DETERMINANTS OF HOUSEHOLD VULNERABILITY AMONG RURAL COMMUNITIES IN MAPHUTSENG AREA DEVELOPMENT PROGRAMME OF LESOTHO

By

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Declaration

I, Mbuso Ncube Jama, hereby declare that this dissertation for Masters in Rural Development Degree (MRDV) submitted to the Centre for Rural Development and Poverty Alleviation at the University of Venda has not been submitted previously for any degree at this or another University. It is original in design and in execution, and all reference material contained herein has been duly acknowledged.

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Abstract

The main purpose of this study was to find out the principal determinants of vulnerability among households in the Maphutseng community of Lesotho. This was done in order to provide alternative effective household targeting methods for social protection and development programmes implemented by governments and non-governmental organizations, respectively. A combination of quantitative and qualitative methods was used. A census survey of 2 566 households in three Community Councils was carried out. Sixteen focus group discussions were conducted in three centres of Setanteng, Mpharane and Ha Sekoati. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 17.0. The Household Vulnerability Index (HVI) model that is anchored on the application of the five capitals (namely natural, social, human, financial and physical) as propounded by the Department for International Development (DFID) was used to compute the indices of vulnerability and descriptive statistics. A Community Council was adopted as the unit of analysis.

Analysis of Variance (ANOVA), Kruskal Wallis and Mann-Whitney tests were used to determine if statistical differences existed between and among groups. Principal Component Analysis (PCA) was used to identify the major determinants of household vulnerability. Eleven principal determinants of household vulnerability were distilled from the 25 candidate dimensions. These could be explained using six extracted principal components, viz.: land ownership, land utilization for food production; number of children and adult meals; age, sex and type of employment of head of household; main source of income; household with debt and availability of second income source; and household receiving remittances.

The most important determinants were observed to be ownership and utilization of land for production, both of which could be classified as natural capitals. These results highlighted the importance of natural capital in Maphutseng households in determining their level of vulnerability. However, through focus group discussions financial capital was found to be an important factor that determined household vulnerability. At least three dimensions that cut across other assets might explain the determinants of household vulnerability when the financial capital category was considered.

The mean household vulnerability indices for male and female headed households were 63.4 and 65.4, respectively. These were significantly different ($t = -6.851$, $P < 0.05$). Understanding the spectrum of principal determinants of vulnerability improves the chances of designing appropriate and effective interventions for development relief. Moreover, it

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provides an opportunity for targeting the most deserving households, particularly in light of the current reduction in flow of aid from developed countries. The HVI helped to objectively rank and categorize households into less vulnerable, moderately vulnerable and highly vulnerable classes.

About 6.8 % of the households were highly vulnerable; 89.5 % moderately vulnerable whilst 3.7 % were less vulnerable. The degree of household vulnerability varied significantly across the Khoelenya, Motlejoeng and Teke Community Councils ($F = 10.603$; $P < 0.05$). The mean HVI for Motlejoeng Community Council was 62.6 compared to 61.30 for Khoelenya and 61.29 for Teke. The differences in HVI, though small, emanated from various factors, including ownership and utilization of land for production.

The results of this study highlighted the need for reviewing the land policy in Mohale's Hoek District Council and relevant authorities in order to facilitate equitable distribution. Also crucial was the need for the Ministry of Agriculture and Food Security to develop appropriate strategies for promoting the utilization of land so as to address the vulnerability status in Maphutseng.

Key words: capitals, determinants, HVI, livelihoods, targeting, vulnerability

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To my family Perpetual, Nokulunga and Mbali

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ABBREVIATIONS AND ACRONYMS

ADP	Area Development Programme
ANOVA	Analysis Of Variance
AU	African Union
CARE	Cooperative for Assistance and Relief Everywhere
CART	Classification and Regression Tree
CC	Community Council
DFID	Department For International Development (UK)
EU	European Union
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization (United Nations)
FEWSNET	Famine Early Warning System Network (USAID Project)
GIEWS	Global Information and Early Warning System
GIS	Geographical Information System
HDI	Human Development Index
HFEA	Household Food Economy Approach
HIV/AIDS	Human Immune Virus and Acquired Immune-Deficiency Syndrome
HVI	Household Vulnerability Index
KMO	Kaiser Meyer Olkin
LNNS	Lesotho National Nutrition Survey
LVAC	Lesotho Vulnerability Assessment Committee
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organisation
PCA	Principal Component Analysis
PDA	Personal Digital Assistant
PPP	Purchasing Power Parity

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SADC	Southern African Development Community
SAT	Southern Africa Trust
SHD	Sustainable Human Development
SLF	Sustainable Livelihoods Framework
SPSS	Statistical Package for Social Scientists
SRM	Social Risk Management
TLA	Transformed Livelihood Approach
TST	Ten Seed Technique
UK	United Kingdom
UNDP	United Nations Development Programme
UNIVEN	University of Venda
USA	United States of America
USAID	United States Agency for International Development
VA	Vulnerability Assessment
WFP	World Food Program
WVI	World Vision International

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CHAPTER 1 INTRODUCTION

1.1 Background

Developing countries are faced with protracted droughts and shifts in climatic patterns that originate from global warming (Brown, Hammill and Mcleman, 2007). At the same time, inflows of aid to underdeveloped countries are threatened as the world recession bites (Moin, 2009). In 2008, Africa's share of aid decreased by 17 %. This equated to a fifth of the total global aid in that year (World Bank, 2009). Developing countries are also faced with a serious decline in food production and subsequently, an increased number of vulnerable persons who require external assistance. The inverse relationship of the volume of aid and vulnerable persons in need raises two critical and fundamental concerns relating to development relief, namely the need for effective household targeting and improved quality of high impact programmes that address vulnerabilities.

Coudouel and Hentschel (2000) define vulnerability as a broad concept that encompasses limitations in income and risks such as those related to health, resulting from violence and social exclusion. All these can have dramatic effects on households. According to the World Bank (2001a), the term *vulnerability* includes the relationship between poverty and risk, including the efforts required to manage it. This approach to thinking has led to the adoption of the concept of "Social Risk Management (SRM)" as a new means of examining poverty, risk and its management. All these are incorporated into the World Bank Social Protection Strategy (World Bank, 2001a). Moser and Holland (1997) also point out that vulnerability is closely linked to ownership of assets. The more assets people have the less vulnerable they are. The reverse is true. Seigel and Alwang (1997) categorize assets as tangible (including land, labour, capital and savings) and intangible (social, institutional and political relationships, physical and social infrastructure).

Various development players have applied different models and approaches in an attempt to address vulnerability and poverty. Among them is World Vision International (WVI), which is an international Non-Governmental Organization (NGO) that has been working with poor and marginalized people since the early 1950s specifically aiming to promote human transformation (WVI, 2010). The highly dynamic environment which often increases the vulnerability of households continues to undermine WV's development relief efforts. As is the case with most development organizations, WVI is faced with inadequate resources required to meet the needs of poor and vulnerable people. Added to this is the fact that there is no

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universally accepted objective tool or system used to select poor and vulnerable people within the rural communities (Chaudhuri, 2003).

Most World Vision International (WVI) programmes rely on Proxy Mean Indicator targeting methods for identifying and registering households that qualify for assistance projects. These approaches are often associated with high levels of targeting errors (Devereux, 2008). Targeting errors result from either poorly designed processes and/or flawed procedures that programme staff and stakeholders such as community leaders and communities use (Food and Agricultural Organization, 2001). It is crucial to find corrective measures.

Currently, WVI is exploring the possibility of adopting the household vulnerability index (HVI) that the Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN) developed (Sibanda, Kalibwani and Kureya, 2007). This tool was designed in order to improve targeting and effectiveness of programming. In the medium to long-term, programme quality would also be enhanced. The drive towards adopting the HVI in WVI programming is currently in the first phase. This phase provided a platform for the HVI pilot projects in three countries, namely Lesotho, Swaziland and Zimbabwe. The aim of this initiative was to carefully examine the pros and cons of using the tool before its possible introduction in other WVI operational areas. The adoption process provided an opportunity for applying WVI's Transformed Livelihoods Approach, which is a slightly modified version of the Department for International Development (DFID) Livelihoods Framework (DFID, 1999). World Vision's modified livelihoods approach adds technology, spiritual and political capitals to those in DFID livelihoods framework.

According to Loughhead and Mittai (2000), many sociologists have adopted the term "vulnerability" as an alternative way of characterizing the dimensions of poverty that are not ordinarily captured by money-metric terms. This gave birth to the concept of 'social vulnerability'. The thinking is closely aligned with WVI's Transformed Livelihoods Approach (World Vision International, 2007). This study in Maphutseng area of Lesotho was triggered by the belief that the results would be beneficial to WVI's drive towards improved household targeting and effectiveness of programming in development relief.

The HVI was initially developed using funding from the Southern African Development Community (SADC) and European Union (EU). This statistical index was then tested through a multi-country research programme across Southern Africa that included Botswana, Lesotho, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. The Southern Africa Trust (SAT) funded this work, which sought to rank households based on relative

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vulnerability to shocks and poverty. A 2007 FANRPAN-produced documentary entitled "Silent Hunger" revealed that the HVI achieved this through comparing livelihood capitals and categorizing households into coping, acute and emergency classes.

It is worth noting and acknowledging that an excellent tool that is not properly utilized or applied is similar to a "badly" designed one. World Vision intended to adopt and adapt the HVI to her setting for pilot projects in Lesotho, Swaziland and Zimbabwe. Because of this shift, there was need to test and validate some of the anticipated benefits, in addition to exploring opportunities. Only after this had been achieved would scaling up of the HVI to other WVI operational areas in nearly 100 countries in the world be recommended.

1.2 Statement of the Research Problem

The current study was premised on the assumption that poor targeting and programming of development relief occurred due to lack of comprehensive information relating to the levels of vulnerability of households. Poor targeting often results from high inclusion or exclusion errors, which comes in the form of providing assistance to non-deserving households. Equally worth noting is the fact that deserving households might be excluded from receiving aid or development assistance. The realities of the global economic crisis point to the need for ensuring that the few resources at the disposal of development relief organizations reach the most vulnerable households. This calls for effective and efficient systems of identifying and selecting beneficiaries. The errors depicted in Figure 1.1 reflect the value of resources directed to the less vulnerable and "loss" that the excluded, yet deserving, beneficiaries experience.

There is evidence from programme evaluations which shows that household targeting remains a huge concern in development initiatives (Devereux, 2008). In addition, current household targeting methods that WVI uses are associated with high inclusion errors. Moreover, exclusion errors have always existed mainly due to limited resources that are never enough for all deserving people. It is important to prioritize the most deserving people.

Currently, there is inadequate reliable data that might be used in decision making, including the design of appropriate response projects from various development actors in an area. Lastly, irreversible targeting and programming errors occur due to lack of comprehensive household-level information that can be used to categorize beneficiaries based on their levels of vulnerability. When wrongly targeted households benefit from the project the impact of development assistance is severely diluted.

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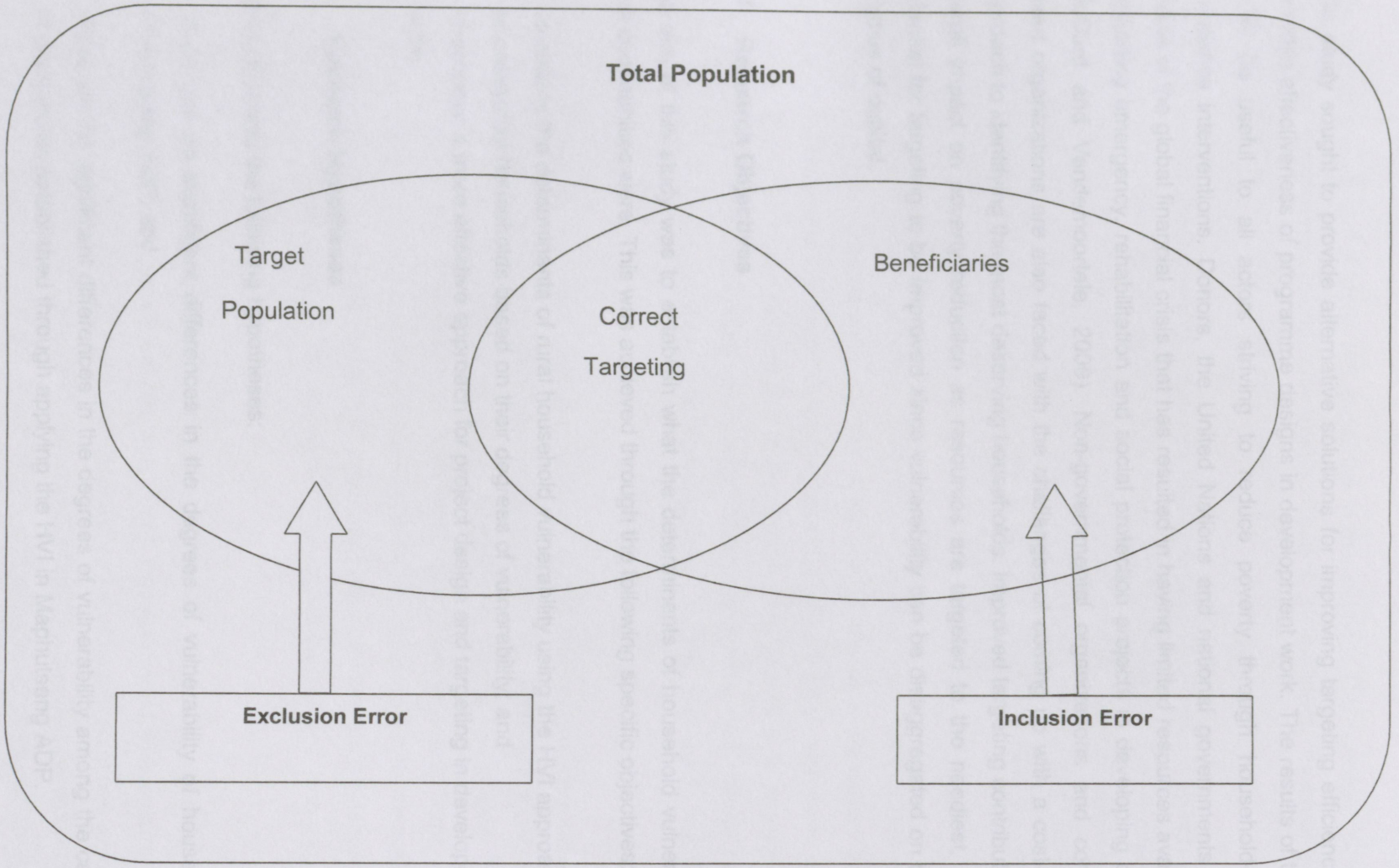


Figure 1:1 Schematic depiction of targeting inclusion and exclusion errors (Hurrell, 2009)

1.3 Justification of the Study

This study sought to provide alternative solutions for improving targeting efficiency for aid and also effectiveness of programme designs in development work. The results of the study might be useful to all actors striving to reduce poverty through household-targeted assistance interventions. Donors, the United Nations and national governments feel the effects of the global financial crisis that has resulted in having limited resources available for supporting emergency, rehabilitation and social protection projects in developing countries (McCord and Vandemoortele, 2009). Non-governmental organizations and community-based organizations are also faced with the challenges of coming up with a cost-effective approach to identifying the most deserving households. Improved targeting contributes to the overall impact on poverty reduction as resources are targeted to the neediest. There is potential for targeting to be improved since vulnerability can be disaggregated on the basis of types of capital.

1.4 Research Objectives

The aim of this study was to establish what the determinants of household vulnerability in rural communities were. This was achieved through the following specific objectives:

a) to assess the determinants of rural household vulnerability using the HVI approach;
b) to categorize households based on their degrees of vulnerability; and
c) to propose a more effective approach for project design and targeting in development work.

1.5 Research Hypotheses

The study tested the following hypotheses:

a) There are no significant differences in the degrees of vulnerability of households in Maphutseng ADP; and

b) There are no significant differences in the degrees of vulnerability among the categories of households established through applying the HVI in Maphutseng ADP.

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1.6 Operational Definitions of Key Terms and Concepts

Key concepts used in the study are explained in this section. The concepts include area development programme (ADP), Community Council, determinant, development relief, livelihood, targeting, targeting errors and vulnerability.

Area Development Programme is a concept that WVI uses to describe a geographic area that consists of at least 20 000 people from several villages, Wards, Community Councils and/or Constituencies. Many projects that cut across multiple sectors such as health, education, water and sanitation are usually designed to address poverty and vulnerability in adopted communities for a period of 5-15 years. An Executive Committee that represents the wide cross-section of the community usually manages an ADP.

Community Councils are the smallest administrative units of local government formed in 1997 under the Local Government Act No. 9 as part of the decentralization process in Lesotho. The Government of Lesotho has 10 District Councils which are made up of 128 Community Councils. The main purpose of the Community Council is to provide services among a range of responsibilities which encompass management of natural resources, environmental protection, land/site allocation, grazing control and water supply in the villages.

Determinants refer to the major causes of vulnerability. In this context, determinants may mean the relative importance of a particular indicator or factor in dictating the vulnerability of a household. In this study, understanding the determinants involved evaluating household membership to a particular category of vulnerability (low, moderate and high). This was intended to analyze how various sets of specific household characteristics were associated with vulnerability. Smit and Wandel (2006) argue that the determinants of vulnerability are dynamic and vary according to the stimulus under consideration and are also context-specific.

Development relief is a continuum that links long-term and short-term improvement in the outcomes of poor people (Barrett and Maxwell, 2005). Developmental relief ensures analysis of people's livelihoods in order to identify appropriate and sustainable solutions which reduce the need for long-term relief. Cadell and Yanacopulos (2006) argue that developmental relief allows greater dialogue with the donor community and provide access to different pools of funding.

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A *livelihood* is a means of making a living. It encompasses people's capabilities, assets, income and activities required to secure the necessities of life. According to Chambers and Conway (1992), a livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets while not undermining the natural resource base.

In terms of development or humanitarian work, *targeting* is a process of identifying individuals or a group of people who meet certain criteria for them to become beneficiaries of aid. Also, *targeting errors* arise from the process of identifying and selecting individuals or groups of individuals who meet certain criteria for them to qualify as beneficiaries.

In the context of targeting in development work, *exclusion error* means the proportion of the target group not receiving benefits. In contrast, *inclusion error* is the proportion of people who are wrongly included as recipients of developmental relief yet they are not supposed to be members of the target group.

Vulnerability is a state of being exposed to internal and external shocks (Cardona, 2004). It includes the ability to withstand shocks. The current study examined vulnerability as the context of poverty restricted to households. Holzmann and Jorgensen (1999) define vulnerability as the risk of an individual or household to fall to poverty. According to Chambers and Conway (1992), a *livelihood* comprises capabilities, assets (both material and social resources) and activities required for a means of living. Concepts such as HVI and poverty are central to this study and thus, are explained in greater detail in Chapter 2.

1.7 Outline of the Dissertation

This dissertation is made up of five chapters. Chapter 1 provides the background of the study while Chapter 2 examines the literature that informed the study. In Chapter 3, the research methodology is described. Chapter 4 presents household survey results followed by a comprehensive analysis of the determinants of vulnerability in Maphutseng. Lastly, Chapter 5 is devoted to a general discussion and distillation of the implications of the HVI in developmental relief at local, national and regional levels. There is a specific focus on targeting and designing programmes or projects.

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CHAPTER 2 REVIEW OF LITERATURE

2.1 Introduction

This chapter presents the review of literature on key concepts and issues that contribute to effective targeting and improved programming with the aim of reducing poverty and vulnerability of households. Relevant literature relating to targeting, vulnerability, poverty and sustainable livelihoods is covered. This is important because it gives a picture of the current position regarding the body of knowledge used to support, validate or advance the hypothesis being tested.

2.2 Understanding Household Vulnerability

Practitioners from various disciplines (Makoka and Kaplan, 2005) use the term vulnerability differently. This has led to diverse methods of measuring it. In general, vulnerability refers to the relationship between poverty and risk, including efforts made to mitigate or manage the risk. A household is regarded as vulnerable if there is future potential loss of welfare. The degree of vulnerability depends upon the capacity of that household to respond to the risk. This implies that measurement of vulnerability depends on the time horizon, implying that households may be vulnerable at certain times of the year. Vulnerability is an ex-ante measure of well being whereas poverty is an ex-post measure of well-being or lack thereof (Chaudhuri, 2003).

Kanbur and Squire (1999) observe that economists often use money-metric terms to define vulnerability. Other scholars define vulnerability using the asset base and highlight that it is closely related to asset ownership. The few tangible and intangible assets a household owns, the more vulnerable it becomes and vice versa. Siegel and Alwang (1999) describe tangible assets as land, labour, capital, savings (natural, human, physical and financial assets) while intangible assets include social, institutional and political relationships, physical and social infrastructure and location. Different assets can be used to manage various possible risks.

Susceptibility and resilience are two concepts that are closely linked to vulnerability. The former refers to the probability that the household is at risk. Resilience refers to the household's ability to withstand the impact of the shock and get back to normal life. Davies (1996) further distinguishes between structural and proximate vulnerabilities. He defines households that exhibit the underlying characteristics that make them vulnerable (such as

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headship, age, households with old and infirm members) as structurally vulnerable. Also, he argues that proximate vulnerability may change from one year to another.

Putnam (1993) and Moser (1998) are among the many sociologists who have been at the forefront of extending the meaning of the term "assets" beyond just physical and financial realms to include social capital and strength of household relations. This has culminated in sociologists adopting the term "vulnerability" as an alternative means of characterizing the dimensions of poverty that money-metric terms do not ordinarily capture. Loughhead and Mittai (2000) have extended this debate through coining the term social vulnerability as opposed to economic vulnerability.

2.2.1 Measures of vulnerability

According to Stephen and Downing (2001), the purpose of vulnerability assessments (VA) is to identify the susceptibility of individuals or a larger population to shocks, for example food insecurity in Southern Africa. The authors argue that there are two components of vulnerability assessments, namely identifying who is at risk to climatic and environment perturbations; and prioritizing the needs. Yohannes and Webb (1999) state that three notable vulnerability assessments are the Global Information and Early Warning System (GIEWS) which FAO mainly uses, Save the Children's Household Food Economy Approach (HFEA) and the Classification And Regression Tree (CART) analysis.

For development programmes to have high levels of sustainability, vulnerability assessments must be methodologically sound and context-sensitive. Borton and Shoham (1991) believe that other methodological shortcomings may include selecting inappropriate indicators of household stress. Campbell (1990) suggests that better measurement of vulnerability requires an integration of methods and disciplines. According to Glewwe and van der Gaag (1988) most economists prefer measuring vulnerability using comparable metric approaches. In this respect, they frequently use income or consumption expenditure as the metric. The outcome of this measurement is an absolute poverty line. Ravallion (1996) and Coudouel and Hentschel (2000) are opposed to the poverty line as a measure of vulnerability, arguing that one cannot use a single-metric approach to define such a complex variable. Such criticisms have led to the development of other methods and techniques of measuring vulnerability, for example asset-based indices. A composite of arbitrary values given to assets is computed to determine varying degrees of vulnerability for households.

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2.2.2 What is the household vulnerability index?

The vulnerability index approach is not a new concept. For example, the Famine Early Warning System Network (FEWSNET, 2000) used it widely in the past with emphasis on food security when carrying out vulnerability mapping exercises. According to Vella and Vichi (1997), several analytical techniques have been used to create the index. They include the principal component and cluster analyses (Eilerts, 1994; Keogh, 1997) and arbitrary weights assigned to the index elements (Keogh, 1997).

The Food Agriculture Natural Resources Policy Analysis Network (FANRPAN) used funding from the European Union to develop the Household Vulnerability Index (HVI). This was a product of a multi-country (covering Botswana, Lesotho, Namibia, South Africa, Swaziland, Zambia and Zimbabwe) research that measured the levels of vulnerability of households in countries with high HIV and AIDS prevalence. The work that Costa (2002) undertook informed the construction of the HVI. It involved quantifying the multi-dimensional impacts of a health problem on a household.

A questionnaire was used to collect data on multi-dimensional indicators of vulnerability. Thereafter, they were weighted using a Fuzzy Set Approach (Sibanda, Kalibwani and Kureya, 2007). Vulnerability indices were then calculated for each household. Households were ranked using their respective vulnerability indices, followed by their categorization into three distinct classes. The three main vulnerability categories were vulnerability level 1 (Coping level households), vulnerability level 2 (Acute level households) and vulnerability level 3 (Emergency level households). Coping levels households were still able to cope. Acute level households were those in need of assistance and their situation could be resuscitated through some intervention. Emergency level households required the best possible expertise to be able to improve or reverse their situation.

2.3 Exploring the Concept of Poverty

Vulnerability is related to poverty because the former is an outcome of a dynamic process. Both poverty and vulnerability are closely linked to time (Bane and Ellwood, 1986). Using the time reference, poverty can either be classified as chronic or transitory. A household is said to be chronically poor if it is in a poor state for the entire reference period. Coudouel and Hentschel (2000) define structural vulnerability as that which is associated with chronic poverty. Also, it describes transitory vulnerability as the one which is associated with transitory poverty. Relevant policy reforms might help deal with structural vulnerability.

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2.4 Dealing with Poverty and Vulnerability

Various strategies that development agencies and governments employ to address poverty and vulnerability are explored here. Vulnerability and poverty are dynamic since cumulative conditions create them. Davies (1996) states that in order to address vulnerability there should be short-term and long-term transformational responses to households. Development agencies use short-term or developmental relief responses to improve the coping capacities of households. According to Davies (1996), coping refers to a set of short-term responses to unusual food stress. Adaptation represents coping strategies permanently incorporated into the normal cycle of activities.

Devereux (2001) discusses various safety net programmes in Africa. He distinguishes livelihood promotion programmes as those that aim to transfer assets or improve productivity of existing assets among the poor from livelihood protection aiming to protect consumption from short-term fluctuations. Some development agencies, including Cooperative for Assistance and Relief everywhere (CARE) and World Vision International (WVI), use the relief-development continuum to address poverty and vulnerability. This approach identifies three mutually exclusive categories, viz. relief, rehabilitation and developmental transformation phases. During the relief phase agencies focus on livelihood provisioning. Appropriate responses associated with the rehabilitation phase are those that emphasize protection of livelihoods. During the developmental transformation phase, attention shifts mainly towards promotion of livelihoods.

2.4.1 Livelihood frameworks in development

Chambers and Conway (1992) define livelihoods using three fundamental attributes, namely possession of human capabilities (education, skills, health and psychological orientation), access to tangible and intangible assets and finally, existence of economic activity. The interaction of these attributes defines how a household develops its livelihood strategies. Relief agencies use various versions of the livelihood frameworks, resulting in diverse programming scenarios.

The vast literature on sustainable livelihoods available now is attributed to the Institute of Development Studies at the University of Sussex in the United Kingdom (UK) (Chambers, 1989; Scoones, 1998). According to Scoones (1998), the literature borrows heavily from the work of Amartya Sen. In the context of livelihoods, vulnerability is regarded as the probability that livelihood stress will occur. This is often referred to as livelihood vulnerability. Chambers (1989) argues that livelihood vulnerability is both internal and external. External vulnerability refers to risks, shocks and stress. On the other hand, internal vulnerability is associated with defenselessness, referring to a lack of means to mitigate or cope without incurring losses.

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Four main agencies, viz. The Department For International Development (DFID), CARE, Oxfam and UNDP use different versions of livelihood frameworks. These are rooted mainly in the values and mandates of the organizations. Also, World Vision developed its own Transformed Livelihood Approach, which expands the DFID model by considering eight (8) instead of five (5) capitals.

The mandate of Cooperative for Relief and Assistance (CARE) is to focus its programmes on helping the poorest and the most vulnerable people in society. In 1994, CARE adopted the livelihood framework for programme design, monitoring and evaluation work. Currently, the approach is used for programming and serves as a means for improving inter-sectoral coordination and maximizing impact of development relief. Households are perceived to be functioning on the basis of the assets they have to generate income and meet their consumptive needs. Figure 2.1 shows CARE's livelihood model and linkage of capitals. The model puts the household at the centre of programming and derives its definition of livelihoods from the work of Chambers and Conway (1992).

The Department for International Development (DFID)'s mandate is to eliminate poverty in poor countries. This is reflected in the White Paper on International Development of 1997. The DFID also adopts a version of the Chambers and Conway (1992) definitions and principles of livelihoods. The approach recognizes three attributes as capabilities, assets and activities required to make a living. Natural, physical, financial, social and human capitals anchor the framework.

Figure 2.2 depicts DFID's Sustainable Livelihoods framework. It is closely related to CARE's framework as both recognize the importance of the extent of the vulnerability of the context. Also, it clearly and logically provides livelihood outcomes and strategies. The DFID Sustainable Livelihoods Framework also points out the importance of access and influence as important factors in manipulating assets into livelihoods strategies. The framework endeavours to provide a way of thinking about livelihoods for poor households in the prevailing social, institutional and organizational environment.

Oxfam Great Britain adopted the sustainable livelihoods in the early 1990s. The international NGO uses the livelihoods framework to design its programmes. The framework offers an opportunity to integrate environmental change to the poverty alleviation efforts. The DFID's sustainable livelihood framework is used. It is important to point out that Oxfam's definition of livelihoods which is adopted from Young, Aklilu, Were and Catley (2002) shapes the framework (Figure 2.3). Livelihoods comprise the ways in which people access and mobilize resources that enable them to pursue goals necessary for their survival and longer term wellbeing. Ultimately, vulnerabilities are reduced.

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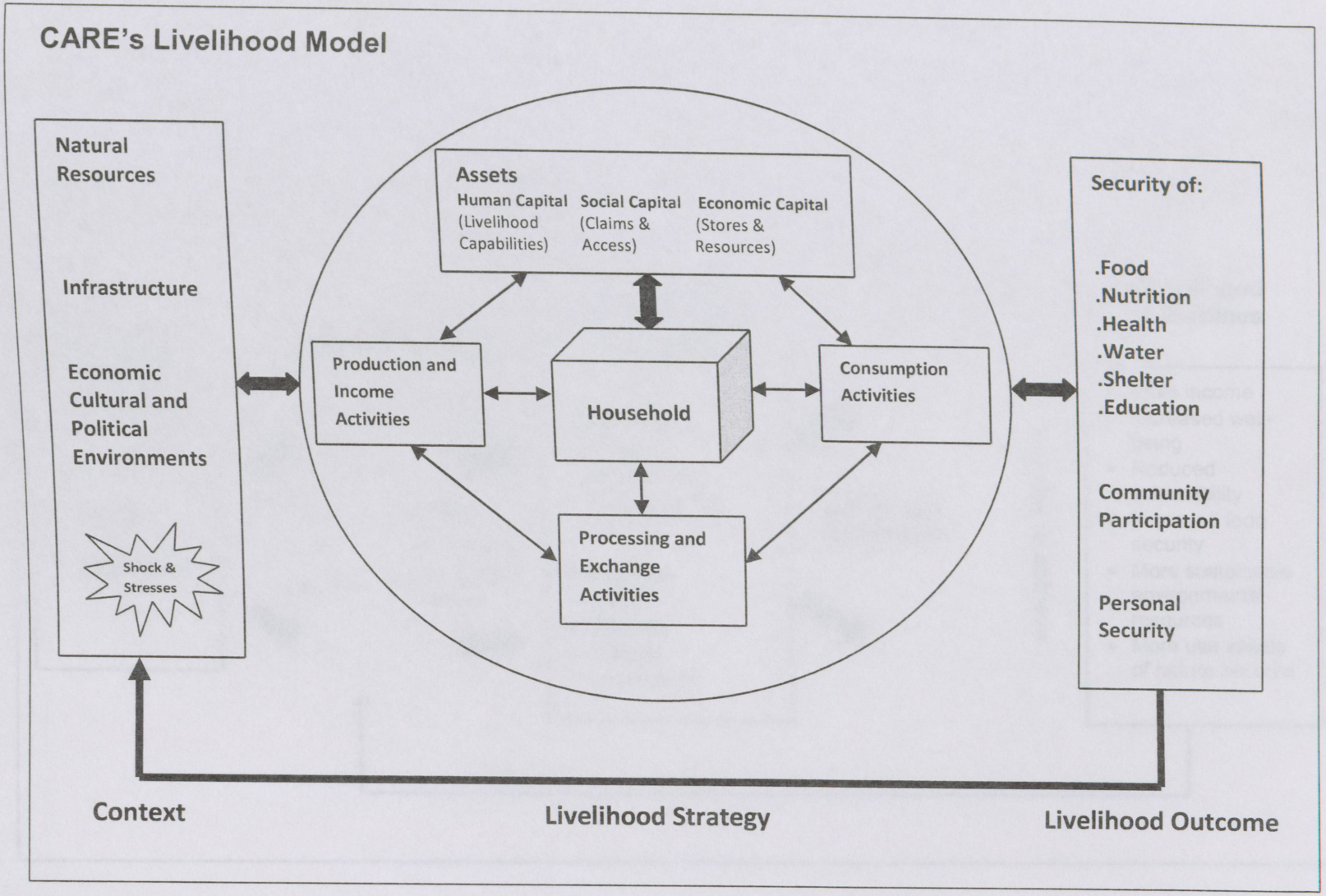


Figure 2:1 CARE's livelihood model, (Krantz, 2001)

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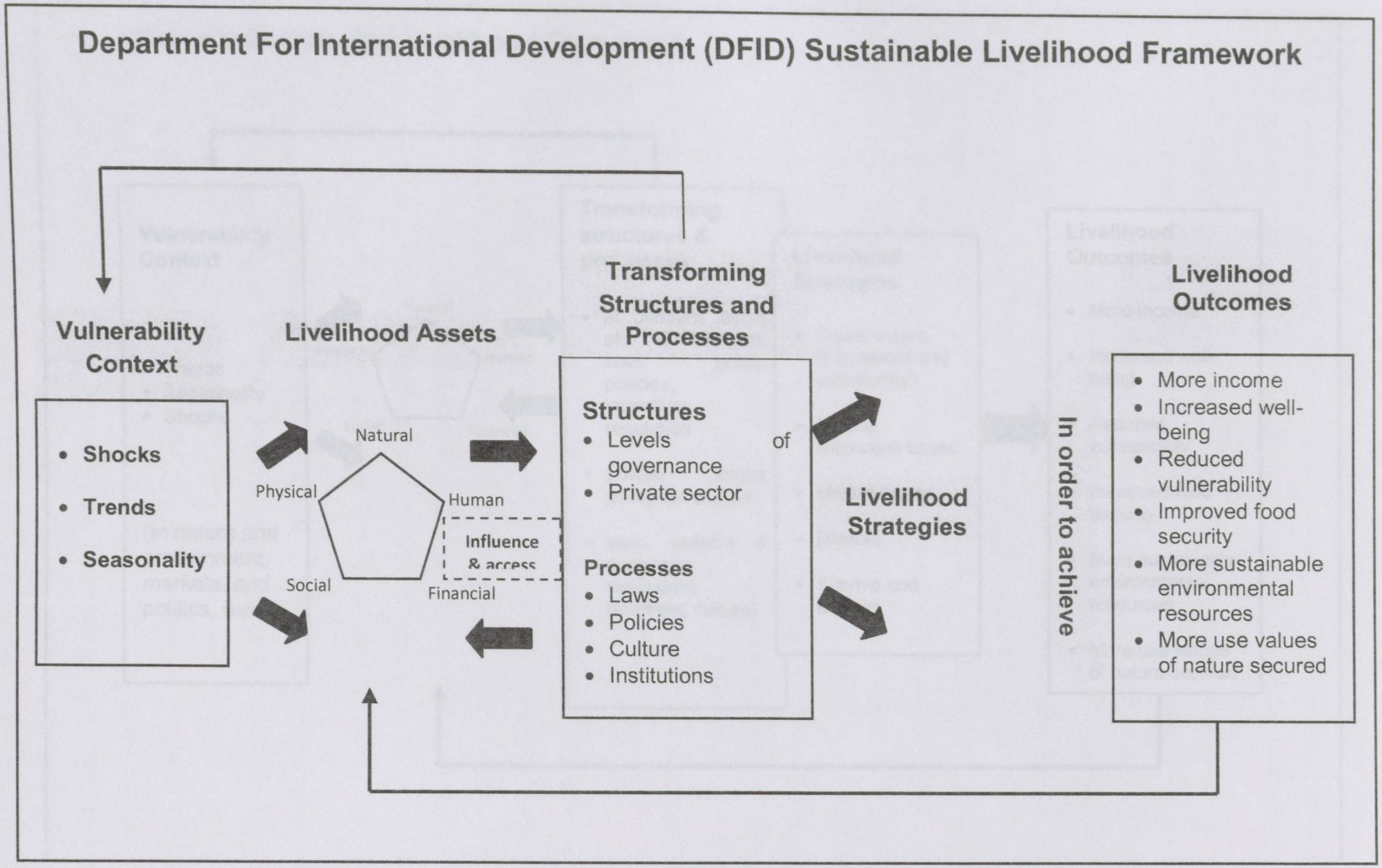


Figure 2:2 DFID's Sustainable Livelihoods Framework, (DFID, 1999)

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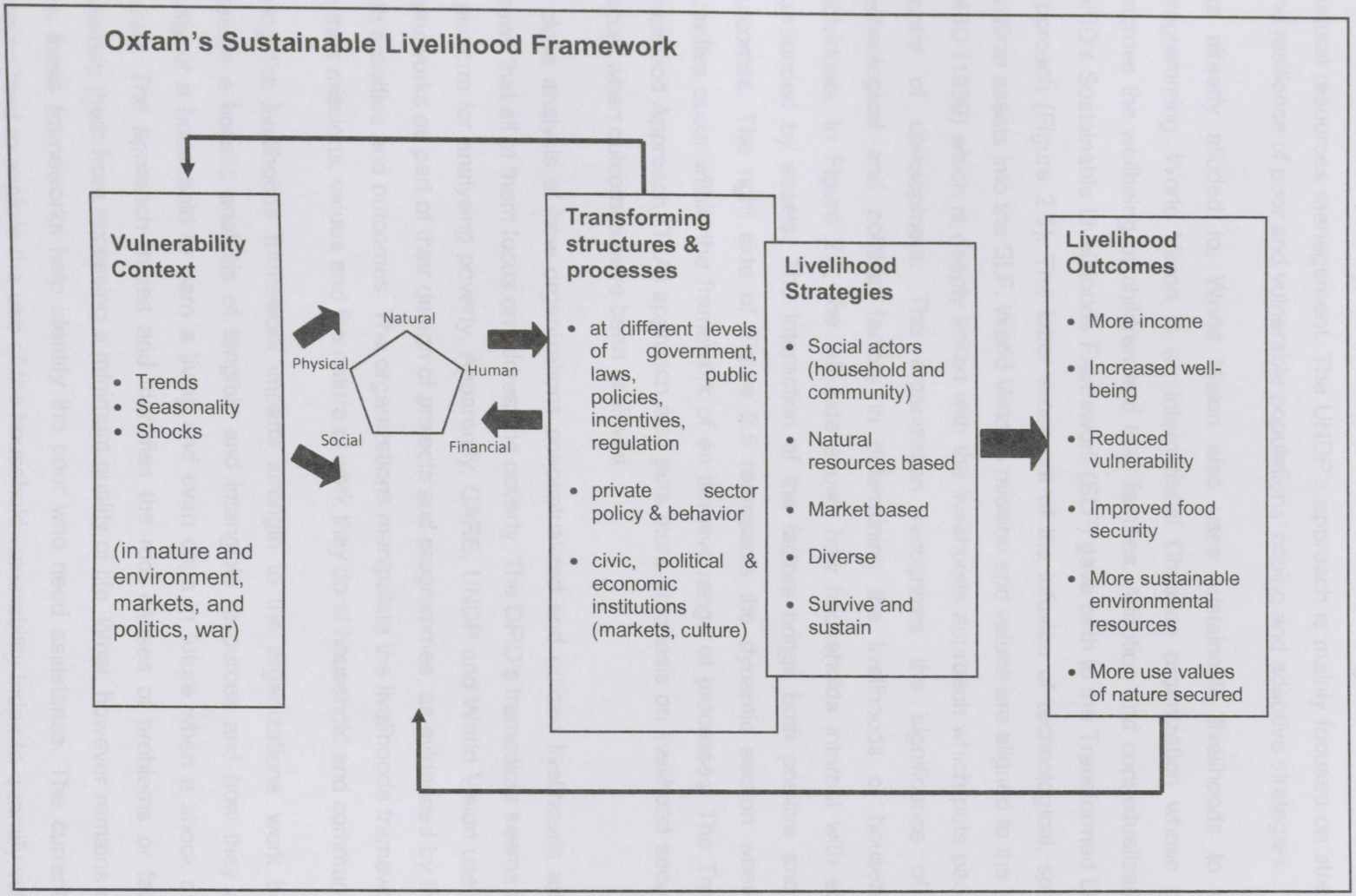


Figure 2:3 Oxfam's Sustainable Livelihood Framework, (Oxfam, 2008)

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In 1995, the United Nations Development Programme (UNDP) adopted a Sustainable Human Development (SHD) mandate. Sustainable Livelihoods is one of the many strategies used to eradicate poverty, in addition to macro-economic growth and community-based natural resources management. The UNDP's approach is mainly focused on strengthening the resilience of poor and vulnerable populations' coping and adaptive strategies.

As already alluded to, World Vision also uses sustainable livelihoods to inform its programming. World Vision is an international Christian organization whose goal is to improve the wellbeing of children and their families. Adoption and contextualization of the DFID's Sustainable Livelihoods Framework (SLF) gave birth to the Transformed Livelihoods Approach (Figure 2.5). The latter arose out of the infusion of technological, spiritual and political assets into the SLF. World Vision's mission and values are aligned to the thinking of DFID (1999) which is deeply linked with the livelihoods approach which puts people at the centre of development. The organization recognizes the significance of spiritual, technological and political factors in determining the livelihoods of households and individuals. In Figure 2.5, the left side shows how households interact with each other surrounded by assets. The interaction of the factors brings both positive and negative outcomes. The right side of Figure 2.5 represents the dynamic section where several activities occur within the framework of an iterative range of processes. The Transformed Livelihood Approach (TLA) approach also puts more emphasis on livelihood security which occurs when outcomes have been achieved.

A close analysis of how organizations conceptualized and utilized livelihoods approaches shows that all of them focus on addressing poverty. The DFID's framework seems to provide a platform for analysing poverty. Apparently, CARE, UNDP and World Vision use livelihood frameworks as part of their design of projects and programmes, as evidenced by the linkage with activities and outcomes. The organizations manipulate the livelihoods framework based on their missions, values and the nature of work they do at household and community levels.

Using the livelihoods framework imparts strength to the organizations' work because it enables a holistic analysis of tangible and intangible resources and how they affect the ability of a household to earn a living and even cope in future when a shock or disaster occurs. The approach traces and identifies the root causes of problems or factors that constrain them from accessing a minimum quality of life. What, however remains unclear is how these frameworks help identify the poor who need assistance. The current study in Lesotho tried to explore the use of the household vulnerability index to quantify vulnerability levels of each household. This calls for understanding targeting mechanisms applied to identify the poor and vulnerable households that require assistance.

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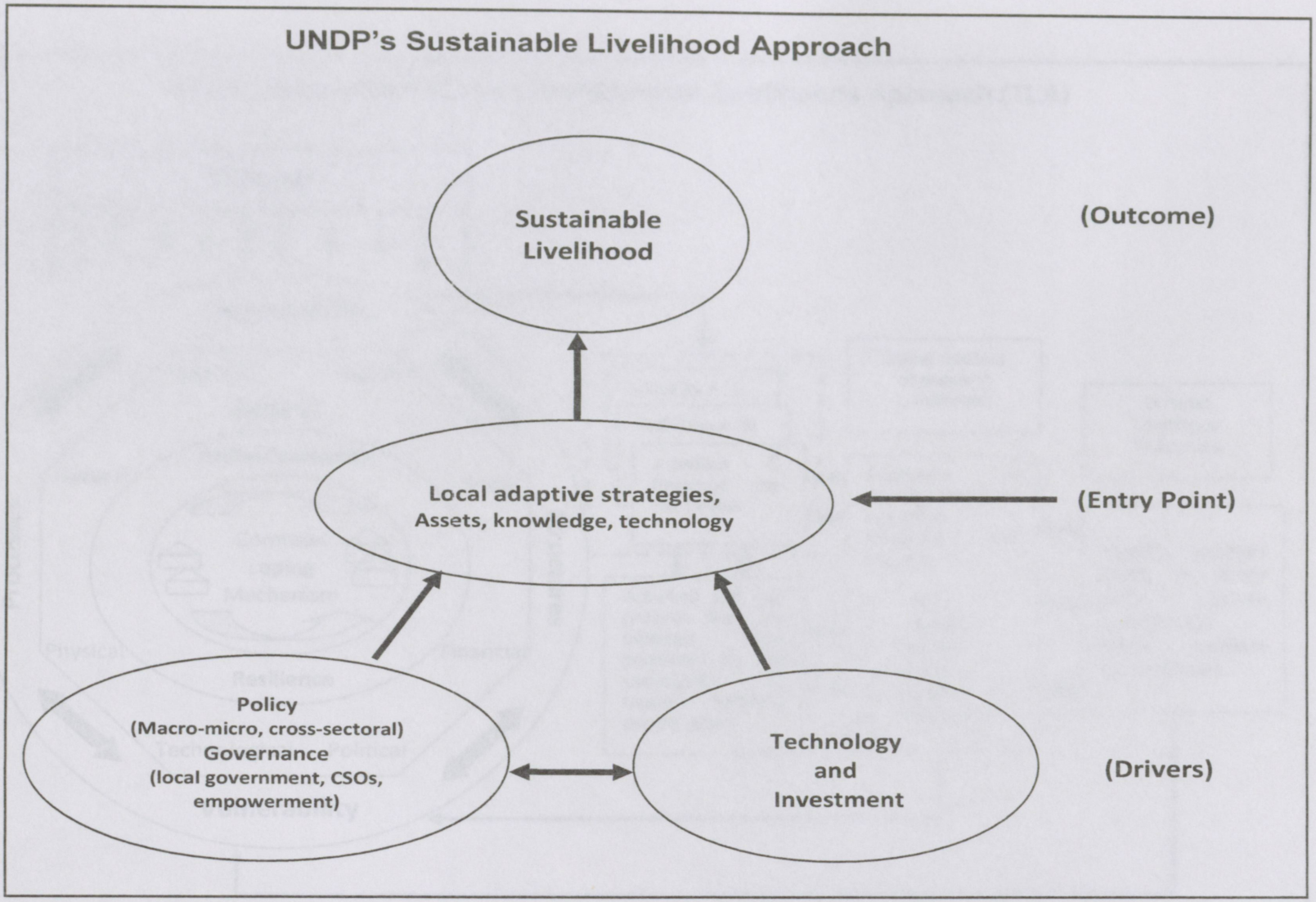


Figure 2:4 UNDP's Sustainable Livelihood Approach, (Krantz, 2001)

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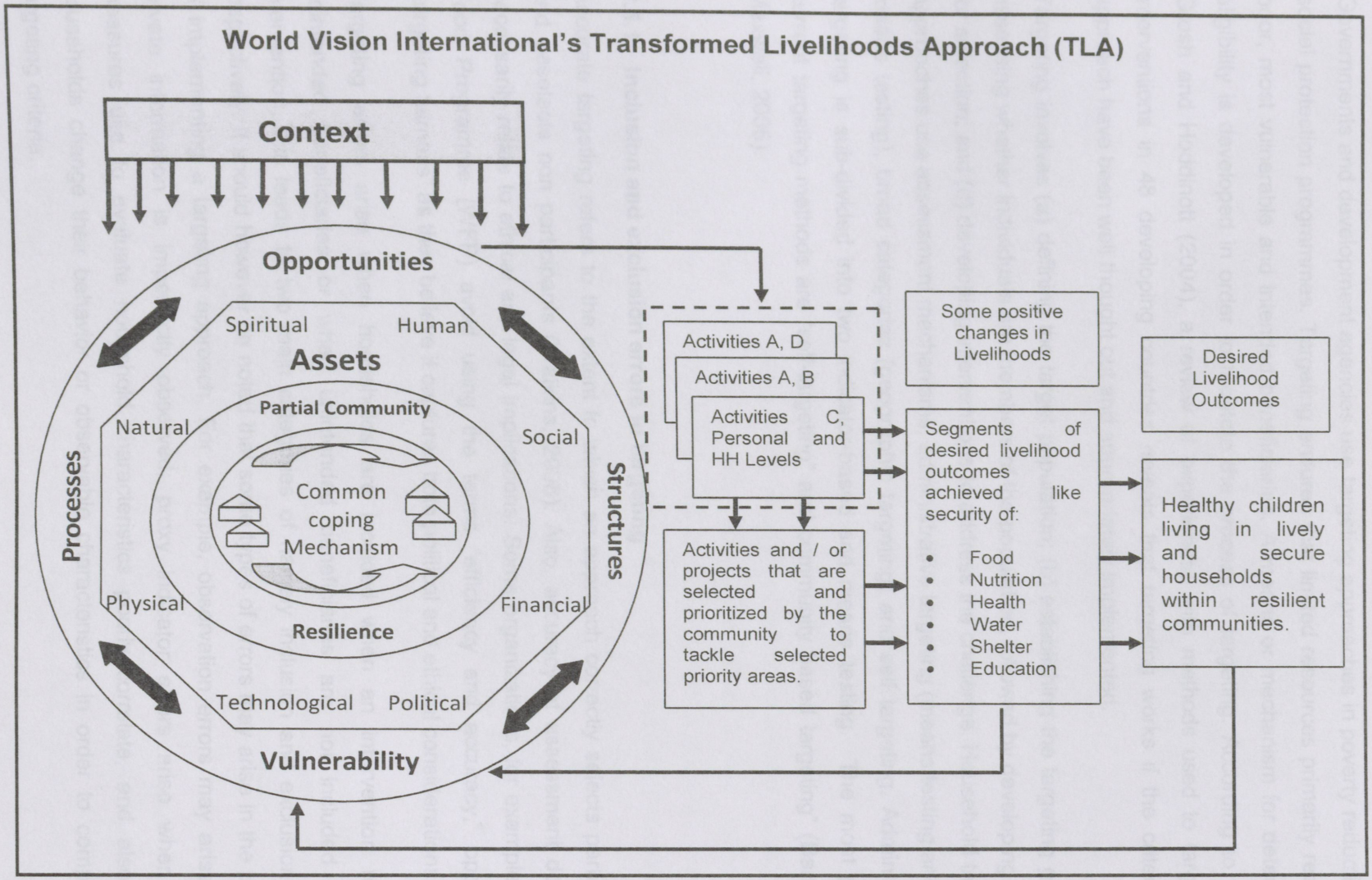


Figure 2:5 World Vision International's Transformed Livelihood Approach, (WVI, 2009)

2.5 Targeting Approaches

Governments and development agencies use targeting approaches in poverty reduction and social protection programmes. Targeting ensures that limited resources primarily reach the poor, most vulnerable and intended beneficiaries. A means or mechanism for determining eligibility is developed in order to facilitate the process of targeting. According to Coady, Grosh and Hoddinott (2004), a review of experiences with methods used to target 122 interventions in 48 developing countries reveals that targeting works if the criteria and approach have been well thought out and appropriately implemented.

Targeting involves (a) defining the target population; (b) establishing the targeting goal; (c) assessing whether individuals are members of the population, followed by developing criteria for selection; and (d) developing interventions to address the challenge. Household targeting approaches use assessment mechanisms, administrative targeting (means testing and proxy means testing), broad categories (geographic targeting) and self targeting. Administrative targeting is sub-divided into two indicator-based and means testing. The most popular current targeting methods are "self-targeting" and community based targeting" (Barret and Maxwell, 2005).

2.5.1 Inclusion and exclusion errors in targeting

Accurate targeting refers to the extent to which an approach correctly selects participants and deselects non participants (Watkins, 2008). Also, accuracy of assessment does not necessarily relate to ethical and legal implications. Some organizations, for example World Food Programme (WFP) avoid using the terms "efficiency and accuracy," opting for "targeting fairness" as they believe it captures both political and ethical considerations.

Targeting errors arise when households are included when an intervention reaches unintended beneficiaries or when unintended beneficiaries are not included in the intervention, this leads to two main categories of namely inclusion and exclusion errors respectively. It should however be noted that some types of errors may arise in the process of implementing a targeting approach. For example, observation errors may arise when private information is imperfectly observed; proxy indicator errors arise when proxy measures use to evaluate household characteristics poorly correlate, and also when households change their behavior or observable characteristics in order to comply with targeting criteria.

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Table 2-1: Descriptions of various types of targeting

Type of Targeting	Explanation
a) Self-targeting	No administrative restrictions on becoming a beneficiary or in participating but the nature of which is supposed to induce only those within a beneficiary target group to self-select into participating. In principle, there is no need for costly administrative screening nor for significant leakage to the non-needy
b) Geographic targeting	Geographic targeting is an approach in which beneficiaries are targeted using their geographic location e.g. district, sub-district level.
c) Community-based targeting	It is an approach that relies on communities to identify beneficiary households based on pre-determined criteria usually developed by them or provided by the implementing agency. Communities usually make a gathering and select beneficiaries through consensus ranking.
d) Proxy-indicator targeting	Includes categorical methods that select households based on one or more easily observable characteristic (gender, household size) and multiple proxy methods that use a number of proxies. It normally uses data on proxy indicators based on socio-economic variables for poverty and vulnerability.
e) Means-test targeting	Refers to an investigative process undertaken to determine whether or not an individual or household is eligible to receive certain types of assistance. The "test" is done through testing certain indicators like income, assets or a combination. In essence there are two types of means-testing: Verified Means Testing – Eligibility is determined through an assessment of household incomes and assets with rigorous verification to improve accuracy. This is mainly used by USA for their social programmes. Unverified Means Testing – Unverified Means Testing uses self-reported information on income and assets with little or no verification.

Source: Castaneda and Lindert, 2005

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2.5.2 Targeting efficiency and effectiveness

Castaneda and Lindert (2005) identify four key principles that can be used for judging the success of household targeting systems. These include the following maximizing coverage for the poor; minimizing leakages to the non-poor; cost efficiency, which involves minimizing the costs of interviewing households while ensuring integrity of intake efforts; and transparency in all efforts to enhance credibility and reduce fraud.

Hoddinott (2006) points out that targeting is costless process. He argues that targeting imposes administrative costs that can reduce the amount of money intended for the intervention. Various methods are used to target food at household level. In practice, programmes often combine more than one targeting method. This is done in order to come up with a blend that would be more effective (Sharp, 2001).

Targeting efficiency measures how well a targeting approach reduces inclusion errors at a given low cost. It addresses the question, "how well did the available resources produce the desired output?" On the other hand, targeting effectiveness examines the impact and size of the programmes that being targeted, in particular the leakage rate of aid and the extent to which set targets were reached.

2.6 Theoretical Framework

The underpinning conceptual framework of the study is the sustainable livelihood framework. The research uses the livelihood framework to identify and understand the causes of poverty and vulnerability by breaking them into capital components (social, physical, natural, human and financial) based on contextualized variables and indicators.

Capitals are weighed based on the level of importance before a computation of household vulnerability index was conducted. This score is then used to categorize households into varying degrees of vulnerability. The capital with the highest score "signifies" high vulnerability and needs to be addressed to ensure that a household achieves a good quality of life. When all the assets are strengthened a household can then finally move from "high" vulnerability levels to "low" vulnerability levels.

2.7 Summary of Review of Literature

The review of literature revealed that an integrated model of assessing vulnerability was necessary in order to determine close to perfect vulnerability levels of individual and households. Different practitioners use the term vulnerability to varying extents. Different organizations and agencies also use a wide range of livelihood frameworks to address

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vulnerability and poverty. Livelihood frameworks are the same and are informed by the same school of thought that seeks to identify the root causes of vulnerability, as developed by DFID. Effective targeting is increasingly becoming important in public policy as efforts are made to combat poverty through livelihood approaches.

It is important for organizations to review their targeting mechanisms if they are to remain competitive in attracting funding from the developed world and also design interventions that are informed by the poverty status. Apparently, the best approach used to identify the root causes of vulnerability and poverty is the use of livelihood frameworks. However, this falls short in the sense that once the root causes have been identified, it is not clear how the vulnerable and poor households can be identified so that they receive assistance. Thus, the current study examined how the HVI could be utilized in effectively identifying households that required specific support.

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CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

This study was designed to explore the state of household vulnerability in Maphutseng. In this chapter, a detailed description of the study area is presented. Information relating to the state of household vulnerability includes a general analysis of the indicators obtained from the questionnaire that distilled demographics, livelihood and income sources, food security and agricultural production. A detailed research methodology that covers data collection and analysis procedures is also presented.

3.2 Research Methodology

3.2.1 Description of the study area

The study was carried out in the Maphutseng Area Development Programme (ADP) established by World Vision in Lesotho. Lesotho is a small, mountainous and land-locked country that is completely surrounded by South Africa. The country covers an area of about 30 000 km^2. The Lesotho Bureau of Statistics Census Report of 2009 reveals that the country has a population of about 1.8 million people. According to the Lesotho Vulnerability and Assessment Committee (LVAC, 2003), the country is divided into four agro-ecological zones, namely Lowlands, Foothills, Mountains and the Senqu River Valley.

The United Nations Development Programme (UNDP)'s Human Development Index (HDI) report of 2010 also classifies Lesotho as one of the least developed countries, ranking 141 out of 169. The report further estimates that 43 % of the population lives below the Purchasing Power Parity (PPP) of US$1.25 per day whilst 48 % face multidimensional deprivation such as health education and standard of living. Lesotho's economy is primarily based on subsistence agriculture, especially livestock. Over the past decade, Lesotho experienced years of erratic weather patterns that resulted in severe drought and chronic food insecurity (LVAC, 2008). Food production has gradually worsened over time, thus necessitating food imports to meet cereal deficits. The Lesotho National Nutrition Survey (LNNS) of 2008 states that lack of both physical and economic access to food has resulted in increasing levels of malnutrition (42 %) especially amongst children aged 0-5 years.

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The United Nations Programme on HIV/AIDS (UNAIDS, 2006) reports that Lesotho has one of the world's highest HIV prevalence rates. At present, the HIV prevalence rate is estimated to be 23.1 % for persons 15-49 years old. The effects of the HIV and AIDS pandemic have led to a decrease in the life expectancy of both men and women. Above all, the impact of HIV and AIDS has continued to threaten progress made towards human development in the country.

According to the German Technical Cooperation Information Handbook published in 2009 and focusing on Mohale's Hoek, Lesotho has 10 District Councils that encompass 128 Community Councils established in 2005. Maphutseng community falls under Mohale's Hoek, which is one of the District Councils. District Councils and Community Councils are local government structures that employ staff who perform duties specific to their respective line Government Ministries, including service delivery.

Figure 3.1 shows the map of Maphutseng. Maphutseng ADP was established in 2007 and is currently funded by the World Vision Australia Support Office. The boundaries of the ADP do not necessarily follow those of the local government administrative constituencies because they are primarily informed by a sponsorship feasibility study. A sponsorship feasibility study refers to research that is undertaken to ascertain the availability of the minimum number of children and their location to support and sustain funding and implementation of projects. An ADP is a programming model that World Vision uses for her development work. It is made up of 3 000-5 000 households from a number of Villages, Wards and Community Councils. The households typically benefit from a wide range of projects based on needs that include education, health and livelihood support implemented for 5-15 years.

Maphutseng ADP is entirely a rural setting and is situated 15 km from Mohale's Hoek District South of Maseru, the capital city of Lesotho. The ADP community covers 86 villages spread over three Community Councils, namely Khoelenya, Motlejoeng and Teke. Although Maphutseng boasts of basic infrastructure, electricity and telephones are lacking. Access to the area is by means of a gazetted gravel road, which the Government is responsible for maintaining. The geographical area covers the foothills, lowlands and mountains. It is estimated that there are 22 000 people residing in approximately 3 000 households. Maphutseng ADP implements education, sponsorship, food security and HIV and AIDS support projects. People residing within Maphutseng ADP are largely the Basotho, with a very small proportion of Xhosa-speaking people, who mainly originated from South Africa.

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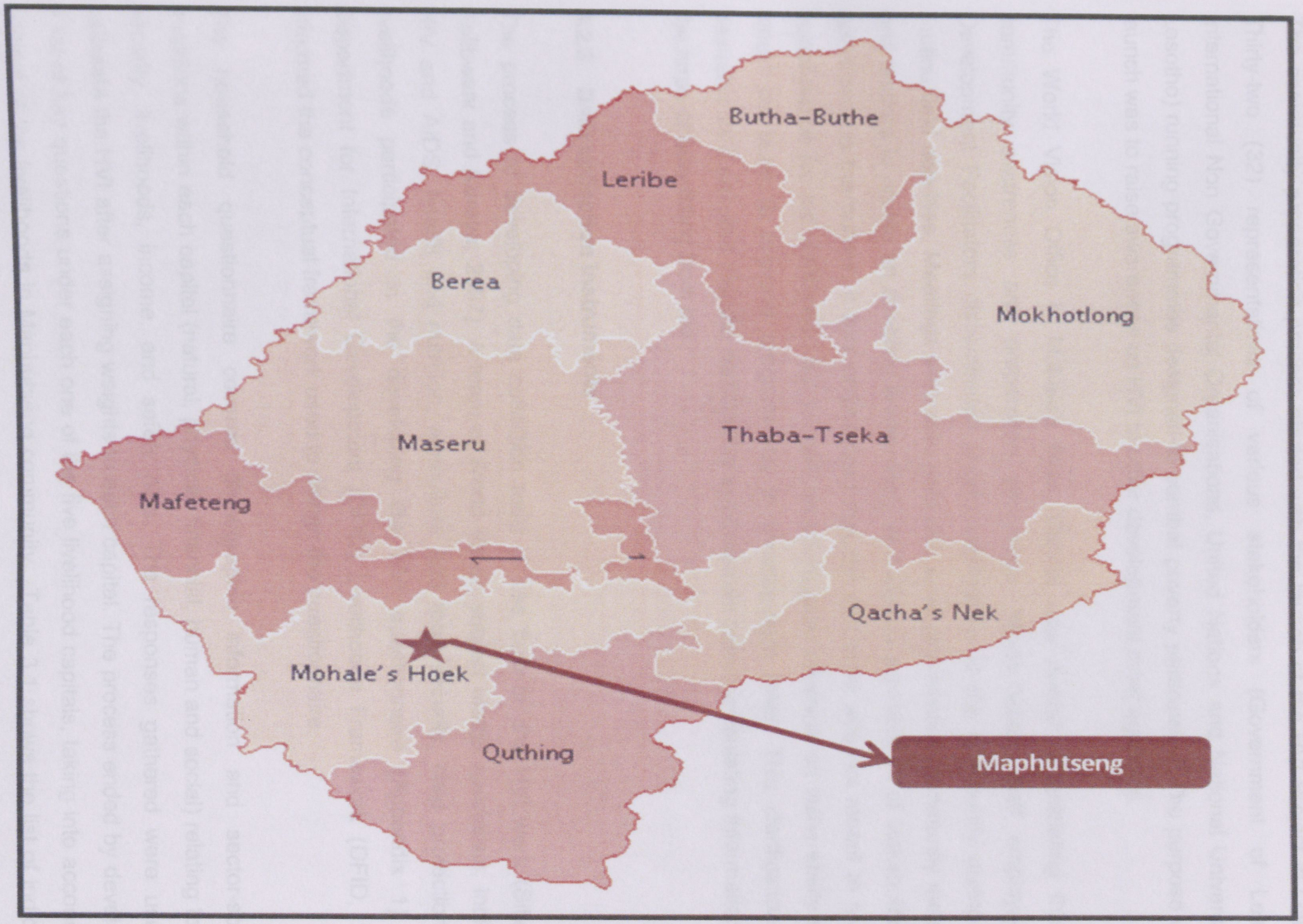


Figure 3:1 Map of Maphutseng in Mohale's Hoek, Lesotho

3.2.2 Preparing the community to participate in the study

The community preparation process started with the launch of the HVI Project in Lesotho. Thirty-two (32) representatives of various stakeholders (Government of Lesotho, International Non Governmental Organisations, United Nations and National University of Lesotho) running programmes designed to combat poverty participated. The purpose of the launch was to raise awareness on HVI to other development relief agencies.

The World Vision Office in Mohale's Hoek District was pivotal in facilitating the HVI community awareness and preparation processes. World Vision staff employed as Development Facilitators disseminated project information to the community during their routine field activities. Meetings were also held with local government, community members and leaders to create an enabling environment and secure commitment of stakeholders to participate in the survey. It was emphasized that the HVI work was not meant to register beneficiaries for aid distribution but to build an information reservoir on vulnerability which would be used to improve programming in development relief. This clarification was desirable as it ensured that the participants would refrain from manipulating information with the hope of benefitting from aid.

3.2.3 Data collection instruments

The process of developing data collection tools to use built on the HVI work (Sibanda, Kalibwani and Kureya, 2007). A team of World Vision subject matter specialists, including HIV and AIDS, health and nutrition, agriculture and food security, child protection and livelihoods participated in the developing the HVI questionnaire (Appendix 1). The Department for International Development (DFID) Livelihoods Framework (DFID, 1999) informed the conceptual framework used to design the questionnaire.

The household questionnaire covered demographic information and sector-specific questions within each capital (natural, physical, financial, human and social) relating to food security, livelihoods, income, and safety nets. The responses gathered were used to calculate the HVI after assigning weights to each capital. The process ended by developing a list of key questions under each one of the five livelihood capitals, taking into account the context of the livelihoods in Maphutseng community. Table 3.1 shows the list of indicators used to develop the household survey questions to assess the determinants of vulnerability.

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Table 3-1: List of key questions perceived to determine vulnerability in Maphutseng

capitals	List of Capital 5 Assets together with key questions for determining vulnerability
1. Natural Capital	a) Households that do not apply natural fertilizers such as cattle manure or compost have cropped lands whose fertility continues to decline. b) Environmental management is deteriorating because more and more households are becoming vulnerable. c) Households rely on the environment for "free" products such as wood. d) HIV and AIDS affected households rely more on the forest for their livelihoods. e) Households have difficulties in fully utilizing their land due to limited labour. f) Households have difficulties in fully utilizing their land due to limited availability of draft power. g) Households that are not involved much in farming activities. h) Households without or with only small farmlands.
2. Human Capital	a) Households with a large number of sick members. b) Households whose heads are sick. c) Households that have sick members who are supposed to be productive. d) Households that have large numbers of dependants due to an increasing number of orphans in them. e) Female-headed and/or child-headed households fail to cope with shocks more. f) Households with members who suffer from serious diseases such as HIV and AIDS. g) Households with few economically active members.
3. Social Capital	a) Households without enough support channels from external sources and with limited quality. b) Households with limited access to information. c) Households not supported by NGOs and government. d) Households without enough knowledge on agriculture and HIV/AIDS and not discussing these regularly in homes.
4. Physical Capital	a) Households that do not use/use fertilizers less. b) Households that do not have adequate labour usually get poor harvests. c) Households that do not have adequate draft power usually get poor harvests. d) Households that do not own ox-drawn ploughs or carts usually face difficulties in cultivation, planting and carrying out other crop farming operations. e) Households that do not own (or have fewer) cattle and other livestock are more vulnerable due to limited access to draft power and other sources of income and nutritious food. f) Households that adopt unsustainable short-term coping strategies, which might include the selling of assets such as livestock and farmland. g) Households with limited access to extension services. h) Households that eat less variety per day due to inadequate food availability. i) Households that eat less per day due to inadequate food availability. j) Households that are not involved in off-farm income-earning work.
5. Financial Capital	a) Households with little or no savings are more vulnerable. b) Households have fewer sources of regular income. c) Households have a limited number of formally employed members. d) Affected households have limited access to credit/loans due to increased risks and lack of collateral. e) Households with unpaid debts are most vulnerable. f) Households experience increased expenditure on health care due to the presence of many ill members.

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3.2.4 Recruitment and training of enumerators/supervisors

Thirty-two enumerators were recruited to collect data for 30 days. Each enumerator held at least a diploma in community development and resided in the Maphutseng community or the Mohale's Hoek District, which was the nearest town. This was done with the aim of minimizing costs and also to lessen wastage of time since the enumerators knew most of the villages and terrain to be covered during data collection. The enumerators were recruited through oral and written interviews. This was done in order to assess their interviewing skills and critical analysis competencies. Using the aggregated scores for each candidate, those with the highest number of points were appointed as supervisors for their teams. Each team consisted of a supervisor and seven enumerators. The enumerators were trained for five days in preparation for data collection. It was important to carry out the training since it helped to familiarize the enumerators with the data collection tools and also equip them with interviewing techniques. The principal researcher and a representative of the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) facilitated the training. Special emphasis was placed on community entry, how to create an enabling environment during face to face interviews, team work, the HVI as a tool to use in objective targeting of beneficiaries of development relief and general data quality issues.

During the training, participants were placed in four teams made up of the eight members referred to above. The role of the supervisor was to monitor the interview process, welfare of enumerators, make logistical arrangements, review all questionnaires for completeness and also check if the expected number of households per village was interviewed. This was necessary because there were no household registers for any of the villages. Estimates of numbers of households in each village were obtained from the local District Council in Mohale's Hoek.

3.2.5 Pre-testing of the household questionnaire

Prior to data collection questionnaires were tested for validity and reliability (Howard, Peters and Sharp, 2002). The enumeration team spent one day testing the questionnaire in the field. This involved estimating the average time it took to complete the questionnaire and also identify any challenging questions. Adjustments to the questionnaire were made where necessary. The pre-testing exercise also provided the enumerators with an opportunity to practice their interviewing skills in preparation for the field work. The pre-testing was carried out in two villages in Taung ADP, which was adjacent to Maphutseng ADP.

After pre-testing the household questionnaire each team consolidated its findings using individual members' daily journals and shared with other teams. The average time it took to administer each questionnaire ranged from 45–60 minutes. Redundant questions were

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removed. The logical flow of questions was improved. Missing options for responses were added. All this was done in order to improve the overall quality of the questionnaire. The final questionnaire that was used for the pre-testing was translated from English to Sotho, the main local language spoken in Maphutseng.

3.2.6 Data collection

As already alluded to, enumerators were placed into four teams in order to make it easier to manage the data collection process. A supervisor led ach team. The number of vehicles available for use in the data collection exercise determined the number of teams formed. Also, the results of a test the enumerators took to gauge their understanding of the planned work was considered in the course of forming the teams. In this respect, careful attention was made to ensure that in each team there was a fair representation of enumerators who obtained high and low scores. This ensured that the enumerators learnt from each other.

The principal researcher served as the Chief Supervisor. All the reports from each team were submitted to him at the end of every day of data collection. The reports from each team contained information relating to expected daily targets, challenges encountered and plans for the next day.

Although at the outset of the survey 2 874 households were expected to be interviewed, the study covered 2 665. The difference between the expected and actual number of households interviewed was mainly due to "empty" households observed during the data collection process. It was indicated that there was temporary outward migration of people to the Western Cape in South Africa as people went in search of casual employment during the Ceres fruit harvest season. The temporary migration period ranged from 3-6 months, taking place mainly between May and November. The migration was driven by the desire of household heads to provide clothes and food for their family members especially during the festive Christmas period. However, there were some households that were reluctant to participate in the study.

3.2.7 Data processing, management and analysis

Eight (8) research assistants were recruited to process the data. They were selected after being subjected to an interview process, which covered theory and practice sessions. Each candidate research assistant was asked to develop a simple data entry template using the Microsoft Excel 2007 spreadsheet.

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Successful applicants participated in a two-day training workshop. This was meant to familiarize the research assistants with the questionnaire and the data entry template. Twenty (20) working days were set aside to complete data processing.

During data entry, questionnaires were randomly sampled to check the accuracy of entries. The principal researcher checked every 10th questionnaire that each research assistant had processed.

Data were analyzed using the Microsoft Access 2007 programme. Frequencies were computed first. Further statistical analyses such as cross-tabulations and derivation of measures of central tendency, specifically means and standard deviations, were carried out using the Statistical Package for Social Scientsts (SPSS) version 17 for Windows. The SPSS software was also used for hypotheses testing and determination of principal components of vulnerability. Statistical tests that were used included Chi Square test for association, Spearman and Pearson correlation tests.

3.3 Ethical Considerations

According to Babbie (2007), a basic ethical rule of social research is that participation should be voluntary. Ethical approval to undertake the study was obtained from the Ethics Committee of the University of Venda. Ethical issues regarding protection of human subjects as respondents included the right not to participate and also confidentiality. Boys, girls, men and women from the communities within Maphutseng ADP were the respondents. In instances where participants were minors, written parental consent was sought. All the respondents were assured that the data would be treated with the strictest of confidence. It was made clear that data and information generated through the study would only be used by World Vision, rural communities in Maphutseng, FANRPAN and UNIVEN to improve and advance the quality of development programming through improved understanding of vulnerability. It was disclosed that the results of the study might be published widely. However, individuals' and households' names would not be divulged, nor would the results be linked with a particular individual or family as the source. The respondents were informed that participating in the survey was voluntary and that they had the right to choose whether or not to participate in the survey.

In order to ensure data security, enumerators signed an information disclosure agreement as part of the engagement process. Each field team had a Supervisor who collected all the completed questionnaires for safe keeping before data processing and analysis. Research assistants were also assigned unique access passwords that they used to capture and retrieve data from the computer.

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CHAPTER 4 STATE OF VULNERABILITY AMONG HOUSEHOLDS IN MAPHUTSENG AREA OF LESOTHO

4.1 Introduction

Vulnerable livelihoods are those which when exposed to risks, households have difficulty in coping with them (Scoones, 1998). In this sense, vulnerability has two aspects, namely being exposed and subjected to risks (the shocks and stresses which are a critical source of vulnerabilities) and the lack of means to cope (inadequate assets and capacities in material and non-material terms, leading to defenselessness). This view informed the current study. Household level variables suspected to contribute to "lack of means to cope" were measured so as to determine the levels of vulnerability.

4.2 HVI Conceptual Model

The conceptual framework of the household vulnerability index (HVI) presented in Figure 4.1 was based on the fact that capitals change due to external shocks or disasters that they are exposed to at any time. When a disaster occurs it impacts directly on the capitals thereby reducing the ability of a household to cope. The shock or disaster can be in the form of loss of gainful employment by the head of household, weakened safety nets due to poor relations or loss of productive assets such as land or livestock.

Each one of the five capitals had a set of variables developed through consultation with local communities, government departments and review of literature. Variables within each asset were contextualized in order to eliminate geographical variations. In constructing the HVI, the fundamental hypothesis was that every household's level of vulnerability can be determined by the way it interacted with the capitals available to it. The more available and accessible the assets were to the household the less vulnerable, even during external shocks or disasters such as drought or loss of a breadwinner.

The model assumed that poverty was an external shock because vulnerability should always be qualified. Finally, the model was based on the fuzzy logic, which estimated that the occurrence of an event had a probability value ranging between 0 and 1. This implies that the HVI ranges from 0 to 100 after transforming the respective probabilities to percentages.

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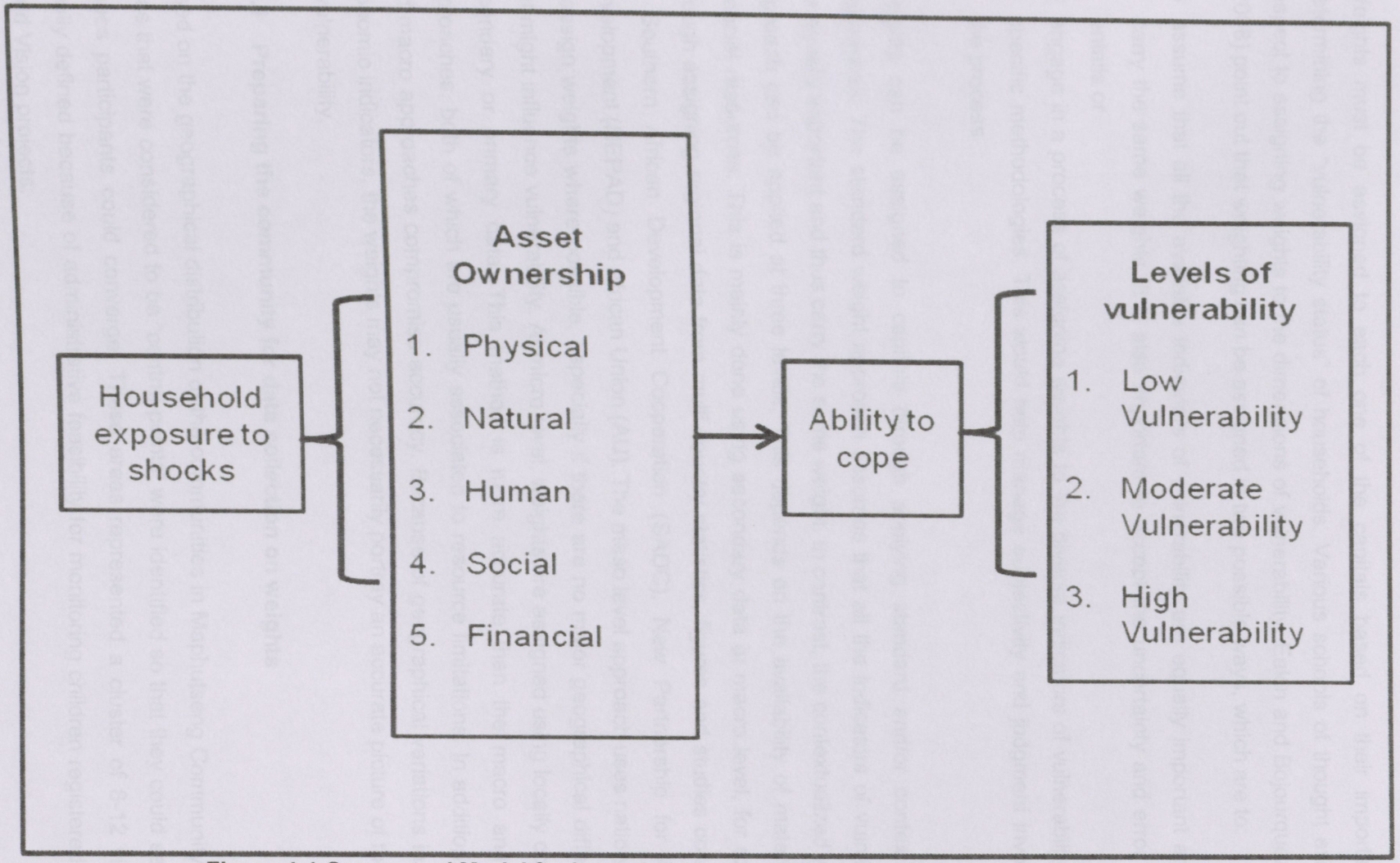


Figure 4:1 Conceptual Model for household vulnerability index (Adapted from Moser, 1998)

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4.3 Assigning of weights to capitals

Weights must be assigned to each one of the capitals based on their importance in determining the "vulnerability status" of households. Various schools of thought exist with respect to assigning weights to the dimensions of vulnerability. Eakin and Bojourquez-Tapia (2008) point out that weighting can be assigned in two possible ways, which are to:

a) assume that all the available indicators of vulnerability are equally important and thus carry the same weights. It is also important to accept the uncertainty and error all this entails or
b) engage in a process of assigning weights to the diverse indicators of vulnerability using specific methodologies. This would help manage subjectivity and judgment involved in the process.

Weights can be assigned to capitals through applying standard and/or contextualized approaches. The standard weight approach assumes that all the indicators of vulnerability are equally important and thus carry the same weight. In contrast, the contextualized weights approach can be applied at three levels. This depends on the availability of material and financial resources. This is mainly done using secondary data at macro level, for example through assigning regional data from multi-country statistics, figures and studies conducted by Southern African Development Cooperation (SADC), New Partnership for Africa's Development (NEPAD) and African Union (AU). The meso level approach uses national data to assign weights where possible, especially if there are no major geographical differences that might influence vulnerability. At micro level, weights are assigned using locally collected secondary or primary data. This method is more accurate than the macro and meso approaches, both of which are usually associated to resource limitations. In addition, meso and macro approaches compromise accuracy. Because of geographical variations in socio-economic indicators, the weights may not necessarily portray an accurate picture of the state of vulnerability.

4.3.1 Preparing the community for data collection on weights

Based on the geographical distribution of the communities in Maphutseng Community, three areas that were considered to be "central-points" were identified so that they could serve as venues participants could converge. These areas represented a cluster of 8-12 villages, usually defined because of administrative feasibility for monitoring children registered under World Vision projects.

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Three out of eight centres were sampled. On average, at each centre 10 people represented each one of the following groups: men, women, boys and girls. Mpharane (Braakfontein Village), Setanteng (Maphutseng Village) and Ha Sekoati (Thabaneng). Separate groups of boys and girls represented the youth, 15-24 years old. In some instances, female participants were more than the target numbers. Thus, instead of one group being formed a second one of young women was formed. A separate discussion was held with elderly women in the same centre. Men were not readily available in one centre. This was the case for boys in two centres. The principal researcher trained four World Vision Monitoring and Evaluation staff to serve as research assistants during data collection and documentation.

4.3.2 Data collection on weights

In the process of calculating the vulnerability indices for households in Maphutseng, a semi structured participatory instrument (Appendix 2) that complemented the census survey questionnaire was developed. It was a modified version of the Jayakaran (2002) Ten Seed Technique (TST). The TST is a participatory approach that allows the community to provide information regarding their perceptions with respect to a particular subject and also provide quantitative measures of the proportion of the community falling within a given category or owning assets."Seeds" are used during the process. The purpose of the modified approach was to improve the assigning of weights to the capitals.

When using the 10-seed technique, participants in a study are given an equal number of seeds representing "equal power" or 'equal chance" to vote or "place seeds" across a number of categories. This tool was modified by using "50 seeds" instead of 10, mainly because of the large number of asset categories and descriptors investigated. The community was prepared to participate following the principles of focus group discussion. Community members were invited to participate. Age and gender were considered when inviting the participants. The principal researcher facilitated a discussion on "vulnerability factors." The main reason for categorizing community members by gender and age was to accommodate differences in roles, priorities and needs of households and communities.

Collection of data when assigning weights to the capitals took place at two levels. The first level of data collection involved assigning weights to the five capitals. Each participant was given an equal number of bean seeds and allowed to independently allocate to the capitals taking into account the importance of each one of them in determining the level of vulnerability of a household. The greater the number of seeds allocated to a capital the greater its importance in determining vulnerability. After all the 50 seeds had been allocated to the capitals, a discussion took place with the aim of understanding the reasoning behind

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the allocation. The discussion focused more on the relative total scores and allowed the participants in each group to adjust their allocation if there was a need until a final agreement was reached.

The second level involved assigning weights to variables within each one of the five capitals. In this regard, the same approach as for the five capitals was followed. Variables within each capital were those that were used in the household census questionnaire.

Facilitated discussions on "total scores" for each variable took place. Average scores for each category and variables were calculated based. Data obtained through focus group discussions was processed manually. The research team held reflection meetings at the end of each day. During the meetings, the reasons given by each homogeneous group for ranking were provided as cementing evidence.

4.3.3 Assigning weights of capitals

The average scores for all the groups with respect to the respective capitals were 25, 11, 9, 3 and 2 for financial, physical, natural, human and social capital. Financial capital had the highest weights across all the groups, with men, women, boys and girls assigning 30, 21, 27 and 21, respectively. The participants reported that households that had access to money or credit were better off, especially in meeting health and food needs.

Females and male youth assigned scores of 19 and 13, respectively to Physical capital. All the groups highlighted the importance of draught power, livestock, ownership of an ox-drawn cart and having access to food.

Natural capital was found to be important by men, women and girls who assigned scores of 11, 15, and 10, respectively to it. Women in most centres stated that their vulnerability was high because they needed water or rain most for farming, livelihood projects and clean water for drinking. Environment degradation or unavailability of trees was also an important factor because they limited animals feed. Also firewood as a source of heating and cooking energy was scarce.

Male youth viewed human capital was viewed as an important asset and assigned a score of 10 to it than all the other interest groups. They argued this was because they found themselves doing most of the masculine work such as farming and also looking after livestock.

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Men believed social capital was important and assigned an average score of 9. They argued that this was due to the need to have networks to ensure that they could improve their families' livelihoods.

Within each set of capital no differences in perception per sub-variable were observed due to variations in gender, geographical location and age.

Eakin and Bojourquez-Tapia (2008) state that problematically, many vulnerability indices are based on the explicit assumption that all vulnerability indicators carry equal weights.

4.4 Categorization of Households

One of the most important features of the HVI is that it should be able to classify households into distinct categories. The initial HVI outlined in "Silent Hunger" (Sibanda, Kalibwani and Kureya, 2007) has three categories, namely acute, coping and emergency. The authors further define coping level households as those that are vulnerable but can "cope". Acute level households are vulnerable and require immediate, specialized assistance. In contrast, emergency level households are almost at the "point of no return", which is equivalent to being in the intensive care unit if equated to a medical condition. Concerns regarding the clarity and use of the terms coping, acute and emergency have always been raised. This is due to the fact that they appear to mean the same thing. In order to resolve this ambiguity, several engagements involving academic staff from the University of Venda (UNIVEN), FANRPAN and other researchers from various stakeholders culminated in the adoption of low, moderate and high as relevant replacements for coping, acute and emergency, respectively.

Classification of households into categories was based on a process of simulating scores of variables within each indicator to determine cut-off points. The two cut-off points that were determined corresponded with the 50^{th} and 75^{th} percentiles. Simulation using the indicators shown in Table 4.1 led to the adoption of the following distinct classes of households: (1) low vulnerability (households with HVI scores <50); (2) moderate vulnerability (households with HVI scores of 50-75); and high vulnerability (HVI scores of 75-100). Table 4.1 shows the perceived descriptions for moderately and highly vulnerable households within the Maphutseng community.

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Table 4-1 Simulated cut-off points for moderate and highly vulnerable households in Maphutseng

Capital	Minimum cut-off for moderately vulnerable households	Minimum cut-off for highly vulnerable households
Human	a) Headed by an economically active member; b) Dependency ratio is low, few sick members and no orphans; and c) At least two economically active members.	a) Headed by an economically inactive member, elderly person or child; b) Dependency ratio is high, large number of orphans and sick members; and c) Economically active members are few.
Natural	a) Uses both inorganic and organic fertilizers; b) Moderate agricultural activity; and c) Utilizes much land for subsistence farming.	a) Organic fertilizers are the main sources of fertilizers; b) Low agricultural productivity; and c) Utilizes limited land for subsistence farming.
Social	a) May receive some means of support from NGOs and government; and b) More knowledgeable on agriculture and HIV/AIDS. Issues are discussed regularly in homes.	a) Receives support from NGOs and government; and b) Most of the support goes towards food and health.
Financial	a) Has diverse income sources; b) Income is used on a balance of needs (farming inputs, education, health, recreation); and c) Eat at least three meals per day.	a) Has no basic source of income; b) Most of the household income is used for food and medicines; and c) Does not eat three times a day on a regular basis.
Physical	a) Owns important livestock such as cattle in sustainable numbers; b) Has labour for farm and off-farm work; and c) Receives some agricultural extension support.	a) Owns cattle, a critical input in crop farming; b) Has no labour for farm and off-farm work; and c) Does not own farm implements.

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4.5 Household survey results

The following section of the study explores vulnerability using the three fundamental attributes of livelihoods as stated by Chambers and Conway (1992) which include possession of human capabilities (education, skills, health and psychological orientation), access to tangible and intangible assets and finally, existence of economic activity. Results will be presented and discussed simultaneously in this section.

An analysis of the above mentioned assets will provide an indication of those that are highly exposed to risks and shocks. The analysis further provides insights into vulnerable livelihoods and vulnerable households. Scoones (1998) argues that vulnerable livelihoods are those that when exposed to risks households have difficulty in coping with them.

4.5.1 Demographic information

There were 11 620 people spread across Maphutseng ADP. The people belonged to 2 665 households. This meant that on average, there were 4.4 members per household. About 40 % of the households were in Motlejoeng Community Council compared to Khoelenya (39 %) and Teke (21 %).

The male : female ratio was 57 : 43. It was also revealed that there were eight child-headed households. This translated to 0.3 % of the interviewed households. In this respect, a person less than 18 years old served as the head. Approximately, 55 % of the households were legally married. Close to a third (31) % of the households were widowed and the remaining 11 % was accounted for by either cohabitating, divorced, separated or single. The average age of head of households was 53 years.

Most heads of households (87 %) had no education at all or had attained primary schooling only. When the education data was decomposed based on sex of head of household, males were the most uneducated (72 %) as shown in Figure 4.2. Out of the 87 % of the household heads who were either uneducated or had attained primary level schooling, 38 % were females.

Antonie and Nanitelamio (1991) argue that parenthood is another important dimension on the human and social capital landscapes in Africa, particularly considering management of household livelihood strategies. At the time of undertaking this study, Lesotho was one of the top countries severely affected by HIV and AIDS when compared to others in the world (UNAIDS, 2006). HIV and AIDS had significantly altered the family structures in the country. Maphutseng had 31 % of households headed by widows and widowers. In this regard, prevalence of single-parenthood tended to undermine kinship-based family structures and

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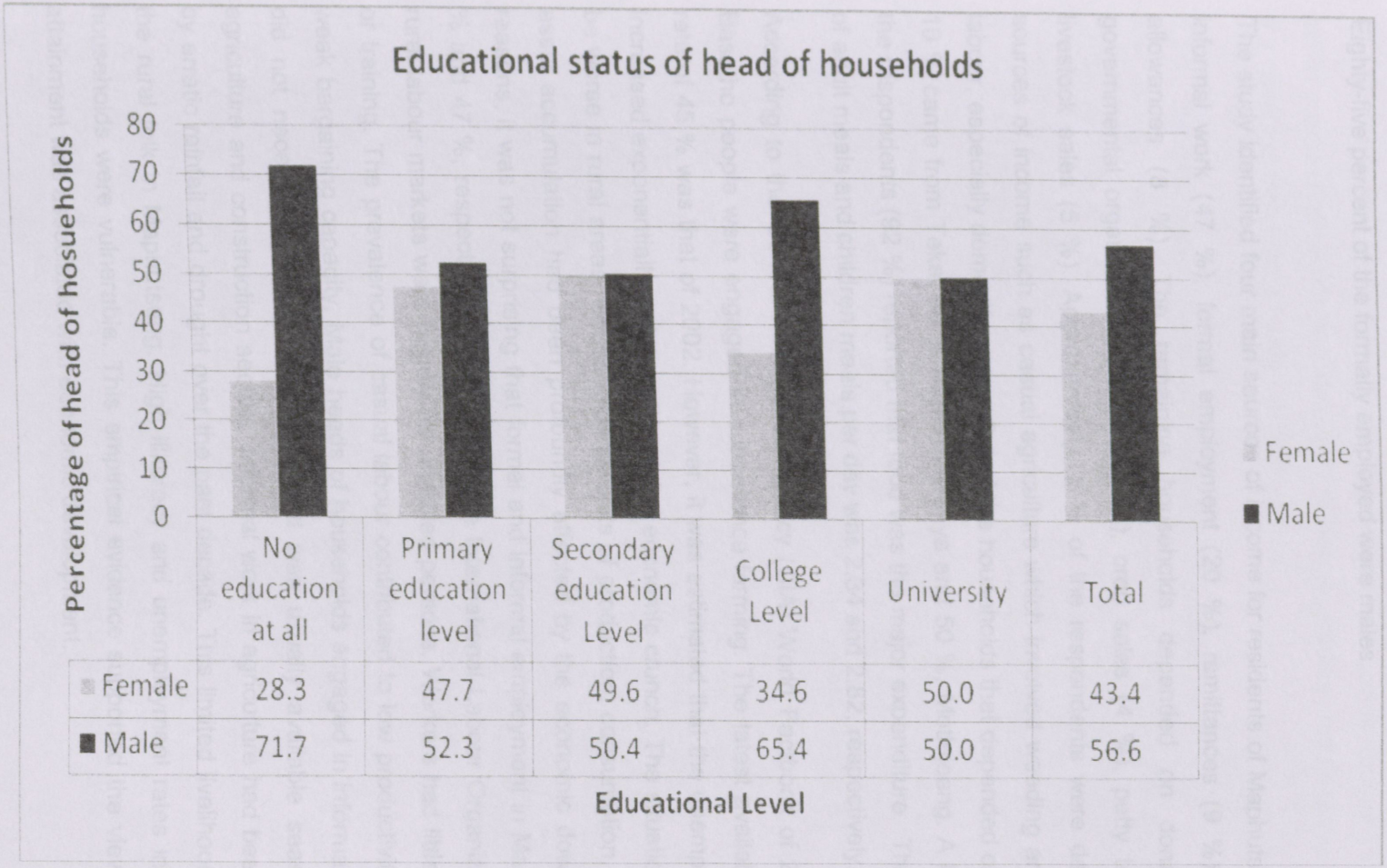
safety nets. Households headed by both parents tended to cope better, as they could try to diversity livelihood incomes and opportunities. This however became difficult for the 30 % of households who had one parent surviving. Normally, the increasing loss of lives due to AIDS undermines social and economic development gains achieved in the past. In Maphutseng, this resulted in child-headed households who are left to manage the welfare of their siblings but with no stable income sources.

Prior to the nineteenth century, systematic investment in human capital was not considered especially important in any country (Ozturk, 2001). The effects of not investing in human capital in the past could have resulted in almost 90 % of heads of households in Maphutseng only going as far as primary education. The United Nations Development Programme's Human Development Index (HDI) is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The HDI for Lesotho for 2011 was 0.450, which represented 0.8 % increase since 1980, ranked 160 out of 187 countries. Thus it was understandable why most head of households in Maphutseng were uneducated. According to Kataria (2011) education has a desirable controlling influence over development of the rural individual, family, community and society that leads to reduced poverty and controlled unemployment. Functions of education include imparting social change, making rural people aware about their rights, improving individual standard of living, providing employment and income opportunities to rural people among other things. Based on the value of education as described by Kataria (2011), the situation of illiterate head of households significantly limited opportunities for households to gain employment and access to sustainable income opportunities.

Thus, it can be concluded that education and family composition were important contributors to economic capability in Maphutseng.

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	No education at all	Primary education level	Secondary education Level	College Level	University	Total
Female	28.3	47.7	49.6	34.6	50.0	43.4
Male	71.7	52.3	50.4	65.4	50.0	56.6

Figure 4:2 Educational status of head of households in Maphutseng

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4.5.2 Household economic and livelihood activities

The majority of the head of households (73 %) in Maphutseng were unemployed compared to only 10 % who were formally employed. Out of the unemployed, 49 % were females. Eighty-five percent of the formally employed were males.

The study identified four main sources of income for residents of Maphutseng ADP, namely: informal work (47 %), formal employment (20 %), remittances (9 %) and government allowances (8 %). The remaining households depended on donations from non-governmental organisations (NGOs) (1 %), crop sales (4 %), petty trading (4 %) and livestock sales (5 %). Approximately, 2 % of the respondents were dependent on other sources of income such as casual agriculture which involved weeding and non-agricultural labour, especially domestic work. Out of the households that depended on salaried income, 10 % came from Teke, 40 % from Khoelenya and 50 %, Motlejoeng. A large proportion of the respondents (92 %) reported that food was the major expenditure. The average number of adult meals and children meals per day was 2.34 and 2.82, respectively.

According to the Central Intelligence Agency (CIA) World Factbook of 2008, 86 % of the Basotho people were engaged in subsistence farming. The latest available unemployment rate of 45 % was that of 2002. However, it was estimated that the unemployment rates had increased exponentially owing to the global economic crunch. The situation was believed to be worse in rural areas. Households as units of production, consumption, reproduction, and asset accumulation had been profoundly affected by the economic downturns. For these reasons, it was not surprising that formal and informal employment in Maphutseng were 20 % and 47 %, respectively. According to the International Labour Organization (ILO, 2008), rural labour markets were largely for unskilled persons. Workers had little formal education or training. The prevalence of casual labour contributed to low productivity, low wages and weak bargaining capacity. Male heads of households engaged in informal employment that did not necessarily require any skills and was usually available seasonally within the agriculture and construction sectors. Informal work in agriculture had been greatly affected by erratic rainfall and drought over the past decade. This limited livelihood opportunities for the rural folk in Maphutseng. High illiteracy and unemployment rates indicated that most households were vulnerable. This empirical evidence supported the view that educational attainment was associated with economic development.

Migrants' remittances were Lesotho's major source of foreign exchange, accounting for 25 percent of GDP in 2006 (UNDP, 2010). Government allowances and remittances were important sources of income for the Maphutseng households. The allowances were mainly

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pensions for the elderly that were introduced in 2004 for persons than 70 years old. Pensions play an important role in poverty alleviation among the elderly, who are normally one of the most vulnerable groups in any society, particularly older women (Stewart and Yermo, 2009). Old age pensions seemed to be major income source. The pensions helped cushion poor households and also cement intergenerational relationships apart from making the older feel less than a burden in communities.

4.5.3 Tangible asset ownership among households

The most common types of livestock in Maphutseng ADP were cattle and poultry which were owned by 33 % and 32 % of households respectively. Other types of livestock owned by the households included goats (23 %), donkeys (21 %), sheep (21 %), pigs (17 %) and horses 6 %. Also worth noting was the fact that a quarter of the households owned ox-drawn ploughs.

Approximately, 38 % of the households in Maphutseng owned either a pit latrine, ventilated-improved pit latrine or a flush toilet. Slightly less than two-thirds (62 %) of the households did not have toilets and thus, relieved themselves in the bushes. About 69 % of the households had access to potable water.

Findings from the research conducted by Takeshima and Salau (2011) reveal that farm power is an important agricultural input used for land clearing, plowing, planting, harvesting, and processing in many African countries. Based on the fact that most households lack of formal employment, it was therefore highly unlikely that they could afford farm implements such as ox-drawn ploughs. Also, climatic shocks made some households to abandon farming as a main source of livelihood. They adopted alternative livelihood options that did not require huge capital inputs for example harvesting natural resources.

Livestock is often used as a liquid asset that facilitates entry into other livelihood activities with higher but more risky returns (Dercon, 1996). A considerable proportion of households owned livestock and poultry in Maphutseng, which may be an indication that households kept these to manage risks in the event of future shocks. Households that owned sheep benefitted from selling mohair in order to generate income. A very small proportion of the likely to be better-off households owned horses and donkeys which were used as transport in the mountainous terrain. The study concluded that there was a close connection between livestock ownership and a household's ability to manage risks.

The World Health Organisation (WHO, 2010) estimates that each year, more than 2.2 million people in developing countries die from preventable diseases such as diarrhoea, cholera

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and typhoid associated with lack of access to safe drinking water, inadequate sanitation and poor hygiene. Maphutseng households were vulnerable to health hazards and water borne disease due to non availability of proper sanitary facilities.

4.5.4 Household access to intangible assets

Almost similar proportions of households reported that they had access to livestock (13 %) and cropping agriculture (16 %) extension services. Teke Community Council had the lowest proportion of households who accessed agricultural extension services, which the Government of Lesotho provided through the Ministry of Agriculture and Food Security.

Approximately 90 % of the households relied on government-provided health information and services. The second most common support received was from churches, with 40 % of the households reporting that they were receiving spiritual and counseling support. About 27 % of the households received support from community-based organizations and NGOs.

Social capital can improve productivity through various channels. The two most important channels are believed to be access to extension services (Sorensen, 2000) and credit (Bastelaer, 1999). Households in Maphutseng had limited access to external support. This could be attributed to a number of issues such as low livestock holdings and limited agricultural inputs. The Government of Lesotho seemed to prioritise access to health for rural communities more, as reflected by an overwhelming majority of households who accessed health information and services. Churches in Maphutseng seemed to be providing the much needed safety nets[1] in the form of spiritual and counseling support. Whilst social capital exists and is important (Fukayama, 1995), individual relationships are also important (Routledge and Amsberg, 1996). Although not implicitly mentioned there was anecdotal evidence that churches provided the spiritual support and built small informal structures of people who often ended up trusting one another and shared resources, including labour, cash and food. Weak social networks in the agricultural sector in some areas could be an indication of social cleavages created by inequality (Blau, 1994) in Maphutseng.

Non Governmental Organisations (NGOs) are professionally-staffed organizations aiming to contribute to the reduction of human suffering and development of poor countries (Streeten, 1997). They do this by supporting men, women, boys and girls in ensuring that they meet their welfare (Desai, 2005) through empowerment programmes. It should, however, be noted

[1] Safety nets are protection systems targeting the vulnerable people from adverse outcome welfare.

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that NGOs have limitations with respect to resources and the 'space' to work. Thus, it was not surprising that more than a quarter of the households in Maphutseng relied on them.

4.6 Vulnerability Indices of Households in Maphutseng

Using the community based weights for capitals and their respective transformed variables weights the following HVI results were obtained. The HVI curve for households in Maphutseng followed a normal distribution, with a mean score of 61.8 and standard deviation of 7.1 for 2 581 households. This implied that the distribution of households (Figure 4.3) was symmetrical and signified that the HVI had a good discrimination power between low, medium and high scores.

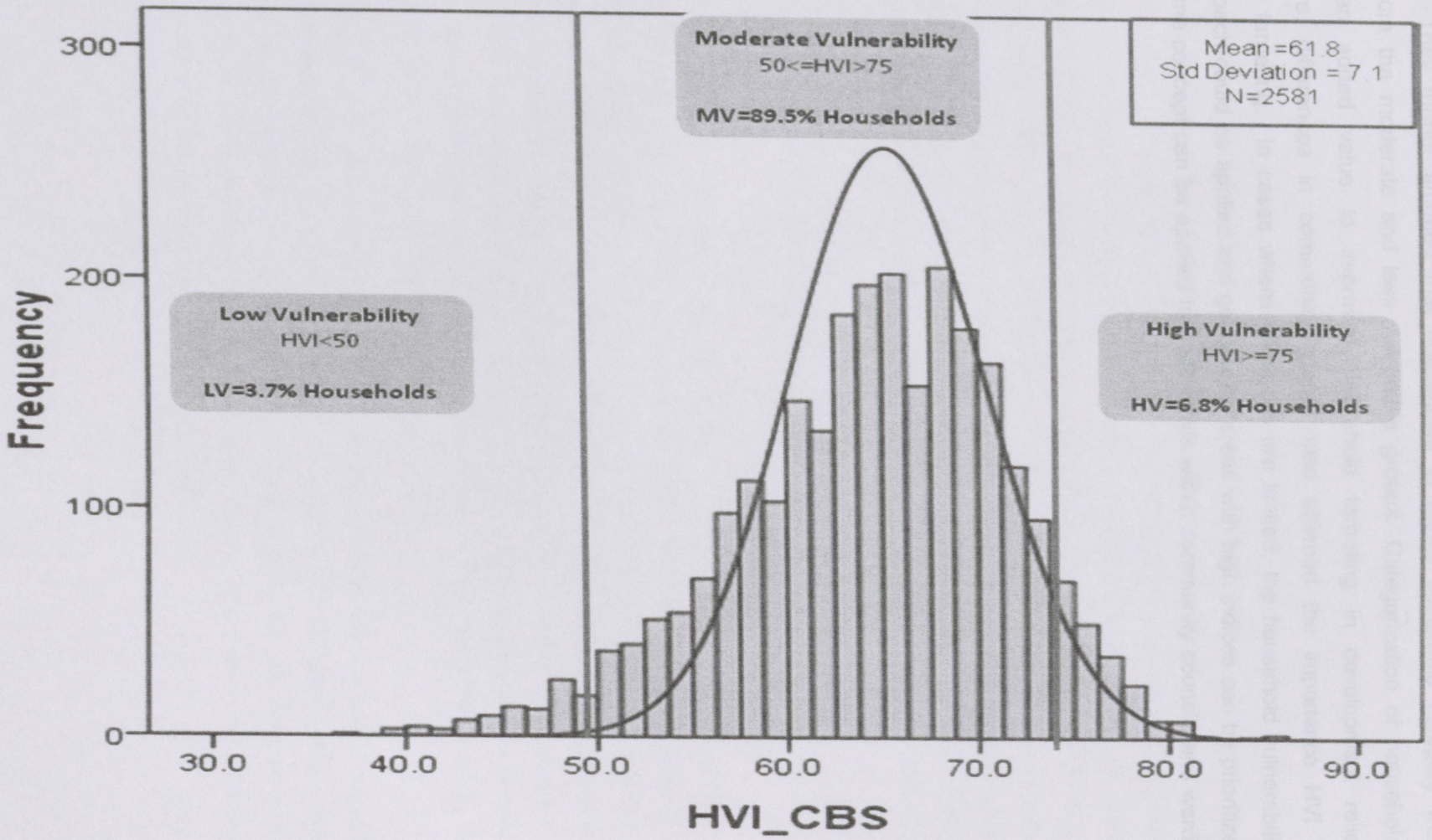
Figure 4.3 also shows that 6.8 % of the people in the Maphutseng community were highly vulnerable, with 89.5 % being moderately vulnerable. The remaining 3.7 % of the households fell within the lowly vulnerable category. The mean HVI score for females (65.4) was higher than that for males (63.4), ($t = -6.851$, $P < 0.001$). This meant that female-headed households were more vulnerable than male-headed ones. The Mann-Whitney test for non-parametric measures gave similar results.

The mean HVI scores for Motlejoeng, Khoelenya and Teke were 62.60, 61.30 and 61.29 respectively. Mean differences in HVI scores were also tested using the one-way Analysis of Variance (ANOVA), with the results showed that HVI mean scores differed significantly among the three Community Councils ($F = 10.603$, $P < 0.001$). Application of the Kruskal Wallis test for nonparametric measures yielded similar results. Confirmatory non-parametric tests were conducted to eliminate any doubt in findings of the study since not all statistical tests were done to fully affirm normality of the distribution of the HVI results.

An analysis of the highly vulnerable groups revealed that 84.9 % of the group was composed of heads households who were only educated as far as the primary level. Further analysis also revealed that the highly vulnerable category had 85.8 % heads of households who were unemployed.

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Figure 4:3 HVI using Community Based Asset Weights



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Statistical differences observed between HVI categories confirm the uniqueness of the three categories. They further affirmed that households in highly vulnerable category were different from the moderate and less vulnerable groups. Categorization of households provided an added value to improved household targeting in development relief. Furthermore, differences in community council also affirmed the importance HVI in geographic targeting. In cases where resources are limited, the household vulnerability index approach could be applied and geographic areas with high indices can be prioritized and the same concept can be applied to households within community councils and wards.

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CHAPTER 5 PRINCIPAL DETERMINANTS OF HOUSEHOLD VULNERABILITY IN MAPHUTSENG COMMUNITY

5.1 Introduction

Vulnerability is a multidimensional concept that is associated with high uncertainty in measurement and classification (Eakin and Bojourquez-Tapia, 2008). The Principal Component Analysis (PCA) linearly transforms indicator variables of vulnerability into smaller components which account for most of the information in the original pool (Dunteman, 1994). It was used in this study to identify the principal determinants of vulnerability. The Principal Component Analysis (PCA) offered opportunities for data reduction and interpretation based on unobservable structures between variables. In this study, extracted components with values greater than 1 were retained for analysis. A scree plot was used to determine the number of principal components to be retained by ranking the eigen-values in descending order.

5.2 Application of the Principal Component Analysis

In order to apply the PCA method, categorical household variables were first converted into dichotomous variables, distinguishing between households that own particular assets or access service to those that did own assets or access services. In addition to continuous variables such as age of head of household and number of family members, new variables were assigned an absolute value of zero or one. A dummy value of "zero" was assigned to households that had access to particular services or owned certain assets. The opposite was true for assigning a dummy value of 1. Variables were then transformed using the Statistical Package for Social Scientists (SPSS) version 17.0.

Five iterations of the Principal Component Analysis were carried out with the aim of reducing the number of variables by elimination. From an initial list of 23 variables, only eleven remained. Eleven of the twenty three variables had values above 0.50 as required by the PCA process. Table 5.1 shows the final list of the six extracted components that explained 73 % of the variance of the 23 variables in the original dataset.

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5.3 Results of the Principal Component Analysis

Using the Principal Component Analysis (PCA) to determine principal determinants of household vulnerability among households in Maphutseng community, the study found out that there are 6 eigen-values greater than 1 with 73.0 % variance explanation. Table 5.1 indicates that there are 6 components to be extracted for these variables and would explain 73.0 % of the total variance. Each principal component is uncorrelated with all others.

The variable loadings per component are explained in Table 5.2 which has the Rotated Component Matrix. The rotated component matrix is an extension of the PCA to Factor Analysis, which better explains the factor loadings. Table 5.2 shows that two variables relating to household land ownership and use of land for production are loading onto component 1, number of adult meals and children meals load to component 2, head of household age, sex and type of employment load to component 3, household's main source of income load to component 4, household's unpaid debt and second source of income load to component 5, whilst household remittances load to component 6. The variable "Household use land for production" falls in component 1 with the biggest loading of 0.95. In total there are 11 variables can be represented by 6 important components with their respective loading to explain household vulnerability. The first component explained most of the variation (18.1 %), the second principal component explained 14.6 %, the third component 10.4 %, the fifth component 9.3 % whilst the fourth component explained 9.2 %. This leads to a conclusion that these 6 components combined together are adequate to explain total variability of 73.0 % in data and is further confirmed by the visual display of the Scree Plot. This also indicates that the first component is important than the second component because it explains higher variability in terms of percentage.

One of the criterions for the Principal Component Analysis is that sampling adequacy must be above 0.50. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the Maphutseng Community was 0.53 which indicates relatively compact patterns of correlations between variables and hence justifying the use of PCA (Dunteman, 1994).

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Table 5-1 Explanation of the total variance of principal components

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.995	18.140	18.140	1.995	18.140	18.140	1.918	17.441	17.441
2	1.610	14.634	32.773	1.610	14.634	32.773	1.431	13.005	30.446
3	1.227	11.158	43.932	1.227	11.158	43.932	1.350	12.276	42.722
4	1.148	10.439	54.371	1.148	10.439	54.371	1.157	10.523	53.245
5	1.027	9.337	63.708	1.027	9.337	63.708	1.105	10.046	63.291
6	1.023	9.296	73.004	1.023	9.296	73.004	1.068	9.713	73.004
7	.882	8.022	81.026						
8	.766	6.963	87.989						
9	.615	5.588	93.578						
10	.554	5.040	98.618						
11	.152	1.382	100.000						

Extraction Method: Principal Component Analysis.

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Table 5-2 Rotated Component Matrix

Dimensions	Component					
	1	2	3	4	5	6
HH use land for production	.950	.005	-.019	.019	-.006	.019
HH land Ownership	.949	.000	-.026	-.006	.032	.037
Children Meals/day	-.019	.855	-.063	.054	.066	-.010
Adult Meals/day	.025	.826	-.050	-.129	-.101	-.006
Sex of HH Head	.152	-.028	.695	-.016	-.010	-.130
HHH Type of Employment	-.106	-.084	.651	.472	.053	.101
Age of Head of HH	-.246	-.068	.642	-.305	-.105	-.005
Main source of income	.023	-.055	-.066	.897	-.041	.006
HH state of debt	-.028	-.012	-.077	.018	.834	-.198
HH second income source	.132	-.047	.059	-.109	.590	.565
HH state of remittances	.004	.002	-.105	.063	-.175	.825

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

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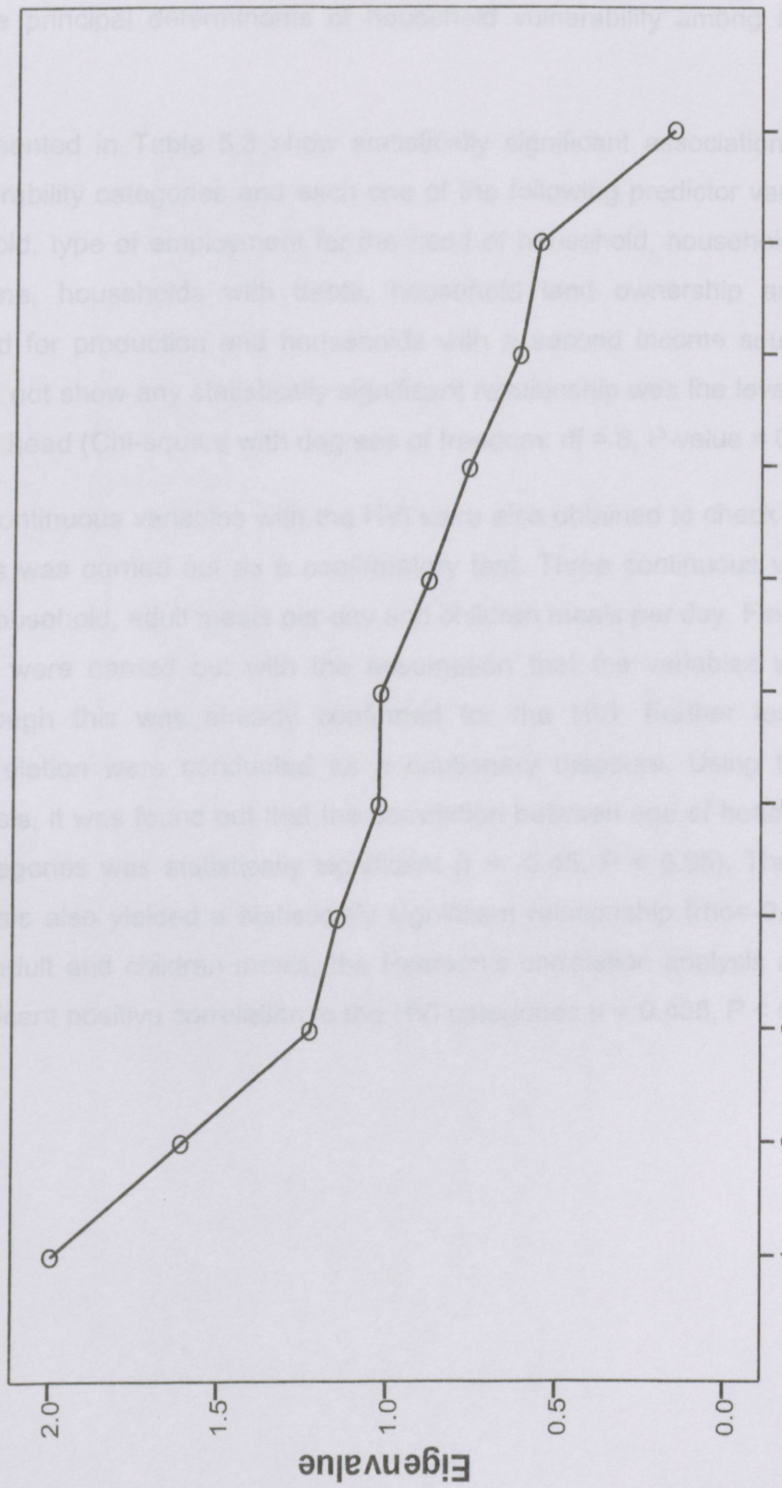


Figure 5:1 Scree Plot of Eigenvalues by Component

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Further statistical tests were carried out using the Pearson's Chi-square statistic to determine whether the seven of 11 predictor variables were associated with the Household Vulnerability Index (HVI). This was done in order to confirm if these respective variables were indeed the principal determinants of household vulnerability among households in Maphutseng.

The results presented in Table 5.3 show statistically significant association between the household vulnerability categories and each one of the following predictor variables: sex of head of household, type of employment for the head of household, household with second source of income, households with debts, household land ownership and household utilization of land for production and households with a second income source. The only indicator that did not show any statistically significant relationship was the level of education of the household head (Chi-square with degrees of freedom: df = 8, P-value = 0.850).

Correlations of continuous variables with the HVI were also obtained to check if there was a relationship. This was carried out as a confirmatory test. Three continuous variables were age of head of household, adult meals per day and children meals per day. First the Pearson correlation tests were carried out with the assumption that the variables were normally distributed, although this was already confirmed for the HVI. Further tests using the Spearman's correlation were conducted as a cautionary measure. Using the Pearson's correlation analysis, it was found out that the correlation between age of head of household and the HVI categories was statistically significant ($r = -0.45$, $P < 0.05$). The Spearman's correlation analysis also yielded a statistically significant relationship (rho=-0.50, p=0.016). With respect to adult and children meals, the Pearson's correlation analysis also yielded a statistically significant positive correlation to the HVI categories ($r = 0.435$, $P < 0.05$).

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Table 5-3 Values of Pearson's Chi-square statistic cross classifying with the HVI

Variables	Chi-square Value	degrees of freedom	p-value
Sex of Head of HH	20.895	2	0.000
Education Level of HHH	4.075	8	0.850
HHH Type of Employment	46.167	4	0.000
HH Land Ownership	178.528	2	0.000
HH use land for production	126.877	2	0.000
HH has second income source	98.240	18	0.000
HH debt status	138.289	4	0.000

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5.4 Discussion of findings

The following estimable model of determinants used was based on the five categories of the DFID's (1999) Sustainable Livelihood Framework (SLF):

HVI = f (human capital, social capital, physical capital, natural capital, financial capital)

The study revealed that there were six principal components that could be used to explain household vulnerability in Maphutseng. They accounted for 73 % of the household variation. In the following sections, the components are explained one after the other.

Principal component 1

The first principal component explained most of the variation (18.14 %) in the dataset. Land ownership per household and utilization of land for food production constituted the first principal component. As shown in Table 5.2, the first principal component also had some variables that were negatively associated with it. These included "households with unpaid debt, number of children meals per day, age of head of household and type of employment.

A further analysis of the variables that contributed to the six principal components revealed that they could be segregated by type of capital. Component 1 had two important variables with factor loading greater than 0.50 and was related to ownership and utilization of land for food production. These two variables fall within the natural capital category, as defined by DFID (1999) asset pentagon. Benjamin and Brandt (1997) state that in an economy where agriculture is among the major sources of livelihood, the most obvious reason for the importance of land ownership arises from its productive capacities. Empirical evidence (World Bank, 2007) indicates that access to land is positively associated with higher incomes. It was, therefore, not surprising that 82 % of households in Maphutseng not owning farming land had no sustainable livelihood resource base. This highlights the highly skewed land distribution in Maphutseng. Thus, there were structural problems that needed to be addressed. Land utilization seemed to be a major concern for households in Maphutseng, with only 34 % of them managing to cultivate and plant during the previous farming season. One of the underlying causes could also be related to lack of education and weak social capital, especially in agricultural extension support. Food security, which is an outcome of agricultural production remained low and was reflected in the low average adult meals per household. Lesotho is a highly patriarchal society, in which women have lower socio-economic status, experience significant gender-based discrimination and lack equal rights. This situation makes female headed households more vulnerable. Findings from the study concluded that land ownership and utilization are major factors of vulnerability in Maphutseng.

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Principal Component 2

Component 2 was constituted by average number of adult and children meals per day, both of which related to food security. In rural areas, food can be produced through farming. Alternatively, it can be bought from the market. The first indicator is linked to natural capital as food is produced locally while the latter is associated with financial capital. The Lesotho Vulnerability Assessment Committee (2008) reports that Lesotho exported about 78 % of her cereal balance needs in 2008. With limited agricultural activity and production in Maphutseng, households were forced to either barter or purchase food to ensure that they were food secure. The purchasing power of households in Maphutseng was also undermined by the lack of formal employment and seasonal casual labour. As an approach to understanding and facilitating development, the 'sustainable livelihoods approach' contains aspects of the basic needs approach and its evolution into concerns with food security as well as poverty alleviation and reduction (Maxwell, 1998). This, therefore, provides some insights into the importance of adopting food security as an important indicator of household vulnerability in Maphutseng.

Principal Component 3

Constituting this component three variables that were related to the head of household namely, age, sex and employment type of head of household. All the variables could be classified under human capital. Low levels of human capital in the agrarian sector in Maphutseng with more than 80 % of the heads of households educated to primary level were the major reason for low productivity and lack of formal income sources. Sex of head of household is a key determinant in vulnerability especially in Lesotho because existing customary laws dictate that women cannot own land. The Lesotho Land Act 1979, Number 19/9 and the customary law, state that women are legal minors who are dependent on men (their fathers, husbands or brothers) throughout their lives. Lack of ownership of land further makes it difficult for women to access credit since they do not have collateral. This study showed that female-headed households were likely to be more vulnerable than their male counterparts.

Maphutseng heads of households were both formally and informally employed. Usually, formal employment provides a predictable source of income as opposed to informal employment which was seasonal and associated with varied income levels. Since 47 % of the households in Maphutseng were engaged in informal work, it made sense to adopt type of employment type as an important predictor of vulnerability.

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Principal Component 4

Source of income for the head of household was the major variable that described principal component 4. This variable fell within the financial capital category. This was due to the fact that the source of income was directly correlated with the financial resources, in terms of both stocks and flow. Carney (1998) explains that "a livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base". Taking into account Carney's explanation, the nature of activity households engaged in to generate money became important if it provided a consistent flow of income which could also sustain the household. Since most of the households in Maphutseng were engaged in informal work, it was highly unlikely that their income flows were as steady as expected. Nor could this be relied on to sustain the households' welfare. It is therefore justifiable to accept that source of income for households were an important factor that determined vulnerability in Maphutseng.

Principal Components 5 and 6

Status of debt per household and availability of second income source were important variables that anchored component 5. As for component 6, remittances were a crucial. All these fall within the financial capital category. However, they were classified using two distinct components because of the various dimensions they encompassed in explaining variation in financial capital. Remittances contribute directly to the financial capital inflows of the household and might be a reliable source of income especially if the head of household is gainfully employed elsewhere.

Fafchamps (1999) contends that in order to keep up with the expected social norms and standards such as celebrating achievements and organizing funerals following death of a family member, poor households often find themselves trapped in debt. Specifically, Fafchamps (1999) isolates excessive social obligations for example paying dowry and organizing wedding ceremonies that tend to overstretch the limited financial resources of rural households. Although such activities demonstrate social cohesiveness, they tend to significantly affect the financial status of the poor who rarely have any savings. Such households would benefit considerably from local safety nets such as membership of burial societies as coping strategies. Households that own livestock and other productive assets are better off because they can liquidate their assets to mitigate risks. Thus, it is not surprising that the poor in Maphutseng found it difficult to meet their consumptive needs and also clear debts at the same time. Based on these arguments, it is not surprising that the

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debt status of a household should be taken as a key determinant of household vulnerability in Maphutseng.

Ellis (1998) defines livelihood diversification as `the process by which rural families construct a broad portfolio of activities and social support capabilities in their struggle for survival and also in order to improve their standards of living. A small proportion of households diversified their livelihood activity portfolio with respect to income generation. Their ability to engage in often more profitable income generating activities is often dependent on their access to assets (Reardon, 1997). Livelihood and income diversification were not a common practice. For most of the households in Maphutseng, livelihood activities were limited due to low asset bases and livestock holdings. Sporadic rainfall and the mountainous terrain and numerous gullies also contributed to the decline in agriculture-related livelihood activities. Some households engaged in crop (4 %) and livestock sales (5 %) to diversify their incomes. Others were involved in petty trading (4 %) to diversify their livelihood activities.

Lesotho is one of the most migration-dependent countries in the world. According to the UNDP (2010), migrant remittances play a significant role in the Lesotho economy. In 2006, remittances contributed 25 % of the country's gross domestic product. This reality is also true at household level. In the current study in Maphutseng, approximately 9 % of the households relied on remittances as the main source of income. Households that received remittances from migrant household members, owning more assets and having more diverse income sources, for example from livestock or trade had more options they could resort to in response to income shocks. However, it is important to highlight that remittances had gradually reduced over time due to loss of jobs by most Basotho men who migrated to South Africa in the 1980s to work in mines.

Miners and skilled workers from Lesotho used to enjoy benefits of easily accessing work permits in South Africa. However, the high unemployment rates in South Africa are making it difficult for the Basotho to secure work permits as easily as before. Migrant-sending households in Lesotho spend the greatest portion of total income on basic necessities. The UNDP (2010) asserts that food and groceries are by far the most important expenditure followed by fuel, clothes, transportation and medical expenses for Lesotho migrant households. Remittance expenditure on food and basic needs suggests that remittances are a main source of income and or complement the main source of income otherwise because households could be saving or spending on productive assets (UNDP, 2010). All these arguments imply that remittances were one of the primary determinants of vulnerability in Maphutseng.

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5.5 Conclusions

Based on the findings of this study, it can be concluded that the principal determinants among the households in Maphutseng, in descending order of importance were:

a) utilization of land for food production;

b) land ownership

c) average number of children meals per day;

d) average number of adult meals per day;

e) Sex of head of household;

f) type of employment of head of household;

g) age of head of household;

h) household main source of income;

i) household debt status;

j) availability of household second source of income; and

k) household received remittances.

It is also important to point out that six factors determined household vulnerability. Also, based on the household vulnerability model, natural capital was the most important and accounted for 18.1 % in variation in vulnerability. The next set of determinants, which were defined by number of adult or children meals per day could be classified under natural or financial since food was usually produced or purchased in rural communities. This accounted for 14.6 % of the variation in household vulnerability.

Household head-related characteristics, namely age, sex and type of employment were all forms of human capital, which explained 11.2 % of variation in household vulnerability. Source of employment was the fourth major determinant of vulnerability and it accounted for 10.4 % of the observed variation. In Maphutseng, this could be classified under either human or financial capital mainly because education was an important factor that determined the type of employment one secured and guaranteed a higher income. Financial capital was the fifth important dimension and it explained for 9.3% of the variation in household vulnerability. This related to the status of household debt and availability of a second household income

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source. Remittances also considerably determined vulnerability and accounted for 9.2 % of the variation.

Based on all the arguments presented in this chapter, it can be concluded that the three most important factors that determined household vulnerability in the Maphutseng area were natural, human and financial capitals. There is need to highlight the fact that financial capital contributed most determinants, whose principal components cumulatively outweighed natural capital.

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6.1 Introduction

The concept of vulnerability is increasingly becoming more important because a significant proportion of the world population is joining the ranks of the poor. Population growth, rapid urbanisation, environmental degradation and the frequency and magnitude of natural disasters exacerbate the situation. At the same time, the concept of sustainable livelihoods is becoming important in research on regional development, poverty alleviation, rural agricultural development and rural resource management (Scoones, 1998; Ashley, 2000). This study was designed to determine the principal determinants of vulnerability among households in the Maphutseng community in Lesotho. The study was anchored on the premise that understanding the principal determinants of households' vulnerability would facilitate better design of development programmes and improve targeting of social protection resources leading to effectiveness of aid and subsequently, reduction in the growing population of the poor.

6.2 General Discussion

6.2.1 Adopting the Household Vulnerability Index

In recent years there has been significant and increasingly polarised debate on the targeting methodology that should be used in social protection programmes, including universal methods that target everyone in a demographic category or just the poor (Kidd and Wylde, 2011). The household vulnerability index (HVI) approach was primarily used to compute the indices and rank or categorize households. In order to carefully assess the strengths and weaknesses of the approach it is important to break it down into the following components: the concept; design of data collection process; data processing and handling; the computation formula and products of the HVI.

The HVI conceptual approach seems appropriate for the needs of social protection and development programmes that include design, targeting and monitoring. Furthermore, the model uses the capital approach in strengthening livelihoods, which are central to the survival of rural households. This addresses one of the concerns that Wisner (1993) raises with respect to the challenge of creating ways of analyzing vulnerability implicit in people's

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everyday life. For this reason, the HVI is a powerful scientific model that provides a practical way of applying the DFID livelihoods framework in social protection and development work. Vogel (1997) asserts that the dimensions of vulnerability can be extended to political and technological capitals, which reinforces the adoption of the World Vision's Transformed Livelihoods Approach as it recognizes spiritual, political and technological capitals as important. According to Vogel (1997), spiritual and political assets get lost in research literature because they are considerably difficult to measure.

Worth pointing out is the fact that the design of the data collection process using the HVI focuses mainly on quantitative methods. The quantitative method makes use of household census survey data. This approach is often easier to implement although at the same time it is relatively expensive to administer. It is often associated with political and social costs, especially with respect to larger areas and populations. The cost of administering the HVI was found to range between $10-12 per household (Chisvo, 2010). In the case of World Vision development programmes that operate in an area for 3-15 years such costs are justified. This is due to the fact that there are obvious medium to long-term benefits of using the information for future assessments and also having data from various sectors that are integrated. Apart from this, the quality of household surveys depends on both non-sampling errors which include inaccurate information that respondents supply, recall and measurement errors, omission of important households that explained variation between the less and highly vulnerable people, and choice of data analysis methods. There is need to minimize the effects of all these factors.

Data entry and initial processing of the HVI is done using the database created in Microsoft Access. Using the database is advantageous because of automation of formulae for calculating indices, ranking and categorization. The database is flexible and can be designed to meet the needs of the user, using the search function or setting thresholds for targeting and printing the lists of households meeting certain criteria. The database provides real-time outputs. Secondly, data can be updated and tracked over time to understand patterns and trends of particular indicators. Although this is the case, a dilemma arises with respect to the administrative aspects of timely collection of information for updating indicators that change over a short period of time. A cost effective way would be to establish structures in schools and service centres such as hospitals and clinics. Finally, there is a potential to reduce enumerator-based errors at the same time aiding spatial data analysis by using hand-held Personal Digital Assistants (PDAs) with Geographic Information System (GIS) technology.

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The formulae used to calculate the HVI uses indicators and variables based on the five Department for International Development (DFID) capitals. The formula is sound and scientifically reliable as it uses the capitals as themes and indicators within these capitals. Eakin and Bojourquez-Tapia (2008) state that assigning of weights is best using locally generated data and context. Thus, community participation is an important element that cannot be ignored.

The HVI products and outputs include households ranked on the basis of their vulnerability scores. Also because variables are classified using the capitals, households are prioritized and selected from those that fall within the highly vulnerable category. Sinha and Lipton (1999) suggest that these categories offer a potential window from which to design specific and effective programmes. Similarities in vulnerability of households might be due to various factors. Using this reasoning, Non Governmental Organizations can prioritize households that have a weak particular capital among the highly vulnerable households and design an intervention to address it. Prioritization can also be applied in household targeting when resources are inadequate, which necessitates adjusting thresholds.

6.2.2 Policy and vulnerability

Geographic disparities in poverty and vulnerability are common in many developing economies. A better understanding of poverty and vulnerability is becoming more crucial as governments promote fiscal decentralization and development agencies feel the impact of the economic recession (World Bank, 2001). The results of this study reflect significant disparities in vulnerability across Community Councils in Maphutseng. This might be an indication of either unequal resource allocation or ineffective local government support to rural communities. Adopting a policy framework on monitoring and evaluation of service delivery might help address this challenge.

As Smit and Wandel (2006) argue, the determinants of vulnerability are dynamic, and vary according to the stimulus under consideration besides being place and system specific. Indicators and variables used in the calculation of the HVI have different sensitivities. Thus, some vulnerabilities stem from primarily long-term effects of inequality in resource distribution while others might be due to consumptive volatility. A clear difference between "transient" vulnerability and "chronic" vulnerability should be determined the latter has more pronounced policy implications. According to Hulme (2001), this is largely based on the types of indicators and variables involved. Land ownership is considered an important indicator of the household's potential to generate income (Grootaert, 1997). This implies

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that households without land will find it difficult to improve their well-being status. There is need for change in policy so that equitable distribution of productive land can be realized among rural communities in Maphutseng.

6.3 Conclusions

The current study sought to test the null hypotheses (H_0): *There are no significant differences in the degrees of vulnerability of households in Maphutseng ADP.*

The mean HVI scores for the less vulnerable, moderately vulnerable and the highly vulnerable groups were 46.3, 64.1 and 76.4, respectively. Highly significant differences ($P < 0.001$) were observed among the numbers of people in the vulnerability classes. The mean HVI scores for the three Community Councils, Motlejoeng, Khoelenya, and Teke were 62.60, 61.30 and 61.29, respectively. Levene's test for Equality of Variances indicated that there were highly significant differences in the mean HVI scores for males and females ($P < 0.001$). Based on these findings, the null hypothesis must be rejected. This leads to the conclusion that there is overwhelming evidence that significant differences in the levels of vulnerability existed among the households in Maphutseng.

The study also sought to understand the state of vulnerability among households in Maphutseng. Household survey results indicated that 31% of head of households were widowed, 87% of head of households only went as far as primary schooling level whilst 73 % of households were unemployed. The very high proportions of illiteracy and unemployment rates indicate that there are high vulnerability levels among households in Maphutseng. The study concludes that the state of vulnerability among the households is significantly high as education and employment further exacerbates the situation by exposing households to more risks and shocks.

6.3.1 Principal determinants of household vulnerability in Maphutseng

In order to explain the differences and determinants of household vulnerability, the principal component analysis (PCA) technique was used. Six principal components and 11 variables that explained 73.0 % of the variation of the original data were extracted. Principal Component 1 accounted for 18.1 % of the variation and the principal determinants of vulnerability land ownership and utilization of land for production. It can be concluded that households that owned land and utilized it for production were less vulnerable.

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The other two principal determinants were food security and number of meals eaten by children and adults. All these are related to access to land and also the extent to which it was utilized. Amongst the different assets, natural capital was quite valuable to those people who secured their livelihoods from resource-based activities such as farming and harvesting from forests.

Another group of principal determinants that were identified in this study were the characteristics of the head of household. These included sex, age and type of employment one had. Female-headed households were more vulnerable than the male-headed. Apart from this, a household's main source of income was a principal determinant of vulnerability among households within Maphutseng.

With respect to component 5, household debt and availability of a second income source were the key variables classified as principal determinants of vulnerability. It was evident that lack of financial capital limited the ability of poor people to "manage risk and vulnerability". Closely linked to this were remittances which were placed under component 6 and explained 9% of the variation in the original data. These results confirm the importance of financial capital in determining household vulnerability.

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6.3.2 Using the HVI to improve programme design and targeting

The HVI allows for the possibility of complicated interactions between the multiple cross-sectional determinants of the level of household's vulnerability. As an approach to vulnerability analysis, the HVI can improve programme design and targeting of the neediest households in an objective manner in addition to reducing inclusion errors. The HVI approach will particularly be very useful in the context of Lesotho given the large proportion of the moderately poor (85%) and low human capital in the country. Social protection programmes can be developed to address and prioritize weak capitals and also target geographic areas with most vulnerable households. It should however be noted that targeting of households needs to be complemented by a verification process that involves a group of local leadership and community meetings. Classifying a particular household as "vulnerable" for the purposes of targeting aid or interventions may help address a short period of emergency. On the basis of the evidence generated by this study it can be concluded that the HVI can reduce targeting errors and facilitate design of effective social protection interventions.

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6.4 Areas of further research

The average cost for applying the HVI ranged between $10 and $12 per household. The study also outlined benefits for using the household vulnerability index approach in targeting, determining principal determinants of vulnerability for improved design of interventions. Considering that the HVI approach requires a census survey to be done, further research on cost-effectiveness of the HVI in achieving outcomes for development relief programmes is an area that requires further investigation.

The study made available information that improved development practitioners' understanding of vulnerability and strengthening targeting efficiency. However, no particular targeting approach was recommended. There is need for further research that clarifies this fundamental issue. This is due to the fact that no single universally accepted household targeting approach is available, mainly because there are multiple namely cost, design, and locality realities of socio-economic circumstances which need to be considered.

6.5 Recommendations

The two null hypotheses stating that there were no significant differences among households in Maphutseng and categories of households were rejected. These findings provide empirical evidence that there were significant differences in vulnerability within groups (male and female-headed households) and between groups (among the three Community Councils and between HVI categories). Based on these findings it is therefore recommended that the local government in the Mohale's Hoek District should explore ways to standardize service delivery, prioritize vulnerable communities and households and also strengthen socio-legal that promote equity in land distribution. In addition, the specific recommendations from this study include the following:

1) *Adoption of the HVI by Development Agencies:* Development agencies and governments should consider adopting HVI in their programming. This is due to its robustness in "splitting the hairs" in household vulnerability analysis. With respect to World Vision, adopting the HVI for long-term programming in ADPs would significantly strengthen impact of developmental relief work.

2) *Review of land policy to promote equity:* The Ministry of Local Government in Lesotho, specifically Mohale's Hoek District Council, should review the land policy to promote equity in the distribution of this resource since the majority of households earn a living through subsistence farming.

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3) *Strategies to improve land utilization for production:* Related to the above point on access to land, the Ministry of Agriculture and Food Security in Lesotho should develop strategies that promote and encourage households to effectively utilize land for production. Provision of subsidized inputs and implements might ensure that land is put to good use.

4) *Application of principal determinants of vulnerability to improve design of social protection programmes:*

   a. Households with diversified income sources are less vulnerable and can manage risk better than those without; Thus, livelihood and income sources should be diversified to address high vulnerability.

   b. When designing and targeting social assistance programmes, female headed households should be prioritized since they are more likely to be vulnerable than male headed ones;

   c. Programme designs should be differentiated based on the nature of vulnerability, irrespective of whether they are in "transient" and "chronic" state. This differentiation is important in determining whether the principal determinants relate to immediate or long term issues.

5) *Using HVI to improve household targeting:* Improved targeting can be achieved through decomposing vulnerability using the five capitals and also its principal determinants. This should be complemented by community verifications since some variables are sensitive and change within short periods of time.

6) *Using HVI to strengthen monitoring of social protection programmes:* The HVI has an automated database to process, manage and store community-based data on vulnerability. In addition, the database has a monitoring module that updates indicators over time. This enables analysis of trends and patterns of vulnerability. The database facilitates the integration of various sectors such as health, education and food aid, among others to understand the interaction of indicators. This helps make informed decisions.

On the overall the study was able to identify the principal determinants of vulnerability among households in Maphutseng using the HVI. Further evidence on the added value of applying the Household Vulnerability Index approach in development relief processes such as targeting and design of interventions was found to beneficial.

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Appendix 1: Household Survey Questionnaire

Maphutseng ADP Household Baseline Vulnerability Census

- Hello. My name is _____.
- I am working with the Maphutseng Area Development programmes team of World Vision in this area. In order to get more information about development issues and quality of life in *Maphutseng ADP*, we are conducting a census of households in the area. I would like to ask you some questions related to your household.
- The information you provide will be useful to find out the status of quality of life in your household, and will be used to plan future development programmes in this area and also in the country. World Vision is conducting this census on household vulnerabilities in all *Maphutseng ADP* households.
- Participation in the survey is voluntary, and you can choose not to take part. However; the information collected by this effort will be used for planning and guiding interventions for several years; and it is in yours households' interest to be part of this census. All the information you give will be confidential. The information will be used to prepare general reports, but will not include any specific names.
- If you have any questions about the survey, you can ask me, my field supervisor who is here with the census team, or one of the development workers at World Vision in *Maphutseng ADP* At this time do you have any questions about the survey?

General Information

GPS Reading (Latitude reading should be between 31-33. Longitude reading should be NEGATIVE 16. Numbers should have 5 digits after comma I.E. 32.28475 and –16.82465		__ __. __ __ __ __ __	– __ __. __ __ __ __ __
Name of Respondent:	Date: ……/……/……	Start Time:	Stop Time:
Respondent agreed to be interviewed: 0 = No 1= Yes		Name of household head:	
Homestead Number (assign):		Household Number (assign):	
Province:	District:	ADP Name:	
Chiefdom:	Ward:	Village:	

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A: HOUSEHOLD SURVEY (For every household in the community)

Occupants *(For 1-10 include members who have stayed for three months and above)*

	A1.1 Full Name Choose by order, starting with Head = 1	A1.2 Sex 1=M 2=F	A1.3 D.O.B.	A1.4 ID No.	A1.5 Relation to Head[1]	A1.6 Marital Status [2]	A1.7 Education[3]	A1.8 School attendance (6-18 years)[4]		A1.9 Employment [5]	A1.10 Health Status[6]	A1.11 If 1, 2 and 3 then record sickness[7]	A1.12 Disability[8]	A1.13 Parenthood Status for children Less than 18yrs[9]
								Are you going to school 1=Yes 2=No 99=n/a	Reason for not going to school					
1					Head									
2														
3														
4														
5														
6														
7														
8														
9														
10														
11-13, Record household members that have relocated away within the last three months														
11														
12														
13														
14-15, Record household members who have died in the last three months														
14														
15														

[1] 1=Spouse 2=Mother 3=Father 4=Son 5=Daughter 6= Niece/ Nephew 7=Grandpa 8=Employee 9=Other
[2] 1=Married 2=Single 3=Widow 4=divorced 5=separated 6=consensual
[3] 0=Illiterate 1=Some Primary School, 2=Completed Primary School, 3=Some Secondary School, 4=Completed Basic Secondary School 5=Completed High School/ Pre-University School 6=Professional College Certificate 7=University Education 8=Adult Education 9=Other
[4] 1=lack of finance, 2=health 3=no interest, 4=work 5=family disputes 6=other 99=n/a
[5] 0=Unemployed/ homemaker/ N/A 1=Subsistence farmer 2=School child 3=Artisan/ Skilled tradesman/women 4=Petty trade 5=Formal employment 6=Harvesting natural resources (wood, panning, etc.) 7=Other (specify)
[6] 0=Good 1=Infrequently sick 2=Regularly sick (sick at least once every month) 3=Bedridden 4=n/a
[7] 1=TB/Pneumonia/Kaposi 2=Malaria 3=Headache/ Whole body 4=Stomach ache 5=Other 99=n/a
[8] 1=visually impaired 2=deaf and or dump 3=physically challenged 4=mentally challenged 0=none 99=n/a
[9] 1=Both parents alive 2=single parent orphan (mother alive) 3=single parent orphan (father alive) 4= Double parents orphan

B: FARM IMPLEMENTS AND LIVESTOCK ASSETS

Farm Implements

	Item	B1.1 Do you own any ox-drawn plough? 1=Yes 2= No	B1.1 Number functional	B1.2 Number not functional
a	Ox-drawn plough			

Livestock

	Livestock	B1.3 Total No		B1.4 Increased in the past year 1= Yes, 0 = No	B1.5 Decreased in the past year 1= Yes, 0 = No	B1.6 Reason for increase or decrease	B1.7 Uses 1= draught, 2= commercial, 3= subsistence, 4=Other
		Own	Access				
a	Cattle						
b	Donkeys						
c	Goats						
d	Sheep						
e	Pigs						
f	Poultry						
g	Other (specify)						

C. FOOD CONSUMPTION

C1.1	Yesterday, how many times did the adults (over 18) in this household eat?	__ times	C1.2 Yesterday, how many times did the children (0-17) in this household eat?	__ times

Could you please tell me how many days in the **past ONE WEEK** your household has eaten the following foods? ***(use codes below, write 0 for items not eaten over the last 7 days)***

	Food Item	C1.3 Number of days eaten last 7 days (0 to 7)
A	Maize (e.g. *Pap, thin porridge*)	__
B	Rice	__
C	Bread	__
D	Other cereals (*sorghum, millet, pasta, etc.*)	__
E	Roots and tubers (*cassava, irish and sweet potatoes, etc.*)	__
F	Beans, peas, nuts	__
G	Vegetables and leaves	__
H	Fruits	__
I	Meat (*domestic or wild*)	__
J	Poultry (*chicken, ducks*)	__
K	Fish	__

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L	Eggs	
M	Oil, fat, butter	
N	Sugar and sugar products	
O	Milk and milk products	

D. WATER, SANITATION AND HEALTH			
	(i) Water Source	D1.1 Is source of water used? 1= Yes, 0 = No	D1.2 State of water source 1= protected, 2= unprotected
A	Tap water		
B	Water tank		
C	Well in yard		
D	Communal borehole		
E	Dam		
F	River		
G	Spring		
H	Communal Well		
I	Canal		
J	Other (Specify)		

Sanitation											
D1.3 Which type of toilet is mainly used by the household? (Tick appropriately)	Bush		Flush toilet		VIP/Blair toilet		Pit latrine		Other		
D1.4 Current Status / condition of toilet (limit to pit latrine and VIP)	Poor		Fair		Good						

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EXTERNAL SUPPORT NETWORKS

	List of support (in the past 12 months)	E1.1 Get support 1=Yes, 0=No	E1.2 Source of support 1=Government 2=NGOs/CBOs/FBOs 3=Relatives 4=neighbours 5=churches 6=any other external support, 99=n/a	E1.3 Please rank adequacy of support offered on a scale of 1-3 (1= satisfied, 2= fair, 3= not satisfied, 99=n/a)
a	Food			
b	Non-food basic			
c	Health			
d	Savings/Financial Services			
e	Transport to work			
f	Transport to clinic			
g	Burial expenses			
h	Farming inputs			
i	Recreation (sports equipment)			
j	School fees, uniforms, stationary			
k	Income Generating Activity			
l	Spiritual			
m	Counselling			
n	Other (specify)			

E1.4. Do your household go to church? (1= yes 0= No) **(Please link to spiritual support)**		E1.5 If yes what denomination? 1= Zionist, 2=Pentecostal, 3=Catholic, 4=Anglican, 5=Jerico, 6= Other (specify)	

F: HOUSEHOLD INCOME

F1.1 What is the household's two main sources of income? *(Circle the two) 1= salary 2=informal work 3=livestock sales 4=crop sales 5=remittances 6=trading 7=donations from NGOs 8=government allowances 9=other (specify)*

F1.2 Do you have access to projects or interventions that can raise income for your household? Yes = 1, No = 2

NB- For the QF1.3 – QF1.5 use the following codes: *1=food 2= non-food basic goods 3=health 4=savings 5=transport to work 6=transport to clinics 7=burial expenses 8=farming inputs 9=beer and recreation 10=school fees 11= income generating projects 12=other (specify)*

	Option 1	Option 2
F1.3 Where does the HH spend most of its financial resources (give 2 of the most common)		
F1.4 Where would you spend any additional financial resources if they were availed to you: (give 2 of the most important)		
F1.5 For what purpose did the household use financial resources from sale of crops/ livestock from the last season? (give 2 of the most important)		

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		F1.6 1= Yes 0= No	F1.7 Amount /Type (for goods)	F1.8 Has the status/amount changed within the last year 0=did not change 1=increased 2= decreased 88=don't know 99=n/a	F1.9 If changed state the reason 1= to meet food 2= to meet medical expenses 3= to meet other needs eg school fees 4=forcibly taken away by relatives or local authorities 5= Death 6 = to service a debt 88=don't know 99=n/a
a	Do you have bank accounts?		Number/Type of bank accounts held:		
b	If household received any remittances from family/relatives please indicate amount or type of goods?				
c	Have you joined any community or formal savings credit scheme?				
d	Do you have any Unpaid debt?				

G: AGRICULTURAL PRODUCTIVITY					
		G1.1 Size /amount	G1.2 Are you satisfied with the quality and/or quantity? 0=poor/need improvement 1=satisfactory quality 2=good 88=don't know 99=n/a	G1.3 Did Asset Increase/reduced within the last year 0=did not change 1=increased 2= decreased 88=don't know 99=n/a	G1.4 If there is a decrease, what are the reasons? 1=sold to meet food 2= sold to meet medical expenses 3= sold to meet other needs e.g. school fees 4=forcibly taken away by relatives or local authorities 5=lost to natural causes 88=don't know 99=n/a
A	Land Size (ha)				
G1.5 Did you plant the previous year (2008/2009)? (1=Yes , 0=No) *If no please proceed to G1.6*					
A	Land area under staple crop in the last season (acres/ha)				
B	Total land area under crop cultivation in the last season (acres/ha)				
C	Land fertilised by manure in the last season (acres/ha)				
D	Land available but not used due to illness or death in the last season (ha)				
E	Top dressing fertilizer used for staple crop (kg) in the last season?				
F	Basal fertilizer use for staple crop (kg) in the last season?				
G	Manure use for staple crop in the last season(bags/wheelbarrows/carts)				

	Agricultural Extension Services	G1.6 1 = Yes, 0 = No	G1.7 If yes indicate No. of visits/month	G1.8 If yes indicate time spent/ visit
a	Do you have access to agriculture extension services for livestock?			
b	Do you have access to agriculture extension services for crops			

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I: HOUSEHOLD ENVIRONMENT	
Use and management of the environment within the last year	**1= Yes, 0= No**
I1.1 Have you ever resorted to cutting down trees and selling wood as a means of survival?	
I1.2 Have you ever resorted to collecting wild fruits because you do not have enough food to eat?	
I1.3 Do you practice environment management activities in your area? e.g. tree planting, gully filling, manure collection	
I1.4 Have you had any awareness sessions on preventing environmental degradation?	
I1.5 Has sickness or death of a family member prevented you from managing your environment? e.g. tree planting, gully filling, manure collection, etc	
I1.6 Has sickness or death affected the amount or quality of water used by your household? E.g. resorting to collecting water from nearer but unsafe sources or failing to pay for piped water or failing to pay for repairs to safe water sources?	
I1.7 Has sickness or death prevented your household from ever developing or participating in planned water or environmental management projects? E.g. borehole drilling, tree planting, participation in community initiatives?	

	J: HIV/AIDS AND AGRICULTURAL KNOWLEDGE	
J1.1	Do you know what is HIV/AIDS *1=yes, 0=no*	
J1.2	How is it transmitted? *1=Blood transfusion, 2=contact with infected blood, 3=sex with an infected person,4=organ transplant of an infected person, 5= from infected mother to child, 6=other, 99=n/a)*	
J1.3	How often are AIDS related issues discussed with parents *1=Rare, 2=Regular, 3=never*	
J1.4	Main information source for HIV/AIDS *1=radio, 2=TV, 3=newspaper, 4=peer educators, 5=Health centre, 6=other*	
J1.5	Do you have adequate knowledge on type of crops to grow, and when to grow them? *1=yes, 0=no*	
J1.6	In any given season, do you know- in advance- the weather forecasts and use this for farming planning? *1=yes, 0=no*	
J1.7	At any given time, do you have adequate knowledge on prices of agricultural and non-agricultural commodities in the market? *1=yes, 0=no*	

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Appendix 2: Focus Group Discussion Tool for Assigning Weights

Purpose: To Determine Weights for indicators of vulnerability through participatory community engagement in World Vision Area Development Programmes (ADPs).

(Prepared by J. Francis, M. Jama and D. Nxumalo)

Phase 1: Social Preparation

1. Mobilize youth, women, men and community leaders in each village/Ward in the ADP to participate in a community workshop.
2. Develop a workshop facilitation programme or agenda, taking into account respect for local protocols and culture.
3. Prepare a workshop participant register.
4. Arrange all the equipment that you would use during the discussion (e.g. 50 stones or 50 coins).

Phase 2: On the day of the workshop:

1. Introduce yourself and explain the purpose of the workshop to participants and what the results would be used for.
2. Allow participants to ask whatever questions they might have.
3. Request participants to break into groups or reflection circles (each one should have 6-15 members. **Note that you should form more than one group if the number of participants per cohort or group is more than 15 people**) as follows:

    a. Male youth
    b. Female youth
    c. Women
    d. Men
    e. Community leaders

4. Explain what the separate reflection circles should do, i.e.:

    a. Choose a chairperson and scribe
    b. Each member of the reflection circle records his or her details in the participant register provided (Appendix 1).
    c. Take flip chart paper and markers and pick 50 stones or other readily available materials.

Phase 3: In the reflection circle, the participants discuss 'household vulnerability' by doing the following:

1. Study the statements on vulnerability to poverty (Addendum 2.2) listed under each of the following five capitals: *Human capital; Natural capital; Physical capital; Social capital; and*

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Financial capital. Add any other important statements (in the spaces provided) that you believe apply to your area but have been left out.

2. Ask one volunteer member of your group to allocate the 50 stones you picked to the 5 capitals, human, natural, physical, social and financial capital. The capital which he/she believes is the most important determinant of vulnerability to poverty gets the most stones followed by the next important one and so on until the least important capital. Note that all the 50 stones should be allocated. As a group, discuss the allocation and redistribute the stones accordingly until what the whole group believes to be the true situation in your area is reflected. Record the number of stones allocated per capital (note that the total should add up to 50).

Capital	Focus Group Ranking for Each Individual Capital											
	FG1	FG2	FG3	FG4	FG5	FG6	FG7	FG8	FG9	FG10	Ave.	Consensus Ranking
Human												
Financial												
Social												
Physical												
Natural												
Total	50	50	50	50	50	50	50	50	50	50		

3. Now, take one capital at a time. Using the same 50 stones follow the same procedure as in 2 above in allocating the stones to the statements under each of the capitals (Addendum 2.2).

Variable	Focus Group Ranking for Variables under Each of the 5 Capitals											
	FG 1	FG 2	FG 3	FG 4	FG 5	FG 6	FG 7	FG 8	FG 9	FG10	Ave.	Consensus Ranking
V1												
V2												
V3												
V4												
Total	50	50	50	50	50	50	50	50	50	50		

4. Record the results obtained per capital.
5. Take flipchart paper on which the statements for each capital are written and paste on a wall or board. Create columns that are equivalent to the number of groups that reflected on the assignment.
6. In plenary, ask each group or reflection circle to share its results with the rest.
7. As each group presents, record the respective scores in the relevant columns without any discussion.
8. After all the groups have presented, add up the totals for each statement. Explain what the results mean. Allow the participants to discuss the results and adjust them based on the further facts they provide leading to adoption of relative scores.

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Addendum 2.1: Workshop Participants' Register

Event: Community Workshop to assign weights to indicators of household vulnerability

Date: **Venue/ADP:**

Surname and Initials	Male or Female	Are you a youth or adult?	Highest Educational level attained (Choose from) 1-None 2-Primary School 3-Secondary School but not Matric 4-Matric 5-Tertiary	Community structure(s) you are a member of	Phone number
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					

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Addendum 2.2: ***Which of the following are true signs of vulnerability of households in this area? Further, which ones are the most important signs?***

5. Natural Capital

i) Households that do not apply natural fertilizers such as cattle manure or compost have cropped lands whose fertility continues to decline.
j) Environmental management is deteriorating because more and more households are becoming vulnerable.
k) Households rely on the environment for "free" products such as wood.
l) HIV and AIDS affected households rely more on the forest for their livelihoods.
m) Households have difficulties in fully utilizing their land due to limited labour.
n) Households have difficulties in fully utilizing their land due to limited availability of draft power.
o) Households that are not involved much in farming activities.
p) Households without or with only small farmlands.

6. Human Capital

h) Households with a large number of sick members.
i) Households whose heads are sick.
j) Households that have sick members who are supposed to be productive.
k) Households that have large numbers of dependants due to an increasing number of orphans in them.
l) Female-headed and/or child-headed households fail to cope with shocks more.
m) Households with members who suffer from serious diseases such as HIV and AIDS.
n) Households with few economically active members.

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7. Social Capital

e) Households without enough support channels from external sources and with limited quality.
f) Households with limited access to information.
g) Households not supported by NGOs and government.
h) Households without enough knowledgeable on agriculture and HIV/AIDS and not discussing these regularly in homes.

8. Physical Capital

k) Households that do not use/use fertilizers less.
l) Households that do not have adequate labour usually get poor harvests.
m) Households that do not have adequate draft power usually get poor harvests.
n) Households that do not own ox-drawn ploughs or carts usually face difficulties in cultivation, planting and carrying out other crop farming operations.
o) Households that do not own (or have fewer) cattle and other livestock are more vulnerable due to limited access to draft power and other sources of income and nutritious food.
p) Households that adopt unsustainable short-term coping strategies, which might include the selling of assets such as livestock and farmland.
q) Households with limited access to extension services.
r) Households that eat less variety per day due to inadequate food availability.
s) Households that eat less per day due to inadequate food availability.
t) Households that are not involved in off-farm income-earning work.

9. Financial Capital

g) Households with little or no savings are more vulnerable.
h) Households have fewer sources of regular income.

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i) Households have limited number of formally employed members in a household.
j) Affected households have limited access to credit/loans due to increased risks and lack of collateral.
k) Households with unpaid debts are most vulnerable.
l) Households experience increased expenditure on health care due to the presence of many ill members.

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