. I make like R3000 every week or even more when it's month-end. I never sleep hungry, I always have food to eat in my house. I even give loans to some of the workers here.* [Contractor]

As stated by the contractor, the microenterprise they have provides them with extra income (in addition to EPWP's wages) which has been a stable contribution towards household food security. In addition to having enough food at all times, the contractor was also able to provide loans to other participants, an indication that the contractor had even more than enough access to sufficient food at all times. Micro-enterprises can be a significant contributor to household food security during the last few days of the month or the long waiting periods when work contracts are being processed.

However, only this contractor from the group of all sampled participants reported having a microenterprise. No other participant indicated having any small business. It is possible that EPWP participants are not engaged in microenterprises because their wages are too low. They are unable to buy sufficient food that lasts an entire month, cover all other household expenses, and still have enough money to invest in a small business. Additionally, perhaps participants are not exposed to any entrepreneur initiatives and as such, they are less keep to engage in them. Nonetheless, microenterprises were lacking amongst EPWP participants.

Such investment in microenterprises was also noted amongst beneficiaries of Rwanda's VUP where the wages received by female participants were used as investments in small trading businesses as well as making and selling of homemade beer (FAO, 2016: 2). Additionally, members of VUP also received micro-loans from the Ubudehe Credit Scheme which they used to invest into livestock such as rearing poultry for meat and eggs as a mechanism of saving and generating more income for future consumption (Devereux, Eide, Hoddinott, Lustig & Subbarao, 2012: 53). Ethiopia also provides government food security loans as part of the Ethiopian Government Food Security Programme (FSP) that also includes PSNP (Siyoum, Hilhorst & Pankhurst, 2012). Beneficiaries invested in initiatives such as the farming of crops and livestock as well as non-farm activities. Experiences from other countries of their engagement in such microenterprises are evidence that participants of EPWP can also receive medium to long-term food security benefits from similar initiatives. Details of how it can be implemented are provided in Chapter 8.

7.3.5. Skills vector – Limited and less competitive skills training

EPWP training is an important part of the programme and an important element that can facilitate participants to graduate out of poverty (Hashemi & de Montesquiou, 2011). It is the intention of the programme to broaden the skills base of the unskilled participants who enroll in the programme so that they can better market themselves in the labour market. According to the DPW (2013: 1), "Training is an important component within the EPWP to ensure that beneficiaries gain skills while they work on EPWP projects, to enhance their chances of being placed on other viable programmes upon exit from EPWP projects". Training also increases job security as well as self-reliance so that participants do not always rely on government support.

The provision of different skills training was reported in the Environment and Culture Sector. Participants were offered accredited training as well as social-related skills training. DPW (2004: 10) has defined accredited training as, "Training provided by a training service provider accredited to provide such training by the relevant Education and Training Quality Assurance (ETQA) body". Such training has been provided by EPWP in the form of skills programmes, learnerships, and artisan development (DPW, 2013: 1).

With the different EPWP sectors, skills training programmes are sector-specific. One of EPWP's Environment and Culture Sector project managers reported, *"Also as part of this project, we do training, accredited training… Under the accredited training, we have the chainsaw operators' training, branch cutting training, which are on-the-job related training, herbicide application, basic plant identification, and so forth"* [Project manager]. As noted, the project manager confirmed the provision of accredited training to participants within their sector.

However, participants reported not receiving all the offered accredited training within their sector. They indicated that certain individuals within their teams were more likely to receive training than others. For instance, men were more likely to be trained to be chainsaw operators than women. It is possible that the role of chainsaw operation was deemed more labour intensive and requires more physical strength. Hence, men were more likely to be trained for this position than women. On the other hand, women reported being more likely to be trained for the roles

of health and safety officers within their teams. Such skills and roles were less labour intense and did not require much physical strength than chainsaw operation. Skills such as basic plant identification were provided to all participants as they were fundamental skills for all participants within the Environment Sector.

However, without having any other skills, participants are somehow indirectly coerced to remain in the Environment and Culture Sector as they possess very limited labour market skills. Instead of looking for other work opportunities elsewhere, most of them would prefer to remain in EPWPs Environment and Culture Sector as they believe this would be the best for them.

However, several participants indicated that the skills they received from EPWP were not enough. These participants highlighted their desire to look for better work opportunities elsewhere, but the limited and less competitive labour market skills they received from EPWP prevented them. "*EPWP should give us more skills training so that we can look for better jobs",* said one EPWP participant [p1, m, wfwc]. Another participant [p53, f, wfwc] also stated the following, "*I just don't want to be a general worker. I also wanted to learn other skills. I also want to be a contractor myself but they* (EPWP) *don't teach us that here".*

As noted above, participants wanted to learn more skills and were eager to expand their skills base and even become contractors themselves. With such an increased knowledge base, participants can better market themselves in the labour market and apply for a wider range of jobs that might pay them more than EPWP as they will possess a fairly competitive Curriculum Vitae. One of the managers of EPWP projects also confirmed that diversified skills training would provide EPWP participants with a competitive edge against other unemployed people within the labour market.

Additionally, the manager also highlighted that social-related training was also provided to participants, which is aimed at improving participants' awareness of social events (such as World Aids Day) as well as equipping them with other life essential skills. These skills were provided to all participants. It would have been interesting to assess the impact of such skills on participants who would have exited the programme, if they managed to acquire better formal or informal

employment, became entrepreneurs with better income, and increased food security impact. As indicated earlier, no data was available for post-EPWP participants for such an assessment. This area could be an opportunity for further research.

7.3.6. Asset vector - Lack of asset creation for a food security benefit

The asset vector of public works programmes benefits the participants from the physical infrastructure or environmental rehabilitation that they create or develop (Subbarao et al., 2013: 11). In countries like Ethiopia and Rwanda, public works participants work on agricultural livelihoods and land conservation with projects that create irrigation trenches, terraces and roads on farms (FAO, 2016: 1). In turn, participants of these projects receive direct or indirect food security benefits either from increased food availability, increased food access or improved food utilisation.

In the South African context, EPWP has different sectors, and assets produced or services provided from each sector differ from each other. The Infrastructure Sector focuses more on labour-related activities such as the construction and maintenance of roads, pavements, bridges, houses, schools, and clinics, amongst others (DPW, 2012: 20 – 22). Work done in the Environment and Culture Sector include rehabilitation of natural resources and protection of biodiversity projects, waste management, wetland rehabilitation, development of cultural heritage, and programmes that promote tourism (DEA, 2014: 11). Projects in the Social sector are focused on early childhood development, home-based care, school nutrition programme, community crime prevention school mass participation. The school nutrition programme is linked to food security in this sector as "the programme employs community members as food handlers to provide food to children from needy families and thus address malnutrition" (EPWP, 2018).

For the Non-State Sector, a variety of community development projects are implemented and EPWP works hand in hand with non-governmental organisations (NGOs). Projects in the Non-State Sector cut across other EPWP sectors as these NGOs come up with different work opportunities within vulnerable communities. Projects vary from the improvement of infrastructure of public facilities (linked to the Infrastructure Sector) to the provision of care to

children, elderly people, and the sick (linked to the Social Sector) as well as cleaning and maintaining public spaces (linked to the Environment and Culture Sector) (DPW, 2014b: 1). Most importantly, there are also projects in this sector that are linked to the production of "food that increases food security for the most vulnerable in society" as well as the supporting "small-scale subsistence farming" (DPW, 2014b: 1).

As explained above, not all assets created in EPWP projects have a food security impact. Additionally, an inter-country comparison, as well as a comparison of projects implemented in the different sectors, reveal that not all public works assets have a food security benefit to their participants. For the case study, EPWP projects on SANParks were mainly land rehabilitation and clearing alien vegetation projects within the national parks. One of the project managers explained the following:

> *I'm the project manager for the Alien clearing team. So for alien clearing, basically what we're doing is eradication, but we do management of Parks land… making sure that if any alien plants are growing, we prioritize those areas and we clear them.* [Project manager]

Another project manager stated that:

> *We are doing land rehabilitation … or roadwork, and opening drainages … to direct water flow because there is a lot of damage due to the rain that comes down the mountain. The EDRR is the Early Detection and Rapid Response project that follows the normal alien clearing by the Working for Water teams, detecting and removing new emerging alien species.* [Project manager]

As indicated by the project managers, assets created in these EPWP environment projects had no food security benefits to participants or their communities.

However, given that these projects are geographically located close to the poor communities of most participants, perhaps EPWP can enter into partnerships with State or NGOs and engage in community development projects, specifically those linked to urban agriculture. This can be a Non-State Sector project that can benefit participants who are in the Environment and Culture Sector.

Urban agriculture has already been implemented in many communities within Western Cape. It has been considered a key issue in tackling the challenges of food insecurity in the city (Battersby, Haysom, Tawodzera & Kroll, 2015: 61). Some of the key actors of urban agriculture include the Western Cape Department of Agriculture (DOA) as well as municipal governments together with other NGOs that have contributed significantly towards the support of this initiative. Additionally, the Urban Agriculture Policy was endorsed in 2007 to support urban farming, an initiative that can significantly increase food access at the communal and household levels (Kanosvamhira, 2019: 286).

In North West province, EPWP participants who were working on a mass vegetable production project also contributed part of their income to buy seeds to start their vegetable garden (DPW, 2015a: 3 – 4). This project has now developed into a large project that significantly contributes towards food security within the province. Furthermore, public works participants in countries such as Rwanda used engaged in extra farming activities (FAO, 2016: 2). These participants contributed part of their wages to rent out pieces of land so that they can grow crops for themselves. Such additional crops for members of the VUP in Rwanda contributed significantly towards household food security for beneficiaries and their families. This is empirical evidence that such an initiative can be a feasible instrument in the fight against food insecurity amongst EPWP participants.

7.4. Conclusion

EPWP is a major social protection instrument that many poor and food-insecure working-age people can significantly benefit from. Given the uncertainty of the food security status of participants from the quantitative methods used in Chapter 6, responses given by participants in this Chapter indicate evidence of a high level of food insecurity amongst the sampled population. Careful consideration of the issues raised by participants is required as these factors may be the causes that limit the programme from effectively alleviating unemployment, poverty, and food insecurity among the participants.

From the Theory of Change of EPWP and food security, it seems, from the evidence presented by participants, that the effectiveness of EPWP's wage vector to food security has been weakened by the receipt of low wages. Although several participants report that income from the programme could provide enough food for immediate consumption, the majority of them argued otherwise. They reported not being able to save some of the income for future consumption or investment into microenterprises for additional household income. Other factors such as delays in inspections as well as delays in the anticipated date of payment also reduced the efficacy of EPWP in ensuring that participants have enough access to food at all times.

The impact of the skills vector was also limited as the coverage of a diversified range of accredited training was limited amongst the participants. Also, although participants received training as well as work experience on their CVs from EPWP, the depth of these skills was reported to be shallow and inadequate. Additionally, the nature of the assets created in this sector did not have any food security benefits amongst the participants. An assessment of these responses from EPWP participants presented evidence of minimal contribution to the programme toward household food security.

A re-evaluation of the programme design to address the structural nature of unemployment in South Africa is required. Furthermore, careful consideration dress of the issues highlighted by participants together with some structural adjustments to the design of EPWP to enhance its contribution to participants' household food security levels. Income from EPWP in itself is not sufficient to provide for all household expenditures but the elimination of other inefficiencies, such as delays in inspections, can significantly improve the effectiveness of EPWP in alleviating household food insecurity amongst participants.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

Public works programmes are all work activities that entail the payment of a wage (in-kind or cash) by the state, an agent acting on behalf of the state, or NGOs, in return for the provision of intensive labour, to enhance employment and produce either physical or social assets with the overall objective of promoting social protection (McCord, 2009). This thesis contributes to the assessment of the impact of public works programmes on food security, through an empirical analysis of South Africa's Expanded Public Works Programme. The study investigates the level of food security amongst the participants of public works to understand the food security contribution of the programme and how its design and implementation can be improved to enhance the food security impact of this social protection programme. In concluding the study, this chapter is structured as follows: Section 8.2 summarises the main findings of the study as empirically presented in Chapters 5, 6, and 7. Section 8.3 provides recommendations by the researcher, on how the design and implementation of EPWP can be improved and/or changed to enhance the food security contribution of the programme. However, it should be mentioned that recommendations made in this study are based on the case study evaluated and they are not generalised to all EPWP projects. Section 8.4 concludes the chapter by answering the research question, highlighting the contribution of this thesis to global literature and relevant theories of public works, social protection, and food security before providing recommendations for future research in the field of study.

8.2 Main findings of the study

The General Household Survey (2018) data was used to assess to food security contribution of PEPs. Due to limited information on public works, a comprehensive analysis of the GHS 2018 data could not be conducted and the assessment of household food security was limited to the following instruments: household dietary diversity, household food insecurity access scale (using the modified version proposed by Stats SA), and a 2 stage least squares regression analysis. The regression analysis indicated a negative correlation between participating in PEPs and household food insecurity. Households that participated in PEPs were less likely to experience food

insecurity during the reference period. Additionally, the HDDS indicator showed a distribution of PEP participants that was skewed towards high levels of dietary diversity. However, the HFIAS characterised the same group of people as both food secure (using the food adequacy indicator) and food insecurity (from the hunger indicator) at the same time within their households during the reference period. These results are contradictory to each other. Without further programme information from the GHS, the study could not conclude (with significant confidence) the contribution of PEPs towards household food security. However, it inferred a positive food security contribution of PEPs as shown by results generated from the 2SLS model, the HDDS, and the food adequacy indicator of the HFIAS. There is no empirical evidence to show that, on their own, PEPs can provide sufficient and long-term sustainable access to food, especially for households with more dependents and who do not have any other source of income.

From the primary data collected from the case study, the household food security status of EPWP participants in the Working for Ecosystems, Working for Water Central, and Working for Water South projects in Simon's Town area was measured using the Household Food Insecurity Access Scale, the Household Dietary Diversity Score, and the Food Expenditure approach. According to a priori expectation, all results are supposed to converge and present a similar food security status of the same households, even though different food security indicators measured different household components of household food (in)security. However, food security results from the sampled participants were also inconsistent with each other. Participants were predominantly categorised as food insecure under the HFIAS indicator whilst the HDDS and the food expenditure approach described them as mostly food secure. Possible reasons for such inconsistencies, such as different recall periods, respondents' bias, or methodological differences with the indicators, were discussed.

The lack of universal thresholds for categorising food-secure people from those that are food insecure using food security indicators was highlighted as one of the methodological challenges leading to inconsistent results. Without clearly defined cut-off points, different studies will use different thresholds and produce different food security outcomes for the same group of people. This may lead to confusion regarding policy recommendations.

Another issue noticed by the researcher on respondents' bias was how EPWP participants answered the interview questions within and outside the proximity of their contractors. In addition to assuring respondents that any information they share will be kept confidential (through reading and signing of the consent form), researchers should practice caution when conducting fieldwork and take any necessary reasonable measures to reduce respondent bias.

An assessment of the qualitative responses of the participants from the case study also indicated that the impact of the programme (using the theory of change of EPWP and food security) is low through all possible vectors of benefits (wage, skill, and asset). This is contrary to a priori expectations where participants are expected to receive optimal benefits from the social protection programme. Arguments have been presented on how the contribution of the wage vector to food security has been limited by receiving low wages. This is a violation of the decent work principles where adequate income has to be paid for productive work done (ILO, 2013: 56). Evidence showed that income was insufficient to provide for current consumption needs, precautionary saving (for future consumption), and investing in other informal income-generating projects. Additionally, the month was described as being "too long" by most participants as the income received was inadequate to buy food that would last the entire month. Several participants even requested payment to be time-based (twice a month on specified dates) instead of project-based (which has inconsistent and unpredictable payment dates). Other highlighted significant issues of the programme include delays in issuing of work contracts, delays in inspections, and delays in the anticipated date of payment. Other participants even requested part-payment of food parcels (with basic food items) during this long waiting period as hunger would be looming within their households.

With the skills vector, participants explained that the basic on-the-job training for general workers, such as plant identification, and a few who received training for semi-skilled workers (such as health and safety training) was inadequate for them to be competitive in the formal labour market in search for other employment opportunities. Although such training and work experience from EPWP improved their CVs, the depth and diversity of the accredited training provided by EPWP were reported as narrow, shallow, and insufficient. Additionally, the nature of

the assets created in this sector did not have any food security benefits amongst the participants, which is a violation of the World Food Programme Gaeta principle, which states that the assets created by public works projects should directly benefit the participants who constructed them (WFP, 2016).

8.3 What could be done differently for an increased food security impact

Several factors, such as the design of EPWP and the implementation of other economic inclusion programmes along with EPWP, can also increase the efficacy of the programme. Such measures aim to increase income diversity, income growth, and the impact of income received. Additionally, other nonfinancial benefits from economic inclusion programmes also "protect poor households against destitution, enabling them to cover their basic needs, maintain consumption levels, and enhance food security" (Andrews et al., 2021: 123).

8.3.1 Data issues

Quality and comprehensive data are required for a detailed and thorough food security analysis. With limited secondary data on public works programmes in South Africa, Stats SA should broaden its GHS questionnaire to capture a wider range of information for public works participants and their households in South Africa. Quantifiable variables such as wages, project duration, frequency of payment, training provided by the programme, and any other benefits received by participants should be captured by this nationally recognised survey. In addition, perhaps Stats SA should design their survey instruments for capturing HFIAS indicators to be the same as the conventional HFIAS by Coates et al. (2007). Having the same indicator captured and measured differently limits cross-country comparisons.

Additionally, for thorough monitoring and evaluation of a programme and the collection of more data to analyse the programme, EPWP should conduct a detailed interview when participants join the programme and capture fundamental livelihood indicators of interest (such as the levels of poverty and food insecurity amongst the new participants) and conduct exit interviews as well, where possible. Ismail (2018: 1) highlights that the unavailability of baseline data limits the monitoring and evaluation of public works programmes, hence, substantiating the need for such

baseline data for better evaluation and assessment of the programme. Also, as the programme has a financial calendar, detailed programme, and participant evaluations can be done at the start and end of each financial year. Such a monitoring and evaluation strategy can produce detailed data for programme evaluation (and not only high-level administrative data). The programme can then also compare expenditure allocation to the programme with both direct and indirect benefits received by participants and their households. These findings can also be included in their annual reports as evidence of programme performance.

As the results from the quantitative food security indicators are contradictory, clearly distinguished cut-off points that separate food secure and food insecure households should be set at both the global and national scale. At an international level, the determined thresholds can be used universally for cross-country assessments. At a national level, the set national food security cut-offs will be used as the context of food security differs from one country to another. Additionally, where possible, a mixed methods approach of assessment should be used as both quantifiable and non-quantifiable household variables can be an assessment to provide a comprehensive food security evaluation. Furthermore, qualitative findings can also supplement and provide a possible explanation for the quantitative results generated.

8.3.2 Design features of EPWP

The designing of EPWP depends on the purpose and aims of the programme. Features of a programme with short-term goals differ from the design and implementation features of a programme with long-term goals. Beierl and Grimm (2018: 9) explained that for any public works programme, "it has to be spelt out clearly whether the programme aims at short-term consumption smoothing or more significant social protection impacts because these objectives require a quite different programming". As EPWP "is one of Government's medium to long term strategies to reduce unemployment and alleviate poverty through the creation of work opportunities using labour-intensive methods" (DPW, 2018: 1), the following design features should be considered as the programme is not only aiming to provide short-term consumption smoothing but a more significant medium and long-term social protection impact.

8.3.2.1. Setting clear and quantifiable programme objectives

In addition to the number of targeted work opportunities, EPWP should set other clear and quantifiable objectives of how it intends to impact beneficiaries. These include, for example, "*decreasing unemployment amongst the economically active group by xxx during period xxx*", "*reducing poverty amongst the working-age group by xxx percentage during period xxx*", or "*increasing food security amongst EPWP participants and households by xxx percentage during xxx*". With clearly stated quantifiable objectives, programme designers, implementers, and monitors can work towards achieving those objectives and clear evaluations can be conducted to determine programme success or failure. Additionally, measures and strategies for improving or adjusting the programme are also clearer when quantifiable objectives are set. Creating work opportunities during an EPWP phase is an insufficient quantifiable objective: programme designers and implementers can rush to create work opportunities with no sustainable impact. For instance, some reported work opportunities lasted for only 9 days when participants had been without work for almost 2 months. A 9-day work opportunity might not have a long-lasting impact on unemployment, poverty, and food insecurity amongst EPWP participants. Hence, instead of focusing on creating a certain number of work opportunities, the programme should focus on other quantifiable objectives that create sustainable impacts such as reducing poverty and unemployment by a certain percentage amongst participants or increasing food security by a certain percentage amongst the target group of people and their households.

8.3.2.2. Increase in wages

The most significant and immediate benefit from EPWP is the income transfer (the wage vector) received by participants. Participants with no other sources of income rely on the income transfer from EPWP for household expenses and without sufficient income; households are vulnerable to food insecurity. An adequate income is required to cater to household expenses and measures such as increasing wages or implementing full family targeting such as in PSNP in Ethiopia (Hoddinott, Stifel, Hirvonen & Minten, 2018: 9) are possible options.

The EPWP wage rate is designed to self-select participants into the programme and to "avoid displacing workers in formal employment or those otherwise engaged in other sustainable

income-earning initiatives" (DPW, 2018: 4). Such a mechanism is to avoid non-poor and undeserving members of society (whose welfare is somehow better off) from crowding out the poorest and unemployed people from joining the programme.

However, it seems that although the programme managed to keep non-poor people from crowding out poor people, the income transfer is insufficient to cater to all household needs for most of the participants. Assuming that a participant works all working days of the month (which was highly unlikely from the empirical evidence presented by several EPWP), a general worker would earn R2,330 (and R2,470 for a semi-skilled worker in 2019 prices) while the labour market minimum wage was R3,500 (National Treasury, 2016: 59). According to the views and expressions by the EPWP participants in the case study, such income was insufficient to cover all household expenses and with some reported delays in the time of payment, most households were frequently food insecure despite working in EPWP. The income transfer only increased their food consumption within their households (mostly food quantity and not food quality). However, the income did not increase their food security and almost all participants requested an increase in wages.

Several nationally recognised thresholds (and not just the minimum wage) can be used to determine an appropriate wage rate for EPWP participants. The upper-bound poverty level or the monetary value of a basket of essential goods and services for an average household size of 3.3[37] people (Stats SA, 2016: 96), can also be used to determine the reasonable income that participants can be paid (ILO, 2012).

This study recommends EPWP increase the wages of participants to match the labour market minimum wage. According to the decent work principles, adequate earnings must be paid for productive work done (ILO, 2013: 65). Beierl and Grimm (2018: 10) explained that the wage rate of public works should align with the objectives of the programme, i.e. medium and long-term impact (DPW, 2018: 1). The increase in wages can lead to such medium and long-term food security benefits for participants and their households, increasing the social protection impact of

[37] Stats SA indicated that the average household size in South Africa is 3.3. Hence, prescribed income should be sufficient to provide a basic standard of living for an average household size.

the programme. With a minimum wage, participants can provide a basic standard of living for their households. Additionally, participants are more capable of saving and investing part of their income into other small productive investments (because they can afford it with a higher income), thereby unlocking other avenues of the wage vector of EPWP's theory of change to food security. Empirical evidence from participants of VUP in Rwanda showed that beneficiaries used their wages for consumption, human capital development, renovation and building of houses, accumulation of more household assets, investment in income-generating businesses, and saving (Subbarao et al., 2013: 201). Participants were capable of engaging in multiple activities because they received sufficient income to do so. Welteji et al. (2017: 10), in the case of PSNP, also advocates for the encouragement of a culture of saving as well as asset accumulation amongst PSNP members. Such a culture is also needed amongst EPWP beneficiaries for participants to possess precautionary savings (as well as assets) that they can use during food insecure periods.

The issue that arises with increasing wages is the argument between coverage and adequacy. With increased wages, it may become more expensive for the programme to roll out to many participants due to budget constraints. Higher wages imply lower coverage and distortion on the self-targeting of the programme (lowly paid people might compete against unemployed people for EPWP employment opportunities). To employ more participants, earnings must be set low. However, to compensate for the payment of low wages, this study recommends longer or guaranteed duration of employment (explained in section 8.3.2.3) and the collaboration of EPWP with other income-generating projects (explained in section 8.3.3).

Another mechanism of increasing income flow to households can be through the employment of more than one household member from families with multiple members. It was highlighted by the EPWP participants that only one member per household is allowed to work in EPWP at a particular point. Such a provision was implemented to increase the coverage of the programme to more households. However, several households reported having more than five household members. Although some household members are beneficiaries of social grants (mostly the child support grant), such income is insufficient to provide food for all household members for an entire month. In addition to income from social grants, income from public works significantly

contributed towards the purchase of more food for the household that would last the entire month. However, with other household expenses, resources were more likely to be diverted from food to other household expenses, leaving the household vulnerable to hunger experiences. There were, however, other household members, who are eligible to work in public works but were not allowed to do so because only one member in the household is allowed to work in EPWP at any given time. Perhaps, instead of only allowing a single member of the household to participate in the programme, more than one household member (perhaps 2 members) from large households with more than five members can participate in the programme. If more than one household member can be allowed to participate in the programme, more income can be injected into these poor and food-insecure households. However, this strategy may have unintended consequences on children in households with higher dependency ratios as noted in a pilot study in Ethiopia under PSNP. Under this strategy, two able-bodied adults (usually both parents) were asked to work in public works. Consequently, it was observed that in large poor households with high dependency ratios, this mechanism compromised childcare – older children were taken out of school to care for younger siblings while the parents went for public works. To avoid such compromise on childcare, full family targeting was implemented instead where one adult would work in public works but still earn income for all household members, although it was not implemented in some regions (Hoddinott et al., 2018: 9; Berhane et al., 2013).

8.3.2.3. Targeting

One of the fundamental elements of an effective graduation model is having an efficient targeting system (Hashemi & de Montesquiou, 2011). According to the World Bank (Andrews et al., 2021: 42), “Poor targeting and weak beneficiary selection mechanisms are one of the key factors that undermine programme performance and impact”. From this statement, the programme needs to ensure that the intended beneficiaries are included in the programme to maximise programme impact. EPWP stipulates that “the recruitment process shall be aligned with the self-targeting, community, and geographic targeting as per the EPWP Phase III” (DPW, 2018: 5). However, a description of the recruitment process by the project managers indicated more of administrative and categorical targeting.

A feasible mechanism to avoid such exclusion of deserving prospective participants is to ensure that all people who apply for the programme (on the municipal websites) are employed. Such a mechanism coverts public works from being a supply-driven programme into a demand-driven programme, thus ensuring that all people indeed of social protection through this programme receive benefits. According to the World Bank (Andrews et al., 2021: 49), "creating an adequate supply of jobs is the foundation of sustained and growing prosperity, inclusion, and social cohesion". Hence, jobs for all are the foundation for ensuring that no one amongst the poor and vulnerable targeted members of society will be left behind. EPWP's employment design of providing work opportunities to participants through contractors, EPWP must increase the number of contractors that they train and employ into the programme. A promotional programme can be introduced amongst the participants, as suggested by several of the surveyed participants who were interested in becoming contractors: any hardworking general or semi-skilled worker who has worked in EPWP for many years should be eligible to apply for training to become a contractor. Such an initiative increases productivity and motivation amongst participants to become an entrepreneur (EPWP contractors) earning more income than their previous role (as a general or semi-skilled participant). The new contractor(s) will experience increased access to food together with other participants that are no longer excluded from the programme.

The initiative of grooming more contractors should be closely monitored and strict measures of operations for the contractors should be put in place and enforced. As mentioned by one of the contractors that a rating system is used on the contractors, contractors are rated according to their period of work experience on the projects. Some contractors (and their teams) may not perform some tasks satisfactorily and if such a trend continues to happen, such a team will earn a lower ranking and will be less likely to receive more projects. Also, the assets they have, such as their vehicle (the standard of the car and its roadworthiness), and the tools they have (whether they are the appropriate tools and if all are fully functioning); also contribute to the rating of a contractor. The idea is for contractors to have road-worthy vehicles for the safe transportation of participants as well as enough appropriate tools for work so that participants are safe and they can perform the assigned task. In addition, contractors with vehicles that consistently have issues

during inspections receive a low ranking. In the former case, both the contractor and team members are to blame for the low rating whilst in the latter case; only the contractor will be at fault for the poor rating. The issue arises when poor and vulnerable participants (who are severely food insecure and require social protection from the government through public works) do not receive long projects (or are not even allocated projects at all) due to the fault of the contractor, if, for instance, they failed to properly maintain their vehicle. As such, the contractor received a poor score. Thus, newly groomed contractors must adhere to all required standards for vehicles and tools so that participants do not suffer from the incompetency of the contractor.

Given limited financial means, the use of community-based targeting can also be promoted in selecting participants, as community representatives are more aware of the poorest members of the community leading to "better screening, monitoring, and accountability" (Conning & Kevane, 2002: 2). These communities will ensure that during enrolment, priority goes to participants from the poorest households using methods such as wealth ranking or proportional piling as they have better household information (Hashemi & de Montesquiou, 2011: 2). Such practice reduces the error of exclusion and it less costly as it faster to setup (Conning & Kevane, 2002: 2). Additionally, McCord (2018) also noted that community participation in EPWP also increased the efficacy of the programme. However, the selection process should be transparent and democratic (Adato et al., 2005: 37) as community-based targeting has been criticised for being more susceptible to inclusion errors where leaders of communities may give priority to their friends and family members. A study of Ethiopia's PSNP described community-based targeting as fair and transparent as the poorest households were selected for the programme (Domelen & Coll-Black, 2012: 54). It was observed that this targeting mechanism minimised exclusion error.

With community-based targeting, autonomy on the selection criteria is transferred from a national or central authority to communities (Conning & Kevane, 2002). Such discretion on the selection can be classified into two categories: decentralisation and devolving. With decentralisation, communities are given full discretion over how they select beneficiaries of the programme. With devolving, communities are given guidelines on how to select beneficiaries so that all communities follow the same selection criteria. With decentralisation, it is difficult to

comprehensively monitor and evaluate the programme as each community might have its selection model and fewer tools for evaluation. Community-based targeting is more effective in smaller communities where community leaders are more aware of the economic and social status of families or households within their community. In larger communities (mostly in urban areas), the status of every household is ambiguous. Hence, it is more challenging for the leaders of community-based organisations to determine which people deserve priority in public works. Furthermore, community-based targeting has also been criticised as leading to conflicts within communities if community members are in charge of 'hiring and firing' people in and out of the programme (Adato et al., 2005: 40 – 41).

8.3.2.4. Guaranteed employment

The other issue that was highlighted by EPWP participants was being casually employed by EPWP when yet they are structurally unemployed and suffer from chronic poverty. As casual workers, participants are uncertain of whether they will be employed in the next project or not. Employment continuity from one project to the next is not guaranteed and there is uncertainty about the time of payment (as explained by the delays in payment reported by the EPWP participants). Such issues have contributed to increased anxiety within households as participants are uncertain whether they can access food tomorrow.

Perhaps a system of guaranteed employment, like the MGNREGS (Liu et al., 2020), can be implemented in South Africa. A system of guaranteed employment makes public works a rights-based rather than discretionary programme, with guaranteed days of employment per year for every applicant. The Community Works Programme already provides guarantees of eight days of employment per month and this strategy can be extended to EPWP. EPWP can also provide guaranteed days of employment per month (varying on nature, context-specific, and requirements of work in each sector of the programme). When the programme fails to employ a certain number of days, for instance, 15 like in MGNREGS (Li & Sekhri, 2020), registered participants should be entitled to a daily unemployment allowance. Participants can also use other days of no work to engage in other supplementary livelihood strategies such as microenterprises thereby increasing the net household income (Ismail, 2018: 4).

Guaranteed days of employment provide structure to employment and ensure job security: participants are certain that they have access to food for tomorrow. Stability and security of work is another important decent work principle (ILO, 2013: 127). With a stable and secured work opportunity, beneficiaries are also able to accumulate assets over time which can be used as insurance during periods of no employment. This was also noted amongst households in the MGNREGS who accumulated non-financial assets from income received from the programme (Deininger & Liu, 2019: 99). Furthermore, having set and specified dates of payment for any work done in the programme, with no delays in payment, increase the certainty and predictability of how the programme operates. Predictability in payment, as also noted in Ethiopia's PSNP, is a "key determinant in programme impact" (Domelen & Coll-Black, 2012: 69). Additionally, specified dates of payment enable participants to better plan their finances and ration their available food supply better as they anticipate the next date of payment.

However, this was contested that the programme is a development programme not designed to provide permanent employment but develop participants so that they can get better jobs. Nonetheless, in an economy with structural unemployment and an oversupply of unskilled labour, participants tend to hold on to any form of employment that they can acquire to avoid being unemployed again. Furthermore, with some participants reporting to have worked for more than 5 years (some reported to have been working for more than 10 years in EPWP), perhaps a review of the design of the programme is required.

In addition to the guaranteed days of employment, EPWP must provide direct income support to participants if there is no work or there is any delay in the actual payment date. If people can work and work opportunities are available, then they should work to receive the benefits from the programme. If poor people want to work and there are no work opportunities provided by public works, the State provides direct income support to these individuals and households as they have a right to social assistance. Like in Rwanda, beneficiaries in the VUP received direct income support to access social services if their households were labour-constrained (Subbarao et al., 2013: 200). This initiative was a complement of public works and poor households continued to receive social protection (and access to food and social services) even if they were

not directly working in the programme. For EPWP, a guaranteed receipt of income support during periods of employment and no employment ensures access to food, and hence, food security amongst participants and their households.

8.3.2.5. Other issues

Other highlighted issues such as not having a specified date of payment and other programme inefficiencies (like delays in an inspection by SANParks rangers, delays in the time of payment by EPWP, and delays in processing work contracts) limit the impact of the programme. Penalties should be imposed on SANParks should they delay the agreed and stipulated time and days on the inspection so that park rangers are more efficient in their operations. Their inspection delays lead to unpredictable times of payment and hence increase the severity of food insecurity in the household of participants who rely on such income transfers for food. EPWP should also improve its administrative efficiency to eliminate delays in the processing of work invoices and the issuing of work contracts. Should they exceed their stated time of processing, they should compensate participants for all excess days. Additionally, perhaps the processing of work invoices should be conducted at a provincial level. Work invoices should not be sent to Pretoria for processing; this only increases the time of processing the payment (as this office can be overwhelmed with payment requests from different provinces). Instead, provinces should receive a budget allocation and work invoices processed within the province and the provincial head office. Such measures can reduce the time of payment thereby increasing the food security impact of income amongst participants.

8.3.3 Linking EPWP to other livelihood strategies

There is evidence that on their own, public employment programmes may not eradicate all livelihood challenges (such as poverty and food insecurity) and create sufficient work opportunities for all poor members of the working-age population. Although they increase food consumption in the short run amongst the target group, there is inadequate income and assets transformation for a longer-term impact (Andrews et al., 2021: 45). Additionally, due to budget constraints, it may not be possible to increase the programme wages (adequacy) and still maintain programme coverage. A possible strategy around the trade-off between adequacy and

coverage of the programme is to implement the programme in partnership with other supporting programmes (Welteji et al. 2017: 10). Economic inclusion programmes are a combination of multidimensional programmes that are coordinated to provide income support and asset accumulation for poor individuals, households, and communities (Andrews et al., 2021: 16).

There can also be an overlap between programmes, with a secondary programme originating from the primary (Andrews et al., 2021: 29). For instance, a microenterprise initiative (being the secondary program) can overlap with EPWP (being the primary programme). The successful implantation of these strategies can increase the resilience of poor individuals and households against harsh economic circumstances: participants in these initiatives will be able to cope and sustain themselves in the medium and long run due to increased access to food and asset accumulation. In addition, other community members can also receive positive benefits (both directly and indirectly) from the outcome of some of these initiatives, thus leading to a significant reduction in poverty and food insecurity. The following initiatives can be implemented together with EPWP as part of the economic inclusion process that aims at leaving no one behind.

8.3.3.1 Microenterprise initiative

As the World Bank states, "Strong partnership is integral to the success of economic inclusion programmes" (Andrews et al., 2021: 16), perhaps EPWP should collaborate with other organisations, such as the Department of Small Business Development or NGOs, and introduce an initiative that encourages and finance small business set-ups or microenterprises that operates in conjunction with EPWP. As learnt from the PSNP in Ethiopia, different organisations might pursue different institutional interests and objectives, especially if there are some NGOs interested in collaborating with government departments (Domelen & Coll-Black, 2012: 45). As such, a memorandum of the agreement should be set with agreed principles and way of action for all parties involved. This guiding document may ensure smooth interaction between parties with the common goal to benefit participants.

A microenterprise is a very small business operating on a very small scale with a few people (usually 10 people or less) operating the business. Such a small business also requires a very small

capital to start its operations. Should these small businesses succeed, the owners and other business partners (which are the EPWP participants, their households, and any other beneficiaries) will have sustainable food security benefits from the profits generated from these initiatives. Such investment in microenterprises was also observed amongst beneficiaries of Rwanda's VUP where the wages received by female participants were used as investments in small trading businesses (FAO, 2016: 2). Additionally, there was also a complementary financial inclusion programme for public works participants who could also engage in entrepreneurship such as producing and selling homemade beer, initiatives that also increased household income for future consumption (Subbarao et al., 2013: 200). These beneficiaries also invested part of their income (together with the finance from the financial inclusion programme) into buying livestock, as a mechanism to store the value of their income.

For EPWP participants, some examples of these survivalist microenterprises can be categorised under producers, distributors, and service providers (Choto, Tengeh & Iwu, 2014: 94). Distributors dominate urban areas and these include street traders, vendors, and hawkers. Examples of such microenterprises include vending of chips, sweets, and cigarettes or the selling of homemade food such as fat cakes, scones, muffins, and boiled eggs (Gamieldien & Van Niekerk, 2017). Perhaps a fusion of EPWP's work together with other small business initiatives can be a mechanism that will increase household income amongst participants thereby ensuring their access to food in the medium and long run.

For these small businesses, all business activities should be conducted outside the usual operating hours of EPWP so as not to interfere with the programme's timeline on its work targets. The initiative should be a package containing small groups of people with business intelligence that can provide regular business coaching (Hashemi & de Montesquiou, 2011: 5), a range of small business ideas, a short compulsory business course on how to better operate a business, a small capital, terms and conditions of the initiative (mainly the capital), and a monitoring team. EPWP should provide a team of people with business intelligence (collaborate with a business organisation or provide business operations training to project managers and their teams) who will spearhead the business projects and provide business coaching amongst the participants.

The initiative should also be introduced during the EPWPs induction process before all projects commence and the business team should present the aims, objectives, guidelines, full training procedure, and potential long-term benefits of the initiative to all participants. To avoid any potential losses and misuse of funds by beneficiaries (some might want to use the money for other non-business purposes), a thorough screening and training process should be put in place to ensure that the available capital is allocated to deserving participants.

The business operators will provide business training to those participants who decide to take part in the initiative. The training should include all procedures and tools of business operation and it should be accredited training. Training and coaching can be conducted individually or through group coaching (based on a customised topic or similar skills required by participants) (Andrews et al., 2021: 77). Group coaching reduces administrative costs and also promotes social interaction amongst participants, thereby encouraging idea sharing and the creation of peer-to-peer learning networks. Also, similar to other EPWP training, business training days should be paid days. The team will have complete autonomy on which EPWP participants can be part of the initiative based on clearly stated and transparent guidelines of the initiative as well as a completion and pass of the business-training course.

A variety of business ideas can also be presented to participants for them to choose from (as some are eager to run a business but are unsure of the exact type of business they want). The initiative should also welcome other business ideas that may be proposed by participants which will be taken under critical review and scrutiny to ascertain their viability. The initiative can start by having small business ideas (that require small capital and hence, has a smaller loss margin should it fail) and expand the project's operations or switch to a bigger business plan if there is proof that the participants are capable of running a business.

The small capital provided to the participants should be a way for the participants to start the business given that their wages from EPWP work opportunities are low. Terms and conditions of the initiative should be signed to safeguard the capital from being either consumed or used for other non-business-related purposes. Once the business has commenced, the EPWP business team of experts should provide close monitoring and assistance to nature business and provide

support when needed for the business to grow and meet its objectives, which is to generate extra income for the participant and their household.

If participants successfully run their small business, they can receive additional income from its profits which they can use to buy additional food during the last days of the month when hunger is mostly experienced within the household. If more EPWP participants partake in this initiative, the programme will significantly reduce the prevalence of hunger amongst participants and their households thereby ensuring an improved impact on household food security. Furthermore, if these small businesses are operated efficiently and natured very well amongst beneficiaries, such additional cash benefits from the initiative can significantly contribute towards households' livelihoods and they might graduate out of poverty or at least, extreme poverty. Such a social protection programme, when complemented with this initiative, will have preventive and promotional nature, thereby having a greater impact on the reduction of poverty and food insecurity for participants and their households.

8.3.3.2 Rotation training

The skills vector is the other important component of EPWP which can ensure that participants have a better chance of finding other jobs once they exit the programme. As participants received sector-specific training and experience, finding other jobs can be challenging, as their skills and experience are limited to one sector they worked in. Additionally, based on the theory of change, if most of the unskilled or semi-skilled work that EPWP participants do does not give them a competitive advantage over other unskilled job seekers, then the training component of the programme is ineffective. Furthermore, if EPWP training does not align with skills gaps in the labour market, then the training component of the programme is also ineffective.

Perhaps EPWP trainers can rotate to participants in all sectors and provide essential skills training that is mainly required within every sector and diversify the skills amongst participants. Although some of these skills will be mostly theoretical (since they may not work in all sectors), they will improve the CVs of many participants, thereby increasing their competitiveness in the labour market. Participants will receive both life skills (such as health and safety, HIV/AIDS, drug and

alcohol abuse, and financial management, amongst others) as well as technical and sector-specific skills. Examples of sector-specific training in the Environment and Culture Sector include plant identification, herbicide application, snake awareness, brush cutter operation, and chainsaw operation; early childhood development, community and home-based care, crime prevention and knowledge on the national school nutrition programme for the Social Sector; and construction and maintenance related training for the Infrastructure Sector.

Such training workshops for additional skills and knowledge can be scheduled mostly during the rainy seasons when participants are less likely to conduct their outdoor daily work activities due to unfavourable weather conditions. Additionally, participants can also receive training during the waiting period when contacts of the next projects or work invoices are being processed. Trainers can make use of pre-recorded videos and pictures for their teaching presentations so participants to understand better. With enhanced skills, participants have better chances of getting other jobs in the future either in EPWP or elsewhere, thereby ensuring their sustained access to food.

8.3.3.3 The practice of urban farming

Looking at the asset vector, assets created in the Environment and Culture Sector do not have direct food security benefits amongst EPWP participants. Clearing of alien plants and the maintenance of water routes in Table Mountain national parks (mostly for Working for Water and Working for Ecosystems projects) can preserve water and the environment but do not contribute towards household food security. As the food security benefits via the asset vector are mostly linked to agricultural activities, what could be done differently is to engage participants in urban farming within their communities and at their homes. Such an initiative is also an opportunity for EPWP to collaborate with other government departments (such as the Department of Agriculture) or NGOs. They both design and implement such agricultural projects that possess the potential to increase food security for EPWP participants as well as the community.

Urban farming is an innovative and sustainable livelihood solution that can increase food security amongst poor urban households (Modibedi, Masekoameng & Maake, 2021: 301). One of the main advantages of urban farming is that a variety of vegetables can be produced throughout the entire year, thereby ensuring food availability all year. There are open spaces within communities of participants that can be converted into community gardens. If environmentally possible, some of the cleared lands from the environmental projects can also be converted into community garden sites. Furthermore, backyard gardens can also be prepared where participants reside (should there be space). As EPWP participants engage in urban farming, the initiative can provide access to affordable, fresh, healthy, and culturally acceptable agricultural produce for beneficiaries and their communities (Modibedi et al., 2021: 301).

To facilitate this operation, the Western Cape Department of Agriculture (or interested NGO) can provide support in the form of necessary agricultural starters inputs such as seedlings and garden tools. Battersby et al. (2015: 61) indicated that the Agriculture and Environmental Management Department also runs an Agricultural Starter Pack programme, which provides these agricultural starter inputs to community and homestead food gardens. Furthermore, the Agriculture and Environmental Management department can also provide gardeners to look after the community garden and ensure its survival and sustainability. The department can also provide agricultural skills training to EPWP participants for those that decide to venture into urban agriculture.

On the other hand, rather than staying home with no work, EPWP participants can provide the required labour to clear and prepare the land for the gardens during the waiting period before the start of their next project or when their work invoices are to be processed. Moreover, engagement in community gardens can be during weekends. As EPWP participants work as gardeners in school food gardens for the National School Nutrition Programme, these participants can also work (as they are more knowledgeable about working with gardens) together with participants in other sectors to develop and maintain the communal as well as homestead gardens. If produced well, the agricultural produce increases household food consumption, and surplus produce from the community (and even homestead gardens) can be sold at local food markets thereby generating additional household income.

A similar approach was conducted in the North West Province where EPWP provided a stipend as well as training to a group of people that had a mass vegetable production project (DPW, 2015a: 3). The project produced a variety of vegetables for commercial and community consumption which significantly contributed towards food security at the household, communal and provincial level. Caution should however be practiced when operating a community garden. Like any operation, crop production requires the necessary skills, attention, effort, and support. Otherwise, expected produce may not be attained. Some community gardens in KwaZulu-Natal (Maphephetheni Uplands) and others in Limpopo province provided insignificant food security contributions to poor households (Modibedi et al., 2021: 302).

Given EPWP's budget, participants can either be paid a full day's wage or a reasonable fraction of the wage rate given that the intention of the initiative is not a direct wage benefit but agricultural products produced from the assets created. Additionally, hours of work per day can also be decided accordingly by EPWP. A well-designed and properly implemented initiative, together with support from interested stakeholders, can be a major instrument that can be used to fight against poverty and food insecurity. Participants and their families, together with other community members, can significantly benefit from this medium to long-term supply of vegetables produced from these gardens. The initiative can lead to improved food security through increased food availability, food access, food utilisation, and a stable supply of these agricultural products within many urban poor communities.

8.4 Conclusion: Recommendations for future studies

In its aim to better understand the food security impact of public works, the design, implementation, operation, and benefits derived from the programme in the South African context were analysed through the wage, skills, and assets channels of the programme. Detailed analysis was only conducted on the wage vector of public works due to the unavailability of data on the other vectors. Both primary and secondary available datasets were limited to investigate the medium and long-term food security impact of the skills and asset vector of public works. Policy recommendations on design features of the programme as well as other strategic

partnerships between public works and other economic inclusion programmes to enhance food security amongst participants were provided for all impact channels of the programme.

To answer the research question, “What is the contribution of EPWP towards ensuring that poor participants and their households have sufficient and sustainable economic access to food that meets their dietary requirements at all times?”, this study reveals the high level of food insecurity amongst public works participants and their households even though they are working in the programme. Empirical evidence highlights that on their own, public works insufficiently provide sustainable economic access to food for participants and their households at all times, especially households with more dependents. With such insignificant access to food, households tend to sacrifice other household expenditures to increase the purchasing power of the available income. Access to food is not sustainable; participants only have access to food when they are working and receiving income from the programme. However, given that employment is not guaranteed and income transfer is not consistent and predictable, any interruption of income exposes the participants to food insecure.

The empirical findings of his study, especially from primary data, add to the trade-off debate between coverage and adequacy of the amount of wages received by beneficiaries of public works. To maximize the efficiency of public works, coverage must be as wide as possible (to reach as many vulnerable people as possible) with benefits being as adequate as they possibly can. However, due to fiscal constraints faced by many governments, there are always arguments on these two: if coverage is wider then benefits are low, and if benefits are high then coverage is low. The results from this study proved this trade-off: coverage of EPWP was fairly wider (although not wide enough) and its benefits were low. To increase the benefits and avoid reducing the coverage of the programme, this study recommended linking public works and other economic inclusion programmes such as microenterprises and urban farming to increase the food security benefits amongst public works participants and their households.

The thesis, when applied to the food security conceptual framework, provides evidence that some social protection measures that provide food access to targeted beneficiaries may not sufficiently eradicate food insecurity when implemented alone. For some households, their level

of food insecurity may continue to be the same (as shown by the HFIAS) whilst, for others, they might be moderately food insecure (as shown by the food expenditure method). Social protection programmes must be linked together to sufficiently provide all food security pillars to vulnerable households, particularly the food stability pillar. Without stable access to food, participants in public works will continue to be dependent on government support to have enough to eat at all times, thus not graduating them out of poverty. As such, in addition to strengthening the skills and asset vectors of public works, this thesis adds to the argument that social protection mechanisms should be linked together: short-term relief programmes should be partnered with programmes that provide long-term benefits. In this research, partnerships between EPWP and other economic inclusion programmes such as microenterprises or small-scale farming activities were recommended, as advocated by the World Bank, to ensure a short and long-run impact on food security.

The methodological lesson to highlight from this study is that quantitative food security indicators, such as the HFIAS, HDDS, and food expenditure approach, must have stipulated cut-off points to distinguish the food secure from the food insecure households. Without clearly international or nationally recognized cut-off points, ambiguity exists in generated results from different studies limiting robust cross-country or inter-study food security analysis using these indicators. Although researchers can still have discretion over the categories they would like to use for their studies, recognised cut-off points allow for the accumulation of literature with similar empirical evidence for future analytical work within this field of study.

The researcher is humble to generalise the findings (mostly) and conclusions of this study to all public works in South Africa and other PWPs globally. Some reasons that may limit the national and cross-country generalisation of results include 1) a small sample size; 2) the inclusion of homogenous participants conveniently sampled into the study; 3) programme impact from other EPWP sectors was not included in the study; 4) sampled participants were only from the Western Cape province of South Africa and there are significant economic differences amongst provinces in South Africa; 5) the use of different HFIAS instrument by Stats SA (having a separate hunger and a food adequacy instrument) limits cross-country analysis of food security using this

instrument. Thus, data on the food security impact of the programme may not have been a full representation of all EPWP participants.

However, the findings can be generalised to other homogenous environment projects due to similar traits. Additionally, the results of this study can also be generalised to other South African public works projects in different sectors. Furthermore, the results are derived from participants of public works whose responses and perceptions on programme impact are valuable. Therefore, although not directly applicable to all PWPs, policy recommendations should also be considered in the design, implementation, and operation of other PWPs in other sectors, provinces of South Africa, and other countries, as the overall objective of the study is to maximise the social protection impact of the programme not only in South African, but internationally.

This study was not exhaustive of all elements of public works. From the theory of change of public works and food security, other elements of the wage vector (saving income for future consumption and using part of the income from investment into microenterprises) were not evaluated critically in this study. Microenterprises are a broad spectrum and can be a significant route of benefit for many participants. If a programme of diverse small businesses is rolled out and promoted amongst all public works participants, beneficiaries can significantly generate more household income and become less dependent on government support for a basic livelihood.

A follow-up investigation on participants who exited the programme is also crucial, to determine how the benefits received from public works have helped them in the labour market as well as their livelihood. The programme should provide sustainable benefits, benefits that will propel beneficiaries out of hunger and food insecurity, leaving them in a position to sustain themselves and not fall back into the same state of food insecure as they were before joining the programme. Here, the emphasis lies more on the skills and asset vectors of the programme: acquired technical and accredited skills must increase chances of employment from other labour market opportunities and benefits from the asset vector (such as vegetables from the community and individual gardens) must provide access to food in the long run.

Another important issue to be investigated is diet quality. Although some of the poor members of society perceive themselves as poor and food insecure, their HDDS indicate that they have very high dietary diversity scores, and they are categorised as food secure. However, due to income constraints, most of them substitute quality food with inferior and highly processed foods just to have enough food to feed their families. Although such highly processed foods are cheap and affordable, they are not nutritionally healthy and may lead to malnutrition, such as obesity and high blood pressure, amongst members of this vulnerable group.

People with disabilities are another category of vulnerable people to evaluate. From the case study, there were no people with disabilities working in public works. The programme documentation as well as the managers however insisted that EPWP has benefited many people with disabilities. It would interesting to explore how some of these vulnerable members of society work and benefit from public works, and how the programme has contributed towards the reduction of poverty, unemployment, food insecurity, marginalisation, and exclusion of such groups of people. Furthermore, an investigation into some of the challenges that these people face in the work environment is also essential, to get a recollection of how they (and public works) managed to mitigate their challenges and ensure that participants receive the optimum benefits from the programme.

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Appendix

EXPANDED PUBLIC WORKS PROGRAMME AND FOOD SECURITY STUDY	
Interviewer details	
Interviwer Name	
Date of Interview	

Section	
A	Identifying information
B	EPWP participation
C	Income and Expenditure
D	Household food security information

E	Dietary diversity information

A. IDENTIFYING INFORMATION

A1	Name of participant	
A2	Area of residence	
A3	Is [...] a male or a female? 1=Male 2=Female	☐ 1 ☐ 2
A4	What populaion group does [...] belong to? 1=African/Black 2=Coloured 3=Indian/Asian 4=White 5=Other, specify in the box at the bottom	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
A5	What is your age in completed years?	_____years
A6	Is [...] a local participant or a migrant participant? 1=Local 2=Migrant	☐ 1 ☐ 2
A7	Are you the head of your household? 1=Yes 2=No	☐ 1 ☐ 2
A8	If you are not the head of the household, is the head of the household working? 1=Yes 2=No	☐ 1 ☐ 2
A9	How many members belong in your household?	_____members **PLEASE SPECIFY BELOW**

Age Cohort	**Male**	**Female**
60 + years		
19 – 60 years		
6 – 18 years		

	0 – 5 years		
	Enumarator, make sure the indicated household members are the same as those indicated in the table		
	What is your relationship status? 1=Single 2=Married 3=Co-habiting 4=Seperated (but not divorced) 5=Divorced 6=Spouse passed away	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6	
A10	What is the highest level of education that [...] has successfully completed? *Interviwer: Show card for years of Education*	Education Code _____	

B. EPWP PARTICIPATION INFORMATION

B1	Are you currently working on an EPWP project? 1=Yes 2=No	☐ 1 ☐ 2
B2	What is the name of the project?	_____
B3	In which sector of EPWP does the project belong to? 1=Infrastructure 2=Social 3=Environment & Culture 4=Economic	☐ 1 ☐ 2 ☐ 3 ☐ 4
B4a	How long have you been working for EPWP? 1=Less than 1 month 2=1 – 3 months 3=4 – 6 months 4=More than 6 months	☐ 1 ☐ 2 ☐ 3 ☐ 4
B4b	If more than 6 months, indicate how long. [PLEASE WRITE]	_____
B5	How long is **this** project expected to last? 1=Less than 1 month 2=1 – 3 months 3=4 – 6 months 4=More than 6 months	☐ 1 ☐ 2 ☐ 3

			4			
B6	How much are you paid?	Amount in Rands R_____	Per day	Per week	After 2 weeks	Per month
B7	If you are paid per each contract, how many times are you paid during that contract?		Per day	Per week	After 2 weeks	Per month

B8	PLEASE FILL YOUR EMPLOYMENT HISTORY	2018	2017	2016	2015
	Months of EPWP employment (0 -12)				
	Monthly income from EPWP (R)				
	Months of non-EPWP employment (0 -12)				
	Average **monthly** income from non-EPWP work (R)				
	Months of unemployment (0 -12)				

Enumerator, please make sure all months in each year adds up to 12 months.

B9	Are there any other members of your household that also participate in EPWP? 1=Yes 2=No -----*Skip to Question C1*	1 2
B10	Besides you, how many more of your household members participate in EPWP?	_____members

C. INCOME AND EXPENDITURE

C1	Does your household receive any social grants? 1=Yes 2=No----------*Skip to Question C3*	1 2
C2	How many members received the … grant last month? *Interviewer: Ask for all grants on list* i. Child support ii. Old age iii. Foster care iv. Disability v. UIF (unemployment grant) vi. Others	i ii iii iv v

		vi
C3	Is anyone else in your household employed? 1=Yes 2=No	1 2
C4	How much do they earn per month? _____ R_____ _____ R_____ _____ R_____ _____ R_____ _____ R_____	Income Code _____ _____ _____ _____ _____
C5	Does your household receive any other income (not from EPWP, those working or social grants)? 1=Yes 2=No---------*Skip to Question C7*	1 2
C6	Please list your other sources of income and the amount received	

Source		Yes/No	Amount (in Rands)
i.	Remittances or support from relatives		R_____
ii.	*Stokvel*		R_____
iii.	*Gooi-gooi*		R_____
iv.	Others (please specify)		R_____
			R_____
			R_____

Interviewer: Ask if these are all the other sources of income within the household

Does anyone give you free food, or money to buy food? 1=Yes 2=No	

If yes, please select from below.

	Source of food or money	Tick if YES
1	Friend or neighbour	
2	Family members	
3	Soup kitchens	
4	Vegetable gardens	
5	Church	
6	Other [WRITE]: _____	

	C6. How much money did your household **spend** in the **last 30 days**? *Interviewer: Specify that this is for the entire household*	Amount in Rands **(last 30 days)**	Is it different from before you participated in EPWP? (YES/NO)	Amount in Rands **(Before participating in EPWP)**
1	Food and drink include take-away *(Interviewer: exclude toiletries and other non-food and drink groceries)*	R_____		R_____
2	Rent	R_____		R_____
3	Transport	R_____		R_____
4	Paraffin, electricity, gas, candles etc	R_____		R_____
5	Membership fees *(Interviewer: Prompt re. including monthly payments to church)*	R_____		R_____
6	Clothes and shoes (cash and lay-bye payments	R_____		R_____
7	Toiletries (soap, shampoo, hair products, creams etc)	R_____		R_____
8	Cigarettes, alcohol)	R_____		R_____
9	Airtime	R_____		R_____
10	Household Items (furniture, bedding, materials for home maintenance etc)	R_____		R_____
11	Medical (traditional healer/ doctor/ clinic/ medicine)	R_____		R_____
12	School fees /Money for creche	R_____		R_____

13	Loan repayments	R_____		R_____

D. HOUSEHOLD FOOD INSECURITY INFORMATION

NOTE: This is information both while they are working for EPWP as well as before EPWP

*Interviewer: Explain that **Rarely** is 1 or 2 times in the past 30 days; **Sometimes** is 3- 10 times in the past 30 days; **Often** is more than 10 times in the past 30 days.*

		a) While working for EPWP			b) Before working for EPWP		
1	Do you worry that your household would not have enough food? 1=Yes 2=No a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3
2	**Do** you or any household member not able to eat the kinds of foods you prefer (like meat or chicken or fish) because you did not have enough money? 1=Yes 2=No a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3
3	**Do** you or any household member have to eat a limited variety of foods, because you did not have enough money? 1=Yes 2=No a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3
4	**Do** you or any household member have to eat some foods that you really did not want to eat (like offal or soya) because you did not have enough money to obtain other types of food? 1=Yes 2=No a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3
5	**Do** you or any household member have to eat a smaller meal than you needed, because there was not enough food or money to buy food? 1=Yes 2=No a) If YES, how often did it happen during the past 30 days?	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3	1 2 1=Rarely 1	2=Sometimes 2	3=Often 3

	b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?						
6	**Do** you or any household member have to eat fewer meals in a day, because there was not enough food or money to buy food? 1=Yes 2=No		1 2			1 2	
	a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1=Rarely 1	2=Sometimes 2	3=Often 3	1=Rarely 1	2=Sometimes 2	3=Often 3
7	**W**as there ever no food to eat of any kind in your household, because of no money to get food? 1=Yes 2=No		1 2			1 2	
	a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1=Rarely 1	2=Sometimes 2	3=Often 3	1=Rarely 1	2=Sometimes 2	3=Often 3
8	**Do** you or any household member go sleep at night hungry, because there was not enough food or money to buy food? 1=Yes 2=No		1 2			1 2	
	a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1=Rarely 1	2=Sometimes 2	3=Often 3	1=Rarely 1	2=Sometimes 2	3=Often 3
9	**Do** you or any household member go a whole day and night without eating anything, because there was not enough food or money to buy food? 1=Yes 2=No		1 2			1 2	
	a) If YES, how often did it happen during the past 30 days? b) If YES BEFORE you worked for EPWP, how often did it happen in 30 days?	1=Rarely 1	2=Sometimes 2	3=Often 3	1=Rarely 1	2=Sometimes 2	3=Often 3

E. DIETARY DIVERSITY INFORMATION

Did you and any member of your household eat any of the following food items:

a) While participating in EPWP: in the **last 24 hours?**
b) Before participating in EPWP: in **any normal 24 hours?**

*Interviewer: Specify that it has to be a **normal day**, not any special day such as birthday or party or any celebration. Ask for all foods that might have been prepared in the household but eaten outside.*

	Food group	**While working for EPWP**	**Before working for EPWP**
E1	**Cereals:** Maize, wheat, rice, bread, biscuits, sorghum 1=Yes 2=No	1 2	1 2
E2	**Tubers and roots:** Sweet potato, potato, yam, cassava, Irish potatoes 1=Yes 2=No	1 2	1 2
E3	**Legumes, nuts and seeds:** Beans, soya beans, lentils, chick peas, peanuts 1=Yes 2=No	1 2	1 2
E4	**Milk and milk products:** Milk, cheese, yoghurt, or other milk products 1=Yes 2=No	1 2	1 2
E5	**Eggs** 1=Yes 2=No	1 2	1 2
E6	**Fish** 1=Yes 2=No	1 2	1 2
E7	**Meat:** Beef, goat, mutton, chicken, pig, rabbit 1=Yes 2=No	1 2	1 2
E8	**Sweets:** Sugar or honey 1=Yes 2=No	1 2	1 2
E9	**Oils and fats:** Food made with oil fat or butter 1=Yes 2=No	1 2	1 2
E10	**Vegetables:** Banana, cabbage, amaranth, aubergine, carrots, pumpkin, tomatoes, onions		

	1=Yes 2=No	1 2	1 2
E11	**Fruit:** Orange, pineapple, lemon, avocado, mango, papaya, tree tomato, passion fruit 1=Yes 2=No	1 2	1 2
E12	**Spices, condiments and beverages:** Any other foods such as condiments, coffee, tea, non-alcoholic drinks 1=Yes 2=No	1 2	1 2

-

End of questionnaire!

Code	Education (A9)
01	None
02	Pre-primary
03	Grade 1/ Class 1
04	Grade 2/ Class 2
05	Grade 3/ Standard 1
06	Grade 4/ Standard 2
07	Grade 5/ Standard 3
08	Grade 6/ Standard 4
09	Grade 7/ Standard 5
10	Grade 8/ Standard 6
11	Grade 9/ Standard 7
12	Grade 10/ Standard 8
13	Grade 11/ Standard 9
14	Grade 12/ Standard 10/ Matric
15	Post high school diploma
16	University degree
17	Other

Code	INCOME (C4 & C5ii)
01	R0
02	R1 –R200

03	R201 -R400
04	R401 –R700
05	R701 -R1000
06	R1001 -R1300
07	R1301 -R1600
08	R1601 -R2000
09	R2001 –R2500
10	R2501 -R3000
11	R3001 –R3500
12	R3501 –R4000
13	R4001 –R5000
14	R5001 –R6000
15	R6001 –R7000
16	> R7000