

**LIVELIHOODS AND NATURAL RESOURCE MANAGEMENT DYNAMICS
IN FAST TRACK LAND RESETTLEMENTS,
KWEKWE DISTRICT, ZIMBABWE**

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ABSTRACT

The purpose of this investigation was to evaluate an Agricultural community and its system of Natural Resource Management (NRM) in the post–Fast Track Land Reform Program (FTLRP) era in Zimbabwe. The study contributes to understanding issues facing Agricultural Community Based Natural Resource Management (CBNRM) set ups in two resettlement models. The aim was to establish the influence that the FTLRP had on emergent practice and use of the natural resource base. The main task was to explore the patterns of natural resource use within the dynamics of culture, vulnerability and governance issues. The researcher deliberately enriched the case study with interviews, questionnaires, focus group discussions and participatory observations to promote triangulation (confirmation) of results. The field work for the study was carried out in Kwekwe District in the Midlands Province of Zimbabwe. The main part of the district falls in Agro ecological zone III and the smaller part in zone IV. Agro ecological zone III is a semi-intensive farming area prone to sporadic seasonal droughts, long-lasting, mid-season dry spells and the unpredictable onset of the rainy season. Agro ecological zone IV is subject to drought and dry spells in summer, rendering the area unsuitable for arable farming but favourable for semi-extensive beef production. The study specifically targeted FTLRP beneficiaries. The results showed that in terms of impacts on NRM, the exploitation of natural resources for survival has become normal practice. This is a shift from the previous farming practice and NRM of the agrarian space before FTLRP as well as a shift from the indigenous knowledge system of NRM found in traditional communal settlements prior to FTLRP. The background of farmers had notable effects on the current farming practices. Governance of NRM was in conflict with farmers’ needs, the harsh economic climate, dwindling NRM institutions and erosion of the authority of traditional community leaders.

DECLARATION

I, Farai Mumanyi, declare that:

- The research reported in this dissertation, except where otherwise indicated, is my original work.
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Farai Mumanyi

19 March 2015

Date

As the candidate's supervisor I have approved / not approved this dissertation for submission

Signed: 

Dr Karen Caister

Date: *19 March 2015*

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Abbreviations and Acronyms

AEW	Agricultural Extension Worker
Agritex	Department of Agricultural, Technical and Extension Services
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBNRM	Community Based Natural Resource Management
CITES	Convention of Biological Diversity and the Convention of International Trade in Endangered Species
Conex	Department of Conservation and Extension
Devag	Department of Agricultural Development
DFID	Department for International Development
EC	Environmental Committee
EIA	Environmental Impact Assessments
EMA	Environmental Management Agency
EMP	Environmental Management Plans
EO	Extension Officer
ESAP	Economic Structural Adjustment Programme
ESC	Environmental Sub-Committee

FAO	Food and Agriculture Organisation
FC	Forestry Commission
FTLRP	Fast Track Land Reform Programme
GDP	Gross Domestic Product
HH	Household
IKS	Indigenous Knowledge Systems
ITK	Indigenous Technical Knowledge
IUCN	World Conservation Union
LEAP	Local Environmental Action Plans
NRM	Natural Resource Management
RDC	Rural District Council
UNDP	United Nations Development Program
WWF	Worldwide Fund for Nature
ZimAsset	Zimbabwe Agenda for Sustainable Socio-economic Transformation
ZimVAC	Zimbabwe Vulnerability Assessment Committee
ZINATHA	Zimbabwe National Traditional Healers' Association
ZRP	Zimbabwe Republic Police

CHAPTER ONE: INTRODUCTION

An estimated 80 to 90% of land habited by people is under some form of productive livelihood activities. This includes almost a third of global land covered by agricultural activities ranging from cropping to pastures as the dominant land uses, therefore having a weighty ecological effect on the overall landscape (McNeely and Scherr, 2008). The agricultural community, in most cases, depends on crucial components of biodiversity and ecosystem services for provisioning, regulating and supporting production (Bradley and Dewees, 1993; Braedt and Standa-Gunda, 2000). Diverse livelihood strategies broaden the community options, cut down dependence on certain natural resources, and augment human capital by offering new opportunities to those who diversify (Ellis and Freeman, 2004).

However, the high frequency of drought and crop failure means that farmers take on risk-averse schemes (Scoones, Marongwe, Mavedzenge, Mahenehene, Murimbarimba, and Sukume, 2010; Mortimore, 1998). The schemes involve increasing livestock and human numbers, which encourage profound dependence on the environment. The flaws of existing institutions and soaring operation costs promote difficulties in Natural Resource Management (NRM) (Campbell *et al.*, 2001). Moreover, livelihoods are directly affected by poor economic policy shifts leading to increasing and unsustainable reliance on the environment by the underprivileged (Chipika and Kowero, 2000).

It is therefore not surprising that for wildlife and environmental conservation, there are quite a number of international organisations e.g. the World Conservation Union (IUCN), the United Nations Development Program (UNDP), and the Worldwide Fund for Nature (WWF). These organisations assist in the implementation of legal international obligations signed by various nations e.g. the Convention of Biological Diversity and the Convention of International Trade in Endangered Species (CITES).

Regionally, the Constitutive Act of the African Union emphasizes the rights of member states to determine their individual policies. Most African countries regard the sustainable management of land as an important aspect and thus have embarked on various land policy reforms (African Union, 2009).

Since its independence from British colonial rule in 1980, Zimbabwe has been involved in land redistribution exercises (Moyo, 2011). Before the Fast Track Land Reform Programme (FTLRP), which commenced in the year 2000, the agricultural sector was characterised by low input and productivity in smallholder communal areas and high input and productivity in commercial areas, which covered most of the most fertile areas of the country (Food and Agriculture Organisation, 2009; Zimrelief, 2008).

The FTLRP resulted in a transformed agrarian arrangement in rural areas, almost doubling the farm production units (Chimhowu, Bare, Chiripanhura, Biti, Chung, Magure, Mtisi, Mambondiyani, Manjengwa, Matshe, Munemo, Nxele, Sibanda, 2010). This rural restructuring changed the land custodianship, attitudes and rules of resource use (DFID, 2011). Agriculture thus shifted more towards subsistence rather than commercial (Food and Agriculture Organisation, 2009).

The backbone of the economy of Zimbabwe is agriculture which caters for the livelihoods of approximately 70% of the population, contributing close to a fifth of GDP and half of exports (Food and Agriculture Organisation, 2009; Zimrelief, 2008). However, since 2000, the agricultural sector in Zimbabwe has been experiencing economic, political and social shocks. As a result, the government has been struggling to meet the demands of new farmers. The situation was further worsened by the international community shunning the newly resettled community in terms of the provision of farming inputs and logistical support (Kapuya *et al.*, 2012; Maposa, Hlongwana and Muguti, 2013). This was also promoted by the unreliable market environment that demotivated the farmers from utilising their land to its optimum capacity, making farming a risky adventure (Chimhowu *et al.*, 2010). The frequency of drought, the harsh national economy and the HIV/AIDS pandemic further severely reduced agricultural production. This was coupled with most rural households' lack of capacity to farm in terms of capital, inputs and sustainable technology (Food and Agriculture Organisation, 2009; Zimrelief, 2008).

In response to such shocks and challenges, farmers resorted to livelihood diversification. Non-agricultural sectors like mining, forestry and wildlife increased in popularity as alternative livelihood strategies in rural communities. According to Wolmer, Chaumba and Scoones (2003), most of the rural households rely heavily on wild natural assets for food, medicines, fibre, shelter and energy, either for direct home consumption or in trade to generate cash.

With the loss of virgin land to agriculture and increasing reliance on the diverse use of the natural resource base, research experience indicates that the role of local resource management mechanisms may be critical to sustaining Zimbabwe's rural farming practices. With Zimbabwe being a signatory of the Earth Charter and subscribing to the principles of Agenda 21 and related conventions, such as the United Nations Convention to combat desertification and climate change (DFID, 2011), there is a need to look into the issues from a grass roots level.

Within the context, rapid change of policies and the fusion of different cultures have forced people to adapt and select livelihood strategies that potentially affect environmental and social sustainability (Mulale *et al.*, 2013). This investigation looks at the culture and livelihood patterns of A1 and A2 land reform communities in the Kwekwe district of Zimbabwe and the roles played by institutions as an example of the influence of the FTLRP on NRM.

1.1 Justification

Several issues called for this research in order to bridge the information gap that has existed in farming, livelihoods and NRM in Zimbabwe. The first stemmed from the blurring of the different farm models in Zimbabwe and their potential effect on NRM (Scoones, 2008). Little research has been undertaken particularly on the role of local resource management mechanisms under the agrarian changes from the FTLRP (DFID, 2011). The second issue arose from the economic and governance crisis from the last decade which resulted in failure by most NRM institutions and programs to operate effectively in research and extension (USAID, 2010). Thirdly, there is general awareness that shocks and challenges such as climate change, unstable economic environment, and diseases of humans, animals or crops negatively affect livelihoods in rural communities. However, there is no full awareness of what the coping strategies of these communities bring to bear on NRM (Dekker, 2004).

These issues called for intervention by the government and various relevant stakeholders to update the knowledge base and design programs that promote community involvement in sustainable NRM. This research therefore seeks to establish an understanding of sustainable development for an Agricultural Community Based Natural Resource Management (CBNRM) set up in the new Zimbabwe.

1.2 Research Problem

The purpose of this investigation is to evaluate the agricultural community and its system of NRM in the post-FTLRP period in Zimbabwe. The aim is to establish the influence that the FTLRP had on emergent practice and use of the natural resource base. The main task is to explore the patterns of natural resource use within the dynamics of culture, vulnerability and governance issues.

1.2.1 Sub-problem One:

To identify the culture (indigenous knowledge systems, attitudes, and values), the emerging forms of NRM practices, and the impacts of culture and the emerging forms of natural resource use on NRM.

1.2.2 Sub-problem Two:

To establish the farming background status, farming practices of the resettled farmers, and the impacts of the farming background status and farming practices on NRM.

1.2.3 Sub-problem Three:

To identify and evaluate the roles and challenges of the policies and institutions responsible for NRM, agriculture and food security.

1.3 Limitations and Delimitations

The study specifically targeted resettlement beneficiaries of which Kwekwe has seven FTLRP agricultural spaces (wards). The research investigates the types of resettlement models and does not use a statistical representation of the total population of FTLRP beneficiaries. The process of land reform itself is not under investigation so details of the ways in which individual pieces of land were allocated under the FTLRP process are not included in the investigation. The fact that the researcher who was in the field is the one who compiled and reported the data promotes bias. This subjectivity is declared throughout the analysis and discussion, where appropriate. The political environment in the country made it possible for a simple question to easily sound politically sensitive if not expressed properly or depending on the interviewee's perception. This has also biased results and, where relevant, has been mentioned within handling of data. The Forestry Commission and Zimbabwe Republic Police were key informants who were inaccessible and declined interviews due to the fear of political victimisation which has dire results.

1.4 Definition of Terms

A1 Scheme: a land redistribution model that mainly targeted landless people and was to facilitate in decongesting the communal areas (Chigumira, 2006).

A2 Scheme: a commercial farming land use model aimed at increasing the number of black indigenous commercial farmers (Chigumira, 2006).

Culture: the sum total of the original solutions that a group of human beings invent to adapt to their natural and social environment (Verhelst, 1990).

Indigenous Knowledge Systems: refers to local knowledge that is unique to a given culture or society and knowledge forms that are characterised by integrated systems of cognition, belief and practice (Williams and Muchena, 1991).

Institution: the designations, hierarchies, relations, responsibilities and modes of interaction that make up a structured grouping of individuals, and the rules, values and behaviour that obtain within the given structure (Sida, 2001).

Livelihood: the capabilities, assets (including both material and social resources) and activities required for a means of living (DFID, 1999).

Natural Resource: a material source of wealth, such as timber, fresh water, or a mineral deposit, that occurs in a natural state and has economic value.

Natural Resource Management: involves taking care of natural resources such as land, water, marine and biological systems, with particular focus on how the management affects the quality of life for both present and future generations (Landlearn Organisation, 2014).

1.5 Assumptions

In a case study the researcher deals with subjectivity as an assumption and this promotes bias. The researcher deliberately enriched the case study with interviews, questionnaires, focus group discussions and participatory observations to promote triangulation (confirmation) of results. Within this context, the assumption is that responses are subjective but valid. This type of research collects rich information with a vast amount of associated data. The assumption is that the researcher is competent in selecting appropriate data for analysis and that sub-problems

provide a framework for systematic collection, selection and analyses of information. The political and economic situation in Zimbabwe is very dynamic, and therefore this research covers a specific time period from August 2013 to March 2014 and cannot account for dynamics occurring outside the time frame of the data collection process.

1.6 Summary

The main task of this investigation is to evaluate the Agricultural CBNRM systems in the post-FTLRP period in Zimbabwe in terms of values, the dynamics of environmental stewardship, patterns of natural resource use and governance. This could establish the influence that the FTLRP had on emergent practice and use of the natural resource base. The research attempts to add insight into the following gaps in knowledge: little information about the different farm models in Zimbabwe and their potential effect on natural resource management; the failure by most NRM programs to operate effectively in research and extension; and the need to increase the resettled communities' awareness of the impact of coping strategies on NRM.

In Chapter Two a Literature Review from books and journals, and current debates has been used to establish a political and theoretical understanding of the issues and framework for discussion of research results. In Chapter Three, a rich picture of the study area integrates field observations with public information sources, and published research in order to assist with developing an in-depth understanding of the context. This adds to transferability of the investigation. In Chapter Four a pragmatic, qualitative approach for an empirical case study is presented. The method for collecting, analysing and presenting research results is explained. Appendices provide the full data set, evidence of how the researcher accessed the respondents, dealt with ethical issues, and sourced information. In Chapter Five, relevant data has been selected from the full data set and is presented in tables and diagrams that represent the focus of the questions asked. The sub-questions of the research design have been used as the framework for selection and discussion and a narrative guides the reader through the data sets. In Chapter Six, the patterns and relationships seen in the results have been discussed in relation to the literature, to draw conclusions and make recommendations.

CHAPTER TWO: LITERATURE REVIEW

This chapter discusses the importance of culture and indigenous knowledge in the day to day activities of various human communities. The chapter further discusses the history and effects of direct management practices of man on the environment and indirectly through policies and institutions globally and regionally, thereafter narrowing the focus to the national Zimbabwe level.

2.1 People and the Environment

2.1.1 Sustainability and the current threat of use of the global environment

Mulale *et al.* (2013) emphasised the importance of meeting the needs of the present without compromising the ability of future generations to do likewise. This, however, depends on how well balanced the social, economic, and environmental objectives are when making decisions today. Global demand for the natural resources is likely to rise with increasing human populations and the intensification of various production and economic growth activities (Gandiwa, Gandiwa and Muboko, 2012). The Global Environment Facility (2000) highlighted the need to exercise NRM activities that attempt to accommodate the laws of nature, if a natural and sustainable environment is to be maintained.

2.1.2 Culture and Indigenous Knowledge Systems (IKS)

The environment forms important components of national heritage in the existence of people on earth. There is therefore a need to encompass the informal norms and values of the communities living with natural resources to assist the formal policies and institutions in the use, control and management of the natural environment (Mohammed-Katerere, 2001). However, some human norms and values have negative consequences for the environment and discouraging them can lead to serious conflicts between the formal and informal institutions (Taylor, 2006).

According to Williams and Muchena (1991) IKS consist of local knowledge valued and upheld by a given group of people. They carry essential information implanted in proverbs, myths and religious rituals. Mapara (2009) asserted that people have and continue to bring forth new knowledge in their relationship with animals, the earth, and the cosmos.

The African community has contributed massively to the world economy through their IKS, as postulated by Mapara (2009) that Western pharmaceutical companies often send their agents to tap the medical knowledge of Africa's traditional pharmacologists. For example plants such as

the African Willow (South Africa), the *hoodia* plant (Namibia) and *iboga* plant (Gabon and Cameroon) are used to treat ailments such as cancer, obesity, and drug addiction respectively.

The resilience of IKS in traditional medicines led to the formal recognition of traditional healers/practitioners in 1980 through an association called the Zimbabwe National Traditional Healers' Association (ZINATHA). Mechanisms have been developed in rural areas to monitor personal properties like homes, fields and livestock. Moreover, weather forecasting mechanisms to help in planning activities at least two to three days in advance are quite common, while indicator plants are popular in land use planning (Mapara, 2009).

Within NRM systems, Indigenous Technical Knowledge (ITK) (Table 2.1) embraces people's knowledge for evaluation, attainment, development, and use of local resources (Mulale *et al*, 2013).

Sibanda (1998) recommended that IKS should complement Western knowledge systems in the implementation of projects. He further encouraged more indigenous knowledge research supported by awareness programs to appreciate IKS in resources' utilisation management for its improvement and restoration.

Table 2.1 Indigenous Traditional Knowledge (adapted from Kajembe, Zahabu and Mwenduwa, 2000)

<p>ITK can encompass the following types of knowledge:</p> <ul style="list-style-type: none">-Vernacular: expert knowledge held by most individuals in a specific locality e.g. disease control knowledge-Specialised: expert knowledge of some skilled members of the community e.g. varietal testing-Controlled: specialised knowledge held by influential people in a community e.g. skills in animal breeding or hunting-Social: knowledge belonging to a group (clan or tribe) or a community, e.g. grazing rights.

However, the major limiting factors of IKS include its lack of documentation and lack of proven scientific procedural explanation. IKS also depends on those who have the knowledge to share it with others and the willingness of others to believe in them. Furthermore, most youths regard it as being out-of-date compared with Western cultural knowledge and practices (Sibanda, 1998).

2.2 Management of the Environment

2.2.1 Definition of NRM

Natural resources are material sources of wealth, such as timber, fresh water, or mineral deposits that occur in a natural state and have economic value (Free Dictionary, 2014). The management of these natural resources are key to sustainability of man and his environment. Natural Resource Management (NRM) involves taking care of natural resources such as land, water, marine and biological systems, with particular focus on how the management affects the quality of life for both present and future generations (Landlearn Organisation, 2014).

2.2.2 Key Global Issues

The Implications of Agricultural Production on NRM

Clearing land for crop cultivation, overgrazing and over browsing, inappropriate agricultural practices, mining, dam construction and human settlement are among the world's major causes of habitat destruction (Environment Africa, 2004). This threatens wild plants and animals (GEF, 2000). Nutrients and organic matter reserves are lost, while compaction and crusting of soils is high (Outreach/TVE, 2002). High salinisation and eutrophication are reported in areas under irrigation, while acidification is high due to poor agricultural practices (Nature Conservancy, 2004). However, globally, sustainable ecosystem services are being provided by non-native species, or by combinations of native and non-native species in farms through intentional land management practices (McNeely and Scherr, 2008).

Generally positive impacts on agricultural growth, economic diversification and sustainable NRM can be attained when resource-allocation rules, government policy, and functioning factor markets favour agriculture (Turner, Hyden and Kates, 1993; Carswell, 1997). This has confirmed the significance of supportive socio-economic organisations and structures in ensuring sustainable agricultural intensification in Africa. In Zimbabwe, institutions like Gwebi College of Agriculture and Matopo Research Station selected some local breeds of various indigenous animals and plants which were being self-bred to preserve the native species (Chimhowu *et al.*, 2010).

The land tenure systems in Zimbabwe needed improvements on security for sustainable development in farms (Ellis and Freeman, 2004). The lack of adequate support from the central government, through its institutions and policies, and negligence by the international community

were the two main causes of failure in agriculture and NRM in the resettled community under the FTLRP in Zimbabwe (Maposa, Hlongwana and Muguti, 2013).

Human Wildlife Conflict (HWC)

HWC refers to a situation when the needs and behaviour of wildlife hinder the goals of human beings or human strategies, affecting free movement of wild animals. Thus, HWC can be considered inevitable in all communities where human and wildlife coexist and share the same habitat (Le Bel, Murwira, Mukamuri, Czudek, Taylor and La Grange, 2011).

In Africa, serious cases of HWC were reported in Mozambique with 265 people killed between July 2006 and September 2008, mostly by crocodiles; 1,116 ha of land destroyed in 2008 mainly by elephants; and hundreds of problem animals killed each year. In a response to the social impact of HWC, a national strategy to reduce HWC was developed and approved by the Government of Mozambique with the support of FAO (Ministério da Agricultura, 2009; Le Bel *et al.*, 2011).

According to Le Bel *et al.*, (2011), conflicts between human and wildlife became one of the biggest obstacles for CBNRM in Zimbabwe. This situation was exacerbated by the FTLRP which resulted in Africans settling on former white-owned commercial farms, as well as on game safari land and sections of National Parks. Changes in individual land use strategies, involving the switch from large fields to scattered cultivated lands, likely contributed to increased conflicts in rural lands adjacent to Protected Areas. Growing poverty and unemployment led to the over-exploitation of natural resources and the increase of illegal activities, including poaching. In addition, the situation was exacerbated by insufficient revenue from wildlife related industries for communities resulting in their decreased tolerance level towards wildlife.

Land Reform and NRM

Tension between property rights established during the colonial period and economic development plans have led to the rise of certain crucial issues. Among the major issues are demands for land redistributions to reduce discrimination, poverty and to stimulate economic development (Holden, Otsuka and Deininger, 2010). To determine the efficiency and sustainability of these land reforms, securing property rights backed by the enforcement power of

the state at various levels is key. This involves secure land tenure systems that lower the risk of land loss and reduce the need for individuals to spend resources on protecting their rights. Moreover, owners would be encouraged to make long-term sustainable developments on their land (Besley, 1995).

Financial, research and extension support for countries strengthening the rights of the rural poor through tenure reform should thus be considered. The rationale for assistance would be to support a more equitable and sustainable distribution of land and economic opportunities (Adams and Howell, 2001).

Decentralisation in NRM

Ellis (2003) mentioned that one of the basic principles of the livelihood approach is that poverty policy should focus on capacity building and thus management of resources by the local community. Institutions that promote livelihood improvement should be identified. The institutions of greater importance are traditional, centralized state rules and regulations, and CBNRM policies and institutions. Mulale *et al.* (2013) supported this point by asserting that common property rights provide an effective means of integrating the informal institutions that develop as people interact with formal institutions over shared resources. This occurs when these interactions are documented and inform policies, laws, and regulations. Appropriate engagement around common property allows for the delegation and acceptance of rights and responsibilities for collective action in the use of common pool resources; creating space for local groups to design and implement their own institutions; and facilitate adaptive governance and management.

Decentralization presents an opportunity in that local institutions can better adapt to local needs that characterise people's lives. However, cash-strapped local councils tend to focus more on using revenues on operational costs at the expense of issues affecting the communities represented (Ellis and Freeman, 2004).

CBNRM falls within the broader worldview of sustainable development, which implies that in meeting present needs, the ability of future generations to meet their needs should not be compromised. CBNRM in southern Africa revolves around state ownership of the resources (Mulale *et al* 2013). In this context, eight principles that govern NRM have been summarized (Table 2.2):

Table 2.2 Summary of the Eight Principles that underpin CBNRM (adapted from Anderies, Janssen, and Ostrom, 2004 in Mulale *et al.*, 2013)

1. The state owns the resources on behalf of citizens and grants communities rights to access and use of these resources.
2. Those who are affected by the choices relating to allocation should be included in decision making.
3. Boundaries must be defined for both the community and the resource.
4. Those deriving benefit must also carry the costs associated with realizing the benefit.
5. Those who monitor change should be accountable to those who benefit directly or indirectly from the common pool resource.
6. Users must obey rules and face sanctions appropriate to the misdemeanors if they do not.
7. There must be affordable and just processes for resolving conflicts.
8. Communities have the right to devise their own institutions without undue interference from external government agents.

In many parts of Africa, the success or failure of nature conservation depends entirely on how administration and management are developed in response to the requirements of socio-political, ecological and economic factors (Le Bel *et al.*, 2011).

In Southern Africa, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is one structure that was adopted by the Rural Councils of many nations. This programme was aimed at providing the impetus for the replication of CBNRM, which is based on common pool resources and carries the expectation of community benefit (Fabricius and Kock, 2004; Child, 2004). Successes in its implementation were reported in South Africa, Botswana, Namibia, Malawi and Zimbabwe, while failures were reported in Zambia and Mozambique. The successes and failures were attributed to various forms of government interference in its implementation e.g. policies that support or sabotage the program, respectively (Fabricius and Kock, 2004).

Within the Zimbabwean context, from the year 2000, the country experienced a decline in the economy which negatively impacted many elements of CAMPFIRE e.g. the policy making process and donor investment. However, due to the culture that had been established in these

communities, some CAMPFIRE projects showed resilience. This was promoted by the Traditional Leaders' Act, supported by CAMPFIRE, which restored powers to chiefs, headmen and village heads in promoting sustainable NRM (Rihoy and Maguranyanga, 2007).

2.3 Moving Towards Sustainability

2.3.1 Sustainable Livelihoods Approach

According to Farrington, Carney, Ashley and Turton (1999), the assumption of the Sustainable Livelihood Framework Approach is that people use various means to make a living, driven partly by their own desires. Vulnerabilities like shocks (e.g. drought), overall trends (e.g. market prices) and seasonal variations also influence their livelihood strategies. Moreover, structures (e.g. government or private sector roles) and processes (e.g. policy and cultural factors) also contribute.

The assets which people can build their livelihoods around include human capital (e.g. education and skills); physical capital (e.g. machinery); social capital (e.g. social networks); financial related capital (e.g. savings and cattle); and natural capital (e.g. natural resources) (Ellis, 1999).

2.3.2 Livelihoods Diversification and NRM

In order to survive and improve the standard of living, households are involved in diverse activities. These shield households from environmental and economic shocks, trends and seasonality that usually affect agriculture production (Ellis, 1999). Therefore, agriculture often fails to be the sole livelihood source for many rural households. Farming thus ends up becoming a part-time or fallback activity as livelihoods become increasingly oriented to non-farm and non-rural activities. Demographic and economic trends and policies have been reported to have direct effects on agricultural production (Ellis and Allison, 2004).

Livelihood diversification occurs through direct utilisation of the natural environment (e.g. mining and agriculture), indirect use (e.g. trading natural resources) and non-natural resource transactions (e.g. remittances from urban areas) (Mulale *et al.*, 2013). Under more favourable labour markets, better-off families are able to diversify more effectively than poor, rural families. For these families, total income and the share of income derived from non-farm sources is directly related (Ellis, 1999; DFID, 2011). For agriculture, underprivileged migrants from less developed, rural areas are less likely to devote their earnings to agriculture, while better-off migrants from high earning potential areas are more likely to do so. On the one hand, for the

natural environment, increased investments in non-farm production reduce the need for landless rural dwellers to carry out extractive practices in local environments for survival. On the other hand, for settled farmers, any opportunity not related to farming can result in neglect of full-time farming. For gender, diversification can mean that men are involved in diverse transactions while women specialise in customary roles (Ellis, 1999).

According to Wolmer *et al.* (2003), the rural people in resettled areas of various African countries will rely on hunting and gathering from the environment for a long time to come. This scenario is promoted by lack of alternatives due to economic hardships, shocks like drought and open access to natural resources. Most rural dwellers heavily rely on woodland products for firewood, construction timber, grazing pastures and medicines (McNeely and Scherr, 2003), as well as fruits and animals (WWF-SARPO, 2005). Wild greens, spices and flavourings as well as tree fruits and root crops are serving to enhance local diets and provide food supplements when crops or the economy fails, respectively (Chimhowu *et al.*, 2010). Furthermore, dangerous wild animals are also killed for security reasons, while hunting and poaching by the locals is rampant (Le Bel *et al.*, 2011).

In Zimbabwe, the economic crisis, and constant interventions by the state and donors led to the collapse of rural markets (Esterhuizen, 2010). This affected agricultural production and the rural community diversified their livelihoods to cushion themselves from the harsh economic environment. Chimhowu *et al.* (2010) supported this point by asserting that rural lives and livelihoods were becoming increasingly divorced from farming as it had become unreliable.

Livelihood diversification brought about some significant environmental degradation in Zimbabwe, a situation that was further worsened by the erosion of powers of traditional leaders and loss of cultural values which used to facilitate and control the access and use of resources from nature. Moreover, poor enforcement of the Communal Lands Forest Products Act and appropriate Rural District Council by-laws also contributed (Chenje *et al.*, 1998).

2.4 Context for Land Reform: the Zimbabwe Experience

The land issue situation in Zimbabwe can best be viewed and analysed in the context of its history. The history of Zimbabwe has been characterised by struggle over land and its resources, both of which are central to NRM (Raftopoulos, 2004; Rihoy and Maguranyanga, 2007).

The foundations for the division of land in Zimbabwe (then Southern Rhodesia) were laid in the earlier part of the 19th century when the country was colonized by white settlers. The gradual and often forced separation of the black community from the white community was facilitated through the Land Apportionment Act of 1930 (Moyo and Skalness, 1990). Repressive policies combined to produce and maintain cheap labour for employment in the mines, manufacturing businesses, farms and homes owned by whites. This was the genesis of the marginalization of the native black community (Arrighi, 1973; Mosley, 1983; Phimister, 1988).

Prior to Zimbabwean Independence in 1980, a maximum number of 6000 white farmers owned half of the productive area (about 15.5 million hectares) and black peasants were relegated to areas of lower agro ecological potential – mostly drier, drought-ridden parts of the country which covered 16.4 million hectares (Moyo and Skalness, 1990; Moyo, 1998). At independence, 5700 white commercial farmers retained 15.5 million hectares of land in fertile areas (Goebel, 2005), while one million black households remained in the communal areas on 16.4 million hectares of marginal land (Moyo, 1998). By 1989, the number of white commercial farmers had declined to an estimated 4,500. This decline in the number of white farmers was a result of the Land Reform Phase 1 (1980 to 1990) from abandoned farms during the war and others brought to the market under the willing-buyer willing-seller clause entrenched in the Lancaster House Constitution (Moyo, 1989). By around 1989, the former African reserves, now called communal areas, were inhabited by around 800,000 households or perhaps 5 million people. These families lived in poverty as a result of poor agricultural yields and overpopulation (Moyo, 1989; Moyo and Skalness, 1990).

The second phase/period from 1990 to 1997 was characterised by declining rural and urban livelihoods, a continued slowed pace of land redistribution, changes to the criteria applicable to beneficiaries for resettlement and changes in the political and economic landscape (Moyo, 1998). The objective of this phase was to ensure that aggregate agricultural production was not endangered through redistribution, in accordance with neo-liberal thinking under structural adjustment. Therefore the criteria for beneficiaries of resettlement shifted from those of the 1980s to the resettlement of capable farmers, which included graduates from training colleges or Master Farmers from the communal areas (Moyo, 1995). Quantitatively, this reduced the number of people that could benefit from redistribution and further marginalised the community, whose numbers had increased significantly since 1980. Zimbabwe's population, meanwhile, had risen

from seven million in 1980 (Wiggins, 2004) to 10.4 million in 1992, with over 60% of the population residing in rural areas (Zimstat, 2002).

The situation was further worsened by the Economic Structural Adjustment Programme (ESAP) adopted by the government in the early 1990s. According to Moyo and Yeros (2004), the result of this policy was increased trade deficits and inflation, deindustrialisation, the fall in GDP by 17% and, by 1995, a two-thirds drop in real wages, and increased job losses in both the private and public sectors. ESAP was thus accompanied by an erosion of farm incomes due to the rising costs of production. Peasant farmers were more adversely affected by the ESAP than large scale commercial farmers who were able to take advantage of ecotourism, horticulture and ostrich husbandry, due to trade liberalisation and access to export markets.

According to Zikhali (2008), in the year 2000, the government of Zimbabwe launched the FTLRP as part of the on-going land reform processes. The programme received mixed reactions worldwide, with admiration for such a bold move from the world's marginalized communities on the one hand and, on the other hand, condemnation from other sectors of the international political community, who sympathised with the former white farmers (Chitsike, 2003). Kapuya *et al*, (2010) further mentioned of the lack of a well-defined policy led to ill-defined overall development strategy and unstructured institutional entities and arrangements.

The FTLRP resulted in agrarian changes from mostly white-owned large-scale commercial farms to black-owned smallholder farms under the A1 villagised and A2 small to medium commercial farms. The programme reduced commercial farms to an average of 500 hectares from 2000 hectares. The government modified the resettlement models A, B, C and D of the Phase 1 to A1 and A2 farm models created prior to the donor conference of 1998 (Matondi and Dekker, 2011).

Model A1 is composed of smallholder farmers living in a villagised or self-contained manner. The A1 Self-Contained scheme was discontinued in 2005, and this scheme is now classified as an A2 small scale model. On the ground, resettled farmers continue to describe or label this settlement scheme as A1 self-contained. The main purpose of this scheme, particularly the villagised set up, was to reduce land pressure in the overpopulated communal areas. The A1 farms are largely under state administration, with the possibility of the offer being withdrawn at any time. In such cases, the government has no compulsion to compensate the farmer for any improvements made.

Model A2 is composed of individual plots of land classified as small, medium and large scale commercial schemes. The defining feature in the A2 farms was the enactment of the 99 year leases. The leases provided for the purchase of existing improvements on the farms by the farmers as well as for the farms to be used as collateral for borrowing from banks.

Chimhowu *et al.* (2010) stated that in the early years, from 2000, Zimbabwe experienced a sharp decline in foreign currency inflows leading to low production of agricultural inputs and equipment, resulting in a significant decline in crop yields. The Zimbabwe Vulnerability Committee (ZimVac) (2009) mentioned that the FTLRP further contributed to shrinkages in Gross Domestic Product (GDP). Productivity reduced as institutions were operating below their potential, leading to poor uptake of productive farm technologies. However, Zikhali (2008) argued that analyses of Zimbabwe's earlier land reform programs suggested that the programs increased the income of the beneficiaries and reduced their income variability (Kinsey 1999). Deininger *et al.* (2004) found a positive, though modest, economic return for land reform programs prior to the FTLRP. This suggests that policies aimed at fighting poverty may improve agricultural productivity.

2.4.1 Agricultural Policies during the FTLRP

According to Kapuya *et al.* (2012), after 2000, the government was directly involved in the agricultural sector financing agricultural production through the Reserve Bank of Zimbabwe (RBZ). This was influenced by the international community that shunned the controversial land reform programme. Zimbabwe's policies on the grain and beef industries shifted to state-controlled markets, which were argued to achieve and ensure food self-sufficiency, while keeping prices low for consumers. Some of the agricultural policies delivered results particularly the Food for Work where community members around the country were involved in community development projects for food aid.

However, due to the unstable political climate the country developed many policies but most were never implemented. As a result, with no formal agricultural policy, initiatives were based on political reactions to the situation in the country. In 2009, with the establishment of the inclusive government, controls and direct government interventions were slowly abandoned. In 2013, Zimbabwe adopted a new economic blue-print called the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset) (Zim Asset, 2013).

2.4.2 Land Tenure Systems in Zimbabwe

Land tenure systems are rules invented by societies to determine the use of resources and the validity of using the resource (Mulale *et al.*, 2013). Rules of tenure define how property rights to land are to be allocated within societies. They define how access is granted to rights to use, control, and transfer land, as well as associated responsibilities and restraints (Matondi, 2008). However, in customary tenure systems, ownership security may be risky and details unclear. Risk demotivates farmers from developing their farms. Inheritance rules are also typically conservative and exclude women from possessing land. Further, the government legislation is unreliable in seeking sound institutional methods that provide security for owners and tenants (Ellis and Freeman, 2004).

According to Matondi, (2008) there were four land tenure policies in Zimbabwe. The first was the Land Acquisition Act which allowed for the obligatory acquirement of commercial farms for land reform purposes and thus created uncertainty for new settlers as it was felt that this could work against them someday. The second was the Gazette Land Act of 2006 which validated the A1 and A2 offer letters and supported the expulsion of illegal settlers. The third was the Agricultural Land Settlement Act which prohibited occupiers from giving their land to any one without Ministry approval. The fourth was the 99 year lease agreement for individuals and the 25 year lease agreement for wildlife farms, subject to the stipulations like productivity and certain payments. The lease vested land ownership in the state.

On A1 farms, permanent assets were owned by the state and homesteads while the former farm houses were used by civil servants as schools and clinics. For productive infrastructure, land recipients were expected to share their infrastructure, with farmers meeting the costs. The A2 beneficiaries had sole responsibility of all fixed assets and access to productive infrastructure was done through the ministry. Shared infrastructure (assets), including irrigation, in A1 and A2 resettlement schemes were thus a major source of conflicts among farmers (Matondi, 2008).

2.5 Institutions/Committees responsible for NRM in Zimbabwe

In terms of section 71(First Schedule) (6) of the Rural District Act, a Rural District Council (RDC) shall take measures for the conservation of natural resources within its area of jurisdiction. The RDC shall strengthen community based development structures to help rural communities to engage in economic activities that enhance household incomes and food security. For effective management of the environment, the RDCs are obliged to establish Conservation

Committees which oversee the management of the environment (FAO, 2003). The RDC also works with the Environmental Management Agency (EMA), Zimbabwe Republic Police (ZRP), Forestry Commission (FC), Traditional Chiefs, Department of Parks and Wildlife, and Agritex (Capacitation of RDCs Workshop, 2010).

2.5.1 Environment Committees, Sub-Committees and Monitors

Environment Committees (ECs) are established in terms of section 61 of the Rural District Act (CAP 29:13) [REVISED EDITION 2003]. According to outcomes of the Capacitation of RDCs Workshop (2010), ECs were to ensure that conservation works are put in place and well maintained; inform EMA of problems and progress of any necessary conservation work in the area; carry out environmental awareness; approve all environmental projects; and promote ecological sustainable development. The RDCs assist in monitoring the Environment Sub-Committees (ESCs) activities in carrying out environmental assessment and facilitating the prosecution of environmental offenders with the assistance of resource monitors (FAO, 2003).

2.5.2 Environmental Management Agency (EMA)

The Environment Management Act, 2002, (Chapter 20:27) provided for the establishment of the EMA. The Agency is managed by the Environmental Management Board which is composed of experts from various areas e.g. environmental planning and management, environmental economics, waste management, soil science, and water and sanitation. There is also legal representative of the Ministry of Environment and Tourism (Environment Management Act, 2002).

The EMA is responsible for developing guidelines for national plans, Environmental Management Plans (EMPs) and Local Environmental Action Plans (LEAPs); and regulating, monitoring, reviewing and approving Environmental Impact Assessments (EIAs). The EMA provides technical advice to the ECs and ESCs; organises joint environmental conservation awareness campaigns; assists ECs in the formulation of by-laws and ensures that ESCs are either resuscitated or established. The resource monitors directly report to the EMA; facilitate the prosecution process of environmental offenders by the EMA; are involved in day to day monitoring of the resources; report all environmental issues observed to the EMA and are selected in consultation with the EMA (Government of Zimbabwe, 2002).

2.5.3 Zimbabwe Republic Police (ZRP)

The ZRP Central Offices in all ten provinces of Zimbabwe have a section which focuses on rural cases. The officers are deployed to enforce the national laws in the Constitution under the Forest Act around the districts and monitor cases surrounding the welfare of natural resources. The Forest Act classifies offences into three groups: major, minor and miscellaneous, to help in the enforcement of these laws (Government of Zimbabwe, 1954).

2.5.4 Forestry Commission (FC)

The Forestry Commission is the state agency responsible for monitoring forest usage in Zimbabwe under the Forest Act (1954) (for gazetted forests) and the Communal Land Forest Produce Act (1987) (for communal areas). In private farms the Forestry Commission is responsible for overseeing the quotas but the farmer decides on the usage. The regulation of trade in forest produce is vested in the Forestry Commission (Government of Zimbabwe, 1954). In communal areas, the RDCs supervise concession agreements on the advice of the Forestry Commission (Katerere, Moyo and Mujakachi, 1993; Katerere, Guveya and Muir, 1999). However, in most instances, local communities are sidelined and receive inadequate benefits because they lack control over the management of these concessions.

In terms of the Communal Land Forest Produce Act (Chapter 19.04), communal residents have the right to make personal use of any forest produce including reserved trees, on any land which they legally use for settlement or agricultural purposes (Government of Zimbabwe, 1975a). According to Katerere, Guveya and Muir (1999), the Communal Land Forest Produce Act is vague, making it difficult to establish for legal purposes, what is classified as an exception. This makes regulating harvesting a challenge.

The other acts governing forest usage are the Rural District Councils Act (1988), and the Natural Resources Act (1941). The Rural District Councils Act also vests power in the RDC to issue licenses for the exploitation of timber resources (FAO, 2003). The formal bodies undermine the power of traditional leadership structures and local community initiatives.

2.5.5 Traditional Chiefs

In terms of section 5 (1) of the Traditional Leaders' Act, traditional leaders are responsible for ensuring that land and its natural resources are legally utilised, preventing the degradation and abuse of land and natural resources in the process (FAO, 1998).

2.5.6 Department of Parks and Wildlife

According to the Protection and Conservation of Wildlife Comptroller and Auditor-General, (2003), the Parks and Wildlife Management Authority falls under the Ministry of Environment and Tourism and it is administered by the Director of National Parks and Wildlife Management.

The Parks and Wildlife Act (Chapter 20:14) governs the Authority. The Act provides for the establishment of the Parks and Wildlife Board, the preservation and control of wildlife, fish and plants of Zimbabwe and the protection of her natural landscape scenery. All institutions that consume and utilize wildlife are compelled to submit proposals for quotas to the Authority for approval. The Authority is mandated to protect all wildlife against illegal activities (Government of Zimbabwe, 1975b).

2.5.7 Department of Agricultural, Technical and Extension Services (Agritex)

In Zimbabwe, extension services were initiated by E. D. Alvord who was the Agriculturalist for Natives, in the Native Affairs Department in 1926. Due to his efforts at the two technical schools, Domboshawa and Tjolotjo, the first demonstrators completed their training in 1927 and officially began work in the reserves. The Department of Conservation and Extension (Conex) and the Department of Agricultural Development (Devag) were established. Conex was responsible for providing advisory services to white commercial farmers, while Devag serviced black smallholder farming communities (Hanyani-Mlambo, 2000).

Initially, the view commonly held by settlers was that Africans were poor agriculturalists and that the later deterioration of land in the reserves resulted from an inherent inability to adjust their agricultural techniques as the need arose. However, the viability of peasant techniques did not go unnoticed, with many settlers actually adopting African methods. Over a number of years, a fairly comprehensive Master Farmer training scheme was established which enabled successful African participants to qualify for a smallholding in the African purchase areas (Kramer, 1997).

A fundamental change to the agricultural extension services, which is worth noting, occurred at independence in 1980. It was the merging of Conex and Devag to form the Department of Agricultural, Technical and Extension Services (Agritex). Agritex has mainly focused on providing agricultural extension services to the smallholder-farming community and providing services to large-scale commercial farmers on request (Hanyani-Mlambo, 2000).

Agritex has a large organizational structure but the Extension Officers (EOs) play a pivotal role in the department and farming community. The role of the EO is diverse. Ultimate success or failure of the extension service rests with the EO's performance in demonstrating to farmers. This is a function of the following factors: the knowledge he possesses and its relevance; the back-up services supporting him; his ability to engage in two way communication with the rural community; and the political climate (Kramer, 1997).

However, there were numerous resignations initially due to racial considerations and up to the present day, there have been increasing resignations attributed to dissatisfaction with the conditions of employment as salaries have fallen considerably in real terms and are much lower than those offered in the private sector (Agritex Report, 2013). Numerous middle and senior management level posts within Agritex have remained unfilled, and a large proportion of management staff had less than five years' experience (and in many cases no field experience), although they possessed suitable academic qualifications (Kramer, 1997).

Farmers have frequently complained that Agritex is not providing new technologies as the recommended technologies are considered impractical or out of date (Mattocks and Steele, 1994). Therefore, NGOs are playing an increasingly important role in agricultural extension and research in a country with a weak institutional infrastructure (de Treville, 1991; Mattocks and Steele, 1994).

2.6 Conclusion

The chapter summarized some of the global debates and studies of various issues surrounding NRM. It then focused on Zimbabwe particularly on resettlement areas. This gave an insight to the views of various writers on the strengths of institutions and possible gaps for further studies and improvement from different perspectives. The next chapter narrows the topic on NRM to Kwekwe district of Zimbabwe giving full details of the status quo.

CHAPTER THREE: RESEARCH CONTEXT A RICH PICTURE

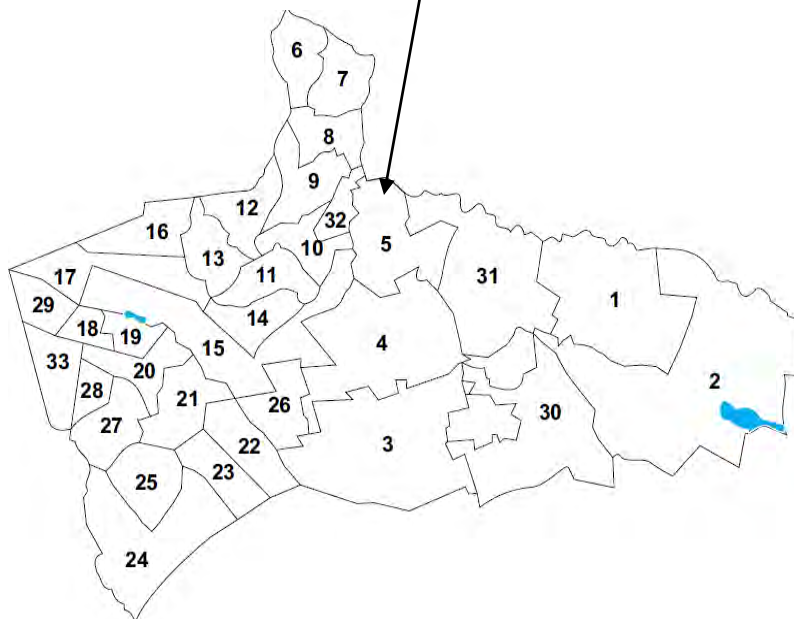
An overview of the geography and historical background of the study area, Kwekwe district, is provided in this section. The livelihood activities of various rural communities, particularly FTLRP resettled areas, are then discussed. Information is drawn from field visits and from literature, where appropriate.

3.1 Geographical Background

3.1.1 Kwekwe District

The field work for the study was carried out in Kwekwe District in the Midlands Province of Zimbabwe. The district is approximately 68km North of Gweru (the Provincial Capital) and equidistant from the capital city and second largest city of Harare and Bulawayo, respectively, stretching from East to West (EMA Report, 2013). It shares boundaries with Chirumhanzi district (East), Nkayi district (West), Gokwe district (North West), Kadoma district (North) and Gweru district (South) (Map 3.1).

Kwekwe district has a total area of 886 649 hectares (8866, 49km²) distributed between seven urban wards and 26 rural wards. The district is comprised of three Local Authorities, namely Municipality of Kwekwe, Municipality of Redcliff and Zibagwe Rural District Council (responsible for the whole rural part of the district). The urban wards include part of ward 1, wards 6, 7, 8, 9, 10 and 14. The remainder are rural wards (Map 3.1). The seven resettled wards under the FTLRP are part of ward 1, ward 2, 3, 4, 5, 31 and 32 (Map 3.1). The resettled area constitutes the highest percentage of the total rural area of the district whilst the communal area covers a small percentage (Agritex Report, 2013). This research sampled three resettled wards, namely ward 31, 2 and 3 which were representative of each land reform model.



Map 3.1 Location of Kwekwe District and its Wards (Google Maps and Zibagwe RDC)

The main part of the district falls in Agro ecological zone III and the smaller part in zone IV. Agro ecological zone III is a semi-intensive farming region prone to sporadic seasonal droughts,

long-lasting mid-season dry spells and the unpredictable onset of the rainy season. It receives an annual rainfall of between 500mm and 700mm. Agro ecological zone IV is subject to drought and dry spells in summer, rendering the region unsuitable for arable farming but favourable for semi-extensive beef production. It receives rainfall of less than 450mm (Agritex Report, 2013). Zone III constitutes 73.8% of the land space whilst zone IV constitutes the remaining 26.2%. The arable area constitutes 69.3% of the total area and Kwekwe hinterland is also agriculturally rich, ranging from cash crops to livestock production. The district is endowed in rich mineral deposits such as gold, nickel and iron (EMA Report, 2013).

There are quite a number of social and economic activities which are carried out around the district but most of them revolve around mining (Parliament Research Department, 2011). The area is made up of old resettlement areas, small to large scale commercial farming areas and A1 and A2 farms from the FTLRP. This research focused on the farmers resettled under the FTLRP.

Like many other districts of Zimbabwe, Kwekwe experienced resettlement activities under the FTLRP (Moyo, 2011). In the years 2001 and 2002, 1487 farmers were resettled under the models A1 and A2, respectively (Agritex Report, 2013). Farmers in the A1 villagised areas have 6 hectares of gross arable land and 0.5 hectares of residential land with common grazing areas. The A1 self-contained farms are around 30ha. A2 farms and small to medium commercial areas range from 30ha to 300ha in size (Agritex Report, 2013).

The resettled community receives aid from the government only as NGOs shunned them, instead targeting the previously resettled areas (Agritex Report, 2013). The calibre of resettled farmers varies from subsistence farmers to affluent businessmen and politicians. Most of the resettled farmers in model A1 came from Kwekwe District but model A2 is a 'mixed bag' with most people coming from outside the Midlands Province. The cultures and church denominations are represented in the area i.e. Christians, Muslims, and African Churches and Traditionalists (Agritex Report, 2013).

While some new farmers were quite productive in agriculture, the majority were not performing well because they lacked the capital to sustain the sizes of operations which were taking place on the farms they took over (Agritex Report, 2013). This worsened as the government was unable to finance all the farmers due to economic hardships and the refusal by the international community to intervene (Chimhowu *et al.*, 2010).

The rural part of Kwekwe District which the research focused on is called, and falls under, Zibagwe Rural District Council which stretches into two parts of the district, namely Kwekwe North and Kwekwe South.

Kwekwe North

Kwekwe North is the area lying between the Sebakwe and Munyati Rivers. It stretches from the confluence of the Sebakwe River and the Munyati River in the west and to the east to Mvurachena area and the Conservancy farms.

The two major rivers found in this part of the district are Munyati, Sebakwe and their tributaries. The area has various soil types varying from sandy loams, to black and red clay soils which are fertile. Dominating rocks found are granite and the area has small mountains. Sodic soils are found adjacent to water sources in gneissic granite regions.

Dominating tree species are *Mopane*, *Mutondo*, *Mususu* and *Mubhondo* while the dominating grass species are *Heteropogoncontontus*, *Sporoboluscocladas* and *Hyphaeran* thatch grass. The farmers in the area grow a wide range of crops on a small scale for household consumption and a little surplus for sale, and cash crops (Agritex Report, 2013). The study area, namely Ward 31 that was sampled is in Kwekwe North.

Kwekwe South

Kwekwe South lies within the Southern part of Sebakwe River with Mvuma District marking the Eastern boundary. Gweru district marks the Southern boundary, while Sessombi zone creates the final boundary to the West. There are three major rivers, namely Sebakwe, Kwekwe and Mbembezane. These used to be perennial rivers but they are now seasonal due to massive siltation taking place. The major dams are Sebakwe, Mbembezane and Chengun'u.

Granite and dolerite constitute the parent material of the bulk of the soils in the area. The soils fall within the *Regosol* and *Lithosol* group and have appreciable reserves of weathered rocks. The area has red soils on the central part with sand to sand loams on the eastern part. These soils are generally moderately shallow, greyish brown, coarse grained sand throughout the profile to similar sand loams formed from granitic rocks. The permeability is good with moderate erosion taking place.

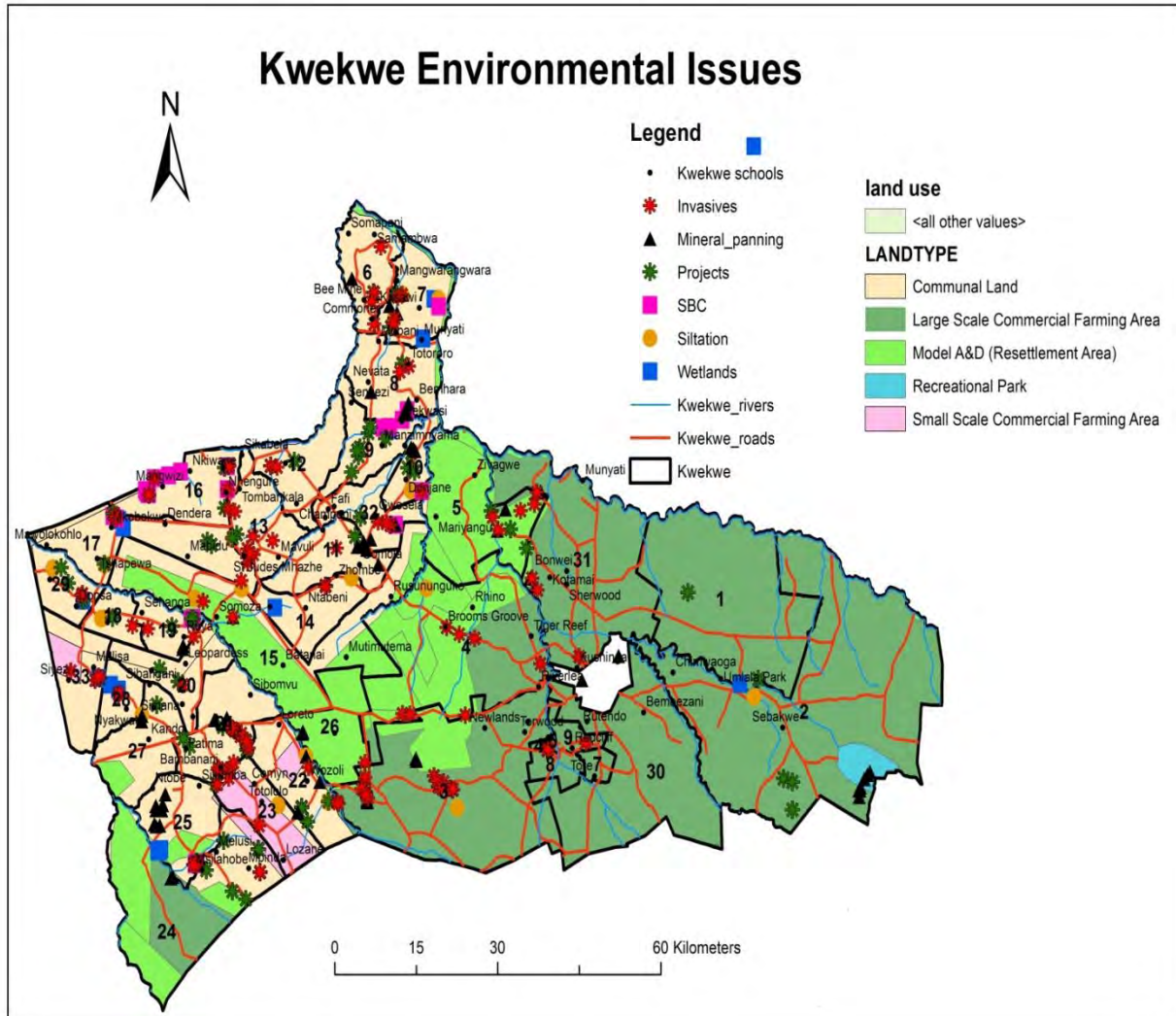
The dominant tree species are *Brachystegia* species, *Acacia* species, *Terminalia* species and *Colophospermum mopane*. The *Acacia* species indicates heavy soils, the *Terminalia* species indicates deep soils and the *Mopane* indicates shallow soils, prone to water logging. The dominant grass species are the *Hyperrhenia*, *Heteropogon* and *Eragrotis* species (Agritex Report, 2013). The invasive species that was quite common in most wards was *Lantana camara* (Plate 3.1; EMA Report, 2013). The study areas that were sampled, Ward 2 and 3, are in Kwekwe South.



Plate 3.1 *Lantana camara* spreading all over the forests in Ward 3 (Photo: Mumanyi, 2013)

3.2 Environmental Issues

The economic activities in Kwekwe district revolve around mixed farming of crop and livestock farming. The district has huge reserves of gold and iron. As a result, the district has a large industrial area to process iron and many gold mining activities that are of great concern to the natural environment (Map 3.2).



Map 3.2 Kwekwe District Environmental Issues (adopted from EMA Report 2013)

According to the Ministry of Lands and Resettlement, the Ministry demarcated the land for the FTLRP. The land that was allocated comprised newly acquired land (taken from the previous owners) and repossessed land taken from white commercial farmers. There were plans to continue the resettlement people in the future for sustainability. The resettled areas under the FTLRP in Kwekwe district are part of the areas that used to be Large Scale Commercial Farming Areas (Map 3.2).

According to the Agriculture and Natural Resources Officer at the RDC, agriculture was the main form of livelihood in the resettled community. However, mining activities were widespread across the district as the second greatest form of livelihood. There were, therefore, serious cases

of land degradation since the land was not rehabilitated after mining activities had taken place (EMA Report, 2013).



Plate 3.2 Illegal mining site in Ward 33 (adopted from EMA Report, 2013:1)

Common wild animals that were problematic in destroying crops were warthogs and baboons with the latter, at times, hunted for their meat. Some animals like snakes, wild dogs and hyenas were killed for safety reasons as they were deemed to be dangerous to people and their domestic animals.

The crops that were grown in the resettled communities were tobacco, sweet potatoes, Irish potatoes, maize, wheat, barley, sorghum, rapoko, millet, cotton, soya beans, sunflowers, round nuts, cowpeas and sugar beans. There had been a downward shift in hectarage of paprika, soya beans, cotton, wheat and barley from what was grown by previous commercial farmers. Groundnuts were usually in surplus due to lack of markets. The community preferred cultural (indigenous farming management practises) to chemical control (use of herbicides and pesticides) of diseases, weeds and pests. Crop rotation and intercropping were thus quite common. Hand control (weeding) was also quite common in most areas. Inorganic fertilisers were very common

in these communities and any high yields in these communities could be attributed to their use (Agritex Report, 2013; Zikhali, 2008). Food gardens were found in areas with high water tables and those close to rivers and dams. The gardens were fenced with materials from the forests since they were easily available and some of the farmers could not afford to purchase wire fencing (Plate 3.3).



Plate 3.3 A food garden with fencing and trellises made of wooden material from the forest in Ward 3 (Photo: Mumanyi, 2013)

The livestock that were being domesticated in the area included cattle, goats, poultry, pigs and sheep. The former Large Scale Commercial farmers in Kwekwe district used to practice intensive mixed farming of beef and crop production but due to changes brought about by the agrarian reforms, there was a slight shift down as land sizes were reduced in an effort to accommodate as many families as possible (Agritex Report, 2013). According to the Livestock Department Officer, the average carrying capacity in the district was estimated to be 1:8 (one livestock unit to 8 hectares of land).

Both the Head of Agritex and observations indicated that the traditional leadership (chiefs and headmen) set up was quite weak, especially in the A1 self-contained and A2 communities where most farmers did not know have any chief to account to. These communities acknowledged that formal institutions, including RDC, EMA, Agritex, ZRP, FC, and Department of Parks and Wildlife were responsible for NRM in their communities. However, in the A1 villagised communities, the traditional set up was still existent and functional with the assistance of the formal institutions previously mentioned. The existing traditional set up in these communities acknowledged and showed great appreciation of the roles of formal institutions in conserving natural resources through awareness campaigns and enforcing rules and regulations.

According to three chiefs from the district, the communities made their living from diversified livelihood sources. Some households relied on remittances from their spouses, relatives and employers in urban areas. Wild products were gathered and animals hunted, especially by herd boys who spent most of the time with their animals in the forests. Women were involved mainly in gathering firewood but could also harvest wild products.

The chiefs emphasised that the new villagised communities were not allowed to fell living trees for firewood or any other purpose. They were only allowed to collect and use dead trees that were found in the forests. However, for those who needed to create some space for settling, agriculture or any other purpose, they could seek permission from the traditional leaders. There were heavy fines and laws that were established in the past, to promote the conservation of the surrounding natural resources.

On the importance of indigenous knowledge, there were still some sacred places in the community e.g. Mabodo area in Ward 31. Unexplained things were believed to happen there if anyone went there and failed to follow the traditional rules of the place. The term '*Mabodo*'

means three legged pot in the native Shona language. It was believed that there were golden pots that could be seen there from time to time and would then disappear and that huge python snakes could appear in large numbers if the rules were violated. These myths helped to keep the natural resources intact up to the present day.

Deforestation and veld fires (Plate 3.4) were on the rise in the resettled areas, but the need to adopt a more integrated approach to resource management using participatory methodologies, e.g. involve NGOs, was hindered by lack of funding, especially from the international community.

3.3 Population Dynamics in the FTLRP Community

In some farms, the land owners and their families lived in urban areas (Kwekwe, Gweru, Masvingo, Bulawayo, Harare and even abroad in South Africa) and visited the farm with or without the family. The frequency of the visits depended on the time of the year and the distance from the farm to where they worked and lived. These families did all the purchases of inputs and farm machinery. They harvested only a little from the natural environment for their families in urban areas. These families hired other families (father, mother and their children) from the communal areas (mainly Gokwe, Kwekwe and Gweru rural), who stayed at the farm providing labour and in turn getting shelter, food and income. This group monitored the farm and were directly exposed to natural resources. However, in some households, the owners themselves stayed at the farm and even allocated some pieces of land to their own children and their families (Appendix 5.3). There were also former farm workers who benefitted from the FTLRP (Appendix 5.2 and Appendix 5.3).

The lack of the sense of ownership by many community members was the main reason behind the poor housing structures made either from wood, mud or bricks that were seen in some farms (Plate 3.5). The existing land tenure systems demotivated the farm owners from developing their farms because of insecurity of tenure. The situation was further worsened by the fact that the farm owners were not living at the farms most of the time. However, well-developed homesteads were found around the study areas where the owners themselves stayed on the farm (Appendix 5.3).



Plate 3.4 The aftermath of a veld fire (Photo: Mumanyi, 2013)



Plate 3.5 A2 Homestead in Ward 31, built from bricks and wooden materials due to insecurity reasons (Photo: Mumanyi, 2013).

Some women were left responsible for the family by their husbands who claimed to be ‘seeking greener pastures’. This had consequences of poverty on women and youths. The women

therefore struggled to care for their families on their own and utilized a variety of strategies to bring in income. Some youths abandoned farming for mining, poaching and looking for better opportunities in urban areas.

3.4 Conclusion

This chapter gave a clear picture of NRM from different levels namely community and institutions. It further described the flora and fauna which were of importance, establishing a rich picture of resources used for livelihood enhancement in the study area. The next chapter describes, explains, and discusses the research methods and methodology that was used to meet the set objectives.

CHAPTER FOUR: RESEARCH METHODOLOGY

The task of the method was to investigate the patterns in the dynamics of livelihood strategies and natural resource use by the beneficiaries of fast track resettlement spaces. The field work for this investigation was conducted in Kwekwe District of the Midlands Province in Zimbabwe between the period August 2013 to March 2014. A mixture of techniques allowed the researcher to deliberately explore contextual conditions (Yin, 2003). In this chapter, the method is described, demonstrated, critiqued and supported with evidence included in the Appendices.

4.1 Research Design

The research aimed to explore the NRM mechanisms in the post-FTLRP settlements in Kwekwe district of Zimbabwe. In this investigation, the phenomenon identified was the emergent livelihood behaviors of farmers related to natural resource use and influenced by land reform processes. To assess the situation effectively, the main problem was sub-divided into three sub-problems (Table 4.1). The first question sought to identify the culture (indigenous knowledge systems, attitudes, and values), the emerging forms of NRM practices, and the impacts of culture and the emerging forms of natural resource use on NRM. The second aimed to establish the farming background status, farming practices of the resettled farmers, and the impacts of the farming background status and farming practices on NRM. The third attempted to identify and evaluate the roles and challenges of the policies and institutions responsible for NRM, agriculture and food security. Primary sources used were semi-structured interviews, household surveys and observations, while secondary data included literature and document reviews.

4.1.1 Sub-problem One: Variables or Factors (Table 4.1)

The investigation focused on the culture which was defined as the indigenous knowledge, attitudes, and values shared by the newly resettled community that formed their livelihood activities. The research investigated the emerging forms of Natural Resource Management (NRM) practices that accounted for livelihood activities directly linked to natural resource use in these communities. The impacts of culture and the emerging forms of natural resource use on NRM were used to identify a vulnerability context for groups (youth, women and former farm workers) and assets, post resettlement.

Table 4.1 Framework for an appropriate method

Research Sub-Problems	Method	Analysis
1. To identify the culture, the emerging forms of NRM practices, and the impacts of culture and the emerging forms of natural resource use on NRM.	Primary Data was collected through Household questionnaires, Interviews with Key Informants (Agritex, RDC and Traditional Leaders).	The analysis was a comparison of existing norms and behaviors to a framework of legal and theoretical understandings of sustainable NRM. Interviews provided a rich picture in narrative form of events, community level institutions, responses to public interventions and perceptions about relationship of culture and emerging forms of NRM. Data provided evidence of dynamics and the patterns that emerged.
	Secondary information was collected through Documents from Government, Agritex, EMA and RDC.	Review of Literature from books, journals, and documents provided information from previous and current studies and debates on the sub-problem to compare with the findings of this research.
2. To establish the farming background status, farming practices of the resettled farmers, and the impacts of the farming background status and farming practices on NRM.	Primary Data was collected through Household surveys with the use of questionnaires and personal observations.	The analysis was descriptive, showing the patterns of natural resource use against known livelihood strategies (e.g. harvesting wild foods) identified in the literature and through observation. The Household survey gave a general perception of various individuals across gender, age groups and cultural groups about the sub-problem. The researcher made some personal observations that were used to connect the data from different sources during analysis.
	Secondary Data was collected through Documents from Government, Agritex, EMA and RDC.	Review of Literature from books, journals and documents provided information from previous and current studies and debates on the problem to compare with the findings of the research.
3. To evaluate the intentions between policy and institutions (agenda) and the perceived influences for natural resource use from the communities perspective.	Primary Data was collected through Interviews with Key Informants (Agritex, RDC and Traditional Leaders).	The analysis here identified policy, institutions and implementation and compared these to the perceptions of the stakeholders. Interviews provided a rich picture in narrative form of events, community level institutions, responses to public interventions and perceptions about the roles and challenges of various stakeholders.
	Secondary Data was collected through Documents from Government, Agritex, EMA and RDC.	Review of Literature from books, journals and documents provided information from previous and current studies and debates on the problem to compare with the findings of the research.
	Focus group discussions were done with Extension officers, and elders from the A1 villagised farms.	The focus group discussions established perceived roles and challenges of extension services in delivering policy intentions. They compared the perceived roles with farmers' experiences.

4.1.2 Sub-problem Two: Variables or Factors (Table 4.1)

The farming background status was established by farmers' exposure to agriculture education and training prior to resettlement. The practices of the farmers were investigated and documented by looking at farming activities (crops grown, tillage methods used, domestic animals reared). The impacts of the farming background status and farming practices on NRM were identified by linking the strategies described by farmers to known classifications (from literature) of natural resource use and abuse. This contributed to a picture of the vulnerability of the environment itself from farming practice.

4.1.3 Sub-problem Three: Variables or Factors (Table 4.1)

This sub-problem aimed to identify the roles of the policies and institutions responsible for NRM within an agricultural community. The analysis showed the perceived intentions of policy by officials and then compared the perceived ability to implement policy by officials against grass roots behaviour. This identified challenges to governance within the context of NRM in the field.

4.2 Description of Population and Sample

4.2.1 Identification of the Population

After independence from British colonial rule in 1980, Zimbabwe carried out three resettlement programmes. The first was the Land Reform Phase 1 which stretched from 1980 to 1990 after the Lancaster House Agreements (Moyo, 2011), followed by the second phase/period from 1990 to 1997 (Moyo, 2011) and lastly the third ongoing process which commenced in the year 2000 called the FTLRP (Zikhali, 2008). According to the Agritex Report, (2013), the rural part of Kwekwe district is made up of old resettlement areas, small to large scale commercial farming areas, and A1 and A2 farms from the FTLRP.

The total population of this research represents the beneficiaries of the FTLRP. The FTLRP used two models of land ownership identified as the A1 farms (villagised and self-contained) and A2 farms. This investigation focused on beneficiaries resettled in Kwekwe district and deliberately represents an example of each of the three types of land use within the two different models of A1 farms and A2 farms. Farmers in the villagised A1 areas have 6 hectares of gross arable land and 0.5 hectares residential land with common grazing areas. The A1 self-contained farms have plots that measure up to 30 hectares. The A2 farms range from 30 hectares to 300 hectares in the medium farming areas (Agritex Report, 2013).

4.2.2 Selection of Sample

There were quite a number of newly resettled communities in the country, thus a decision had to be made about who would actually participate in the study at national, district and ward level. Kwekwe district was chosen for research in Zimbabwe because of mixed farming practices and the gold-rich Great dyke belt that attracted diversified livelihoods activities, particularly direct from the physical environment (EMA Report, 2013). This made the district representative of other districts with specialized farming practices and natural resources of economic importance.

With the assistance of the Head of Agritex, three wards were selected out of the total seven resettled wards under the FTLRP in the district. The seven resettled wards were ward number 1, 2, 3, 4, 5, 31 and 32 (Map 3.1). The three wards sampled (31, 2 and 3) provided the researcher experience with all the existing models of the FTLRP.

Household (HH) Selection: In each of the three wards, 60 household farms (30 A1 farms and 30 A2 farms) were randomly selected and interviewed. This meant that one hundred and eighty questionnaires were administered to various households in the district. The interviews targeted one individual per household who was available; either household heads, their spouse or children over 18 years. Therefore, in this study, N represents the total number of respondents (180) and n represents the number of individuals from each A1 or A2 group within a ward (30).

Key Informant Selection: When seeking permission from the RDC to conduct research, the researcher asked the Agriculture and Natural Resource Officer for a list of institutions that they worked with in NRM. This provided a list of key informants to be interviewed (Appendix 5.1). The head of Agritex was able to provide a list of extension officers associated with the different models of FTLRP resettlement. Once wards were selected, the appropriate extension officers were included in the key informant group of respondents.

4.2.3 Definition of the Sample Respondents

The research focused on certain groups of respondents that were stated and described below:

- a) Study area – the area sampled for investigation, defined as Ward 31, Ward 2 and Ward 3 of Kwekwe District in the Midlands Province of Zimbabwe.
- b) HH respondents – representatives of a selected household who responded to the questions administered, in this case the household heads, their wives or children over 18 years of age.

c) Key informants – stakeholders and professionals who supplied the information from their observations or personal experiences because of their long history (more than five years) and positions in the community. These were individuals who somehow had some authority over certain aspects of the community e.g. extension officers, chiefs and heads of departments.

d) Farmers – people who stay on and are somehow involved, directly or indirectly, in the day to day operations of a specific farm. A farm is the piece of land allocated to a beneficiary.

e) Villagised community – a small rural settlement with a compound residential area separate from fields. The community shares the grazing pastures for their domestic animals.

4.3 The Process of Accessing the Field (Figure 4.1)

Between the 6th and the 24th of August 2013, the researcher approached the District Administrator's Office to seek permission to carry out the research study. The office gave the researcher a stamped and signed letter (Appendix 4.1) that permitted him to do the research in the district. The researcher then approached the Zibagwe Rural District Council for the same purpose and was granted further written permission in the form of a stamped and signed letter (Appendix 4.2). This permitted the researcher to carry out the research in the district.

Within the same period, the researcher met with the Head of Agritex to seek assistance in selecting the wards to be sampled, to obtain district maps and be introduced to the respective extension officers of the wards. Extension officers helped the researcher with transport and directions to remote areas for data collection. The researcher finally visited the chosen wards and the extension officers introduced him to the chiefs, headmen and village heads. The researcher selected 30 farms for a pilot study to test the household questionnaire (Appendix 4.4). This provided an opportunity to make adjustments to language use, to test appropriateness of questions and check the accuracy of translations from English to Shona.

During the period between September and November 2013, the researcher embarked on interviewing the key informants (from Ministry of Lands and Rural Resettlement, Head of Agritex, RDC, EMA, Department of Parks and Wildlife, Forestry Commission, Traditional Leaders, and Zimbabwe Republic Police) using the semi-structured key informant guide (Appendix 4.3). The household questionnaires were administered to selected households in the study wards. Focus group discussions were also done with available and willing members from

the A1 villagised community. Further focus group discussions were held in March 2014 with Extension Officers.

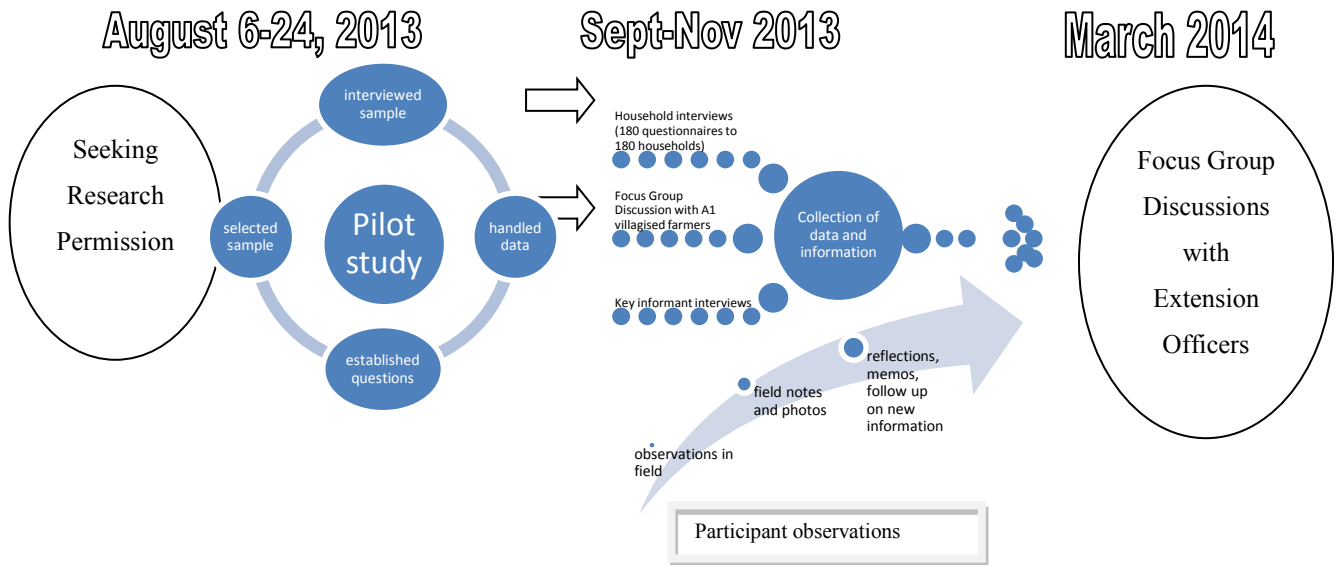


Figure 4.1 Data collection process

The researcher also took photographs, made observations, and followed up on information of interest arising from engagement in the field. Information was recorded in field notes. Data collection was completed in March 2014 when the researcher focused on interviewing and checking various documents from the extension officers.

4.4 Investigation Materials and Approaches

4.4.1 Key Informant Interviews

Key informants were mostly interviewed first in order to confirm themes and develop a general picture of the current situation. The semi-structured key informant interview guide was used for this purpose (Appendix 4.3). The respondents were asked to tell their stories, which allowed the researcher to respond to the answers of the interviewee and also to confirm themes and issues identified by respondents for further investigation, as they arose. The researcher wrote these questions and answer sessions up as field notes when returning from the field.

4.4.2 Household Questionnaires

A pilot study for testing the household questionnaire (Appendix 4.4) was conducted in August 2013, to reveal the weaknesses, if any, of the questionnaires. The weaknesses that were found were as follows: certain questions were not translated clearly and correctly from English to Shona; and some questions were ambiguous. For example the word ‘tillage’ means *kurima* in Shona which to some means farming. The questions were subsequently rephrased for the final questionnaire to highlight certain words or aspects that were more specific and relevant to the research. The household questionnaires provided a quick answer to the community livelihoods activities, their background status and the tillage methods in use. To complement this data, the semi-structured key informant interview guide provided information relating to the stakeholders, their interactions, perceptions and challenges in NRM.

4.4.3 Focus Group Discussions

The researcher focused on two groups, namely the six extension officers and the farmers who were accessible because they were available and willing to participate. The work was made easier for the researcher as the Head of Agritex managed to gather all the extension officers of the study wards at the Head Office for the interviews.

The A1 villagised community in ward 3 were chosen to share their views, perceptions and opinions in an open forum. The choice of the A1 villagised community was influenced by their proximity to each other making it possible to move door to door to talk to them. The researcher went door to door recruiting land recipients for the open forum. The Focus Group Discussions were difficult to do with the A2 farmers since the researcher did not manage to access all of them personally but was helped by Extension Officers since the households were located very far away from each other.

4.4.4 Recording

Audio recording were carried out, when allowed, to preserve audible data on oral histories and experiences. Transcripts of excerpts of these have been included in field notes. However, when recording, the researcher used a mobile cell phone which produced poor recordings. There was a lot of interference from the surrounding environment e.g. the windy conditions outside where the interviews were done interfered with sound quality. Moreover, most people were suspicious of the researcher’s intention and uncomfortable with being recorded.

4.4.5 Personal Observations through Field Visits

Local people assigned by the local responsible authorities accompanied the researcher on walks through the resettlement spaces to introduce, demonstrate practices and generally engage with the researcher around the homestead and fields of the respondents. The elderly household members were targeted to draw out their feelings, perceptions and experiences over a specific period of time. These field visits provided rich, in-depth material on how the natural resource management affected an individual's life on a personal level. Respect and maintenance of appropriate boundaries was carefully considered at all times.

4.5 Handling of Data

The data for the investigation was collected from observations, participant observations, interviews, and questionnaires. The observations and participant observations were jotted down in a note book while in the field. The household questionnaires and institution questionnaires were either administered by the interviewer who filled the form in for the interviewee or they were distributed to the interviewees who answered the questions themselves.

The focus group discussions revolved around natural resource management and included the semi-structured key informant guide to provide boundaries and direction for the conversation. These recordings were used by the researcher for transcribing relevant notes. The names of all respondents were withheld on ethical grounds unless permission was obtained from them.

Analysis of Information and Data

The full data set from field notes, questionnaires, interviews and focus group discussions have been presented in narrative form (Appendices 5.1, 5.2 and 5.3). Respondent's answers to questions were itemised using Excel, converting yes and no questions to 0's and 1's to allow for descriptive statistics and the production of graphs and charts (Appendix 5.4). Relevant selections from these results are presented in Chapter Five. Using the sub-problems as a framework, the results are discussed and the conclusions drawn in Chapter Six.

4.5.1 Research Methodology (a critique)

By studying contemporary events or phenomena, case studies permit the use of two types of evidence which are not always possible in other types of studies: direct observation and interviews with people directly involved in the phenomenon or event. The main characteristic of a case study, where an object is studied in the context in which it naturally occurs (Yin, 2003),

was fulfilled by a detailed account of the social, economic, historical, cultural, and environmental context surrounding the research, including a rich description of that environment. This promoted the transferability of the case study to other similar contexts. Moreover, the large and varied sample population increased confidence in the reader to transfer the findings to other situations. Also, it allowed the researcher to confirm consistency within results.

However, in case studies, the level of intensity (and complexity) of data analysis is usually higher than in other studies because it has to comprise multiple perspectives. The use of multiple sources of evidence imposes on the researcher a challenge to know how to carry out different data collection techniques. The sample of the three chosen wards offered the researcher the possibility to compare analysis and verification of results through triangulation. This is a powerful tool to make the findings more robust (Yin, 2003).

The sample sizes (at least three wards) used promoted comparison of results and provided an opportunity to confirm respondents' realities/perspectives. The representative samples (A1 villagised, A1 self – contained and A2 farms) used meant that the information obtained gave a glimpse into the livelihood strategies within different land ownership and organizational structures that influence natural resource use and farming practice. Using both qualitative and quantitative handling of data encouraged more logical interpretations of the situation from different angles.

To improve the process of completing this investigation in terms of dependability, credibility and transferability, the research was carried out in three wards representing the three types of the FTLRP settlements. To further improve the research, it could be done in all five of the agro ecological zones of the country since they have different natural resource composition. The research could also be done by more than three researchers as a survey and as a case study to validate the results.

4.5 Conclusion

The chapter described the methods and methodology that were used for this research. These were then explained in detail to give a clear picture of what exactly was done. The reasons for adopting them and their weaknesses were explained. The next chapter then presents and describes the findings of the research using these research methods and methodologies.

CHAPTER FIVE: PRESENTATION OF RESULTS

In this chapter, results drawn from the full data set (Appendices) are presented as evidence for findings around the three sub-questions of this research. The purpose of the investigation was to describe the experiences of people post-resettlement in pursuing livelihood activities that utilise the natural resource base.

5.1: Sub-problem One: Natural Resource Management

In sub-problem one, the question was to identify the emerging forms of Natural Resource Management (NRM) practices and the culture (indigenous knowledge systems, attitudes, and values). The researcher was interested in understanding how the emerging forms of natural resource use and culture impacted on NRM. To achieve this, it was necessary to identify the relationships between what people know how to do and what they see as an opportunity for accomplishing livelihood goals through using the natural resources available within their farming contexts.

Respondents felt vulnerable from a farming perspective, stating an unstable economic environment and unreliable rainfall for their lack of food production. In Chapter 3, (section 3.1.1) the vulnerability context of farming as a livelihood option has already been described. When asked what respondents would do if their farming production was not sufficient to meet their food needs, a variety of responses were presented (Table 5.1). These coping strategies were quite uniform in all three wards.

Table 5.1 shows that in all three wards, most households would opt to increase the area under cultivation and establish nutrition gardens to improve food availability, either for the following season or in case of unpredictable weather. Some would establish woodlots and fence them, thus declaring ownership of the resource. Also observed was the planting of exotic trees (e.g. mango, orange, avocado) to provide food and income for the family (Plate 5.1).



Plate 5.1 Young exotic trees protected from domestic animals by wooden materials (Photo: Mumanyi, 2013).

Gold mining activities were an option for a significant number of respondents, particularly in Ward 31 mainly because the area has abundant reserves of gold, providing quick cash. However, since unregistered mining activities are considered by traditional authorities, ZRP and EMA as illegal, the responses do not exactly suggest that (Table 5.1). However, individuals were reluctant to admit to illegal mining activities, causing a difference between observation of mining activity by the researcher and the lack of acknowledgement of these activities by the respondents (Table 5.1).

Table 5.1 Coping strategies for farming challenges (Drawn from Appendix 5.4)

Coping strategies	Number of households					
	W31		W2		W3 A3	
	A1	A2	A1	A2	A1	A2
Increase area under cultivation	14	19	11	18	9	11
Establish a woodlot (planting trees)	14	16	8	3	13	8
Establish a food garden	17	14	4	4	24	11
Mining and panning minerals	6	4	9	5	13	9
Sand Extraction	-	1	4	-	3	1
Cutting and selling wood/timber	-	3	6	4	4	4
Selling wild fruits, insects and mushrooms	-	-	1	1	-	-
Hunting wild animals	1	3	1	2	-	-
Arts and crafts	-	-	-	1	1	-
Other	-	-	-	-	1	-

(N=180. A total of 60 sampled respondents per ward; one person per household, n=30 in A1 and n=30 in A2)

Very few people (4%) mentioned relying on hunting wild animals because most wild animals either moved away as forests were cleared for agricultural purposes or their numbers had declined due to previously high levels of hunting and poaching. In general, the research findings showed a reliance on the natural environment which was noticeable across the district. Since the community was directly exposed to natural resources, this automatically became the most accessible livelihood option (Table 5.2).

Responses on household use of natural resources showed that ward 2 community's reliance on natural resources was quite heavy compared to ward 31 and ward 3. The reliance of ward 3 on natural resources was also noteworthy as they relied heavily on wild fruits, vegetables, insects, tree products and thatching grass. Ward 2 and 3 respondents acknowledged their total reliance on firewood as an energy source, while in ward 31 the use of firewood was supplemented by

electricity, promoted by the presence of registered mines (Appendix 5.3). Quite a number of respondents in ward 2 mentioned that they harvested wild insects for business, particularly mopane worms which were abundant during the summer season. Wards 31 and 3 showed less reliance on harvesting natural resources. The pattern of how natural resources are used suggests a high dependency for household consumption. These findings show that the community has resorted to the use of a wide range of natural resources, particularly for food, fuel and thatching of homes.

Table 5.2 Patterns of Natural Resource Use by Households (Drawn from Appendix 5.4)

	Households harvesting the resource						Households selling the resource (business)					
	W31 (n=60)		W2 (n=60)		W3 (n=60)		W31 (n=60)		W2 (n=60)		W3 (n=60)	
	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2
Wild Fruits	5	13	23	26	28	26	-	-	1	1	-	-
Wild Vegetables	11	19	27	29	28	28	-	-	1	1	-	-
Insects	4	13	17	23	16	10	2	1	1	6	1	-
Medicinal Plants	5	5	14	18	2	6	2	-	1	3	-	-
Wild Animals	3	10	13	16	3	7	2	2	1	5	1	-
Firewood	15	9	30	30	30	30	2	5	3	7	1	3
Wood for Carving	9	10	15	16	17	16	-	2	4	4	1	2
Thatching Grass	19	27	26	29	26	27	-	4	2	1	1	1
Rocks/Stones	3	1	13	11	2	4	2	-	1	3	-	1
Water Resources	15	1	13	14	1	1	-	-	1	5	-	1

(N=180. A total of 60 sampled respondents per ward; one person per household, n= 30 A1, and n= 30 in A2)

The natural resources harvested by the resettled community included fungi, wild vegetables and fruits, insects and animals. Some were seasonal (fungi, wild vegetables, fruits and insects) while wild animals and birds were available throughout the year. These were all used either for food, to provide income or both (Table 5.3).

Table 5.3 shows various types of flora gathered for food around the district. Fungi in form of mushrooms (*howa*), particularly *Cantharellus densifolius* (the chanterelle, *firifiti*), *Amanita zambiana* (the amanita, *nhedzi*), and *Lactarius species* (milk caps, *zheveyambuya*) were gathered for household use as relish (sauce) and business during the rainy season. The main forms of tubers found were *Coleus esculenta* (vlei tuber, *tsenza*) which were either eaten raw or cooked. Plants whose leaves were used to make relish included *Amaranthus hybridus* (Pigweed, *mowa*), *Cleome gynandra* (African spider flower, *nyevhe, ulude*) and *Corchorus olitorius* (Jute mallow, *derere, idelele*). The fruits that were commonly gathered included *Cucumis metuliferus* (cucumber, *mugaka, amagaka*), *Sclercarya birrea* (marula, *mupfura, umganu*), *Uapaca kirkiana* (wild loquat, *muzhanje, umhobohobo*), *Strychnos spinosa* and *Strychnos cocculoides* (monkey orange, *mutamba, umhlali*), *Adansonia digitata* (baobab, *muuyu, umkhomo*), *Parinari curatellifolia*, (mobola plum, *muhacha, umkhuna*), and *Azanza garckeana* (snot apple, *mutohwe, uxhakuxhaku*).

The fauna gathered around the district were used for food or generating income. According to the Department of Parks and Wildlife, the wild mammals that were still found included *Aepyseros melampus* (impala, *mhara, impala*), *Sylvica pragrimmia* (duiker, *mhembwe, impunzi*), and *Lepus capensis* (scrub hares, *tsuro, umvundla*) while some like *Taurotragus oryx* (eland, *mhofu, impofu*) and *Tragelaphus strepsiceros* (greater kudu, *nhoro, ibhalabhala*) were almost extinct since they were quite easy to hunt and some had relocated as forests became human settlements. The common bird hunted or at times domesticated was *Numida meleagris* (guinea fowl, *hanga, itendeli*). Fishing activities were quite common, especially near water sources (Kwekwe and Sebakwe River). Insects were used to make relish as well and those most commonly used around the district were mopane worms (*madora, amacimbi*), termites (*majuru, ishwa*), crickets (*makurwe*), and grasshoppers (*hwiza, mhashu*). Mice and crickets were found by digging into the soil thereby leaving numerous holes that were dangerous to animals and humans. The natural resources gathered by the resettled community are summarised in Table 5.3.

Table 5.3 Natural Resources and their uses by the community (Drawn from Appendix 5.4)

	Natural Resource	Vernacular (Shona and Ndebele)	Genus species	Economic Use/s
Fungi	The chanterelle The amanita Milk caps	<i>Firifiti</i> <i>Nhedzi</i> <i>Zheveyambuya</i>	<i>Cantharellus densifolius</i> <i>Amanita zambiana</i> <i>Lactarius species</i>	Food and income
Wild Vegetables (tubers)	Vlei tuber	<i>Tsenza</i>	<i>Coleus esculenta</i>	Food and income
Wild Vegetables (green leafy plants)	Pigweed African spider flower Jute mallow	<i>Mowa</i> <i>Nyevhe, ulude</i> <i>Derere, idelele</i>	<i>Amaranthus hybridus</i> <i>Cleome gynandra</i> <i>Corchorus olitorius</i>	Food and income
Wild insects	Mopane worms Termites Crickets Grasshoppers	<i>Madora, amacimbi</i> <i>Majuru, ishwa</i> <i>Makurwe</i> <i>Mhashu, hwiza</i>		Food and income
Wild fruits	Cucumber Marula Wild loquat Monkey orange Baobab Mobola plum Snot apple	<i>Magaka, amagaka</i> <i>Mapfura, umganu</i> <i>Muzhanje, umhobohobo</i> <i>Mutamba</i> <i>Muuyu</i> <i>Muhacha, umkhuna</i> <i>Mutohwe, uxhakuxhaku</i>	<i>Cucumis metuliferus</i> <i>Sclercarya birrea</i> <i>Uapaca kirkiana</i> <i>Strychnos spinosa</i> and <i>Strychnos cocculoides</i> <i>Adansonia digitata</i> <i>Parinari curatellifolia</i> <i>Azanza garckeana</i>	Food and income
Wild animals	Impala Duiker Scrub hares Eland Kudu	<i>Mhara, impala</i> <i>Mhembwe, impunzi</i> <i>Tsuro, umvundla</i> <i>Mhofu, impofu</i> <i>Nhoro, ibhalabhala</i>	<i>Aepyseros melampus</i> <i>Sylvica pragrimmia</i> <i>Lepus capensis</i> <i>Taurotragus oryx</i> <i>Tragelaphus strepsiceros</i>	Food and income
Wild birds	Guinea fowl	<i>Hanga, itendeli</i>	<i>Numida meleagris</i>	Food and income

The resettled community acknowledged the presence of NRM structures that were either functional or lying dormant. They had mixed feelings about the roles and the way they were operating at the time of the data collection. Table 5.4 shows the number of respondents that acknowledged that the given rules were either being known or enforced in the community by Households themselves, Government Agencies (GAs), Zimbabwe Republic Police (ZRP) and Community Leaders (CLs).

There was a strong indigenous knowledge of NRM expressed by the CLs in Table 5.4. According to cultural leaders in the district, IKS were relied upon historically to manage natural resources. The community members interviewed (Appendix 5.3) said there were trees that were used as places for cultural meetings and for the performance of traditional rituals. Their surrounding ecosystems were not allowed to be disturbed. The common trees used for these purposes around the district were *Parinari curatellifolia*, (mobola plum, *muhacha*, *umkhuna*), *Burkea africana* (wild syringa, *mukarakati*, *umnondo*) and *Sclerocarya birrea* (amarula, *mupfura*, *umganu*).

On the topic of harvesting wild fruits, they mentioned the *Uapaca kirkiana* (wild loquat, *muzhanje*, *umhobohobo*) which was quite common in their locality. The traditional leaders and adults were very strict about their belief that the harvest was from the ancestors to feed everyone, particularly passing travellers on long journeys. The fruits were not to be harvested from the tree but could be picked from the ground when they were ripe, thereby protecting brittle branches. For example, in Ward 3 if anyone was caught illegally harvesting the fruits, he/she would pay the least price of two chickens to a maximum price of a goat/s depending on what the chief decides. However, the beliefs conflicted with what most local youths thought and prosecuting them was very difficult since this would have created tension in the social life of the community.

Table 5.4 Institutions Enforcing Rules and Regulations (Drawn from Appendix 5.4)

Rules and Regulations	Households						CLs						GAs						ZRP					
	W31		W2		W3		W31		W2		W3		W31		W2		W3		W31		W2		W3	
	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2
Prohibiting Cutting Down of Trees	12	13	14	8	1	10	15	-	1	1	14	5	13	6	-	-	4	1	1	2	4	1	2	-
Regulations on Soil Conservation	15	7	15	20	1	9	10	2	1	-	13	5	18	9	8	13	5	7	2	-	-	-	2	-
Prohibiting the Killing of Wild Animals	6	6	13	8	1	5	1	-	1	1	13	1	-	2	-	-	4	1	24	2	4	4	4	-
Prohibiting Mining and Panning of Minerals	4	4	9	18	1	4	-	-	1	-	12	4	3	1	-	-	4	1	25	3	4	4	3	2
Prohibiting Uncontrolled Fires	20	10	11	18	1	2	5	1	1	-	11	2	10	1	-	-	3	1	7	2	2	2	2	-
Prohibiting Land and Water Pollution	23	9	17	18	1	4	4	-	3	-	11	4	4	-	-	-	3	2	1	-	1	-	2	-

(N=180. A total of 60 sampled respondents per ward; one person per household, n= 30 in A1, and n= 30 in A2)

The chiefs, headmen, village heads and elders in the community (Appendix 5.3) acknowledged the importance of various indicator plant species that they believed to have helped many generations to show areas with unique characteristics such as soil chemistry, depth, structure, water logging, and drainage. They mentioned the *Syzygium species* (waterberry, *mukute*, *umdoni*) and the *Parinari curatellifolia* (mobola plum, *muhacha*, *umkhuna*) which were associated with waterlogged soils. The *Colophospermum mopane* (mopane, *iphane*) was associated with shallow, waterlogged, poor soils while the *Brachystegia spiciformis* (msasa, *musasa*, *ingonde*) and *Acacia rehmanniana* (silky acacia, *muunga*, *umpumbu*) were associated with well drained, deep soils. This signified their importance to the community for land use planning in agriculture and in siting wells, fields and homes and therefore the need to conserve them.

The chiefs (Appendix 5.3) said traditionally, people used certain indigenous trees to predict fortunes and disasters, such as rainfall and drought. For example, a heavy Mobola plum fruit harvest was associated with drought in the subsequent rainy season. It was believed that the bumper Mobola plum fruit harvest would compensate for poor agricultural harvests by providing an alternative food source for the people. As a result, there were heavy fines that were put in place by the traditional leaders to conserve these species.

The chiefs (Appendix 5.3) said the idea of controlled hunting was encouraged, especially in the A1 community, to allow breeding but this was quite a challenge with widespread poaching activities. According to one headman in Ward 31,

“No hunting is allowed in the rainy season as animals will be having young ones and are also too easy to track. Mammals suckling young ones and the young should not be killed.”

According to one traditional healer in Ward 31,

“People have always had beliefs which helped in conserving plants or plant parts harvested for medicinal purposes. A bark is effective as medicine only if cut from east- and west-facing parts of a trunk. This belief ensures that ring barking which totally kills the plant is avoided. Harvesting tree roots resulting in plant death, as a result of harvesting too many roots from one plant is believed to result in patient’s death.” (Appendix 5.3).

He further mentioned that he has never used or heard of any traditional healer who uses any kind of seeds for medicinal purposes. This preserves the seeds from one season to another (Appendix 5.3)

However, some chiefs and headmen interviewed (Appendix 5.3) were bitter about the loss of these traditions which they attributed to the demise of many valuable natural resources. They said the FTLRP brought together people from different and at times conflicting cultures and backgrounds, something which had somehow led to lawlessness and, therefore, erosion of IKS, particularly in the management of natural resources. The perceived negative impacts of the resettled community on the environment are summarised in Table 5.5. The impacts emanated from the livelihood strategies of these communities.

Table 5.5 Asset Base and Perceived Impacts in the Resettled Community

Asset Base	Current Practice	Observed impacts
Land	-Farming -Mining -Settlement	-Land degradation -Deforestation -Land degradation -Pollution -Human wildlife conflicts
Flora	-Harvesting wild fruits and vegetables -Tree barks and roots for medicinal purposes -Wood for carving -Firewood	-Overharvesting of wild fruits and vegetables -Deforestation -Veld fires
Fauna	-Hunting -Domesticated for food and draught power	-Human wildlife conflicts -Some species facing extinction -Selective grazing and overgrazing
Water	-Fishing -Recreation	-Human wildlife conflicts -Pollution -Eutrophication

5.1.1 Summary of Findings on Emerging NRM Practices

The community acknowledged their reliance on natural resources to supplement their diets, for medicinal materials and income sources to enhance their livelihoods. They mentioned the importance of some plant species in land use planning. However, as mentioned in Chapter 3, the observed impact of humans on the natural environment resulted in reduced animal and plant populations and diversity due to mining and agricultural activities. The traditional leadership were quite active in NRM but their powers were threatened and eroded by people with different

and conflicting backgrounds. As a result, the traditional set-up was more functional in the A1 villagised farms while in A1 self-contained and A2 farms the actual households were involved in NRM. The community acknowledged the presence of formal institutions but they had mixed feelings towards them. Some traditional leaders appreciated their roles while the farmers described living in constant fear caused by the threat of rules and regulations. People were caught between formal regulations of NRM use which were threatening their livelihood activities because people perceived that they had no alternative, especially with the economic hardship they were enduring.

5.2 Sub-problem Two: Farming Background and Practices

The purpose of this section was to establish the farming background status, farming practices of the resettled farmers, and the impacts of these on NRM.

5.2.1 The Background of Zimbabwean Farmers

According to the Head of Agritex and the RDC Agriculture and Natural Resources Officer, before resettlement the large-scale commercial farmers who previously owned the land were using conventional farming techniques. They used tractor drawn implements, inorganic fertilisers and chemical control for pests, diseases and weeds. During winter periods, the former farmers used to clear the land by burning the crop residues since they believed that the residues harboured diseases, pests and seeds for weeds which would carry over to the next season.

According to the Livestock Department Officer, the average carrying capacity in Kwekwe was estimated to be 1:8 (one livestock unit to 8 hectares of land). Before resettlement, the large scale commercial farms used to have paddocks that were used for rotational grazing. The animals observed in the area included cattle, goats, poultry, pigs and sheep (Appendix 5.3).

However, due to changes brought about by the Agrarian reforms, there was a slight shift down as land sizes became reduced in an effort to accommodate as many families as possible. Paddocks were not maintained in most farms, leading to disputes as the domestic animals strayed into fields and selective grazing was quite common (Agritex Report, 2013).

The FTLRP brought together various people of differing backgrounds. The research findings show that 75% were from farming communities while 25% had never practiced farming before. 73% had received some form of education (formal or informal) over the course of their lives while 27% had never been educated about farming. Work experiences included unskilled and

skilled farm work for the previously white owned farms. The research findings (Table 5.6) show that most people who were resettled (A1 and A2 farmers) were people who had been influenced by agricultural training in some form. Most of these were from communal areas, were former farm workers or people who had migrated to urban areas from farming areas. This means that they were previously involved in some aspect of farming. Some had received farming education from the extension officers, secondary schools and tertiary institutions and various NGOs where they used to stay before resettlement (Appendix 5.1). Others were graduates of the Master Farmer Training scheme (Agritex Report, 2013). There were a few that had never been in farming communities and had never received any form of agricultural training, yet benefitted from the FTLRP. There were, however, some groups of resettled beneficiaries e.g. the civil servants, businessmen and politicians, some of whom had never been exposed to farming experience or education (Appendix 5.1).

The main target for Agricultural Extension Officers was the A1 farmers with the assumption that the A2 farmers had their own farm managers who had adequate and appropriate farming knowledge and that the A1 farmers had the communal background which needed to be updated (Appendix 5.1).

Table 5.6 Farming Background Status of Resettled Farmers (Drawn from Appendix 5.4)

	Farming Background		Farming Education	
	Yes	No	Yes	No
W31 A1 Farmers(n=30)	26	4	26	4
W31 A2 Farmers (n=30)	27	3	23	7
W2 A1 Farmers (n=30)	17	13	21	9
W2 A2 Farmers (n=30)	22	8	24	6
W3 A1 Farmers (n=30)	23	7	16	14
W3 A2 Farmers (n=30)	20	10	22	8
Totals	135 (75%)	45 (25%)	132 (73%)	48 (26%)

(N=180. A total of 60 sampled respondents per ward; one person per household, n= 30 in A1, and n= 30 in A2)

5.2.2 Emerging Farming Practices

The various groups of people that were brought together by the FTLRP were from differing backgrounds and of differing wealth status. This had a bearing on the farming practices they

were involved in where they were resettled. The education they received from the secondary schools, tertiary institutions and extension officers either promoted or worked against certain farming methods that were adopted by these communities.

The nature of the farming methods, particularly in terms of labour and prestige, also had an effect on their popularity. The findings show that the resettled community under the FTLRP used animal drawn implements the most (76%) since they owned domestic animals (cattle) and those who did not own them were assisted by their neighbours or friends for exchanges that ranged from cash to kind (Table 5.7). They also used tractor drawn tillage (42%) because some could afford to purchase these and there were institutions like the District Development Fund (DDF) that assisted the community with tractors. The use of tractors in Ward 2 was considered prestigious.

Table 5.7 Tillage Methods used in the Resettled Community (Drawn from Appendix 5.4)

	W31 A1	W31 A2	W2 A1	W2 A2	W3 A1	W3 A2	% of Respondents
Animal Drawn	27	22	19	23	27	19	76
Tractor Drawn	3	7	18	22	2	23	42
Hoeing	4	1	-	1	-	-	3
Conservation Practices	1	6	5	2	10	2	14

(N=180. A total of 60 sampled respondents per ward; one person per household, n= 30 in A1, and n= 30 in A2)

In all the wards visited, extension officers indicated and observations (Appendix 5.3) showed that the community did not like (3%) and had no intention of practicing conservation farming methods which had been taught by the extension officers. The main reason for the unpopularity was that these were labour intensive. The term used by Extension Officers for encouraging Conservation Agriculture was “*dhiga udye*” meaning ‘dig and benefit’ in the native Shona language. However, farmers referred to it as “*dhiga ufe*” meaning ‘dig and the effort will kill you!’ In spite of this, however, there were modified conservation practices found in the district which involved the use of ploughs. From observations, most of the people who adopted

conservation farming practices did it mainly because they were too poor to afford implements for conventional tillage and not because of the many benefits of conservation farming.

Among those farmers who practised conservation farming, one example of how fallow areas were identified is as follows. Lines were drawn parallel to each other from any two perpendicular ends leaving spaces according to the recommended space for the given crop. The aerial view of the field would show boxes. The spaces inside the boxes were left undisturbed and the meeting points of the perpendicular lines were the planting points. The resettled community used different tillage methods. A variety of reasons were given why they preferred to use some over others (Table 5.8).

Table 5.8 Reasons behind the adoption or rejection of the tillage systems

Tillage System	Reasons for adoption	Reasons for rejection
Tractor drawn tillage systems	-Could afford them -Prestigious reasons	-Could not afford them -Education which campaigned against conventional tillage methods
Animal drawn tillage systems	-Traditional tillage system -Could afford them	-Could not afford them -Education which campaigned against conventional tillage methods
Mechanical tillage systems	-Could not afford tractor drawn and animal drawn tillage systems	-Labour intensive
Conservation practises	- Could not afford tractor drawn and animal drawn tillage systems -Awareness campaigns for conservation practises -Promotes high yields	-Labour intensive -Negative attitude because of some other reasons e.g. prestige

The community (Appendix 5.3) preferred ploughs to cultivators for mechanical weed control saying that the plough was not as heavy as the cultivator and the plough could be used as a multipurpose tool. Mulch tillage was also quite common among both the A1 and A2 farms. Some farmers practiced mulch tillage without much knowledge of what they were doing but they left the mulch until the rainy season and crop residues were seen throughout the district in the fields e.g. maize and legume (beans, groundnuts) stalks. However, there were households that removed the crop residues, particularly maize stalks, from the fields and stored them as stock feed used during winter.

The community used cultural control of diseases and with mechanical control for weeds. Using hoes for weeding was quite common in most areas. According to the extension officers, the community was given some herbicides and pesticides to use through government programmes but they were not willing to use them. Even though inorganic fertilisers were very common in these communities (Agritex Report, 2013) the community was not using herbicides mainly because of the belief that pesticides reduced soil fertility. It was not because they understood the scientific reasons or because they could not afford them (Appendix 5.3).

This was even evident in the way they were complaining about little assistance with agricultural inputs, particularly seed and fertilisers. Some farmers further mentioned that crops grown using cattle and goat manure were not uniform as they grew and therefore affected yields. The farming background status and the perceived way this impacted the farming practices and other NRM issues in the resettled community is summarised in Table 5.9.

5.2.1 Summary: Influence of Farming Backgrounds on Practice

The background of farmers had notable effects on farming practices at the time of data collection. The farming practices of former white farmers were shown to be different from the new farmers resettled under the FTLRP. This change represented a shift in production methods from fully commercial farming to partly commercial and subsistence farming. The farming practices adopted in the resettled community were influenced by wealth status, beliefs, and how the farmers perceived the farming methods in terms of labour and prestige. As a result, conservation farming ideas were facing resistance while the use of tractors was considered a milestone in development by many. Another reason that caused the farmers to adopt some tillage methods was its affordability. The community showed that they appreciated the use of chemical fertilisers. However, they were against the use of chemicals to control diseases, pests and weeds.

Table 5.9 Background Characteristics of the Resettled Farmers

Type of Farmer/ Farm Model	A1 Farmers	A2 Farmers
Background Characteristics	<ul style="list-style-type: none"> -Some were former communal settlers -Some were former farm workers -Most were Kwekwe district residents -All cultures and church denominations were represented -Some were graduates of the Agritex Master Farmer Programme -Some were civil servants, businessmen and politicians -27% had no agricultural background (opportunists) -73% had farming knowledge from extension officers and NGOs before resettlement 	<ul style="list-style-type: none"> -Some were former farm workers -Most came from other districts outside the Midlands Province -All cultures and church denominations were represented -Some were civil servants, businessmen and politicians -53% had no agricultural background (opportunists) -77% had farming knowledge from extension officers and NGOs before resettlement
Effects of Background on farming activities	<ul style="list-style-type: none"> -Prioritised by extension workers -Attempted conservation farming -Tractor drawn, animal drawn, conservation practices and mechanical tillage systems used -Considered the use of tractors as prestigious -Trusted the use of chemical fertilisers - Negative attitudes towards the use of chemical weed, pest and disease control -Most relied on hand outs for agriculture inputs 	<ul style="list-style-type: none"> -Neglected by extension workers -No conservation farming practices used -Only tractor drawn, animal drawn and mechanical tillage systems used -Trusted the use of chemical fertilisers -Negative attitudes towards the use of chemical weed, pest and disease control -Most were self-reliant for agriculture inputs

5.3 Sub-problem Three: Governance of NRM

This section looks at governance issues for the institutions responsible for NRM, agriculture and food security in the resettlement areas. The researcher compiled the information from literature reviews, interviews and observations which gave insight into institutions that were responsible for NRM in the resettled community of Kwekwe district. It constructs an understanding of what people knew and understood about the policies within the actual meaning and intentions of the policies and institutions, respectively.

5.3.1. Identification of NRM Institutions

The RDC Agriculture and Natural Resource Officer stated that Zibagwe Rural District Council is responsible for coordinating the various institutions in NRM (Figure 5.1). The institutions working with the RDC included EMA, Forestry Commission, Department of Parks and Wildlife, ZRP, and Agritex (Appendix 5.1).

5.3.2 Challenges of NRM Institutions

The international development institutions have shunned the resettlement process in Zimbabwe and the government's incapacity to fund development projects resulted in the abortion or abandonment of developmental projects. For example, the CAMPFIRE project is not operational in Kwekwe district which would be supporting CBNRM (Appendix 5.1). Other challenges revolve around staffing issues, namely shortages, unreliability and funding (Table 5.8).

5.3.3 Challenges of NRM Institutions

The EMA Report (2013) described the ratio of EMA officers to people as sub-optimal, with only one officer for the whole of KweKwe district. The situation was made worse by the diverse responsibilities of one person ranging from areas such as agriculture, mining, and urban waste management. As a result, most projects were on paper and very little was taking place on the ground. The lack of funding for the projects also hindered operations (Appendix 5.1).

The ratio of Forestry Commission officer to citizens was similarly problematic as one officer was responsible for the whole district. There were daunting signs of deforestation throughout the study wards but there were no signs of afforestation programs taking place (Appendix 5.1). At the same time, unregulated practices were widespread amongst the communities. For example, some residents were involved in illegal harvesting of fuel wood for sale to urban residents while the urban residents at times poached firewood from the nearby farms. Those caught illegally

harvesting and selling fuel wood usually resolved the issues between themselves (Appendix 5.3). The Department of Parks anti-poaching system did exist but their activities were unreliable. People from both the urban and resettlement areas were involved in poaching animals. Structures for CBNRM were in place but were non-operational (Appendix 5.1).

There were numerous resignations at Agritex attributed to dissatisfaction with the conditions of employment as salaries had fallen considerably in real terms and were much lower than those offered in the private sector (Agritex Report, 2013).

Table 5.10 shows the roles and perceived strengths and challenges of various NRM institutions in Kwekwe District. The lack of funding resulted in the poor performance of most institutions.

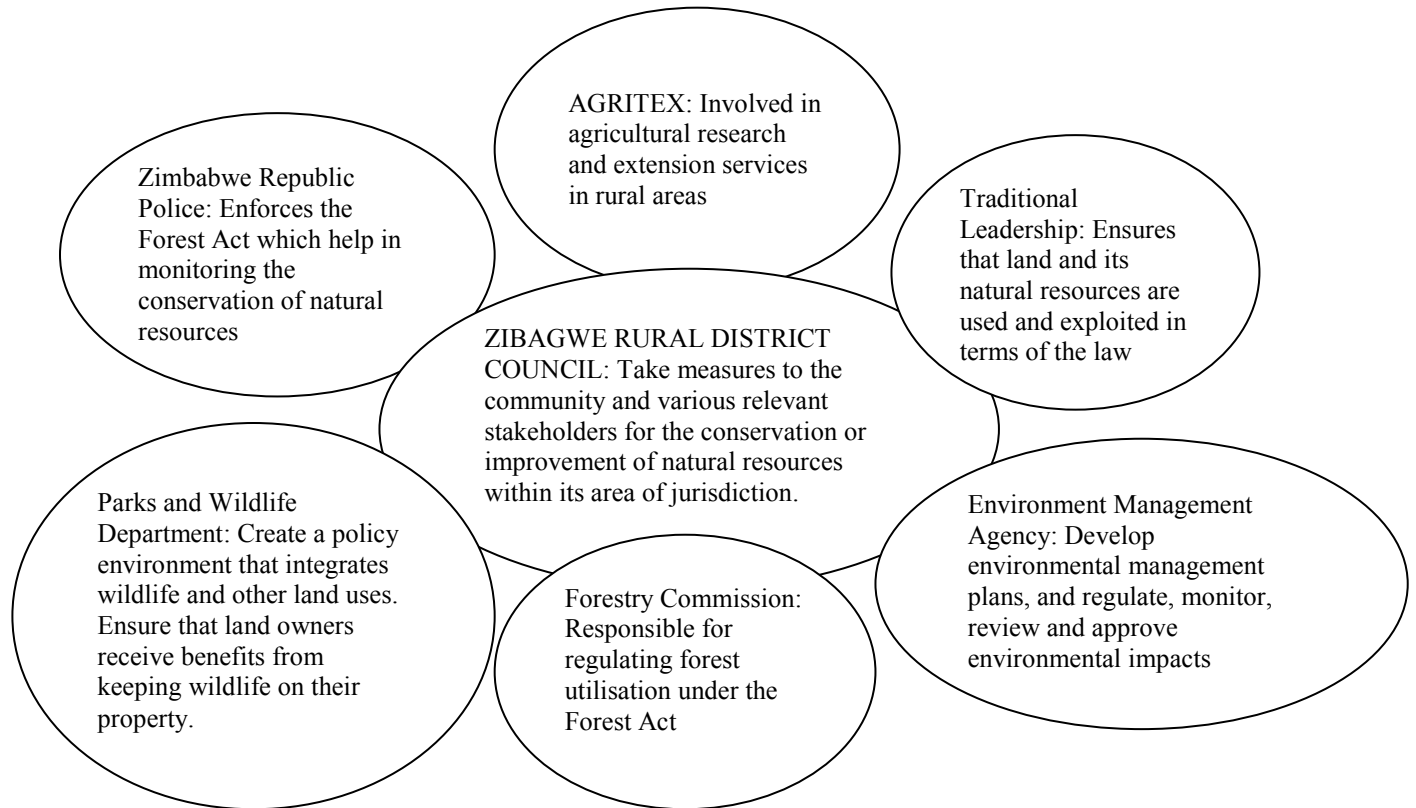


Figure 5.1 Institutions responsible for Natural Resource Management in Kwekwe District

Table 5.10 Summary of Governance issues of NRM in Kwekwe District

Institutions	Role	Strengths	Challenges
Zibagwe Rural District Council	-Take measures to the community and various relevant stakeholders for the conservation or improvement of natural resources within its area of jurisdiction	-All the stakeholders to work with were still functional -Appropriately staffed with qualified personnel	-Lack of funding led to the abortion of many projects e.g. CAMPFIRE
Environment Management Agency	-Develop environmental management plans, and regulate, monitor, review and approve environmental impacts assessments	-Structures still existing	-Limited funding -Manpower shortages
Forestry Commission	-Responsible for regulating forest utilisation under the Forest Act	-Structures still existing	-Lack of funding -Manpower shortages
Traditional Leaders	-Ensure that land and its natural resources are used in terms of the law	-Government support therefore potential to rejuvenate -Community respect	-Erosion of powers -Corruption
Department of Parks and Wildlife	-Create a policy environment that integrates wildlife and other land uses -Ensure that land owners receive benefits from keeping wildlife on their property	-Perceived as effective by communities and other stakeholders	-Lack of funding -Manpower shortages
Agritex	-Involved in agricultural research and extension services in rural areas	-Structures still existing	-Lack of adequate funding -Resignations led to serious labour shortages -Farmers had negative perceptions of methods used (farmer groups) -Lack of support from other stakeholders (especially NGOs)
Zimbabwe Republic Police	-Enforce the Forest Act in monitoring the conservation of natural resources	-Community respect or fear	-Corruption -Manpower shortage

5.3.4 Community Perceptions on Policy Intentions

Traditional institutions follow a hierarchical pattern of communication and responsibilities. Figure 5.2 shows the formal institutions and traditional institutions in the A1 villagised set up of Zimbabwe. Some of the existing traditional chiefs set up in the resettled community acknowledged and showed great appreciation for the roles of these modern institutions (Table 5.7) in conserving natural resources through awareness campaigns and enforcing rules and regulations. However, some mentioned that formal bodies undermined the authority of traditional leadership structures as well as measures started by local communities (Appendix 5.3). According to the chiefs, headmen and village heads of communities visited, in a villagised set up; trees, stones and rocks, hills and kopjes and water sources located near a homestead or in a field belonging to a certain household, automatically belong to that family and cease to be a common pool resource. This was not influenced by the laws but by the tradition, norms and values of the community. If anyone wanted to use any such resource, he/she had to consult the nearby homestead first for permission. This gave a sense of ownership to the community members who would therefore monitor and protect the resources. However, because of different backgrounds and cultures of people in the resettled community, there were cases of people fighting over such issues. The Head of Agritex said that in the A1 villagised communities, the traditional set up was still existent and functional, with the assistance of the formal institutions. In the self-contained A1 farms, traditional structures were operating under the authority of chiefs only without headmen and village heads. The traditional set up was perceived as more functional, efficient and effective in the villagised communities than in self-contained farms. However, in all the A2 farms visited, the community were not aware of any traditional institutions (Figure 5.1). All the resettled communities except the A1 Villagised communities (Figure 5.1) were monitored by the farm owners themselves and formal institutions only.

Kwekwe district farmers used to practise intensive mixed farming of beef and crop production but due to changes brought about by the Agrarian reforms, land portion sizes were reduced in an effort to accommodate as many families as possible. Beef and crop production were still being done although the beef herd had been reduced significantly. Other sectors such as dairy, small stock and game farming were still operational, although some dairy farms were also downsized, thus resulting in reduction of herd sizes. There was no major shift in stocks of small livestock.

There had been a downward shift in hectares planted of paprika, soya beans, cotton, wheat and barley. Groundnuts were usually in surplus due to lack of markets.

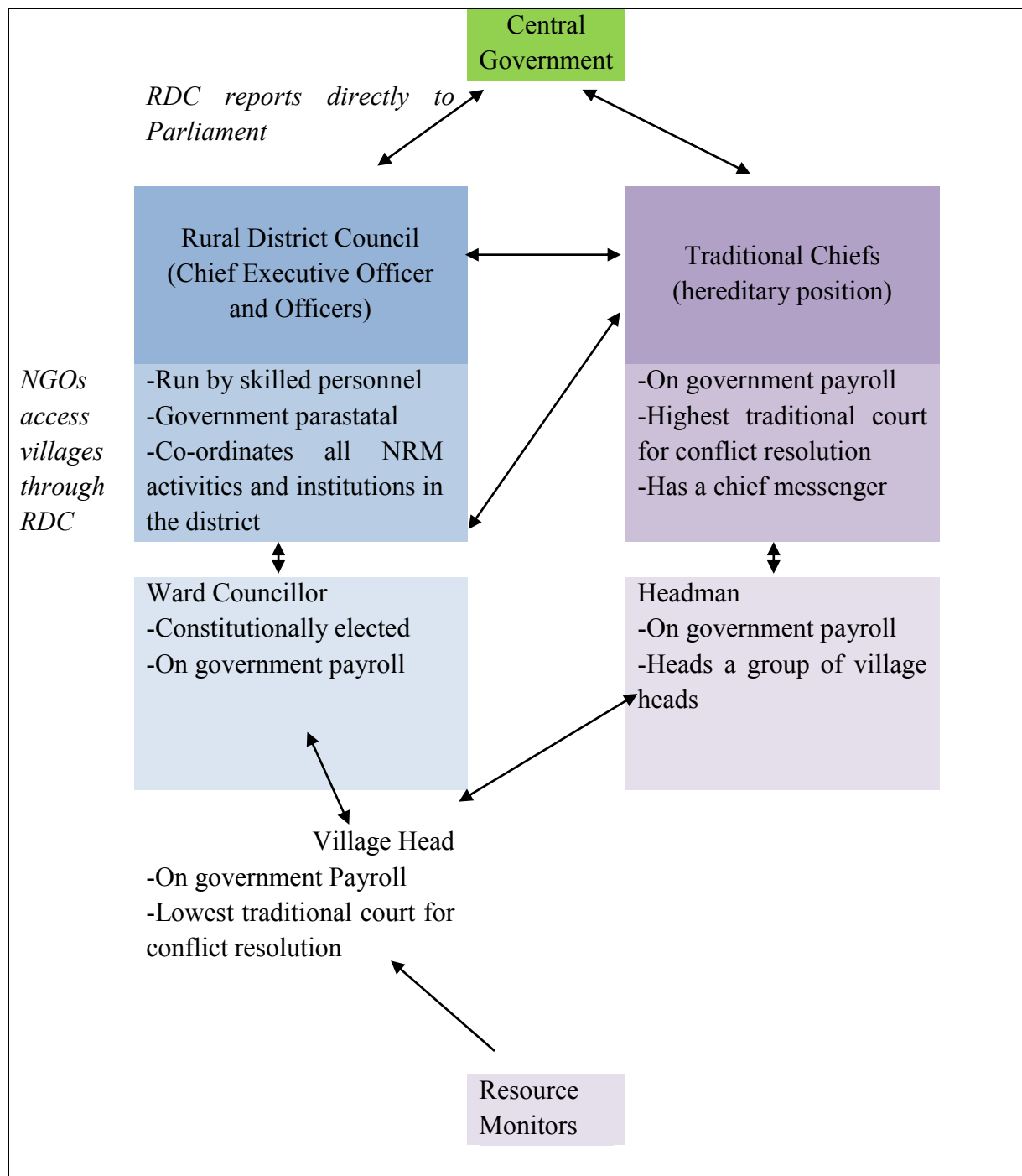


Figure 5.2 Conceptual Map of Institutional Structures arising from policy framework (synthesised from Field Notes, Appendix 5.3, Figure 5.3)

A respondent from the Ministry of Lands said the land that was allocated under the FTLRP comprised newly acquired land (taken from the owners) and repossessed land (taken from incompetent settlers). The resettlement was ongoing since there was the need to reclaim the land from incompetent settlers for redistribution (Appendix 5.1).

The Sebakwe Conservation and Education Centre in Ward 2 was operating under the Department of Parks and Wildlife. The head of the centre was involved in educating locals on wildlife conservation as well as sourcing funds for livelihood enhancement projects. These projects such as nutritional gardens and bee keeping were aimed at reducing pressure on the environment (Appendix 5.1). The farming practices of the community around the centre resembled the methods of contouring and crop rotation from the centre's demonstration plots (Appendix 5.2).

Some community members who had been facing problems of baboons that were seriously attacking their fields acknowledged and appreciated the efforts by the Department of Parks and Wildlife. The department authority delegated officers who destroyed the areas where the baboons were living and, as a result, the baboons relocated and were no longer problematic (Appendix 5.2). The community complained that the ZRP police officers mainly focused their punitive management on areas that were rich in natural resources. For the communities, these areas were important for extra income from gold panning, game and firewood poaching (Appendix 5.3).

The main target for Agricultural Extension Officers (AEWs), also known as Extension Officers (EOs) was the A1 farmers with the assumption that the A2 farmers had their own farm managers who had adequate and appropriate farming knowledge and that the A1 farmers had the communal background which needed to be updated. However, the situation on the ground showed otherwise. The Agritex Chief Officer complained that farmers had negative perceptions of farmer groups and they lacked motivation from other stakeholders.

5.3.5 Summary of Governance Issues

The resettled community was monitored by various government agencies but there were no donor-funded projects. The government agencies were facing problems of funding which crippled their operations in NRM. This was evident through understaffing and lack of proper equipment. The traditional institutions were weak or they had not yet been fully established, as people and cultures were still merging. However, this could be the reason why they were weak as

they faced resistance from people of different cultures. Moreover, the formal institutions sometimes undermined the authority of the traditional leadership.

5.4 Summary of the Findings

The resettlement program brought together different people from various backgrounds and cultures. The different people brought together by resettlement were of varying wealth status, which had a direct influence on their livelihoods. This further extended to the management of the surrounding resources. For sustainable management of natural resources to take place, various institutions were in place. However, these institutions were facing challenges in their operations and this hindered the effectiveness of NRM.

5.5 Conclusion

The chapter presented the results that were obtained through various ways mentioned in the previous chapter. The results were presented according to set objectives in order to meet their requirements. The next chapter will combine the debates and findings of other researchers from Chapter 2 with this research findings presented in this chapter. The aim was to discuss any similarities and differences of various researches to come up with a sound conclusion and recommendations for implementation and further studies.

CHAPTER SIX: DISCUSSION OF RESULTS

The aim of this investigation was to establish the influence that the FTLRP had on emergent practice and use of the natural resource base by resettled farmers. The main task was to explore the patterns of natural resource use within the dynamics of culture, vulnerability and governance issues. This chapter discusses the research findings presented in Chapter Three and Chapter Four in relation to the debates and studies presented by the review of literature in Chapter Two. The research sub-problems have been used as headings to systematically discuss the results in terms of answering these research questions.

6.1 Sub-problem One: Understanding the Impact of Culture on Emergent NR Use and Management

6.1.1 The Fusion of Cultures in the Resettled Communities

The research findings showed that the traditional institutions did exist and were functional in the A1 villagised communities only (Figure 5.2; Chapter 3, section 3.3). The village set-up of these communities promoted and supported the establishment of traditional structures. Matondi and Dekker (2011) mentioned that the main purpose of the A1 villagised set-up was to decrease land pressure in the communal areas as well as to provide assets to the poor. Moreso, the tenure arrangements in A1 farms were interpreted to follow the customary systems of land allocation in communal settlements. This point was supported by the research findings about the communal background of these farmers (section 3.3). The lifestyle of the A1 villagised community can therefore be labelled as an image of the marginal communal settlements, but in fertile lands. With such strong traditional structures, the performance of farmers in agriculture and NRM was, however severely reduced by lack of capital, inputs and equipment (Maposa *et al.*, 2013). This could be attributed to the economic crisis which led to incapacity of the government structures to support them (Table 5.10) and lack of assistance from the international community (Kapuya *et al.*, 2012). The community thus relied heavily on diverse livelihoods, some of which had negative impacts on the natural environment (Table 5.1; Table 5.2; Table 5.3).

In the A1 self-contained and A2 farms the traditional institutions were either weak or non-existent, respectively. The research findings (Chapter 3, section 3.3) showed that the farmers in the A1 self-contained farms and A2 farms were from differing backgrounds and cultures. The traditional leaders identified the problem as an erosion of traditional structures where people

were living together with different and sometimes conflicting cultures and backgrounds. Sibanda, (1998) imputed the issue to the views of some groups who regarded traditional structures as out of date. In this case, discordant and harmonious cultures were merging to form a new culture. The ‘mixed bag’ of farmers in A1 self-contained farms and A2 farmers (Agritex Report, 2013) meant they had different wealth status. Some could afford to farm on their own while others needed assistance. Like the A1 villagised farmers, the performance of some farmers in agriculture and NRM was severely reduced due to incapacity of the government structures to support them (Table 5.10) and lack of assistance from the international community (Kapuya *et al.*, 2012). However, some farmers, particularly businessmen, civil servants and politicians (Agritex Report, 2013) performed quite well in agriculture and NRM because of their wealth of background in terms of exposure to new technology, capital and opportunities. Unlike in A1 villagised farms, a number of farms in the A1 self-contained and A2 farms had two non-related types of households. The land owners and their families sometimes lived in urban areas and hired families that provided labour at the farms (Chapter 3, section 3.3). Ellis and Allison (2004) observed this and concluded that for some farmers, farming sometimes becomes a part-time, residual, or fall-back activity as livelihoods become increasingly oriented to non-farm and non-rural activities. The observation meant that farmers did not have enough faith to rely on agriculture as their sole and main livelihood. Kapuya *et al.*, (2012) mentioned that the unpredictable weather, the incapacity of the government to fully sponsor farmers and the nonexistence of international donor activities in the resettled communities were serious problems that hindered agricultural production in resettled areas under FTLRP. Wolmer *et al.*, (2003) and Ellis and Freeman (2004) thus identified the adoption of diverse livelihood strategies as an obvious option to lessen the vulnerability of the farmers to food insecurity and livelihood collapse.

Such farmers adopted diverse livelihood strategies depending on their wealth status and situation in order to supplement and support agriculture. According to Ellis (1999) better-off migrants from farming areas are more likely to re-invest urban earnings in agriculture while the vulnerable migrants from remote areas are less likely to do so. This situation was widespread in the resettled community (Chapter 3, section 3.3). Some land owners were based in urban areas but provided the equipment and inputs needed at the farms by their workers. The workers and their families were directly exposed to natural resources; and relied more on agriculture for their livelihoods

(Wolmer *et al.*, 2003; Table 5.1; Table 5.2; Table 5.3). The less fortunate former farm workers and people from the surrounding communal areas of the study areas were doing part time jobs mainly to feed their family (Chapter 3, section 3.3). Lack of a sense of ownership (Chapter 3, section 3.3) and lack of capital and resources (Maposa *et al.*, 2013) by most farmers were the main reasons behind poor structures on some farms (Plate 3.4). The lack of sense of ownership stemmed from poor land tenure systems (Ellis and Freeman, 2004; Besley, 1995). Moreover, some land owners were not living at their farms so they were not motivated to build proper structures at their farms. The workers who stayed at the farms could not afford and found no sense in developing farms that did not belong to them. However, the case could have been otherwise if the land owners themselves stayed at the farm, as observed in some well-developed farms (Chapter 3, section 3.3). There were former farm workers who benefitted from the FTLRP (Chapter 3, section 3.3; Table 5.6). The success or failure in farming of this group was mainly determined by the positions they held at their former places of employment. Former farm managers and foremen could afford to farm and their background was an added advantage for them. However, former farm workers found it quite difficult to farm since they relied on government hand outs (Kapuya *et al.*, 2012, Chimhowu *et al.*, 2010).

6.1.2 The Emerging Forms of Livelihoods in the Resettled Community

McNeely and Scherr (2008) stated that the rural community is one group that substantially depends on key components of biodiversity and ecosystem services. The dependence is either for direct home consumption or in trade to generate cash (Chimhowu *et al.*, 2010; Table 5.1; Table 5.2; and Table 5.3). Moyo, (2004a) said the beneficiaries of the FTLRP were using the ecological systems in order to suit their livelihood systems, resulting in changes in land use patterns. The community acknowledged their reliance on natural resources to supplement their diets, medicinal materials and income sources to enhance their livelihood sources (Table 5.1; Table 5.2; Table 5.3). They also mentioned the importance of some plant species in land use planning (section 5.1).

Farrington *et al.*, (1999) further mentioned the structures such as the roles of government or of the private sector and processes such as institutional, policy and cultural factors which people face (Table 5.4; Table 5.10) as factors that cause people to diversify their livelihoods. This depends on what these favour or inhibit. The incapacity of the government to fully sponsor farmers and the nonexistence of international donor activities in the resettled communities were

serious problems that hindered agricultural production (Kapuya *et al.*, 2012). The community thus adopted diverse livelihood strategies and the surrounding natural environment presented an easy option (Wolmer *et al.*, 2003; Table 5.1; Table 5.2; Table 5.3). Ellis and Freeman, (2004) supported the adoption of diverse livelihood options in lessening the vulnerability of the rural community to food insecurity, livelihood collapse and providing the basis for building assets that permit individuals and households to construct their own exit routes out of poverty.

Le Bel *et al.* (2011) stressed that the FTLRP aggravated human wildlife conflicts in Zimbabwe. The situation was worsened by the high rate of unemployment and the growing poverty which led to the over-exploitation of natural resources and the increase of illegal activities, including poaching. Wildlife conflict was quite common in Kwekwe District (Chapter 3, section 3.2) and was exacerbated by the unreliability of authorities that enforced rules and regulation (Table 5.4). The community faced problems with warthogs and baboons destroying their crops. At the same time, animals like snakes, wild dogs and hyenas were killed for safety reasons as they were considered dangerous to people and their domestic animals (Chapter 3, section 3.2). A similar situation response is reported to also occur in Mozambique (Ministério da Agricultura, 2009). Mining activities were widespread in the district as they provided quick cash compared to agriculture (Table 5.1). The activities led to natural vegetation destruction as the miners cleared the land for mining, and the pits served as traps for wild and domesticated animals (Plate 3.2). The assumption is that the mining activities and agricultural practices would eventually reduce the carrying capacity of most farms, cause high siltation levels in rivers and dams, and high levels of pollution and contamination of water sources.

6.1.3 Livelihood Vulnerabilities and Resilience

As people pursue a range of livelihood activities driven in part by their own preferences and priorities, some groups are vulnerable or are left vulnerable by the consequences (Farrington *et al.*, 1999). In this case study, some women were left responsible for the family by their husbands who claimed to be ‘seeking greener pastures’. These women struggled to raise the families on their own and resorted to different activities that brought income. Diverse livelihood strategies were thus more of an option for both rural men and women.

Some youths abandoned farming for mining, poaching and seeking better opportunities in urban areas (Appendix 5.3, Ward 3 observations). This supports Ellis’s (1999) observation that failure

in farming could cause people to opt for non-farm livelihoods in order to support or supplement farming. Non-farm livelihood opportunities could result in total neglect of farming and labour-intensive conservation practices.

Adams and Howell (2001) encouraged financial, research and extension support to countries strengthening the rights of the rural poor through tenure reforms. The rationale for assistance would be to support a more equitable distribution of land and economic opportunity. Despite the resettlement agenda and the existing public services and responsibilities, the resettled communities remain vulnerable. The Sustainable Livelihoods Framework identifies human, physical, social, financial, and natural capital as assets that constitute livelihood building blocks (Ellis, 1999). Table 6.1 summarises the groups identified in this study that were perceived as vulnerable in the resettled areas and highlights the priority needs for development.

Table 6.2 Summarises the ways by which the resettled community showed resilience within contextual vulnerability to the farming challenges and shocks they faced. The Sustainable Livelihood Framework Approach also encourages researchers to look at the ways in which people pursue a range of livelihood activities driven in part by their own preferences and priorities, and the types of vulnerabilities they are exposed to (Farrington *et al.*, 1999).

The challenge of change and acculturation represented in the study examples suggests an opportunity for resolving differences and collective decision making around new norms and behaviours that could lead to confidence and improved monitoring and management of natural resources. Mapara (2009) supported this point by asserting that people have and continue to bring forth new insights and new knowledge systems in their dynamic relationships with each other and the cosmos, from which knowing emanates.

Table 6.1 Vulnerable Groups Analysis

Vulnerable Groups	Causes of Poverty	Coping Strategies	Priority Needs
Youths	<ul style="list-style-type: none"> -Unemployment leading to risk of becoming involved in illegal activities e.g. illegal mining and poaching 	<ul style="list-style-type: none"> -Young men looked for unreliable part- time jobs around farms -Migration in search of employment opportunities -Engaging in illegal activities 	<ul style="list-style-type: none"> -Reliable employment opportunities -Help to complete and further their studies -Being equipped with entrepreneurship skills
Women	<ul style="list-style-type: none"> -Poor housing conditions had negative effects on health -Low levels of awareness of their rights -Weak decision-making capacity -Lack of access to financial services 	<ul style="list-style-type: none"> -Engaged in unreliable part-time jobs around farms -Participated in women’s cooperatives -Mobilized savings for investment in children’s education -Participated in agriculture and livestock production -Illegal mining activities 	<ul style="list-style-type: none"> -Improved housing conditions -Increased awareness of their rights -Access to financial services for investment in economic activities -Improved decision-making capacity within the society.
Former Farm Workers	<ul style="list-style-type: none"> -Lived in poor housing structures -Low wages and unsafe labour conditions -No access to land 	<ul style="list-style-type: none"> -Provided labour on farms -Illegal activities e.g. mining and poaching 	<ul style="list-style-type: none"> -Improved housing conditions -Improved labour conditions -Access to land -Increased savings capacity

Table 6.2 Internal Resilience and Vulnerability

Internal Resilience	A1 Respondents	A2 Respondents
Strengths	<ul style="list-style-type: none"> -Huge reserves of natural resources promote all year round livelihood activities -Economies of scale from optimum utilisation of resources in manageable plots -Diverse ideas from diverse people 	<ul style="list-style-type: none"> -Huge reserves of natural resources promote all year round livelihood sources -Farms are more spacious to promote diversified livelihood activities -Diverse ideas from diverse people -99 year leases that could be used as collateral for loans
Trends	<ul style="list-style-type: none"> -Preservation of culture through traditional institutions -Mixed farming activities supplement each other during shocks 	<ul style="list-style-type: none"> -Most farmers have the capacity to farm because of their background -Mixed farming activities supplement each other during shocks
Seasonality	<ul style="list-style-type: none"> -Wild fruits and vegetables to supplement their diet -Seasons for mining and farming supplement each other on livelihoods all year round 	<ul style="list-style-type: none"> -Wild fruits and vegetables to supplement their diet -Seasons for mining and farming supplement each other on livelihoods all year round
Internal Vulnerability	A1 Respondents	A2 Respondents
Shocks	<ul style="list-style-type: none"> -Culture Shocks -High unemployment -Environmental degradation -Increased poverty 	<ul style="list-style-type: none"> -Culture Shocks -High unemployment -Environmental degradation
Trends	<ul style="list-style-type: none"> -Brain and labour drain -Incapacity to farm 	<ul style="list-style-type: none"> -Brain and labour drain -Incapacity to farm
Seasonality	<ul style="list-style-type: none"> -Illegal Mining Activities -Poaching 	<ul style="list-style-type: none"> -Illegal Mining Activities -Poaching

6.2 Sub-problem Two: Understanding the Impacts of Farming Backgrounds on Farming Practices and Natural Resource Management

6.2.1 Farming Background of the Resettled Farmers

Raftopoulos (2004) and Rihoy and Maguranyanga, (2007) asserted that any economic or social situation in Zimbabwe could best be analysed and understood in the context of its history. Mosley, (1983), Phimister (1988) and Moyo and Skalness (1990) said that the policies of the colonial era combined to produce and maintain cheap labour from the black community for employment in the mines, manufacturing business, farms and homes owned by whites. The remaining black community comprised black peasants who were relegated to areas of lower agro-ecological potential – mostly drier, drought-ridden communal parts of the country (Moyo and Skalness, 1990; Moyo, 1998). The farmers resettled under the FTLRP in the study wards came from a variety of farming backgrounds: communal, commercial, and some had no farming experience at all (Table 5.6; Table 5.9; Agritex Report, 2013). This research showed that most, if not all, of the farmers from communal areas had received some form of education from the Agritex officers and various NGOs where they used to stay before resettlement (Table 5.6; Table 5.9; Agritex Report, 2013).

6.2.2 Farming Practices of the Resettled Farmers

McNeely and Scherr, (2008) mentioned that where wild biodiversity has been significantly reduced to make way for food and fibre production, high levels of ecosystem services could still be provided through intentional land management practices. In this study, there is a mixture of conservation practices associated with damaging patterns of natural resource use and reliance. The influence of farming background is seen in the crops that are grown, the use of production preferences or necessities and the knowledge systems around farming and livelihood decisions.

The crops that were grown around the community in order of importance were maize, tobacco, cotton, sweet potatoes, barley, sorghum, rapoko, millet, Irish potatoes, wheat, soya beans, ground nuts, cowpeas, sugar beans and sunflower (Chapter 3, section 3.2). There had been a downward shift in hectarage of paprika, soya beans, cotton, and wheat. This was partly because the new farmers lacked the capital to sustain the sizes of operations which were taking place on the farms they took over, or for a variety of reasons, they did not prioritise these crops (Kapuya *et al.*, 2012; Maposa *et al.*, 2013; Agritex Report, 2013).

The community showed mixed reactions towards the use of chemicals in agriculture. They mainly used traditional methods to control of diseases, weeds and pests as well as weeding. This was mainly because of the negative attitude towards chemical control of pests and weeds due to the beliefs they had (Table 5.6; Kajembe *et al.*, 2000 in Mulale *et al.*, 2013; Sibanda, 1998) rather than lack of funds to purchase them. These beliefs are already ingrained in the community knowledge system and can be leveraged for encouraging the practice of environmentally friendly methods in NRM. However, the community showed trust in the use of chemical fertilisers (Chapter 3, section 3.2). Since chemical control and chemical fertilisers have equally positive and negative impacts in their respective uses, the basis for mixed reactions towards the use of chemicals demonstrates the other side of IKS where farmers make decisions based on beliefs that lack proven scientific explanation (Sibanda, 1998).

The extension workers and some community elders had been involved in teaching the local community some conservation farming practices (Kajembe *et al.*, 2000 in Mulale *et al.*, 2013) but their efforts were not welcome in the community (section 5.2.2; Table 5.9). Some households were practicing conservation agriculture not because of its many advantages but because they could not afford conventional tillage implements (Table 5.8). The main tillage methods in use in the resettled community were tractor drawn for the households that owned them or could afford to hire them and animal drawn for the rest who owned domestic animals (Table 5.7). The use of tractors was considered prestigious by farmers and this promoted its usage (Table 5.9). The households that did not own the animals were, at times, helped by their neighbours that owned the animals with certain terms attached. Hoeing as a tillage system was used by very few households in both A1 and A2 farms (Table 5.7; Table 5.8). However, many households used hoes for weeding (section 5.2.2).

6.3 Sub-problem Three: An Assessment of Governance Institutions and Policies

6.3.1 Evaluation of Policies and Institutions Responsible for NRM in Kwekwe District

Sjaastad and Bromley (2000) mentioned that the efficiency and sustainability of land reforms is determined by securing property rights backed by the enforcement power of the state (at various levels) or the community. The resettled community acknowledged but showed mixed reactions about the roles of the various NRM institutions in conserving natural resources (Figure 5.1) and enforcing NRM rules and regulations (Table 5.4). Although the structures of the NRM

institutions still existed, they were not fully operating in NRM mainly because of financial constraints (Table 5.10; Maposa *et al.*, 2013; Kapuya *et al.*, 2012). Most projects were lying dormant as a result e.g. CAMPFIRE. The community acknowledged the efforts of the Department of Parks and Wildlife in resolving human wildlife conflicts in their areas (section 5.3.3). However, the Department's anti-poaching system was not reliable. This was attributed to understaffing due to limited funding. Wildlife were left vulnerable without reliable advocacy (section 5.3.3; Table 5.10). Game and firewood poaching were thus on the rise as people from the urban and resettlement areas took advantage of the loop holes (Chapter 3, section 3.2).

The community complained that the ZRP police officers concentrated their efforts in patrolling areas that were rich in natural resources e.g. gold, game and firewood (Section 5.3.4). This meant that other NRM sectors were neglected. The situation was further worsened by corruption as the increasing market for these illegal activities provided good business and extra income for officials and even for local community members (Table 5.1). The diverse responsibilities of some stakeholders like ZRP, EMA and Forestry Commission, coupled with understaffing due to limited funding, crippled their operations in NRM (Table 5.10). As a result, most projects were either aborted, lacked follow ups or were never implemented. This supports Kapuya *et al.*, (2012) in the observation that most projects were on paper and very little was taking place on the ground. The situation was also aggravated by the circumstances under which the policies governing the NRM institutions operated in real life. Katerere, Guveya and Muir (1999) argued that the circumstances which the Communal Land Forest Produce Act and the Forest Act operated were so wide that it was difficult to establish the exceptions, for legal purposes. For example, the laws permit harvesting of forest produce for personal use. Therefore, use and abuse are subjective depending on who is interpreting such laws. Issues like routine fires versus veld fires, clearing land for agricultural purposes versus deforestation, and hunting versus poaching were thus quite difficult to deal with (Table 5.9). This is a strong indicator for the encouragement of traditional knowledge and institutions to play a prominent role in planning and monitoring NRM. For example, the traditional structures were quite weak in the self-contained A1 farms (they were operating under the authority of chiefs only) and hardly existent in A2 farms. However, they were more fully functional, efficient and effective in the villagised A1 communities than in self-contained farms (Figure 5.2).

Sibanda (1998) asserted that the loss of tradition was attributed to the loss of valuable natural resources. The traditional leaders pointed out that the problem was due to different and sometimes conflicting cultures and backgrounds in the same community, which made it quite difficult for the community to agree on certain issues. Some further mentioned that the powers vested in the formal bodies undermined their authority as well as measures initiated by local communities. Others mentioned economic hardships as causal factors for livelihood diversification and forest resources presented an easy option to the community members (Table 5.1, Table 5.2 and Table 5.3). However, some traditional leaders acknowledged and showed great appreciation of the roles of these modern institutions in conserving natural resources through awareness campaigns and enforcing rules and regulations (section 5.3.4).

Agritex, in its involvement in research and extension, was not doing justice to their operations because of delusive assumptions. The research findings showed (section 5.3.4) that the department was targeting the A1 farmers with the assumption that they were from communal areas (Matondi and Dekker, 2011) so their farming knowledge needed to be updated. Moreover, they assumed that the A2 farmers were better off (Matondi and Dekker, 2011) but the research findings showed otherwise (section 5.3.4). The department was, however, in line with its policy design to concentrate efforts in providing agricultural extension services to the smallholder-farming sector as an institutional mandate, while servicing large-scale commercial farmers on request (Hanyani-Mlambo, 2000). The department was facing numerous resignations attributed to poor salaries (Table 5.10), lower than those offered in the private sector (Kramer, 1997). Farmers, from time to time, indicated that Agritex was not providing new and reliable technologies (Mattocks and Steele, 1994). This was acknowledged by the Agritex Chief Officer who complained that farmers had negative perceptions of farmer groups. She further said the farmers lacked motivation from other stakeholders. The lack of NGO activity (Kapuya *et al.*, 2012) and the incapacity of many institutions to support the farmers (ZimVac, 2009) is the main reason for poor NRM and agricultural production. Table 6.3 summarises the vulnerabilities that the resettled community were exposed to due to the performance of NRM institutions below their expected standards.

Table 6.3 Perceived External Vulnerability

External Vulnerability	A1 Respondents	A2 Respondents
Shocks	<ul style="list-style-type: none"> -Donor oversight neglect -Weather and Climatic Change -Insecure land tenure systems 	<ul style="list-style-type: none"> -Donor oversight neglect -Agritex oversight neglect -Weather and Climatic Change -Insecure land tenure systems
Trends	<ul style="list-style-type: none"> -Unreliable markets -Formal and Informal institutions -Low water, sanitation and hygiene coverage -No NGOs 	<ul style="list-style-type: none"> -Unreliable markets -Formal Institutions -Low water, sanitation and hygiene coverage -No NGOs
Seasonality	<ul style="list-style-type: none"> -Government intervention specific to the rain season -Farming activities restricted to rain season by lack of irrigation equipment 	<ul style="list-style-type: none"> -Government intervention specific to the rain season -Farming activities restricted to rain season by lack of irrigation equipment

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

This thesis investigated the emergent process of natural resource use and management in three fast track communities in the Kwekwe District, Zimbabwe. The case study showed how new farmers were interacting, modelling and shaping their physical environment since resettlement. It contributes to the literature on Zimbabwe's fast track land reform Program with analysis and comment on natural resource use and management in Fast Track Communities.

The study showed that in terms of impacts on NRM, the exploitation of natural resources for survival has become normal practice. This is a shift from the previous farming practice and NRM of the agrarian space before FTLRP as well as a shift from the indigenous knowledge system of NRM found in traditional communal settlements prior to FTLRP. The resettled community acknowledged their reliance on natural resources to supplement their diets, for medicinal materials, land use planning and to generate income sources to enhance their livelihoods. However, the observed impacts of humans on the natural environment included degradation of natural resources with widespread reduced animal and plant populations and diversity as a result of mining and agricultural activities. Migration from the resettlement areas was quite high as people sought better opportunities in the process diversifying their livelihoods.

The background of farmers had notable effects on the current farming practices. The farming background of former white farmers was shown to be different from the new farmers resettled under the FTLRP. This resulted in a shift from fully commercial farming to partly commercial and subsistence farming. The farming practices adopted in the resettled community were influenced by the farmers' wealth status, beliefs, and how they perceived farming methods in terms of labour and prestige. As a result, conservation farming ideas were facing resistance while the use of tractors was considered a milestone in development by many. Another reason that caused the farmers to adopt a particular tillage method was its affordability. The community showed mixed reactions towards the use of chemicals, with acceptance of chemical fertilisers and rejection of chemicals to control diseases, pests and weeds.

Governance of NRM was in conflict with farmers' needs, the economic climate, dwindling NRM institutions and the erosion of authority of traditional community leaders. The traditional institutions were weak or they had not yet been fully established as people and cultures were still

merging. The traditional leadership were more functional in the A1 villagised farms while in A1 self-contained and A2 farms the households were involved in NRM. Some traditional leaders appreciated their roles while the farmers were living in constant fear caused by the threat of rules and regulations. The community acknowledged the presence of formal institutions but they had mixed feelings towards them. People were caught between formal regulations of NRM which were threatening to livelihood activities, especially with the harsh economic hardships they were living in. The same economic problems crippled the government institutions in their operations in NRM. This was evident through understaffing and lack of proper equipment. The situation was further worsened by the lack of donor-funded projects around the resettled community.

The abuse and destruction of natural resources is inevitable where people have no alternative. However, the challenge of change and acculturation represented in the study wards suggests an opportunity for resolving of differences through open discussions and collective decision making. There is a need to create opportunities to facilitate new norms and behaviours around natural resource use rather than punitive measures for behaviour aimed at basic survival. An engaged and participatory approach to learning new patterns for decision making could lead to confidence and improved monitoring and management of natural resources at community level. Beliefs ingrained in the community knowledge system could be leveraged for encouraging the practice of environmentally friendly methods in NRM.

REFERENCES

- Adams, M. and Howell, J., 2001, *Redistributive land reform in southern Africa: Natural Resource Perspective*, Number 64, Overseas Development Institute.
- African Union, 2009, *Land Policy in Africa: a framework to strengthen land rights, enhance productivity and secure livelihoods, Framework and Guidelines on Land Policy in Africa Draft 5*, African Union.
- Agritex, 2013, *Agritex Annual Report*, Agritex Office, Kwekwe, Zimbabwe
- Anderies, J. M., Janssen, M. A., and Ostrom. E., 2004, A Framework to Analyse the Robustness of Social-Ecological Systems from an Institutional Perspective, *Ecology and Society*, 9 (1), 18. Viewed 15 December 2013 from <http://www.ecologyandsociety.org/vol9/iss1/art18/>.
- Arrighi, G., 1973 "Labour Supplies in Historical Perspective: A Study of the Proletarianization of the African Peasantry in Rhodesia," in Arrighi and John S. Saul, *Essays on the Political Economy of Africa*, New York and London: Monthly Review Press.
- Besley, T., 1995, "Property Rights and Investment Incentives: Theory and Evidence from Ghana", *Journal of Political Economy*, 103(5), pp 903-37.
- Bradley, P. and Dewees, P., 1993, *Indigenous Woodlands agricultural production and household economy in the communal areas*. In: Bradley, P. N. and McNamara, K. (eds) *Living with trees: Policies for forestry management in Zimbabwe*, The World Bank, Washington DC.
- Braedt, O., and Standa-Gunda, W., 2000, *Woodcraft markets in Zimbabwe*, International Tree Crop Journal 10. Page 1 – 3
- Bromley, D.W. & Cernea, M.M. 1989. The management of common property natural resources: some conceptual and operational fallacies. World Bank Discussion Papers No. 57. Washington., DC, World Bank.
- Campbell, B. M., de Jong, W., Luckert, M., Mandondo, A., Matose, F., Nemarundwe, N. and Sithole, B., 2001, *Challenges to proponents of CPR systems: despairing voices from the social forests of Zimbabwe*, World Development 29.
- Capacitation of Rural District Council, Workshop handout distributed in the unit, Roles of RDCs, Harare International Conference Centre (HICC), Harare, Zimbabwe on 15 February 2010.

Carswell, G., 1997, *Agricultural intensification and rural sustainable livelihoods: 'A thinkpiece'*, Institute of Development Studies, Working Paper 64.

Chenje, M., Sola, L., and Paleczny, D., (ed), 1998, *The State of Zimbabwe's Environment*, Ministry of Mines, Environment and Tourism, Government of Zimbabwe, Harare, Zimbabwe.

Chigumira, E., 2006, *An Appraisal of the Impact of the FTLRP Programme on Land Use Practices, Livelihoods and the Natural Environment at three study areas in Kadoma District, Zimbabwe*, Rhodes University, South Africa.

Child, B. (ed.), 2004, *Parks in transition: Biodiversity, rural development and the bottom line*. London: Earthscan.

Chimhowu, A., Bare. T., Chiripanhura, B., Biti, B., Chung, F., Magure, T., Mtisi, S., Mambondiyani, L., Manjengwa, J., Matshe, I., Munemo. N., Nxele, M., Sibanda, D., 2010, *Moving Forward in Zimbabwe: Reducing Poverty and Promoting Growth*, The Brooks World Poverty Institute, University of Manchester, UK.

Chipika, J. T., and Kowero, G., 2000, *Deforestation of Woodlands in communal areas of Zimbabwe: is it due to agricultural policies?* Agriculture, Ecosystems and Environment. 79:175-185

Chitsike, F., 2003, *A Critical Analysis of the Land Reform Programme in Zimbabwe*, 2nd FIG Regional Conference, Marrakech, Morocco, December 2-5, 2003.

de Treville, D., 1991, *Toward Sustainable Agriculture in East Africa: The Role of NGOs in Participatory Research*, Unpublished Proposal: Xerox Copy, Winrock Institute.

Dekker, M., 2004, *Risk, Resettlement and Relations in Rural Zimbabwe: PhD Thesis*, Copyright Vrije University, and Amsterdam, Australia.

Department For International Development (DFID), 2011, *Department for International Development: Natural Resource Management and Sustainable Rural Livelihoods: Compatibility or Conflict*, Crown Copyright, UK.

Department for International Development, 1999, *Sustainable Livelihoods Guidance Sheet*, DFID Abercrombie House, Glasgow.

Deininger, K., H. Hoogeveen, and B.H. Kinsey. 2002. "Benefits and Costs of Land Reform in

Zimbabwe with Implications for Southern Africa. Paper presented at the Center for Study of African Economies conference, "Understanding Poverty and Growth in Sub-Saharan Africa" St. Catherine's College, Oxford, U.K.

Ellis, F. 1999, *Rural livelihood diversity in developing countries: evidence and policy implications*, Natural Resource Perspectives, Overseas Development Institute.

Ellis, F. and Allison, E., 2004, *Livelihood diversification and natural resource access*, FAO, Livelihood Support Programme (LSP), Overseas Development Group, University of East Anglia, UK.

Ellis, F. and Freeman, H. A., 2004, '*Rural livelihoods and Poverty Reduction Strategies in Four African Countries*', Journal of Development Studies, Vol 40, No. 4.

Ellis, F., 2003, '*Human Vulnerability and Food Insecurity: Policy Implications*, Forum for Food Security in Southern Africa, Theme Paper No. 3, London: Overseas Development Institute, July, Processed.

Environment Africa, 2004, *Greenline Number 26*, Zimbabwe's Leading Environmental Magazine, Harare, Zimbabwe.

Environmental Management Act, 2002, [Online] Available from Environment Management Agency: www.ema.co.zw/.

Environmental Management Agency Report, 2013, *State of the Environment EMA Annual Report*, Kwekwe, Zimbabwe.

Esterhuizen, D., (2010). *Zimbabwe corn and wheat update*. Global Agricultural Information Network (GAIN) Report. Pretoria: GAIN. Viewed on 13 January 2014 from www.gain.fas.usda/Recent%20Publications/Corn%20and%20wheat%20update_Pretoria_Zimbabwe_2-1-2010.pdf.

Fabricius, C., and Kock, E., 2004, *Rights, resources and rural development: Community based natural resource management in southern Africa*, Earthscan, London.

Farrington, J., Carney, D., Ashley, C., and Turton, C., 1999, *Sustainable Livelihoods In Practice: Early Applications Of Concepts In Rural Areas*, Overseas Development Institute Natural Resource perspectives 42, June 1999.

Food and Agriculture Organisation, 1998, *The Traditional Leaders Act (Ed)*, [Online] Available: [www.faolex.fao.org/cgi-bin/faolex.exe%](http://www.fao.org/cgi-bin/faolex.exe%). Accessed 7 March 2015.

Food and Agriculture Organisation (FAO), 2003, *The Rural District Act (Ed)*, [Online] Available: www.fao.org/docs/pdf/zim83837.pdf. Accessed 7 March 2015

Food and Agriculture Organisation, 2009, *The Community's Toolbox: The Idea, Methods and Tools for Participatory Research Publications*, FAO Corporate Document Repository.

Gandiwa, E., Gandiwa, P. and Muboko, N. 2012, Living with Wildlife and Associated Conflicts in a Contested Area within the Northern Gonarezhou National Park, Zimbabwe, *Journal of Sustainable Development in Africa*, 14:6 pp252-260

Global Environment Facility, 2000, *Conservation and Sustainable Use of Traditional Foods in Zimbabwe*, Global Economic Forum Project Document, Harare, Zimbabwe.

Goebel, A., 2005, Is Zimbabwe the future for South Africa? The Implications for Land Reform in Southern Africa, *Journal of Contemporary African Studies*, 23, (3), pp 345-370.

Google Maps, 2014, Map of Zimbabwe [Online] Available on www.maps.google.com/

Government of Zimbabwe, 2002, *The Environment Management Act (Ed)*, [Online] Available: www.cbd.int/./msr-abs-zw-en.pdf.

Government of Zimbabwe, 1975a, *The Communal Land Forest Produce Act (Ed)*, [Online] Available: www.pubs.iied.org/pdfs/7414IIED.pdf. Accessed 12 October 2014.

Government of Zimbabwe, 1975b, *Parks and Wildlife Act*, Government Publications, Harare, Zimbabwe, [Online] Available on: www.parks.it/world/ZW/Eindex.html. Accessed 12 October 2014

Government of Zimbabwe, 1954, *The Forest Act*, [Online] Available: www.fao.org/./ac850e0g.htm. Accessed 12 October 2014

Hanyani-Mlambo, B. T., 2000, Re-Framing Zimbabwe's Public Agricultural Extension Services: Institutional Analysis and Stakeholders Views, *Agrekon*, Vol 39, No 4.

Holden, S., Otsuka, K., and Deininger, K., 2010, Land Tenure Reforms, Poverty and Natural Resource Management: Conceptual Framework, *Journal of Development Studies*.

Kajembe, G. C., Zahabu, E., and Mwenduwa, M. 2000, “*Indigenous Technical Knowledge as Reflected in the Management of Natural Resources in Tanzania.*” In A.S. Kauzeni (Ed) “*Gender, Biodiversity, and Local Knowledge Systems (Links) to Strengthen Agricultural and Rural Development (GCP/RAF/338/NOR): Selected Papers from the First National Workshop Held in Morogoro, 22-23 June, 1999.*” (Links Report No. 3, pp. 12-17)

Kapuya, T., Anseeuw, W., and Saruchera, D. 2012, *Zimbabwe’s agricultural reconstruction: Present state, ongoing projects and prospects for reinvestment*, Development Planning Division Working Paper Series No. 32, Development Bank of South Africa.

Kapuya, T., Saruchera, D., Jongwe, A., Mucheri, T., Mujeyi, K., Ndobongo, L. T., and Meyer, F. H., 2010, *The grain industry value chain in Zimbabwe*, Unpublished draft prepared for the Food and Agricultural Organization (FAO), 2010, www.fao.org/fileadmin/templates/est/AAACP/eastafrica/UnvPretoria_GrainChainZimbabwe_2010_1.pdf.

Katerere, Y., Guveya, E., Muir, K., 1999, *Community forest management: Lessons from Zimbabwe*, IUCN Regional Office for Southern Africa.

Katerere, Y., Moyo, S., and Mujakachi, L., 1993, *The National Context: land, agriculture and structural adjustment and the Forestry Commission*, In Bradley, P.N. and K. McNamara (eds). *Living with Trees: Policies for Forestry Management in Zimbabwe*.

Kinsey, B.H. 1999. “Land Reform, Growth, and Equity: Emerging Evidence from Zimbabwe’s Resettlement Program,” *Journal of Southern African Studies* 25(2).

Kramer, E., 1997, *The early years: Extension services in peasant agriculture in colonial Zimbabwe, 1925-1929*, Department of Economic History, University of Zimbabwe.

Landlearn Organisation, 2014, *Landlearn Natural Resource Management Information on: www.landlearnnsw.org.au/./nrm*.

Le Bel, S., Murwira, A., Mukamuri, B., Czudek, R., Taylor, R., and La Grange, M., 2011, *Human Wildlife Conflicts in Southern Africa: Riding the Whirl Wind in Mozambique and in Zimbabwe, The Importance of Biological Interactions in the Study of Biodiversity*, InTech, Europe, Available from: <http://www.intechopen.com/books/the-importance-of->

biologicalinteractions-in-the-study-of-biodiversity/human-wildlife-conflicts-in-southern-africa-riding-the-whirl-wind-inmozambique- and-in-Zimbabwe.

Mapara, J., 2009, *Indigenous Knowledge Systems in Zimbabwe: Juxtaposing Postcolonial Theory*, Department of African Languages and Literature, Great Zimbabwe University, Masvingo, Zimbabwe.

Maposa, R. S., Hlongwana, J., and Muguti, T., 2013, Marching forward to the past? Challenges and prospects for the new theology of land in Zimbabwe, *European Journal of Sustainable Development*. 2:1, pp133-148

Matondi, P. B., 2008, *Institutional and policy issues in the context of the land reform and resettlement programme in Zimbabwe*, in C. T. Khombe and L. R. Ndlovu, *The Livestock Sector After the Fast Track Land Reforms in Zimbabwe*, Zimbabwe: Institute of Rural Technologies.

Matondi, P. B., and Dekker, M., 2011, *Land Rights and Tenure Security in Zimbabwe's Post Fast Track Land Reform Programme: A Synthesis report for LandAc*, Ruzivo Trust and African Studies Centre, Harare, Zimbabwe.

Mattocks, D. M. and Steele, R. E., 1994, Non-Government Paradigms in Agricultural Development: A Relationship of Collaboration or Competition? *Journal of International Agricultural and Extension Education*, Winrock International Institute for Agricultural Development.

McNeely, J. A. and Scherr S. J., 2008, *Ecoagriculture: strategies for feeding the world and conserving wild biodiversity*, Island Press, Washington, DC: Island Press.

Ministério da Agricultura, 2009, *Informe Sobre a implementação da Estratégia de Gestão de Conflito Homem-Fauna Bravia*, de Janeiro, Brasil.

Mohammed-Katerere, 2001, Participatory Natural Resource Management in the Communal Lands of Zimbabwe: What Role for Customary Law?, *African Studies Quarterly* 5:3, 115-138

Mortimore, M., 1998, *Roots in the African dust*, Cambridge University Press, Cambridge, UK.

Mosley, P., 1983, *The Settler Economies: Studies in the Economic History of Kenya and Southern Rhodesia 1900-1963*, Cambridge: Cambridge University Press.

Moyo, S., 2011, Three decades of agrarian reform in Zimbabwe, *The Journal of Peasant Studies*, 38:3, 493-531.

Moyo, S., 2004, *A Review of Zimbabwean Agricultural Sector following the Implementation of the Land Reform: Overall Impacts of Fast Track Land Reform Programme*, 2nd Draft: 13 May 2004. http://archive.kubatana.net/docs/agric/aias_land_reform_040513.pdf. Accessed 13 December 2013.

Moyo, S., 1998, *The Land Acquisition Process in Zimbabwe (1997/1998)*, Harare, UNDP.

Moyo, S., 1995, *The Land Question in Zimbabwe*, Sapes Books, Harare.

Moyo, S., 1989, "Agriculture Employment Expansion: Smallholder Land and Labour Capacity Growth", Harare: ILO, mimeo.

Moyo, S and Skalness, T., 1990, *Land reform and development strategy in Zimbabwe: state autonomy, class and agrarian lobby*, Zimbabwe Institute of Development Studies, Afrika Focus, Vol. 6.

Moyo, S., and Yeros, P., (eds) 2004, *Reclaiming the Land: The Resurgence of Rural Movements in Africa, Asia and Latin America, forthcoming*, Zed Books, London.

Mulale, K., Matema, C., Funda, X., Slater-Jones, S., Njovu, D., Kanguishi, G., Hay, D., Crookes, V., 2013, *Community-Based Natural Resource Management in Southern Africa*, Centre for African Studies, University of Florida.

Nature Conservancy, 2004, *The Nature Conservancy's 2015 goal*. Available on: <http://sites-conserveonline.org/gpg/projects/tnc2015goal.html>. Accessed 7 March 2015.

Outreach Television Trust for the Environment (Outreach/TVE), 2002, *Understanding Soil in: Soil Series Introductory Pack: Soil Erosion and Soil Degradation*, Soil Series Solution Pack, OUTREACH/TVE in association with Global Environment Facility (GEF) and Worldwide Fund for Nature (WWF), UK.

Parks and Wildlife Management Authority Comptroller and Auditor-General, 2003, *Protection and Conservation of Wildlife Report for the Ministry of Environment and Tourism*, Presented to Parliament of Zimbabwe, Harare, Zimbabwe. (PAGE 28)

Parliament Research Department, 2011, *Kwekwe Constituency Profile*, Parliament of Zimbabwe, Harare, Zimbabwe.

Phimister, I., 1988, *An Economic and Social History of Zimbabwe 1890-1948: Capital Accumulation and Class Struggle*, London and New York: Longman.

Raftopoulos, B., 2004, *Current politics in Zimbabwe: Confronting the crisis*, in *Zimbabwe: The past is the future*. Harare: Weaver Press.

Rihoy, E., and Maguranyanga, B., 2007, *Commons Southern Africa: Devolution and democratisation of natural resource management in southern Africa: A comparative analysis of CBNRM policy processes in Botswana and Zimbabwe*, Centre for Applied Social Sciences/Programme for Land and Agrarian Studies, University of Zimbabwe, Harare, Zimbabwe.

Scoones, I., 2008, *A New Start for Zimbabwe: Livelihoods After Land Redistribution In Southern Africa*, Copyright Reserved CRM and CMS Websites by Open Networks, University of Western Cape, South Africa.

Scoones, I., Marongwe, N., Mavedzenge, B., Mahenehene, J., Murimbarimba, F. and Sukume, C., 2010, *Zimbabwe's Land Reform: Myths and Realities*, New York and Harare: James Currey and Weaver Press.

Sibanda, H., 2004, *Sustainable Indigenous Knowledge Systems in Agriculture, Zimbabwe Case study*; in *Local Pathways to Global Development*. IK Notes, World Bank pp76-77

Sida (Methods Development Unit), 2001, *Sida's Policy for Capacity Development as a Strategic Question in Development Cooperation*. Stockholm

Taylor, R. D., 2006, *Case Studies on Successful Southern African NRM Initiatives and their Impacts on Poverty and Governance*, USAID, International Resource Group.

Turner, B. L., Hyden, G., and Kates, R. W., (eds), 1993, *Population Growth and Agricultural Change in Africa*, Gainesville, University Press of Florida.

United States Aid (USAID), 2010, *USAID Country Profile: Property Rights and Resource Governance, Zimbabwe*, USAID Information Portal, USA.

Verhelst, T.G., 1990. *No life without roots: Culture and development*. London-Zed.

Wiggins, S., 2004, *Food Security Options in Zimbabwe: multiple threats, multiple opportunities*, [Online], Available: www.odi.org.uk-security-forum [10/06/2005]. Accessed 16 December 2013.

Williams, D. L. and Muchena, O. N, 1991, Utilising Indigenous Knowledge Systems in Agricultural Education to Promote Sustainable Agriculture, *Journal of Agricultural Education*. Winter, pp 52 –56.

Wolmer, W., Chaumba, J., Scoones, I., 2003, *Wildlife Management and Land Reform in Southeastern Zimbabwe: A Compatible Pairing or a Contradiction in Terms?* Sustainable Livelihoods in Southern Africa Programme, Environment Group, Institute of Development Studies, University of Sussex, Brighton BN1 9RE, United Kingdom.

WordWeb, 2014, *WordWeb Dictionary* [Online] Available on: <http://www.wordwebonline.com/?WW>

World Wide Fund for Nature Southern Africa Regional Programme Office (WWF-SARPO), (2005), *Human wildlife conflict manual*. Harare, Zimbabwe, WWF-SARPO.

Yin, R. K., 2003, *Case study research: design and methods* (3rd ed.), Thousand Oaks, CA: SAGE Publications, Inc.

Zibagwe RDC Map, 2014, *Map of Kwekwe District*, Zibagwe RDC Offices, Kwekwe, Zimbabwe.

Zikhali, P., 2008, *Fast Track Land Reform and Agricultural Productivity in Zimbabwe*, Environment for Development; Discussion Paper Series.

Zim Asset, 2013, *Zim Asset, "Towards an Empowered Society and a Growing Economy"* October 2013- December 2018, Government of Zimbabwe.

ZimRelief, 2008, [Online] *ZimRelief Information* Available from: www.fao.org/reliefoperations/.

ZimStat, 2002, *A Compendium of Statistics*, Central Statistics Office, Causeway, Harare, Zimbabwe


ZimVAC (Zimbabwe Vulnerability Assessment Committee), 2009, *ZimVAC Urban food security assessment*, National Report. Harare: ZimVAC.

APPENDICES

Appendix 4.1: Research Permission (District Administrator)

Ministry of Local Government, Rural and Urban Development

Tel: 263 (055) 23721/3, 22947
Fax: 263 (055) 23722



Office of the District Administrator
P O Box 114
Kwekwe

Zimbabwe

Please quote Our Ref no. _____

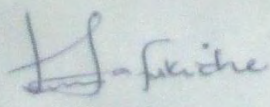
20 August 2013

TO WHOM IT MAY CONCERN

This note serves to confirm that Mumanyi Farai I.D Number 08-814014227 has been cleared by this office to carry out a research in this District under your area. The data collected is strictly for academic purposes.

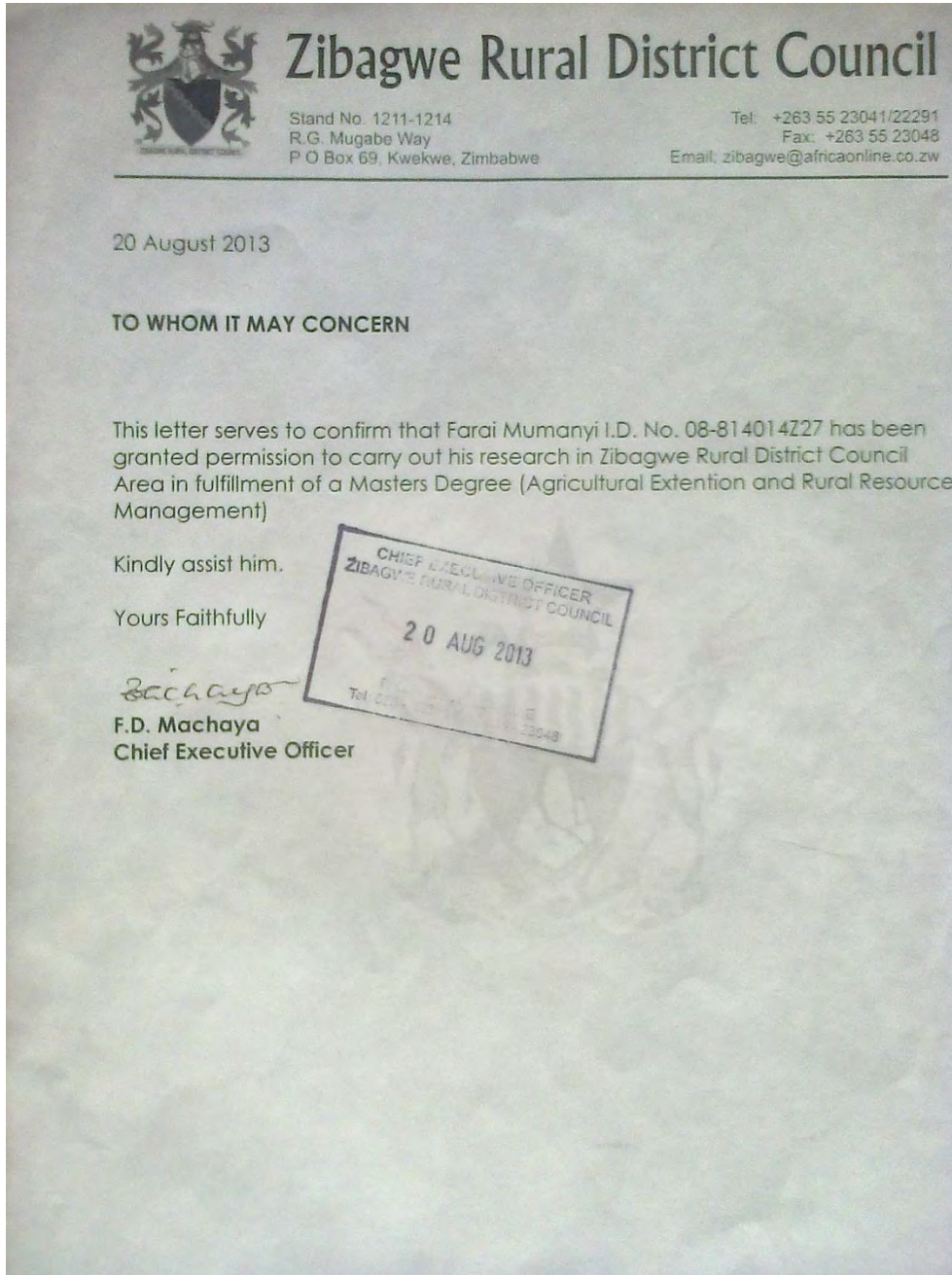
May you render him positive support.

We bank on your support.


M.M. Mafukidze
For DISTRICT ADMINISTRATOR



Appendix 4.2: Research Permission (Zibagwe Rural District Council)



Appendix 4.3: Semi-structured Key Informant Guide, Kwekwe District, Zimbabwe
Livelihoods Impacts and Implications in the FTLRP Agro-ecological Zones of Zimbabwe

Name of Institution.....Position of Respondent.....

What is the role of your institution in this community?

Is your institution involved in livelihoods enhancement to the various households of this community and if so, how?

From the time that your organisation started its operation in this community until today, what changes have taken place in the livelihoods of this community?

How is your institution involved in the sustainable use and conservation of natural resources in this community?

Can you describe the changes that you might have noticed from the time you started operating in this community up to now, especially in the following?

Tillage practices.....

Grazing pastures.....

Forest resources.....

Wild animals.....

Water resources.....

Land (Soil).....

Other (specify).....

Is agriculture the main source of livelihood in this community?

How productive has the agricultural sector been in this community and what do you attribute the situation you mentioned to?

What are the other forms of livelihoods that are emerging in this community and how useful are they to the well being of the local resettled community?

How are these emerging forms of livelihoods impacting the surrounding natural resources?

In about 5 to 10 years time, what do you think the situation in this community will be, regarding:

Livelihoods.....

Natural resources.....

Agricultural production.....

Appendix 4.4: Household Questionnaires, Kwekwe District, Zimbabwe

Livelihood strategies in the FTLRP Communities of Zimbabwe (Kwekwe District Case Study)

Name of Respondent.....Position in Household.....

Have you ever been involved in any form of agriculture before you settle here?	1. Yes 2. No
Did you receive any form of agricultural education either then or now?	1. Yes 2. No
What do you use for tillage in your fields?	1. Animal draught power (plough) 2. Mechanised draught power (tractor) 3. Digging (hoeing) 4. Conservation tillage
Where did you get the idea of the tillage practices that you are currently applying?	1. Forefathers 2. AGRITEX Extension Officers 3. NGOs 4. Others (specify).....

Which of the following activities have you been involved with in the last year as a response to economic and natural shocks and challenges?		
Activity	1. Yes	2. No
Increase area of cultivation	1	2
Establish a woodlot (plant trees)	1	2
Establish a food garden	1	2
Panning of minerals	1	2
Sand extraction	1	2
Cutting and selling wood/timber	1	2
Selling wild fruits, insects, mushrooms	1	2
Hunting wild animals	1	2
Arts and crafts	1	2
Others (specify).....	1	2

Did you harvest anything from the environment in the last 12 months?	1. Yes 2. No (skip this section)			
	If yes above, what did you harvest from the environment in the last 12 months?			
	1. Yes 2. No		If yes, did you sell it? 1. Yes 2. No	
Wild fruits	1	2	1	2
Wild vegetables	1	2	1	2
Insects	1	2	1	2
Medicine	1	2	1	2
Wildlife (mammals and birds) and other products like horns, tusks, hide	1	2	1	2
Firewood	1	2	1	2
Wood for carving	1	2	1	2
Thatching grass	1	2	1	2
Rocks/stones	1	2	1	2
Water	1	2	1	2

Regulations	Are the following regulations that were put in place by the government being enforced and followed in this community? 1. Yes 2. No	If yes, who is enforcing these regulations? 1. Households themselves 2. Community leaders (CLs) 3. Government Agencies (GAs) 4. ZRP Officers
Prohibiting cutting down of trees	1 2	1 2 3 4
Regulations on soil conservation	1 2	1 2 3 4
Prohibiting killing of animals	1 2	1 2 3 4
Prohibiting mineral panning	1 2	1 2 3 4
Prohibiting uncontrolled veld fires	1 2	1 2 3 4
Prohibiting land and water pollution	1 2	1 2 3 4

Appendix 5.1: Field Notes from Key Informant Interviews

Interviews with Key Informants

Ministry of Lands and Resettlements

According to a respondent at the Ministry of Lands and Resettlement, the Ministry demarcated the land and equal opportunity was given to men and women. The land that was allocated under the FTLRP comprised newly acquired land (taken from the owners) and repossessed land (taken from incompetent settlers). The resettlement was ongoing since there was the need to reclaim the land from incompetent settlers and redistribute it. The assumption was that over time, children would inherit the land from their parents. Moreover, a 99 year lease provided room for further land redistribution in the future. The Ministry of Lands and Resettlement was carrying out some veld fire awareness campaigns while the AEWs were quite active in advising on ways to minimise overgrazing.

The rural scenario was dominated by two legally defined institutions, Rural District Councils and traditional leaders, and provided for under the RDC Act and the Traditional Leadership Act. Other key players are political parties - particularly the ruling Zanu-PF, non-governmental organisations (NGOs), community-based organisations (CBOs) and the structures provided for under the decentralisation programme.

Zibagwe Rural District Council (RDC)

According to the Agriculture and Natural Resources Officer at the RDC, Zibagwe Rural District Council was responsible for coordinating the overall NRM in the district by strengthening community based development structures. In order for the RDCs to be able to effectively manage their environment, they were obliged to establish Environment Conservation Committees which would oversee the management of the environment with the Environment Management Agency (EMA), FC, Agritex, and Department of Parks and Wildlife. The CAMPFIRE project was not operational in the district in supporting CBNRM due to lack of funds from the government and donors.

Agriculture was the main form of livelihood in the resettled community. However, mining activities were widespread throughout the district as the second greatest livelihood form. There

were therefore serious cases of land degradation since the land was not rehabilitated after mining activities.

The crops that were being grown in the resettled communities were tobacco, sweet potatoes, Irish potatoes, maize, wheat, barley, sorghum, rapoko, sorghum, cotton, soya beans, sunflower, round nuts, cowpeas and sugar beans. The community used chemical and cultural control of diseases, weeds and pests with some mechanical control (weeding) common in some areas. The animals that were being domesticated in the area included cattle, goats, poultry, pigs and sheep which grazed/browsed in the community grazing pastures.

The traditional leadership set up was slowly fading especially in the A1 self-contained and A2 communities. These communities were instead monitored much by modern institutions that included RDC, EMA, Agritex, ZRP, FC, and Department of Parks and Wildlife. However, in the A1 villagised communities, the traditional set up was still in existence and functional with the assistance of the modern institutions earlier mentioned. The existing traditional set up acknowledged and showed great appreciation of the roles of these formal institutions in conserving natural resources through awareness campaigns and enforcing rules and regulations.

The wild mammals that were still found included *Aepyseros melampus* (impala, *mhara*, impala), *Sylvica pragrammia* (duiker, *mhembwe*, *impunzi*), and *Lepus capensis* (scrub hares, *tsuro*, *umvundla*) while some like *Tauro tragusoryx* (eland, *mhofu*, *impofu*) and *Tragelaphus strepsiceros* (greater kudu, *nhoro*, *ibhalabhala*) were almost extinct since they were quite easy to hunt and some had been forced to relocate as forests became human settlements. The common bird hunted or at times domesticated was *Numida meleagris* (guinea fowl, *hanga*, *itendeli*). Fishing activities were quite common especially near water sources (Kwekwe and Sebakwe River). Insects were used as relish, with the commonly used around the district being mopane worms (*madora*, *amacimbi*), termites (*majuru*, *ishwa*), crickets, and grasshoppers. Mice and crickets were found by digging into the soil, thereby leaving numerous holes that were dangerous to animals and humans.

According to the RDC Agriculture and Natural Resources Officer, before resettlement the large scale commercial farmers were using conventional farming techniques. They used tractor drawn implements, inorganic fertilisers and chemical control of pests, diseases and weeds. During winter periods, the former farmers used to clear the land by burning the crop residues since they

believed that the residues harboured diseases, pests and seeds for weeds that would be carried over to the next season.

Department of Agricultural, Technical and Extension Services (Agritex)

The main target for Agricultural Extension Officers (AEWs) was the A1 farmers with the assumption that the A2 farmers had their own farm managers who had adequate and appropriate farming knowledge whilst A1 farmers had communal background/ knowledge which needed to be updated.

Most of the resettled land owners both in A1 and A2 areas were people from communal areas, civil servants and politicians some of whose professions and backgrounds had nothing to do with farming. These people came from communal areas, former farm workers or people who migrated to urban areas from farming areas. This means that they were previously involved in some aspect of farming. Some had received farming education from the extension officers, secondary schools and tertiary institutions and various NGOs where they used to stay before resettlement.

Kwekwe district used to practise intensive mixed farming of beef and crop production but due to changes brought about by the Agrarian reforms, there was a slight shift as land sizes were reduced in an effort to accommodate as many families as possible. Beef and crop production were still being done although the beef herd had been reduced significantly. Other sectors such as dairy, small stock and game farming were still operational, although some dairy farms were also downsized, thus resulting in reduction of herd sizes. There was no major shift in stocks of small livestock. There had been a downward shift in hectares planted of paprika, soya beans, cotton, wheat and barley. Groundnuts were usually in surplus due to lack of markets. The new farmers lacked the capital to sustain the sizes of operations which were taking place on the farms they took. This was further worsened as the government was unable to finance all the farmers due to economic hardships and the refusal by the international community to intervene.

There were quite a number of challenges that were currently being faced by the AEWs in the district. These included long distance coverage accompanied by lack of efficient transport with a ratio of one functional motorbike to every ten AEWs. There was also the need to provide them with handsets and a monthly allowance for airtime for effective communication. The accommodation was suboptimal for them, as they were still using the structures constructed in

the colonial era. They always operated without teaching materials such as flipcharts, markers, teaching aids and subsistence allowances which would have aided them in demonstrations.

The farmers themselves had negative perceptions of farmer groups and they lacked motivation from other stakeholders and farmer organisations. The AEWs usually could not access the land owners who were always unavailable due to other commitments such as employment in urban areas.

Environment Management Agency

The officer at EMA complained that the ratio of Environment Management Agency officers to people was problematic as one officer was required to take care of the whole district. The situation was further worsened by the fact that their responsibilities were so diverse, covering areas like agriculture, mining, and urban waste management. As a result, most projects were on paper and very little was taking place on the ground. The situation was further worsened by lack of funding.

Livestock Department

The Officer in Charge mentioned that agriculture was the main form of livelihood in the resettled community. The communities were also involved in mining, fishing, hunting and gathering wildlife products. The main crops grown in the district were maize, cotton, soya beans and wheat. The farmers used chemical and cultural methods of controlling plant diseases, weeds and pests. There was also significant use of both artificial (inorganic) and organic (manure) fertilisers in the fields. There were few cases of conservation tillage although this method greatly improved the yields, particularly of maize. Extension officers had been involved in teaching the local community some conservational practices but they were not welcome in the community who labelled conservation farming as labour intensive.

The animals that were mainly domesticated were cattle, goats and poultry with a few pigs, sheep and donkeys. These animals grazed/browsed along rivers; and grazing pastures and paddocks, depending on the Agrarian model. The stocking rate in the district was four livestock units per hectare. Before resettlement the large scale commercial farms used to have paddocks that were used for rotational grazing.

Mining activities were widespread in the district and they had left an aftermath of natural vegetation destruction, with the pits serving as traps for wild and domesticated animals. The mining activities had reduced the carrying capacity of most farms in the district. There were cases of high siltation levels in rivers and dams as well as high levels of pollution and contamination of water sources arising from mining and poor agricultural activities.

Sebakwe Conservation and Education Centre

The centre was a state owned institution involved in educating locals on wildlife conservation as well as sourcing funds for livelihoods enhancement projects. These projects such as nutritional gardens and bee keeping were aimed at reducing pressure on the environment. The surrounding resettled community were now able to feed their families as well as send their children to school with the assistance they obtained from the funded projects. All the projects that were promoted by the centre were environmentally friendly and aimed at promoting environmental sustainability e.g. bee keeping projects emphasised the importance of trees.

The Head of Sebakwe Conservancy stated that agricultural production was hindered by lack of farming resources among the resettled community. As a result, agriculture was mainly subsistence. Most farmers in the surrounding community used ox-drawn implements and a few had the capacity to hire tractor drawn implements to till their land. This showed a major change since the former farm owners used tractor drawn implements only.

The Head of the Conservancy further mentioned that wild animal populations had significantly decreased since 2000, with some species becoming very rare as human settlements increased. Dangerous animals like snakes, hyenas, and wild dogs were killed for safety reasons, thereby disturbing the natural ecosystem. Wildlife suffered the consequences of river siltation because of mining activities, poor agricultural activities and other livelihood activities. Moreover, most villagers no longer had any reliable water sources and thus relied on water from the centre.

Land cover (vegetation) had decreased significantly as more vegetation was cleared by veld fires and other land was cleared for farming. Forest resources were decreasing as the numbers of people who were gathering wood from the forests were increasing. The incessant power cuts in Kwekwe urban areas resulted in people flooding the nearby rural areas illegally searching for and poaching firewood.

Chiefs and Headmen

According to some chiefs from the district, the communities made their living from diversified livelihood sources. The main livelihood source was agriculture, while mining activities were quite common. Some households relied on remittances from their spouses, relatives and employers in the urban areas. Wild products were gathered and animals hunted, especially by herd boys who spent most of the time with their animals in the forests. Women were involved mainly in gathering firewood, meanwhile they could also have harvested wild products.

The chiefs interviewed emphasised that the new villagised communities were not allowed to fell down living trees for firewood or any other purpose. They were only allowed to collect and use dead trees that were found in the forests. However, for those who needed to create some space for settling, agriculture or any other purpose, they could seek permission from the traditional leaders to do so.

There were heavy fines and laws that were established long ago, to promote the conservation of the surrounding natural resources. There were still some sacred places in the community e.g. Mabodo area in Ward 31. Weird things were believed to happen there if anyone went there and failed to follow the traditional rules of the place. The term '*Mabodo*' means three legged pot in the local Shona language. It was believed that there were golden pots that could be seen to appear and then disappear from time to time and could disappear, as well as huge python snakes which would appear in large numbers if the rules were violated. These myths helped to keep the natural resources intact up to the present day.

According to the chiefs and headmen of various communities visited; in a villagised set up trees, stones and rocks, hills and kopjes, water sources located near a homestead or in a field belonging to a certain household, automatically belong to that family and cease to be a common pool resource. This was not influenced by the laws but by the tradition, norms and values of the community. If anyone wanted to use any such resource, he/she had to consult the nearby homestead first for permission. This gave a sense of belonging to the community members who therefore monitored and protected the resources. However, because of different backgrounds and cultures of people in the resettled community, there were significant cases of people fighting over such issues.

In some of the communities visited, especially the A1, there were some trees that were used as places for cultural meetings and the performance of traditional rituals, therefore these and the surrounding ecosystems were not disturbed by anyone. Around the district, the common trees used for these purposes were *Parinari curatellifolia*, (*muhacha*, *umkhuna*, mobola plum), *Burkea Africana* (wild syringa, *mukarakati*, *umnondo*) and *Sclerocaryabirrea* (amarula, *mupfura*, *umganu*). For *Uapaca kirkiana* (Wild loquat, *muzhanje*, *umhobohobo*), the traditional leaders and adults in some areas were very strict and believed that the fruits were to be picked only from the ground since some referred to them as food for passing travellers so that the harvest was from the ancestors to feed everyone. The fruits were therefore not harvested from the trees allowing for the protection of brittle branches.

The elders in the community acknowledged the importance of various indicator plant species that they believed had been helping previous generations to show areas with unique characteristics such as soil chemistry, depth, structure, water logging, and drainage. *Syzygium species* (waterberry, *mukute*, *umdoni*) and *Parinari curatellifolia* (mobola plum, *muhacha*, *umkhuna*) were associated with waterlogged soils. *Colophospermum mopane* (mopane, *iphane*) was usually associated with shallow waterlogged poor soils. *Brachystegia spiciformis* (*msasa*, *musasa*, *ingonde*) and *Acacia rehmanniana* (silky acacia, *muunga*, *umpumbu*) were associated with well drained deep soils. This signified their importance to the community for agricultural purposes, siting wells and therefore the need for conserving them.

Traditionally, people used certain indigenous trees to predict fortunes and disasters, such as rainfall and drought. For example, a flowering *Mopane* tree and a heavy *muhacha* fruit crop were associated with drought in the subsequent rainy season. It was believed that the bumper *muhacha* fruit harvest would compensate for poor agricultural harvests due to the drought and provided food for the people. As a result, there were heavy fines that were put in place by the traditional leaders to conserve these species.

For wildlife, controlled hunting was being practised especially by the A1 community to allow breeding, but this was quite a challenge. According to one headman in Ward 3, “*No hunting is allowed in the rainy season as animals will be having young ones and are also too easy to track. Mammals suckling young ones are not to be killed and the young should not be killed either.*”

Department of Parks and Wildlife

The Officer in Charge who was interviewed quoted most of his responses from the filed documents. He said the department was involved in utilizing and allocating quotas to private landowners, Rural District Councils and other appropriate authorities after research to ensure way of promoting sustainable utilisation of wildlife for the benefit of all Zimbabweans. This was supported by paragraph 5.7.3 of the Policy for Wildlife Zimbabwe which stated that the department had to be involved in carrying out detailed research before allocating quotas so as to have an insight into factors that would determine the setting of quotas in the requisite areas. The department also monitored the utilisation of the allocated quotas on both private land and park estates based on the provisions of paragraphs 5.7.3 and 5.7.4 of the Policy for Wildlife Zimbabwe. The paragraphs stated that the authority should monitor wildlife populations which are hunted and enforce regulations designed to maintain high standards in the sport hunting industry. The Sebakwe Conservancy which the researcher visited in Ward 2 was run by the Department of Parks and Wildlife.

The operations of the department in terms of protecting and conserving wildlife involved the anti-poaching system. The system had, however, been affected by the economic crisis and manpower shortage. Wildlife was thus left susceptible to poaching because the scouts on patrol could not ensure the safety of the wildlife in the park's area because of the low average scout density; the scouts were too old to be active; they lacked proper training, and there was inadequate communication and other equipment necessary for the efficient performance of scouts in the field.

Forestry Commission

Efforts to interview the Officer in Charge of the district proved fruitless as he was inaccessible. The researcher was assisted by various members of Zibagwe Rural District Council who collectively possessed the knowledge on how all the stakeholders in NRM worked and they were willing to assist with information on how the Forestry Commission performed its duties in managing forests. They referred to the previous work they had carried out together, details of which were filed.

They mentioned that the guidelines that the Forestry Commission used were documented at national level as the country drafted a National Strategy for the Sustainable Management of Forests to address the problem of deforestation. This policy aimed at improving environmentally sound harvesting practices, promoting afforestation programmes, increasing agro forestry activities, promoting non-consumptive use of forest resources and value added secondary processing of forest products at the community level. The policy thus targeted to empower and increase the capacity of the Forestry Commission in monitoring deforestation and changes in the vegetation cover.

They, however, said because deforestation was on the rise, and that the Government had realized the need to adopt a more integrated approach to resource management using participatory methodologies e.g. involving NGOs, however, the initiatives could not reach the resettled community since the international community avoided such areas. The ratio of Forestry Commission officers to people was also problematic, as one officer was required to take care of the whole district. There were daunting signs of deforestation throughout the study wards. They concluded by mentioning the need for more investment into affordable alternative energy sources in order to reduce rural communities' dependency on fuelwood, as planned by the government.

Zimbabwe Republic Police (ZRP)

The attempts to interview the members of the ZRP were futile as they were not comfortable to say anything pertaining to their work in the district. Regardless of all the efforts, including supplying the acceptance letter, university ID and other approval documents, these were futile. They, however, mentioned procedures which needed to be followed to allow them to release information; these took too long and the process could not be completed within the academic time-frame.

Appendix 5.2: Field Notes from Focus Group Discussions

Agricultural Extension Workers and A1 Villagised Community Responses

Ward 31 Responses

The ward had three extension workers who covered all the resettled community in the ward. Awareness campaigns were being done to encourage methods of farming that slowed down the rate of soil erosion, illegal mining practices as well as encourage the community not to dispose of chemicals that kill fish, birds and wild animals.

However, they mentioned that the wild animal population had significantly declined as some were hunted and killed while others fled as the forests were being cleared. The pastures in the ward were failing to support the livestock because the area had poor and sparse grass. Fire breaks were either not constructed or maintained and with rampant veld fires, flora and fauna were at great risk. The roads linking farms were in a dire condition because they were never maintained.

Water was a major problem in the area with people travelling very long distances to the rivers which provided the main water source for the communities as they were failing to drill boreholes and wells due to the low water table of the area. Some soils were inherently poor and needed to be supported with nutrients through fertilisers and manures but the support was not enough since the international community shunned the resettled community and the government lacked the capacity to assist the farmers fully.

The yields of the area were slightly below the expected average because the farmers did not have capital, inputs, machinery and there were frequent dry spells. The farmers attitudes towards farming were, however, good and with effective development assistance, they had great potential to attain high yields. Some parts of the ward had irrigation pumps and irrigation schemes which assisted some members of the community to grow crops all year round. Farmers with irrigation equipment always had high yields and this was the main cause of the economic gap between farmers in the ward.

Mining and fishing activities were quite common in the area and some families derived their livelihoods from them.

Ward 2 Responses

The ward had four extension officers that covered the resettled communities in the ward. They mentioned that the farming methods they had been teaching the community were adopted quite well. However, conservation methods of farming faced serious resistance in the community as the farmers stated that the methods were labour intensive, although they acknowledged the high yields that could be attained by using them. Some members of the resettled community had constructed contour ridges while in most parts they were just pegged and were yet to be constructed. Crop rotation practices were being carried out, mainly between maize, groundnuts, sugar beans, wheat in irrigated plots and Bambara nuts. Agricultural production was on the increase as the farmers were zealous to farm. This is an area of further research. To identify why farmers choose the crops they do.

The farmers themselves created committees to monitor the natural resources, working together with the responsible authorities and modern institutions. Anti-poaching campaigns had been done and the neighbourhood committees assisted the police in prosecuting the culprits. The Department of Parks and Wildlife Authority delegated officers who destroyed the areas where the baboons were living and, as a result, the baboons relocated and were no longer problematic. Some farmers were beginning to repair fences so that they could start practicing rotational grazing.

Former farm labourers were well known throughout the ward as they moved from farm to farm looking for part-time jobs. They resorted to selling natural resources if they failed to find jobs. The land owners were becoming wealthier while their workers were growing poorer every year and this had a negative bearing on the natural resources. Since the poor people of the community were always exposed to the natural resources in and around the farms, they always resorted to them for livelihood activities.

Ward 3 Responses

The ward had three extension officers who covered the resettled communities in the ward. Farmers were responding fairly well to conservation farming methods although they complained that they were labour intensive. With the conventional methods that were commonly used, the farmers obtained an average of 3.5 tonnes per hectare for maize and other crop yields were quite good.

Through awareness campaigns, the incidences of veld fires had decreased significantly. However, the main problem of veld fires came from gold panners who would try to clear the forests for their mining activities. Deforestation was quite high, especially in the villagised A1 areas where people gathered forest resources for fencing poles, timber for their houses, and grass for thatching. Poachers were quite common in some parts of the ward but there was significant progress with officers from EMA and the Department of Parks and Wildlife doing patrols to enforce rules against such issues.

However, they mentioned that some natural resources were at risk of depletion since the community relied on them for business, especially when it was not the farming season. This was quite common in the villagised set up where people with almost the same background and culture of heavy reliance on natural resources were settled together. In mining areas there was some likeliness to see a continued decrease in agricultural production as farmers resorted to mining activities that brought quick cash. The community relied on boreholes since the area did not have any dams or rivers.

These were development structures (resource monitors) established at a local level that were operational, but which were not supported by any institution. The Environment Committees and monitors from the RDC were not known by the community .

General Trends

The sizes of A2 farms and the nature of self-contained farms made it quite difficult for the community to interact, unlike in the A1 villagised community. This weakened the influence and authorities of traditional leaders. The various groups of people in the resettled communities from different backgrounds and cultures meant that there were diverse lifestyles and forms of livelihoods. The land owners in the district were both men and women. However, there were cases of women-headed families as their husbands had either moved to the urban areas to search 'for greener pastures' or had run away from family responsibilities. The community had quite poor housing structures, mostly made from wood and a few from bricks. This could be attributed to insecurity reasons due to the existing land tenure systems, as well as lack of capital to improve their structures.

Personal observations and input from extension officers showed that most families that were located in areas close to rivers, dams and that had boreholes and wells also had nutritional

gardens. Since the farmers could not afford fences, they used materials from the forest. Cultivation on stream banks was common as some farmers relocated to areas that had reliable water sources.

In the A1 community visited, there were trees that were used as places for cultural meetings and the performance of traditional rituals. Such places and the surrounding ecosystems were not disturbed. The common trees used for these purposes were *Parinaricuratellifolia*, (mobola plum, *muhacha*, *umkhuna*), *Burkea Africana* (wild syringa, *mukarakati*, *umnondo*) and *Sclerocaryabirrea* (*amarula*, *mupfura*, *umganu*). Traditionally, people used certain indigenous trees to predict fortunes and disasters, such as rainfall and drought. For example, a flowering *Mopane* tree and a heavy *muhacha* fruit crop were associated with drought in the subsequent rainy season. It was believed that the bumper *muhacha* fruit harvest would compensate for poor agricultural harvests due to the drought and provided food for the people. As a result, there were heavy fines that were put in place by the traditional leaders to conserve these species.

For wildlife, controlled hunting was being practised especially by the A1 community to allow breeding but this was quite a challenge. According to one headman in Ward 3, “*No hunting is allowed in the rainy season as animals will be having young ones and are also too easy to track. Mammals suckling young ones are not to be killed and the young should not be killed either.*”

Appendix 5.3: Field Notes from Observations

Personal observations made in the field

Ward 31 Observations

The A1 community sampled in the ward had self contained A1 farms and A2 farms. There were no NGO activities in the ward, only government and its parastatals like the Department of Parks and Wildlife, EMA, RDC, FC were found.

Almost all households relied on more than one non-agricultural livelihood activity. The people were involved in quite a number of livelihood projects like poultry, running piggeries, brick laying, welding, food gardens, beekeeping and other related activities.

Unreliable weather conditions and markets demotivated farmers who at times resorted to livelihood diversification by engaging in non-agricultural activities, most of which had negative impacts and implications on the surrounding natural resources.

The ward was characterised by many gold mining activities, from registered large and small claims to illegal gold panning. As a result, most households were, one way or the other, involved in mining activities. A significant number of people worked in the surrounding mines where they got the money for agricultural inputs, food, clothes and school fees for their children. Because of these mining activities, quite a number of households were connected to electricity which supplemented the use of firewood.

Warthogs, monkeys and baboons attacking the fields were the main source of human wildlife conflicts. Deforestation was the main problem in the ward as the land was being cleared for cultivation by the resettled community as well as legal and illegal mining activities. Bushes were quite common, signaling conditions conducive to the rejuvenation of trees.

Ward 2 Observations

The A1 community sampled in the ward had self-contained A1 farms and A2 farms. There were no NGO activities in the ward, only government and its parastatals like the Department of Parks and Wildlife, EMA, RDC, FC were found.

There were serious water problems around the ward for people and animals and they were mainly relying on rivers if they could not afford to reach water tables during attempts to drill boreholes and wells. The presence of *Mopane* trees meant that there was a lot of *mopane* worms

that were seasonal. Local people and others from as far as Kwekwe urban areas visited the resettled areas to harvest or collect them, mainly for business.

There were no gold panning activities around the ward. Deforestation was also very high as the resettled community cleared the land for farming. Moreover, the other part of the ward was next to the Kwekwe urban area and people from here either stole firewood at night or the locals themselves sold firewood to them. This demand for firewood came from serious electricity load shedding at the time in the high density suburbs of Masasa and Mbizo. Some land owners who lived in urban areas always carried some firewood on their way from their farms.

Most of the gardens were located about 5m from the rivers and stream banks as communities abandoned their initial plots in search of wetter areas. This cultivation of gardens was threatening the rivers and streams with siltation, leading to reduced water holding capacities of surface water bodies. The communities were able to confirm that the water holding capacities of some rivers and dams had greatly reduced due to severe siltation from stream bank cultivation.

However, some farmers were beginning to repair their fences so to promote the practice rotational grazing. The researcher was fortunate enough to meet the committee formed by farmers to monitor natural resources. The committee met once every fortnight and they worked together with EMA, Department of Parks and Wildlife, ZRP and chiefs at times.

There was a conservancy, Sebakwe Conservation Centre which educated the surrounding community and carried out many conservation projects. The farming activities and the approach of the community in the areas around the conservancy, towards the surrounding natural resources, resembled the demonstrations that were done at the centre.

In many resettled farms, especially the A1 farms, there were so much evidence of land that was cleared for agricultural purposes but was never used for its intended purposes. This was facilitated by lack of agricultural inputs, bad and unpredictable weather conditions and the unreliability of the markets. This led to livelihood diversification into non-agricultural activities, some of which were centred around the manipulation of forest resources for food and income.

Ward 3 Observations

There were small scale licensed and illegal gold mining activities in some areas throughout the ward. Iron was also found in the ward but mined by ZIMASCO only, because the community did not have the capacity to mine and transport it due to its nature.

Hunting and poaching were quite common in some parts of the ward. Some members of the community even complained that their domestic animals were being caught/ killed in snares that were meant for wild animals. In the villagised A1 community sampled, the grazing pastures contained thick bushes, forests and grass.

New gardening projects were being introduced in most communities and fenced using products from local wood trees, since people could not afford meshed wire fencing and this was causing serious destruction of vegetation, particularly *terminalia* and *Mopane* species.

The domesticated animals grazed selectively in the pastures thus some grass species were being depleted while others were becoming dominant. However, the knowledge of such areas preferred by animals was used by herd boys when they were looking after their animals.

Lantana camara was one invasive species that was found widely in the forests in some parts of the ward. Some gardens were fenced by *lantana camara* which was spreading to forests, as well as arable and grazing areas. Communities were ignorant and lacked knowledge about the effects of *lantana camara* and therefore no efforts were being made to eradicate the species.

There were patches of areas that had been cleared for farming from recent land occupations (around August 2013 according to the ward AEW). Some households had started some afforestation projects of exotic trees and wooden materials were used to protect the young trees from domestic animals.

Runoff from unplanned roads and animal tracks interfered with the stability of the soils and promoted soil erosion, leading to gully formation. Ecosystems, especially grazing and arable lands were therefore under threat.

There were traces of modified conservation farming practices with the use of ploughs to draw the lines and planting points. The A1 villagised community sampled had a Land Committee that dealt with issues surrounding natural resource management.

General Observations and Community Responses

The researcher learnt that most farms in the resettled community had two households. The land owner and his/her family in most cases lived in urban areas (Kwekwe, Gweru, Masvingo, Bulawayo, Harare and even abroad in South Africa) and visited the farm with or without the family, the frequency depending on the time of the year and the distance from the farm to where he/she worked and lived. This family made all the purchases of inputs and farm machinery. These land owners harvested only a little from the natural environment for their families in urban areas. The family could hire another family (father, mother and their children) from the communal areas (mainly Gokwe, Kwekwe and Gweru rural), who stayed at the farm and provided labour, in turn getting shelter, food and income. This group monitored the farm and were directly exposed to natural resources. However, in some households, the owners themselves stayed at the farm and even allocated some pieces of land to their children and their families.

Another group of people who either owned the land or provided part-time labour on the farms were the former farm workers. They had commercial farming backgrounds but due to the lack of capital some were not directly involved in farming but provided labour in different farms to get income and food. However, some were quite successful in their farming activities, something that was mainly determined by the positions or experiences they held at their former places of employment.

There were diverse lifestyles and forms of livelihoods as various people of different ethnic group. Both men and women owned land. However, there were cases of women-headed families as their husbands either moved to the urban areas for various reasons. There were poor housing structures mostly made from wood and a few from bricks. Unreliable land tenure systems and lack of capital to improve housing structures were the major reasons for such structures.

Cell phones were used for communication in all the three wards sampled but the choice of network service providers available in the country (Econet, Telecel and Netone) varied throughout the wards.

In all A2 farms visited, there were no traditional institutions (headmen and village heads). In the A1 farms, both self-contained and villagised farms, the structures were in place but they were more functional, efficient and effective in the villagised communities, probably because of the set up which promoted people living close to each other. Figure 5.3 was constructed with the

assistance of the RDC Agriculture and Natural Resource Officer. It shows the hierarchical structures that make up central government.

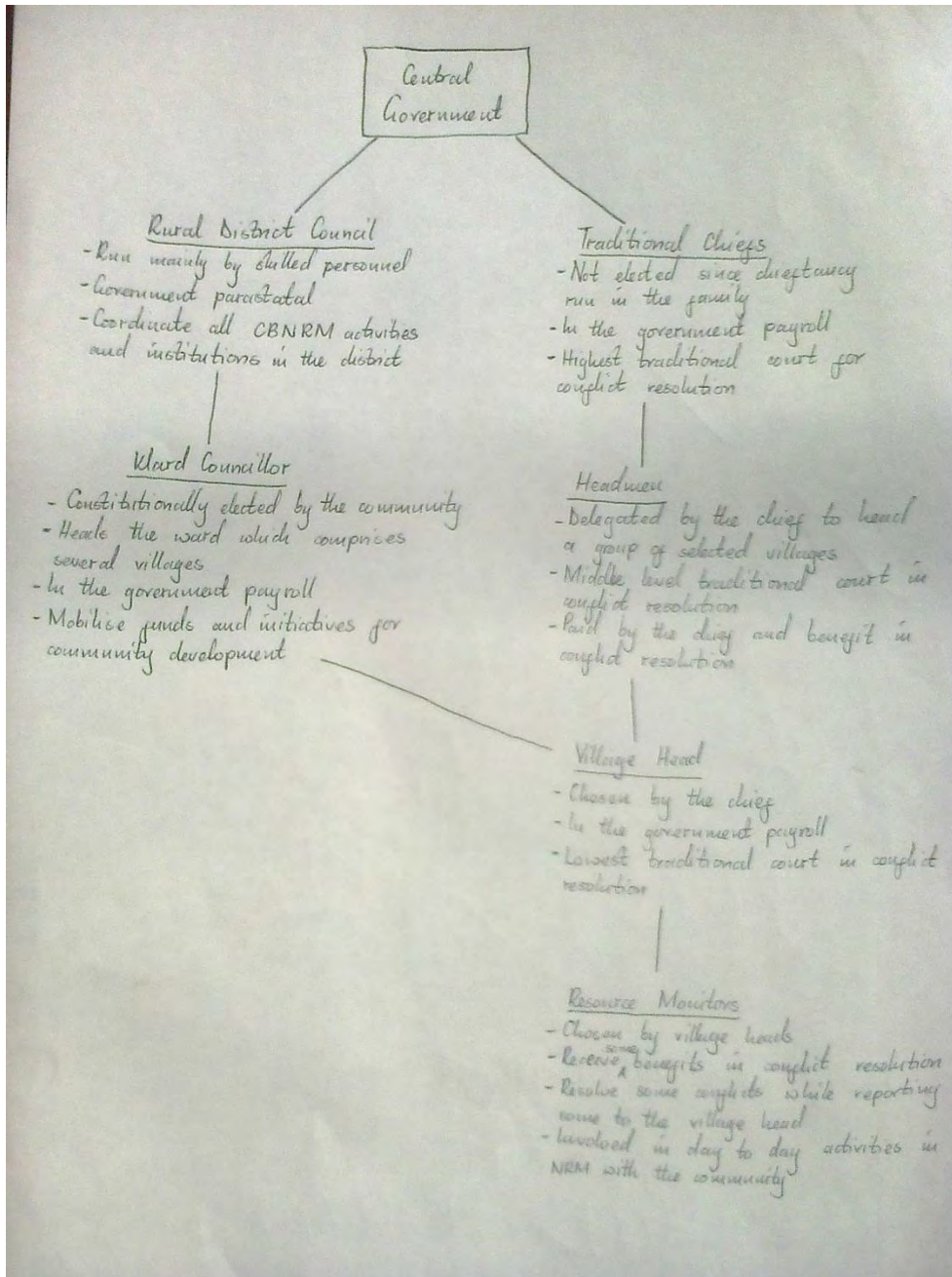


Figure 5.3 Kwekwe traditional and formal leadership

In all the wards visited, the community clearly showed that they did not like and had no intention of practicing conservation farming practises again. The main reason for its unpopularity was that

it was labour intensive. However, the modified conservation practices that were found in the district involved the use of ploughs. Lines were drawn parallel to each other from any two perpendicular ends, leaving spaces according to the recommended space of the given crop. The aerial view after this process will show boxes. The spaces inside the boxes were left undisturbed and the meeting points of the perpendicular lines formed the planting points. From observations, most of the people who adopted conservation farming practices did so mainly because they were too poor to afford implements for conventional tillage and not because of the many benefits of conservation farming. The community preferred ploughs to cultivators for mechanical weed control, citing that the plough is not as heavy as the cultivator and is therefore easier to use.

Mulch tillage was also quite common among both the A1 and A2 farms. It was being done by some without much knowledge of what they were doing but was probably used because of the laziness of farmers to clear the land after harvesting. Crop residues were seen throughout the district on the surface e.g. maize stumps as well as legumes (beans, groundnuts). However, there were some significant cases of households that removed the crop residues from the fields and stored them as stock feed used during winter.

Generally, crop rotations were not being followed mainly because food crops (especially maize) were grown in most parts of the fields every year. The community had a great deal of faith in the use of chemical fertilisers. This was even evident with the way they complained about limited assistance with agricultural inputs, particularly seed and fertilisers. Some farmers further mentioned that crops grown using manure were not uniform in size and so were the yields. However, the community was not using herbicides mainly because of their many disadvantages, rather than the issue of affordability.

From observations and interviews, veld fires were quite common. In areas with many mining activities, uncontrolled fires started as the gold panners would be clearing the land. Some fires started as farmers would be carrying out their routine farming practices, thus they were seasonal. The situation was further worsened by the fact that the community had not yet established fire guards.

There were serious human wildlife conflicts with warthogs, monkeys and baboons heavily attacking field crops and at times the damage caused by these animals was quite significant, leading to poor harvests. As a result, some community members were very bitter to the extent

that they used snares and other means to hunt down those animals and kill them. Invasive pests such as locusts and caterpillars were reported to be spreading from the forests into the fields, leading to serious damage to crops at times to the extent of being beyond recovery. Some animals like hyenas, jackals and wild dogs were attacking domestic animals and though there were no incidents of people who had been attacked by these wild animals, the community lived in constant fear that it might happen someday.

The Department of Parks and Wildlife authority were making efforts to visit such areas, if the community reported the cases. They either killed the animals and gave food to the community or found other ways of dealing with the issue.

The community complained that the ZRP police officers were mainly focusing on areas that were rich in natural resources that were in demand to bring in extra income e.g. gold panning, and game and firewood poaching.

The social life of gold panners was centred on drinking (alcohol) to such an extent that they would go to any lengths to get money for drinking. The panners were involved in a wide range of activities during periods when police were busy with operations on illegal gold panning; it was the rainy season and it was impossible to dig pits and mine; and the prices were too low in their market or there were no buyers. They were involved in buying and selling clothes, electrical gadgets and foodstuffs around the farms. They also harvested wild products like wild loquats, mushrooms, firewood and sold them to passers-by along the major highways. Mining activities provided income for food, school fees and in rare cases, agricultural inputs. The gold panning activities were done mainly by the youths.

The youths always labelled rural life as backward and therefore always looked forward to their future plans to move to urban areas. In most households, the youths/middle aged had left the farms either to look for jobs in urban areas or even abroad to seek education. The family members that remained behind no longer had the capacity to work on all the fields they cleared so they farmed around the homestead and the other fields were left unattended. Bushes and sparse grass cover was therefore quite common in many parts of the wards as the trees and grass rejuvenated. The women were involved in various small businesses that helped them to raise the money for food and to send their children to school. However, there were some cases of

boundary disputes, mainly arising from mining activities when the gold belts extended to neighbouring farms.

The fauna gathered around the district were used for food and business. Wild mammals included *Aepyseros melampus* (impala, *mhara*, impala), *Sylvica pragrimmia* (duiker, *mhembwe*, *impunzi*), and *Lepus capensis* (scrub hares, *tsuro*, *umvundla*) are still found while some like *Taurotragusoryx* (eland, *mhofu*, *impofu*) and *Tragelaphus strepsiceros* (greater kudu, *nhoro*, *ibhalabhala*) were almost extinct since they were quite easy to hunt down while some had relocated as forests became human settlements. The bird commonly found and hunted or at times domesticated was *Numida meleagris* (guinea fowl, *hanga*, *itendeli*). Fishing activities were quite common, especially near water sources (Kwekwe and Sebakwe River) and the main types of fish that were found included breams, tiger fish and catfish. Insects were used as relish as well and the commonly used around the district were *mopane* worms (*madora*, *amacimbi*), other caterpillars, termites (*majuru*, *ishwa*), crickets, and grasshoppers. Mice and crickets were found by digging into the soil thereby leaving numerous holes that were harmful to animals and humans.

There were various types of flora gathered for food around the district. Fungi in the form of mushrooms (howa), particularly *Cantharellus densifolius* (the chanterelle, *firifiti*), *Amanita zambiana* (the amanita, *nhedzi*), and *Lactarius species* (milk caps, *zheveyambuya*) were gathered for relish and business during the rainy season. The main form of tubers found was *Coleus esculenta* (vlei tuber, *tzenza*) which was eaten raw by some. Plants whose leaves were used as relish included *Amaranthus hybridus* (Pigweed, *mowa*), *Cleome gynandra* (African spider flower, *nyevhe*, *ulude*) and *Corchorus olitorius* (Jute mallow, *derere*, *idelele*). The fruits that were commonly gathered included *Cucumis metuliferus* (*mugaka*, *amagaka*), *Sclercaryabirrea* (marula, *mupfura*, *umganu*), *Uapaca kirkiana* (wild loquat, *muzhanje*, *umhobohobo*), *Strychnos spinosa* and *Strychnos cocculoides* (monkey orange, *mutamba*, *umhlali*), *Parinari curatellifolia*, (*muhacha*, *umkhuna*, *mobola plum*) and *Azanza garckeana* (snot apple, *mutohwe*, *uxhakuxhaku*).

According to one traditional healer in Ward 31,

“People have always had beliefs which helped in conserving plants or plant parts harvested for medicinal purposes. A bark is effective as medicine only if cut from east- and west-facing parts of a trunk. This belief ensures that ring barking, which totally kills the plant, is avoided. Harvesting tree roots resulting in plant death as a result of harvesting too many roots from one plant is believed to result in patient’s death.” He further mentioned that he has never used or heard of any traditional healer who uses any kind of seeds for medicinal purposes.

The adults mentioned some beliefs that they, as well as their parents believed up to the present day. However, they acknowledged that most were being eroded by the Western culture, especially among the youths.

However, the aged individuals interviewed (key informants) complained bitterly about the loss of these traditions which they attributed to the loss of many valuable natural resources. They said the FTLRP brought together various people from different and at times conflicting cultures and backgrounds, something which had somehow led to lawlessness in some aspects, especially in NRM.

According to respondents in some households, they reported rearing animals like cats which were very useful in killing pests like rats and mice as well as preventing snakes from reaching the homesteads. This was a form of biological control which prevents the negative effects caused by chemicals. Generally, most farmers cited the need for capital and inputs if agricultural production was to be improved. They further called for the international community to intervene and stop shunning the resettled community. Former farmhouses had been converted into schools, shops, clinics and homes for government workers.

In the resettled community, households fenced the area surrounding their homesteads and fields in an attempt to keep domestic animals away from their fields. Any natural resource in the proximity would be fenced in and thus protected in the process, meaning that it ceased to be common property by tradition. Some residents were involved in illegal harvesting of fuel wood for sale to urban residents while the urban residents, at times, poached firewood from the nearby farms. Those caught illegally harvesting and selling fuel wood usually resolved the issues between themselves.

Appendix 5.4: Results of Household Surveys

Farming Background Status of Ward 31 A1 Farmers

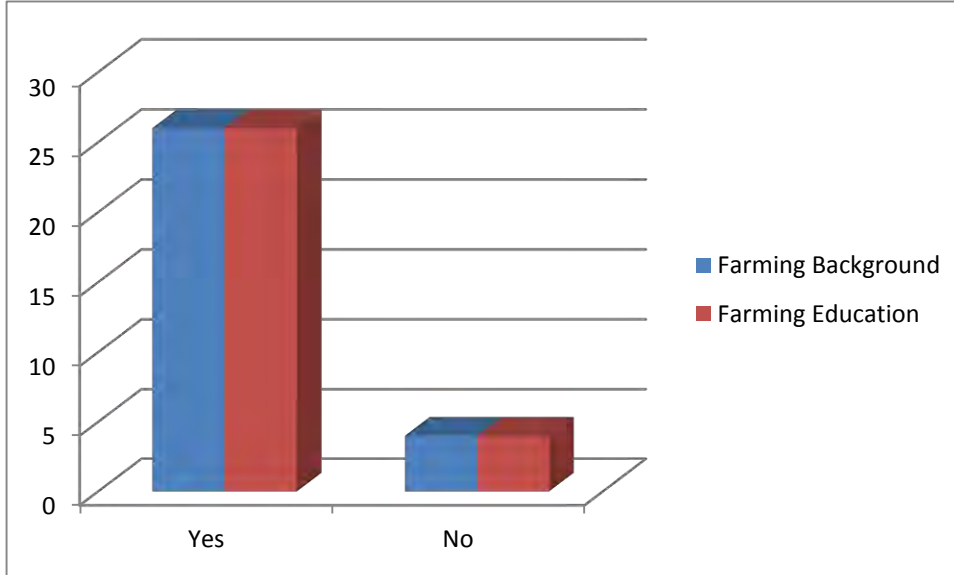


Figure 5.4 Farming Background Status of Ward 31 A1 Farmers

Tillage Methods in Ward 31 A1 Farms

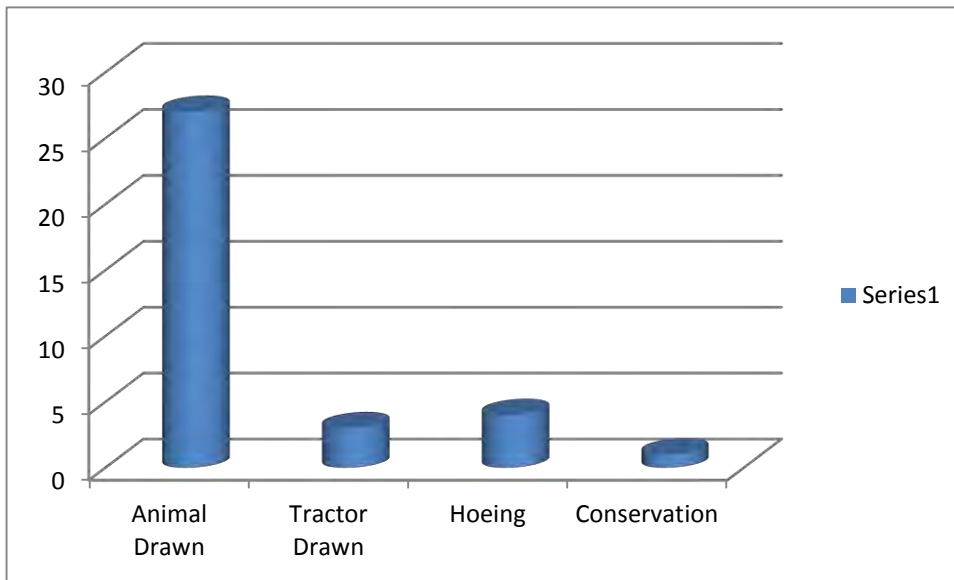


Figure 5.5: Tillage Methods in Ward 31 A1 Farms

Emerging Forms of Natural Resource Use (Ward 31 A1 Farms)

Table 5.9 on page 79 summarises the resources that were harvested by the community and the households that sold them for livelihoods:

Table 5.11 Emerging Forms of Natural Resource Use (Ward 31 A1 Farmers)

Natural Resource	Households harvesting the resource	Households selling the resource
Wild Fruits	5	-
Wild Vegetables	11	-
Insects	4	2
Medicinal Plants	5	2
Wild Animals	3	2
Firewood	15	2
Wood for Carving	9	-
Thatching Grass	19	-
Rocks/Stones	3	2
Water Resources	15	0

Number of Households = 30

Coping Strategies for Challenges and Shocks

The coping strategies that most farmers resorted to were increasing the area under cultivation, establishing a woodlot and establishing a garden. Gold panning activities were mentioned by six households that had some members either formally or informally employed in mines.

Table 5.12 Coping Strategies to Challenges and Shocks (Ward 31 A1 Farmers)

Coping Strategies/Responses	Number of Households
Increase Area under Cultivation	14
Establish a Woodlot (Planting Trees)	14
Establish a Food Garden	17
Mining and panning minerals	6
Sand Extraction	-
Cutting and Selling Wood/Timber	-
Selling Wild Fruits, Insects and Mushrooms	-
Hunting Wild Animals	1
Arts and Crafts	-
Other	-

Number of Households = 30

Institutions Enforcing Rules and Regulations

The community mentioned a sound partnership between households, community leaders and government agencies in enforcing rules and regulations that prohibit illegal felling of trees, uncontrolled fires, land and water pollution, and promote soil conservation. The ZRP were mainly involved in enforcing rules and regulations that prohibit the killing of wild animals, and illegal mining of gold.

Table 5.13 Institutions Enforcing Rules and Regulations (Ward 31 A1 Farmers)

Rules and Regulations	Institution			
	Households	CLs	GAs	ZRP
Prohibiting Cutting Down of Trees	12	15	13	1
Regulations on Soil Conservation	15	10	18	2
Prohibiting the Killing of Wild Animals	6	1	-	24
Prohibiting Mining and Panning of Minerals	4	-	3	25
Prohibiting Uncontrolled Fires	20	5	10	7
Prohibiting Land and Water Pollution	23	4	4	1

NB: CLs – Community Leaders, Gas – Government Agencies, ZRP – Zimbabwe Republic Police

Number of Households = 30

Farming Background Status of Ward 31 A2 Farmers

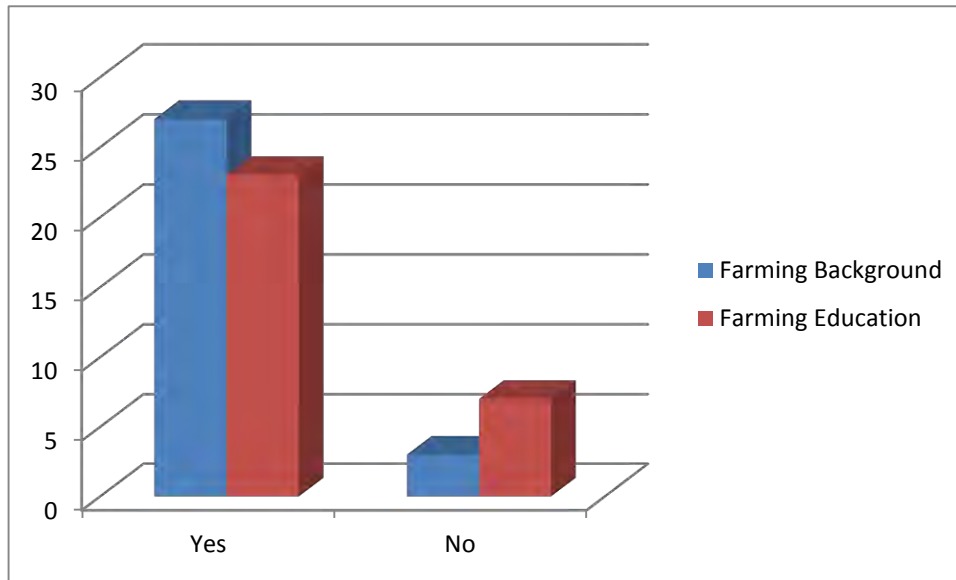


Figure 5.6 Farming Background Status of Ward 31 A2 Farmers

Tillage Methods in Ward 31 A2 Farms

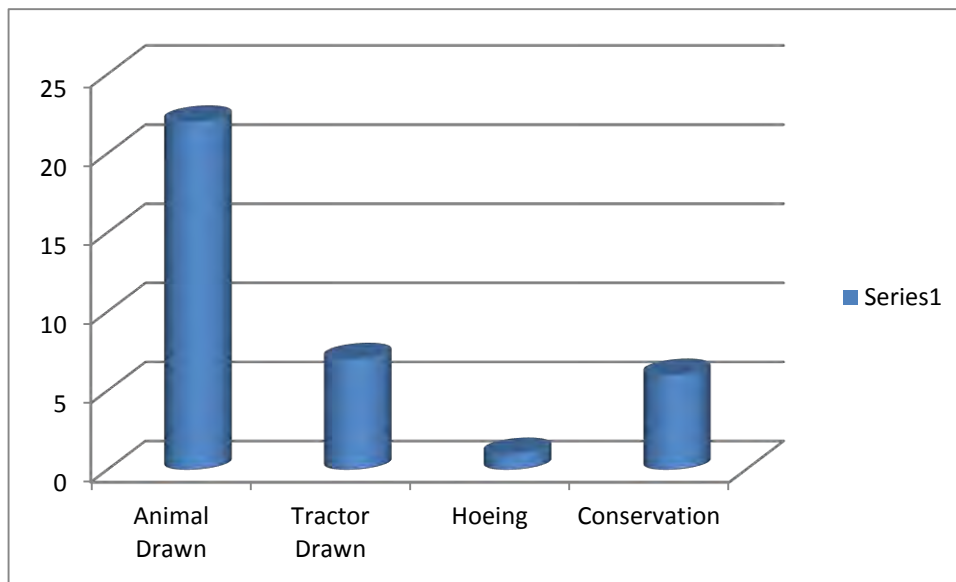


Figure 5.7 Tillage Methods in Ward 31 A2 Farms

Emerging Forms of Natural Resource Use (Ward 31 A2 Farms)

Thatching grass was harvested by almost every household with wild fruits, wild vegetables, insects, wild animals and wood for carving being harvested by ten households in this Ward. Between one and five households acknowledged that they were involved in commercial business related to firewood, wood for carving, thatching grass, insects, and wild animals as shown in the table below:

Table 5.14 Emerging Forms of Natural Resource Use (Ward 31 A2 Farmers)

Natural Resource	Households harvesting the resource	Households selling the resource
Wild Fruits	13	-
Wild Vegetables	19	-
Insects	13	1
Medicinal Plants	5	-
Wild Animals	10	2
Firewood	9	5
Wood for Carving	10	2
Thatching Grass	27	4
Rocks/Stones	1	-
Water Resources	1	-

Number of Households = 30

Coping Strategies for Challenges and Shocks

In response to the various challenges and shocks faced, around half of the sampled households mentioned that they increased area under cultivation; established a woodlot and a nutritional garden. Of the listed coping strategies, mining activities, cutting and selling timber or firewood, sand extraction and hunting wild animals were adopted by less than five out of the sample of 30 households. The table below summarises the information collected:

Table 5.15 Coping Strategies for Challenges and Shocks (Ward 31 A2 Farmers)

Coping Strategies/Responses	Number of Households
Increase Area under Cultivation	19
Establish a Woodlot (Planting Trees)	16
Establish a Food Garden	14
Mining and panning minerals	4
Sand Extraction	1
Cutting and Selling Wood/Timber	3
Selling Wild Fruits, Insects and Mushrooms	-
Hunting Wild Animals	3
Arts and Crafts	-
Other	-

Number of Households = 30

Institutions Enforcing Rules and Regulations

The responses by the community members suggest that members of the households themselves were mainly involved in following rules and regulations while their enforcers were quite inattentive to their responsibilities, although a notable few respondents mentioned government agencies, ZRP and community leaders doing initiatives now and then. Below are the results obtained from the 30 sampled households on the roles played by various NRM institutions in their community:

Table 5.16 Institutions Enforcing Rules and Regulations (Ward 31 A2 Farmers)

Rules and Regulations	Institution			
	Households	CLs	GAs	ZRP
Prohibiting Cutting Down of Trees	13	-	6	2
Regulations on Soil Conservation	7	2	9	-
Prohibiting the Killing of Wild Animals	6	-2	2	
Prohibiting Mining and Panning of Minerals	4	-	1	3
Prohibiting Uncontrolled Fires	10	1	1	2
Prohibiting Land and Water Pollution	9	-	-	-

NB: CLs – Community Leaders, GA - Government Agencies, ZRP – Zimbabwe Republic Police

Number of Households = 30

Farming Background Status of Ward 2 A1 Farmers

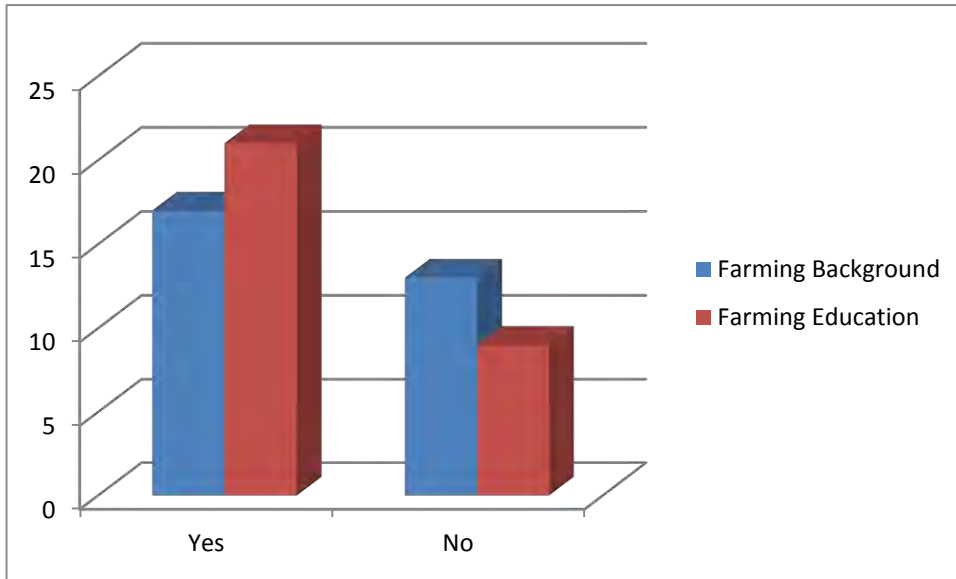


Figure 5.8 Farming Background Status of Ward 2 A1 Farmers

Tillage Methods in Ward 2 A1 Farms

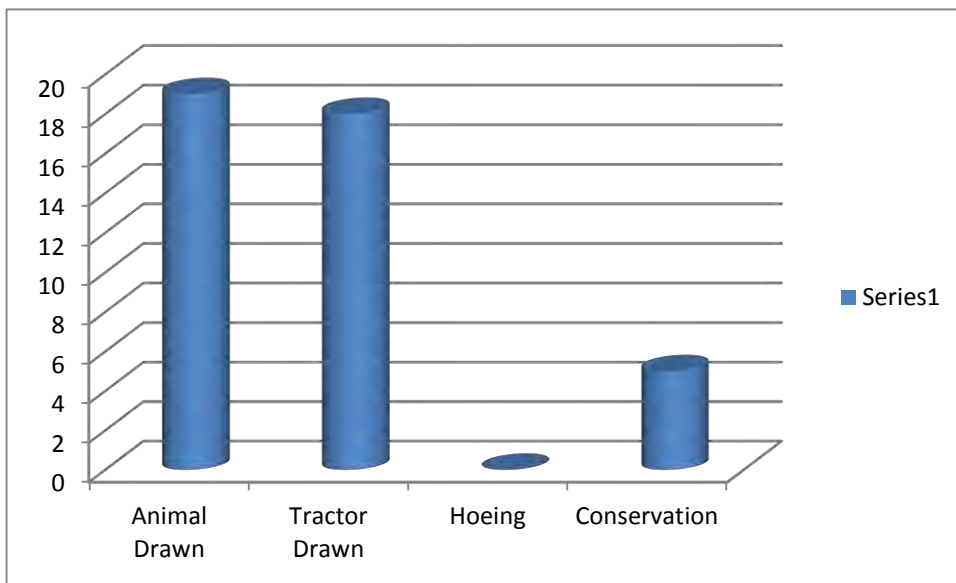


Figure 5.9 Tillage Methods in Ward 2 A1 Farms

Emerging Forms of Natural Resource Use (Ward 2 A1 Farms)

More than 20 households admitted that they harvested wild fruits, wild vegetables, and thatching grass whilst all 30 households used firewood mainly for subsistence purposes. At least one and at most four households were involved in commercial business with each of the listed natural resources. The table below summarises the households that were involved in various forms of natural resource use for subsistence and commercial purposes:

Table 5.17 Emerging Forms of Natural Resource Use (Ward 2 A1 Farmers)

Natural Resource	Households harvesting the resource	Households selling the resource
Wild Fruits	23	1
Wild Vegetables	27	1
Insects	17	1
Medicinal Plants	14	1
Wild Animals	13	1
Firewood	30	3
Wood for Carving	15	4
Thatching Grass	26	2
Rocks/Stones	13	1
Water Resources	13	1

Number of Households = 30

Coping Strategies for Challenges and Shocks

In response to the various farming challenges and shocks, more than five households were involved in employing each of the following coping strategies: increasing area under cultivation in the subsequent season, establishing some woodlots, resorting to mining activities and selling firewood and timber. The remaining listed coping strategies were adopted by less than five households each. The coping strategies by the community are summarised below:

Table 5.18 Coping Strategies for Challenges and Shocks (Ward 2 A1 Farmers)

Coping Strategies/Responses	Number of Households
Increase Area under Cultivation	11
Establish a Woodlot (Planting Trees)	8
Establish a Food Garden	4
Mining and panning minerals	9
Sand Extraction	4
Cutting and Selling Wood/Timber	6
Selling Wild Fruits, Insects and Mushrooms	1
Hunting Wild Animals	1
Arts and Crafts	-
Other	-

Number of Households = 30

Institutions Enforcing Rules and Regulations

According to the responses, the members of the households themselves were responsible for the enforcement of the rules and regulations governing all surrounding natural resources. A notable few respondents mentioned the ZRP being active in enforcing the conservation of resources, especially those that produced significant income for the country while government agencies were acknowledged for being active in soil conservation.

Table 5.19 Institutions Enforcing Rules and Regulations(Ward 2 A1 Farmers)

Rules and Regulations	Institution			
	Households	CLs	GAs	ZRP
Prohibiting Cutting Down of Trees	14	1	-	4
Regulations on Soil Conservation	15	1	8	-
Prohibiting the Killing of Wild Animals	13	1	-	4
Prohibiting Mining and Panning of Minerals	9	1	-	4
Prohibiting Uncontrolled Fires	11	1	-	2
Prohibiting Land and Water Pollution	17	3	-	1

NB: CLs – Community Leaders, GAs – Government Agencies, ZRP – Zimbabwe Republic Police

Number of Households = 30

Farming Background Status of Ward 2 A2 Farmers

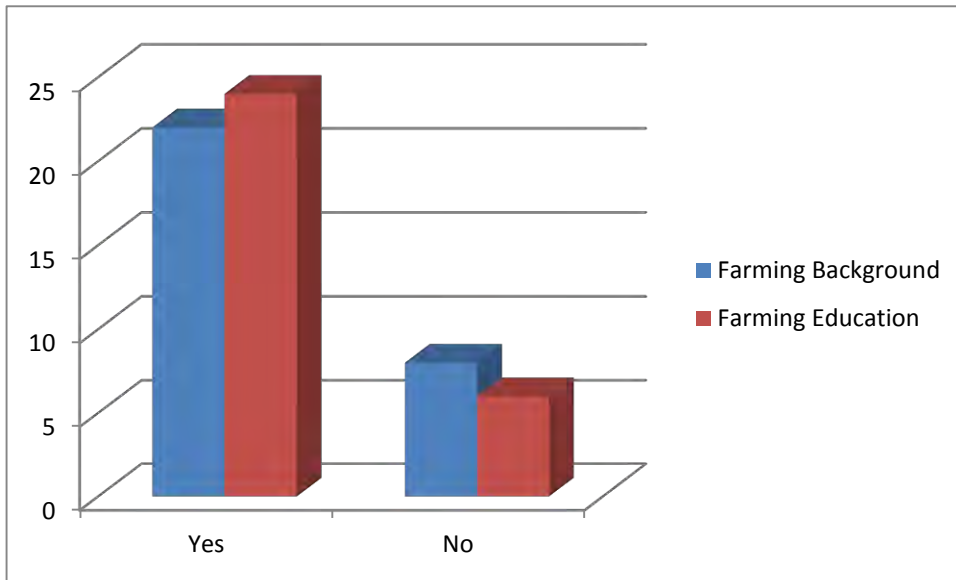


Figure 5.10 Farming Background Status of Ward 2 A2 Farmers

Tillage Methods in Ward 2 A2 Farms

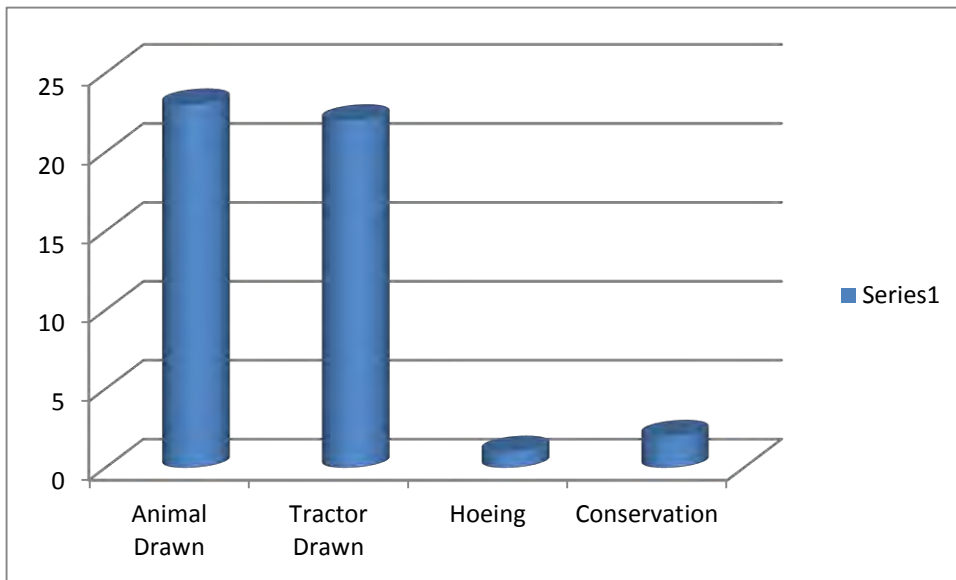


Figure 5.11 Tillage Methods in Ward 2 A2 Farms

Emerging Forms of Natural Resource Use (Ward 2 A2 Farms)

All the listed natural resources were used by at least one and at most six households for commercial purposes. These were harvested by more than half of the sampled community, except rocks or stones and water resources.

Table 5.20 Emerging Forms of Natural Resource Use (Ward 2 A2 Farmers)

Natural Resource	Households harvesting the resource	Households selling the resource
Wild Fruits	26	1
Wild Vegetables	29	1
Insects	23	6
Medicinal Plants	18	3
Wild Animals	16	5
Firewood	30	7
Wood for Carving	16	4
Thatching Grass	29	1
Rocks/Stones	11	3
Water Resources	14	5

Number of Households = 30

Coping Strategies for Challenges and Shocks

Most respondents mentioned that in the case of farming challenges and shocks they would increase their farming areas to improve their yields. The other listed coping strategies were not trusted by most of the community members sampled, as shown in the table below:

Table 5.21 Coping Strategies for Challenges and Shocks (Ward 2 A2 Farmers)

Coping Strategies/Responses	Number of Households
Increase Area under Cultivation	18
Establish a Woodlot (Planting Trees)	3
Establish a Food Garden	4
Mining and panning minerals	5
Sand Extraction	-
Cutting and Selling Wood/Timber	4
Selling Wild Fruits, Insects and Mushrooms	1
Hunting Wild Animals	2
Arts and Crafts	1
Other	-

Number of Households = 30

Institutions Enforcing Rules and Regulations

The respondents showed that most rules and regulations were not enforced by any institution but the households themselves were responsible for management of their own resources. Only the extension officers were mentioned by many respondents for their efforts in soil conservation.

Table 5.22 Rules and Regulations Enforcement Institutions (Ward 2 A2 Farms)

Rules and Regulations	Institution			
	Households	CLs	GAs	ZRP
Prohibiting Cutting Down of Trees	8	1	-	1
Regulations on Soil Conservation	20	-	13	-
Prohibiting the Killing of Wild Animals	8	1	-	4
Prohibiting Mining and Panning of Minerals	18	-	-	4
Prohibiting Uncontrolled Fires	18	-	-	2
Prohibiting Land and Water Pollution	18	-	-	-

NB: CLs – Community Leaders, GAs – Government Agencies, ZRP – Zimbabwe Republic Police

Number of Households = 30

Farming Background Status of Ward 3 A1 Farmers

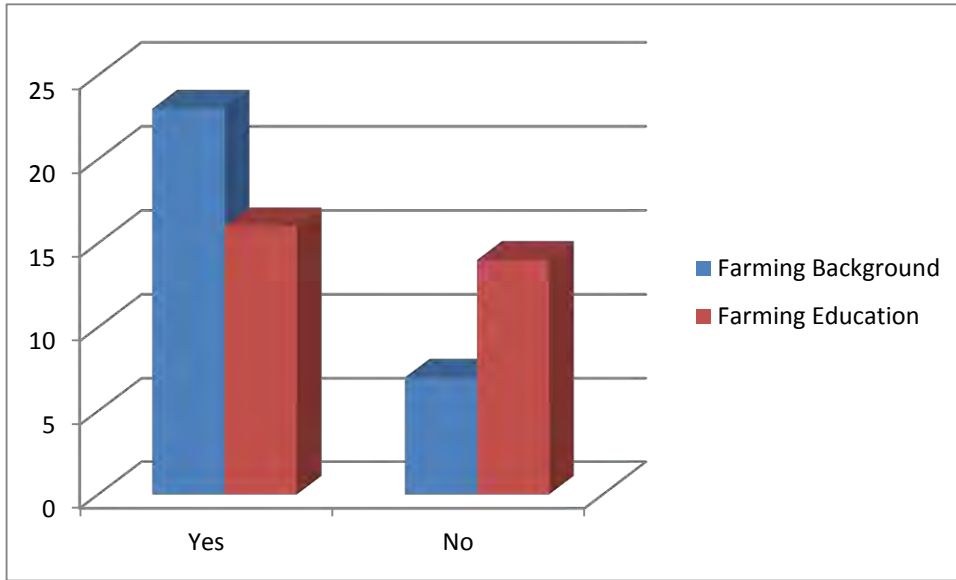


Figure 5.12 Farming Background Status of Ward 3 A1 Farmers

Tillage Methods for Ward 3 A1 Farmers

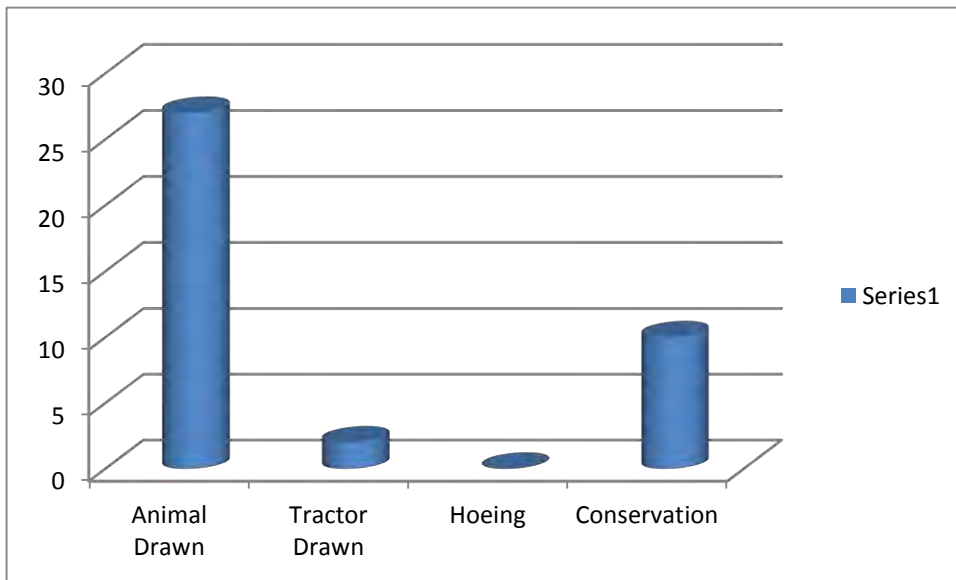


Figure 5.13 Tillage Methods for Ward 3 A1 Farmers

Emerging Forms of Natural Resource Use (Ward 3 A1 Farms)

The natural resources that were harvested by almost all households sampled included wild fruits, wild vegetables, firewood and thatching grass, with firewood topping the list. Most of the harvested wild natural resources were mainly for consumption and hardly for commercial purposes, as shown in the table below:

Table 5.23 Emerging Forms of Natural Resource Use (Ward 3 A1 Farmers)

Natural Resource	Households harvesting the resource	Households selling the resource
Wild Fruits	28	-
Wild Vegetables	29	-
Insects	16	1
Medicinal Plants	2	-
Wild Animals	3	1
Firewood	30	1
Wood for Carving	17	1
Thatching Grass	26	1
Rocks/Stones	2	-
Water Resources	1	-

Number of Households = 30

Coping Strategies for Challenges and Shocks

In responding to farming challenges and shocks, respondents from more than ten households said they established a woodlot, established a nutrition garden and resorted to gold mining. Respondents from fewer than ten households said they opted for sand extraction, increased the area under cultivation, and sold firewood and timber. Only one household mentioned arts and crafts while other coping strategies included job searching in urban areas.

Table 5.24 Coping Strategies for Challenges and Shocks (Ward 3 A1 Farmers)

Coping Strategies/Responses	Number of Households
Increase Area under Cultivation	9
Establish a Woodlot (Planting Trees)	13
Establish a Food Garden	24
Mining and Panning minerals	13
Sand Extraction	3
Cutting and Selling Wood/Timber	4
Selling Wild Fruits, Insects and Mushrooms	-
Hunting Wild Animals	-
Arts and Crafts	1
Other	1

Number of Households = 30

Institutions Enforcing Rules and Regulations

Most people in the community (more than ten respondents on each regulation) acknowledged the importance of traditional leaders (headmen and chiefs) in the enforcement of rules that govern natural resource conservation. A few respondents (between two and five) acknowledged the importance of government agencies and ZRP in natural resource management, as shown below:

Table 5.25 Rules and Regulations Enforcement Institutions (Ward 3 A1 Farmers)

Rules and Regulations	Institution			
	Households	CLs	GAs	ZRP
Prohibiting Cutting Down of Trees	1	14	4	2
Regulations on Soil Conservation	1	13	5	2
Prohibiting the Killing of Wild Animals	1	13	4	4
Prohibiting Mining and Panning of Minerals	1	12	4	3
Prohibiting Uncontrolled Fires	1	11	3	2
Prohibiting Land and Water Pollution	1	11	3	2

NB: CLs – Community Leaders, GAs – Government Agencies, ZRP – Zimbabwe Republic Police

Number of Households = 30

Farming Background Status of Ward 3 A2 Farmers

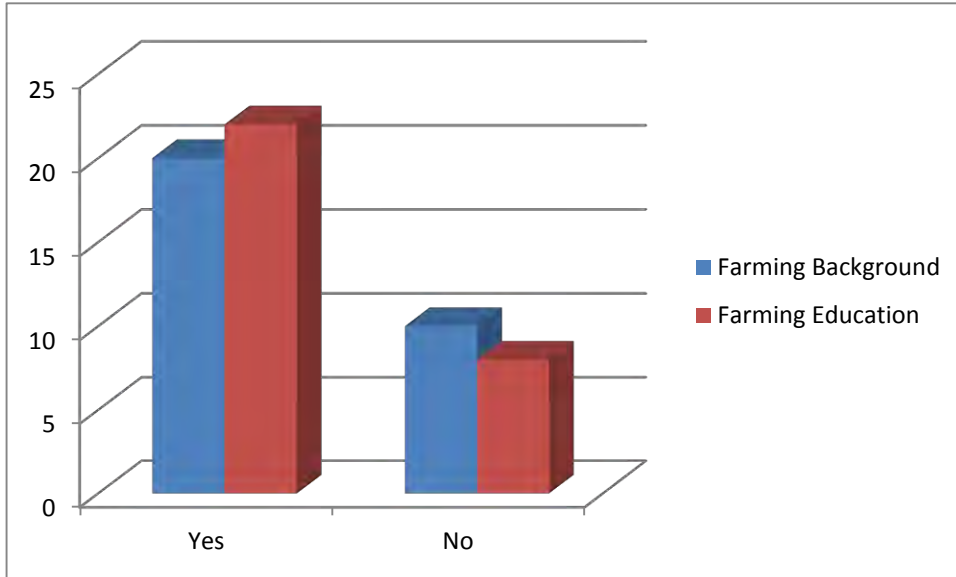


Figure 5.14 Farming Background Status of Ward 3 A2 Farmers

Tillage Methods in Ward 3 A2 Farms

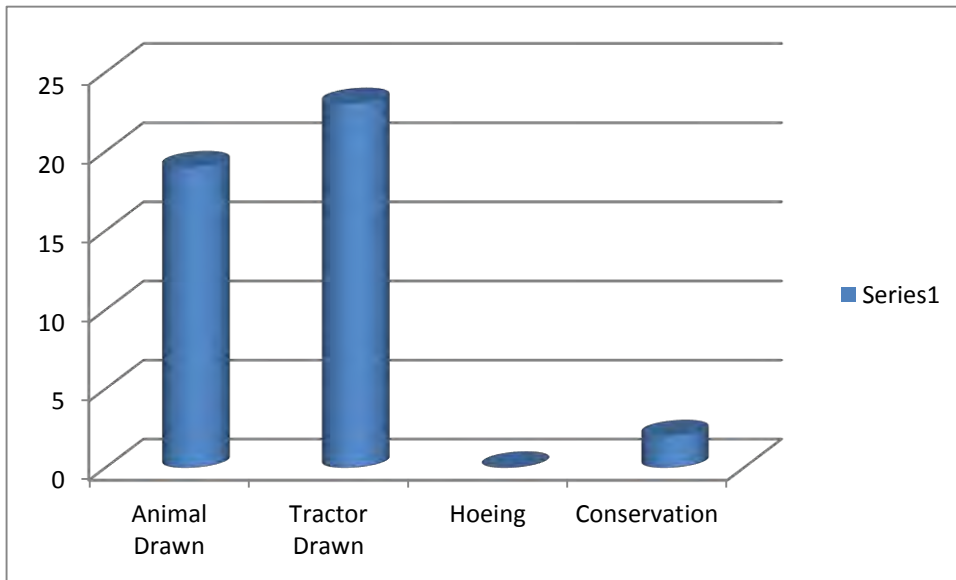


Figure 5.15 Tillage Methods in Ward 3 A2 Farms

Emerging Forms of Natural Resource Use (Ward 3 A2 Farmers)

More than 20 households mentioned that they harvested the following natural resources: wild fruits, wild vegetables, firewood and thatching grass with firewood being used by every household. Among these, one to three households admitted selling firewood, thatching grass, rocks or stones, water resources and wood for carving to enhance their livelihoods, as shown in the table below:

Table 5.26 Emerging Forms of Natural Resource Use (Ward 3 A2 Farmers)

Natural Resource	Households harvesting the resource	Households selling the resource
Wild Fruits	26	-
Wild Vegetables	28	-
Insects	10	-
Medicinal Plants	6	-
Wild Animals	7	-
Firewood	30	3
Wood for Carving	16	2
Thatching Grass	27	1
Rocks/Stones	4	1
Water Resources	1	1

Number of Households = 30

Coping Strategies for Challenges and Shocks

At least ten households mentioned increasing area under cultivation and establishing a nutritional garden as a coping strategy in case of shocks. Less than ten acknowledged that they resorted to mining activities, established a woodlot and sold firewood and timber.

Table 5.27 Coping Strategies for Challenges and Shocks (Ward 3 A2 Farmers)

Coping Strategies/Responses	Number of Households
Increase Area under Cultivation	11
Establish a Woodlot (Planting Trees)	8
Establish a Food Garden	11
Mining and panning minerals	9
Sand Extraction	1
Cutting and Selling Wood/Timber	4
Selling Wild Fruits, Insects and Mushrooms	-
Hunting Wild Animals	-
Arts and Crafts	-
Other	-

Number of Households = 30

Institutions Enforcing Rules and Regulations

Except regulations on soil conservation, all the other regulations concerning natural resource management were enforced mainly at a household level and to a lesser extent by community leaders and government agencies, as shown in the table below:

Table 5.28 Rules and Regulations Enforcement Institutions (Ward 3 A2 Farmers)

Rules and Regulations	Institution			
	Households	CLs	GAs	ZRP
Prohibiting Cutting Down of Trees	10	5	1	-
Regulations on Soil Conservation	9	5	7	-
Prohibiting the Killing of Wild Animals	5	1	1	-
Prohibiting Mining and Panning of Minerals	4	4	1	2
Prohibiting Uncontrolled Fires	3	2	1	-
Prohibiting Land and Water Pollution	12	4	2	-

NB: CLs – Community Leaders, GAs - Government Agencies, ZRP – Zimbabwe Republic Police

Number of Households = 30