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**THE ROLE OF PROPERTY RIGHTS TO LAND AND WATER RESOURCES
IN SMALLHOLDER DEVELOPMENT: THE CASE OF KAT RIVER
VALLEY**

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DECLARATION

I, hereby declare that this thesis is my original work, and has not been submitted in partial or entirety for degree purposes to any other university. All the work that was written by other authors and used in the thesis is fully acknowledged.

Submitted for the Master of Agriculture degree in Agricultural Economics at the University of Fort Hare.



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Montoeli Rantlo

25 March 2010

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ABSTRACT

Property rights are social institutions that define and delimit the range of privileges granted to individuals of specific resources, such as land and water. They are the authority to determine different forms of control over resources thus determining the use, benefits and costs resulting from resource use. That is, they clearly specify who can use the resources, who can capture the benefits from the resources, and who should incur costs of any socially harmful impact resulting from the use of a resource. In order to be efficient property rights must be clearly defined by the administering institution whether formal or informal and must be accepted, understood and respected by all the involved individuals and should be enforceable. These institutions influence the behaviour of individuals hence the impact on economic performance and development.

The thesis has attempted to determine how the situation of property rights to land and water affects the development of smallholders in the Kat River Valley. Data was collected from 96 households who were selected using random sampling. To capture data, a questionnaire was administered through face-to-face interviews. Institutional analysis and ANOVA were used for descriptive analysis to describe the property rights situation, security of property rights and the impact of property rights on the development of smallholder farming.

The results show that individual land rights holders have secure rights to land and water resources while communal smallholders and farmers on the invaded state land have insecure rights to land and water resources. The results from institutional analysis show that the situation of property rights negatively affects development of all smallholder farmers in the Kat River Valley. There are various institutional factors that negatively affect development of smallholder farmers in the Kat River Valley. Based on the research findings, some policy recommendations are made. These include consideration of the local context and strengthening of the protection of property rights.

Keywords: Smallholder/small-scale farmers, Development, Property rights, land and water, Kat River Valley.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immuno Deficiency Syndrome
ANOVA	Analysis of Variance
CFs	Community Forums
CMAs	Catchment Management Agencies
DLA	Department of Land Affairs
DoA	Department of Agriculture
DWAF	Department of Water Affairs and Forestry (now Department Water and Environmental Affairs - DWEA)
FAO	Food and Agricultural Organisation
ha	Hectare
HACOP	Hertzog Agricultural Cooperative
HIV	Human Immuno Virus
kg	Kilogram
KRV	Kat River Valley
KRVWUA	Kat River Valley Water User Association
m	Meters
mm	Millimetres
MTP	Micro-projects Trust
NWA	National Water Act
SANCO	South African National Civic Organisations
ULIMCOR	Ciskei Agricultural Cooperation
WAR	Water Allocation Reform
WARS	Water Allocation Reform Strategy
WUAs	Water User Associations
WRC	Water Research Commission

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Institutions as the set of formal and informal rules of conduct that ensure social cohesion through governing the relationships within a society are essential for economic development due to their bearing on behaviour that affects various social outcomes (North, 1990). In rural areas of the developing world, agriculture is key to economic development as many rural people depend on farmland, rangeland, irrigation and fishing waters and forests for their livelihoods. This dependency makes access to these resources of great significance for economic development of these areas. This access to natural resources will lead to poverty alleviation by allowing people to grow food and to invest in productive activities (Van Braun, 2004). However, this access to resources is not realised automatically but depends on the institutions that govern resource use in these areas, thus property rights (Meinzen-Dick and Di Gregorio, 2004). Anderson (2008) stated that property rights define incentives people face for undertaking sustainable and productive management strategies and they determine the extent and distribution of socioeconomic benefits from natural resources. These have important implications for technology adoption, food security, poverty reduction, economic growth and environmental sustainability, hence overall development.

The realisation of these outcomes is dependent upon the institutions that administer property rights through ensuring that individuals and communities involved have clearly defined, understood and accepted the property rights. The institutions that administer property rights should ensure that property rights rules are respected and enforced and this has been facilitated by the institutions' social legitimacy, legal support and accessibility by and accountability to the property rights holders (O'Driscoll jr. and Hoskins, 2003). Nevertheless, multiple property rights present in the world have resulted in various outcomes in different settings and the outcomes being determined by various socioeconomic factors. The main determinants have been social capital, resource

conditions, politics, markets and the needs and preferences of the local people (FAO, 2008a).

Governments in developing countries have designed and implemented various policies aimed at achieving development but the success of these policies has been limited and absolute failure has been realised with other policies. Several factors have been mentioned as sources of failure and these include lack of finance, poor natural resources, and lack of human capital among others (O'Driscoll jr. and Hoskins, 2003). The South African government has implemented a land reform policy and the National Water Act aimed at achieving development through providing access to, economic use of, non-gender based distribution of, sustainable use and management of land and water resources throughout the country (DLA, 1999 ; DWAF, 1997). These policies have been and continue to be given various forms of support including finance, human capital, technical support, natural resources of good quality and where this has not been the case improvement measures have been taken (DLA, 1999). Despite all these, the policies have achieved limited success with regard to the intended outcomes particularly in the rural area of Kat River Valley. However, the effect of the property rights situation in the Kat River Valley on the achievement of the national development objectives are examined in this study.

1.2 Problem Statement

Agriculture is the pillar of economic development in the rural areas of the developing countries and this makes access to land and water resources important for the development of the rural areas. Improved access to land and water resources can increase food security and lead to poverty reduction by allowing rural people to grow food and invest in productive activities. They can use their property as collateral for credit needed to finance their other livelihood strategies (Pingali, 2006). In the Kat River Valley, the potential for agricultural development is great due to the presence of fertile soils, fairly favourable weather conditions, an adequate amount of land and abundant water from the Kat River (Smit, 2003). The South African government has dispensed national policies including land reform and the National Water Act whose main objectives are poverty

reduction, environmental sustainability and economic development. These policies facilitate access to, economic and sustainable use of natural resources such as land and water (DLA, 1999 ; DWAF, 1997).

Despite the agricultural potential and institutional arrangements, the Kat River Valley has low agricultural productivity that is attributed to the high degree of soil erosion and water pollution together with large areas of idle land (Rowntree, 2005). The majority of the people have no access or have limited access to small areas of land and many of these people have no legal access to land. There have been social conflicts over natural resources, particularly land in this area. These people have no technical and financial capacity to practice any meaningful agriculture while a few people with large areas of land have access to the necessary resources. Other poor people are marginalised from the water management institutions that control water use; their water use has been limited while those of others have not been limited. The level of participation in the water management forums by the local people of Kat River Valley has not been satisfactory (Edgren, 2005; Mbatha, 2005). Conditions of unequal distribution of benefits, degradation of environment and poor productivity and high unemployment rates have been prevalent. There is general under-development hence poverty in the area of Kat River Valley. This has led to the study seeking to find an answer to the following question;

1.3 Objectives of the study

- To identify the property rights to land and water resources held by people in Kat River Valley.
- To establish whether property rights held by people in Kat River Valley are secure and the implications thereof.
- To determine the impact of property rights to land and water resources on smallholder development in Kat River Valley.

1.4 Hypothesis

Property rights as institutions that govern land and water use are a necessary condition for the well being of the rural people. They are a key component of various economic growth and development strategies.

The hypothesis developed for the study is that:

- The property rights to land and water resources held by people in Kat River Valley do not help to achieve smallholder development.

1.5 Significance of the study

Property rights shape how people use natural resources and these patterns of use, in turn, affect the outcome of people's agricultural production systems. They define the incentives people face for undertaking sustainable and productive management strategies, and they affect the level and distribution of benefits from natural resources. They have implications for food security, environmental sustainability, poverty reduction and economic growth. There are multiple property rights arrangements and these arrangements have different socioeconomic outcomes in different environments. In various countries, development objectives are never realised due to the irrelevance of the development initiatives to local conditions as they are applied after having succeeded elsewhere (Meinzen-Dick and Di Gregorio, 2004). The study will provide an understanding of the local socioeconomic conditions and identify property rights arrangements applied in the Kat River Valley. The impact of these property rights on the achievement of development will be established. This will clarify whether changes to property rights are necessary or not in order to effect development in Kat River Valley. If it is not necessary, further research would be undertaken to determine the actual inhibitors of development, which in turn, will assist in the implementation of development strategies that are relevant to the area. This could lead to national land and water policy objective of smallholder development being realised and the rural people would be positively affected.

1.6 Delineation of the study

The study will focus on the role of property rights in smallholder development. The role of rights to land and water resources applied in Kat River Valley towards achieving smallholder development which is one of the objectives of land reform policy and National Water Act will be an area of focus. The population targeted by the research includes small-scale and smallholder farmers in the upper part of Kat River Valley.

1.7 Outline of the study

The second chapter defines smallholder farmers and highlights their importance in economic development. The definition, emergence and evolution of property rights as well as different tenure systems are reviewed. The environment in which property rights become efficient together with different roles that property rights to land and water resources play in the development of rural economies are discussed in this chapter. The third chapter outlines the methodology used in the study. Data collection method, sampling procedure and data analysis strategies are discussed. A description of the study area is outlined in terms of location, climate, topography, vegetative cover, soils, hydrology, land ownership, natural resource management and economic activities. The results presentation, interpretation and discussion are covered in chapter four. The results from the institutional framework of analysis and analysis of variance are presented in the chapter. Chapter five presents conclusions and recommendations of the research.

CHAPTER TWO

PROPERTY RIGHTS AND RURAL ECONOMY

2.1 Introduction

The chapter provides the definition of a smallholder and highlights the importance of smallholder farming in economic development. Property rights' definition, emergence and evolution as well as the roles played by property rights in smallholder development form part of the discussion in this chapter.

2.2 Smallholder farming and its importance and challenges

Hazell *et al* (2007) defined smallholder farming as the farming in which households practice agriculture on relatively small areas of land. This farming is characterised by great dependency on family labour for carrying out farm operations though better-off smallholders hire labour at times. This labour-intensive nature leads to production of small yields in comparison to large-scale farming (Burgess, 1997). Produce is intended for family consumption and/or sale that depend upon individual farmer's objectives. Farms are the main sources of income and livelihoods in smallholder farming. However, Kirsten and van Zyl (1998) indicated that smallholders have diverse sources of income that is evidenced by their non-farm income generating activities.

Smallholder farming is also referred to as peasant or small-scale farming. Smallholder farming is mainly practiced in rural areas across the world (Burgess, 1997). South Africa is no exception as Kirsten and van Zyl (1998) indicated that smallholder farmers are found in rural areas particularly in former homeland areas. This renders smallholder farming crucial for rural economic development of South Africa.

Smallholder farming is the backbone of the African rural economy as it concerns the manner in which the majority of rural people earn a living from year to year. The sector has proved to be a tool for alleviating poverty as it provides food, income, employment and export earnings (Lipton *et al*, 1996). However, Kirsten and van Zyl (1998) ; Burgess (1997) indicated that past and present policies and actions of different nations have

limited the contribution of this sector towards economic development. This is supported by Hazell *et al* (2007) who states that smallholder farming receives a small amount of available developmental resources that is highlighted by, *inter alia* few technical packages, scanty extension services, deficient marketing and credit sources and insecure ownership of land resources. This has led to Kirsten and van Zyl (1998: 564) defining a smallholder farmer as ‘one whose scale of operation is too small to attract provision of the service one needs to be able to significantly increase one’s productivity.

In South Africa, rights to land and water resources have been one of the main challenges facing the sector and economy as a whole (Mbatha, 2007). This is supported by Rowntree (2005) who states that in the Kat River Valley (KRV) smallholders have limited and insecure rights that has influenced their land use patterns, production and economic behaviour, hence economic performance.

In response, the South African government implemented various policies including land reform and the National Water Act (NWA) in order to address the situation (Mbatha, 2007). Both the land reform programme and National Water Act are aimed at creating equitable access to land and water, economic and sustainable use of these resources (DLA, 1999 ; DWAF, 1997). The programme is ongoing in Kat River Valley, hence provision of property rights to land resources in the area.

2.3 Property Rights

Property rights are social institutions that define and delimit the range of privileges granted to individuals of specific resources, such as land and water. They are the authority to determine different forms of control over resources thus determining the use, benefits and costs resulting from resource use (Meinzen-Dick *et al*, 2004). That is, they clearly specify who can use the resources, who can capture the benefits from the resources, and who should incur costs of any socially harmful impact resulting from the use of a resource (Demsetz, 1967). The property rights have multiple characteristics each of which represents a different aspect of control over a particular resource. These include user rights that deal with the resource’s use such as rights to cultivate land, rights to

walking across a field, or to exploit a resource for economic benefit by extracting minerals. Transfer rights that are concerned with the exchange of property rights such as rights to rent out, sell, or give away the rights. Exclusion rights that allow the rights holder to prevent others from accessing the resource in anyway not prohibited in the specification of rights by the administering institution (North, 1990). Property rights come in less complete packages, allowing rights holder to derive certain benefits from the resources thus they do not grant unlimited control over resources and do not imply full ownership and sole authority. There are restrictions on use, transfer, and exclusion with regard to resources (Demsetz, 1967).

Property rights could be held under different forms that include private property rights: which is the regime in which property rights to a resource are held by an individual or a household. Common property rights: in this regime the rights to a resource are held by a group usually larger than a household, that is ownership by a collective. State property rights: in this system, the state or government holds the property rights to resources and the state controls access by individuals and groups, usually through the lease holding (Norton, 2004 ; Ellickson, 1993). Various institutions administer property rights both formally and informally. Property rights institutions range from formal arrangements, including constitutional provisions, statutes, and judicial rulings, to informal arrangements such as informal conventions, practices and customs regarding the allocations of and control over resources (Meinzen-Dick *et al*, 2004). Other sources of property rights include international treaties and donor organisations. According to Meinzen-Dick *et al* (2007), the existence of different sources of property rights does not imply that all sources are equally powerful. Their strength depends mainly on their legal backing, social legitimacy and accountability to and accessibility by the holders of the property rights.

2.4 Emergence and Evolution of property rights

In the world of scarcity, possession of rights to resources has been one of the main determinants of interactions and exchange that takes place within and among societies. This has an influence on the manner in which opportunities are created and benefits are

captured. These rights have a bearing on the bargaining power of the interacting parties that turns into social, economic and political power. The emergence and evolution of property rights are influenced by various social, economic and political factors which affect the overall level of development (Alchian, 1965; North, 1990; Demsetz, 1967). Understanding property rights' emergence and their evolution over time is important to appreciate how property rights affect behaviour that has an impact on the socioeconomic outcomes.

Population growth has led to the emergence of property rights, since in the areas with high population densities; land has become a scarce resource resulting in increased demand and increases in the value of land. This situation has led to more intensive use of land and associated resources that have necessitated clear and well defined rights to the resources in the form of property rights so that owners can preserve and invest in the resources (Deininger, 2003). The need to intensify use of land has necessitated adoption of technology in order to increase productivity. Acquisition of this technology required capital investment in production which led to the requirement of secure ownership of resources to guarantee returns to the investors (Nwosu, 1991). However, Boserup (1991) stated that in low population density areas, the availability of land has been high that led to low demand and value of the land. This has not motivated people in such areas to require clear and well defined property rights to land and other resources.

Trade has been liberalised in the world which means that in countries, including South Africa, a market economy prevails where market forces are the main factors that control exchange and allocation of resources. In a country where international trade has been practiced there have been opportunities presented to people in possession of productive resources (McCulloch *et al*, 2001). The opportunities include access to multiple markets and increased prices of products and resources and this has motivated people to invest in their resources in order to utilise these opportunities and capture the benefits. This condition has made it necessary to acquire more secure ownership of resources (Bamire and Fabiyi, 2007). Although Tweeten (1990) argued that there have been countries in which property rights have not changed despite the many social opportunities and

benefits presented by membership of the international community. This has been attributed to the countries' leaders only taking membership of the international community to serve their self interest and their political parties' interest.

There have been interactions and exchange activities that take place within and among communities that, in turn, result in benefits and costs to the interacting parties and property rights to resources emerged in order to capture the provided benefits and to reduce the costs (Libecap, 1990). According to Van den Brink *et al* (2006), the benefits are positive impacts of an activity while costs are negative impacts of an activity. The economically ideal situation is when the costs are less than the benefits as well as when the costs of reducing negative impacts is less than the benefits of so doing. Demsetz (1967) stated that property rights emerge as a move to achieve economic efficiency. However, North (1990) argued that not all property rights have been efficient and, historically, there has never been a presence of all economically efficient property rights. Binswanger *et al* (1995) ; McCarthy *et al* (2002) indicated that there has been an emergence of inefficient property rights regimes as there are particular political groups that designed property rights regimes that serve their own self interests and normally these proved to be economically inefficient.

2.5 Land Tenure and Property Rights

Land tenure is an arrangement concerned with the terms and conditions on which land resources are held, used, and transferred (de Villiers, 1996). It is crucial to the development of rural economies that rely on agriculture for growth and development since the tenure system determines peoples' access to land and water resources and the security over the use of these resources. The tenure system determines the type of property rights people have and how the rights are exercised. Depending upon the tenure system employed property rights may be held by an individual or a group (Ellickson, 1993). There are various property rights and rules found in different tenure systems and the common property rights could be classified in to use, transfer, and exclusion rights.

Use rights are concerned with different purposes for which an individual or groups can physically use land and water resources. These include the rights to use land for crop production, to graze livestock, to draw water from a source, to bury the dead, to build a house, to gather fuel wood and medicinal plants, and to make permanent improvements (Ostrom, 1990). Transfer rights deal with the transfer of land and water resources from the rights holders to the other person. The transfers involved may be temporary or permanent and these include the rights to sell, give, rent and mortgage the land. The exclusion rights are the rights that allow the rights holders to deny other people to access the land and water resources. These rights allow the holder to prevent others from exercising use and transfer rights on the land over which they do not have rights (Adams *et al*, 1999).

The form and extent of exercising property rights is determined by the administering institution and the tenure system employed. There are different tenure systems in the world. The tenure systems that are prevalent in Kat River Valley include freehold, state, and communal tenure (Rowntree, 2005).

2.5.1 Freehold Tenure

This tenure system is also called private tenure. In this system, property rights to a particular resource are held by an individual or a household. The system provides the holder with the rights to use the resource in any manner he deems fit and to exclude other people from accessing the resource. The holder has the rights to transfer the resource to other people on permanent or temporary basis through either selling or renting out (North, 1990; Alchian, 1965). However, this tenure system does not grant unlimited ownership; control over resources. There are certain uses and forms of control that are permitted and others are prohibited. The operating rules and conditions are determined by the institution behind the tenure system (Demsetz, 1967).

2.5.2 State Tenure

Under the state tenure system, property rights to the resource belong fully to the state or government and the control and decision making over the resources are carried out by the state. The state owns and lends or rents out the rights to use resources to the communities and individuals for a certain period of time and there are various restrictions attached to the lending of the rights. The most common restrictive condition being that these rights are not transferable, that is, they cannot be sold or rented out to other people (Norton, 2004). This tenure system is common in rural areas and resources owned by the state include forests, nature reserves, and grazing and arable lands (Csaki and Lerman, 1997).

2.5.3 Communal Tenure

Under communal tenure, the land ultimately belongs to the state but is under the control of a chief or headman. The property rights are granted to a group of people or a community (Chikwendu, 1993). The property rights are granted over residential, ploughing, and grazing lands. An individual member may be provided with rights to residential and arable lands where he can exercise use rights. This individual may exercise exclusion rights depending upon the administering institution behind the property rights. The grazing lands are used collectively where only use rights are exercised by group or community members (Orindi and Higgins, 2005). In this tenure system, the transfer of land is temporary, that is, land can only be rented out or lent to another person who is expected to be a community member. The transfer of land through sales is limited in communal tenure (Adams *et al*, 1999). The exclusion rights are exercised against people who are not members of the community.

Conquest and colonial rule brought the imposition of new forms of authority and economic organisation as well as the subordination of indigenous forms. According to Mamdani (1996), as cited in Cousins (2008), the Apartheid regime created reserves as a way of containing resistance to dispossession, and later facilitated the supply of cheap labour to the emerging capitalist economy. The reserves also allowed for the creation of a system of indirect rule in which traditional leaders undertook low-cost local

administration on behalf of the regime. However, variations in policies and their impacts occurred within this overall pattern.

To establish uniformity in policies the Apartheid regime established the Native Trust and Land Act 18 of 1936. The Act established South African Native Trust in which would vest all Crown land set aside for ‘native occupation’. It allowed regulations to prescribe conditions under which residents could hire, purchase or occupy land held by the trust and to control soil erosion (Department of Land Affairs, 1999). Rights to transfer or bequeath land were limited, the sizes of allotments were set, and women’s land rights were severely circumscribed.

After democratisation of the Republic of South Africa, the African National Congress-led government established Communal Land Rights Act in order to redress the injustices of the past. The Act adopts a transfer of ‘title’ approach that accepts the private ownership paradigm of property rights. Ownership of land is transferred from the state to ‘communities’, and community members’ rights are secured through the issuing of deeds of communal land right (DLA, 1999). According to the Act together with the Traditional Leadership and Governance Framework Act 41 of 2003, transfer of ownership to the communities means that land administration functions such as allocation of land rights, and the establishment and maintenance of registers and records of rights and transactions are undertaken at the pinnacle of the traditional hierarchy. According to Mulaudzi (2004), as cited by Cousins (2008), this presents a decisive shift of the ‘relative balance of power’ in favour of tribal authorities and chiefs at the expense of individuals and families as well as headmen and sub-headmen. This provides more power to chieftaincy than it previously enjoyed.

2.5.4 Open Access

This is the regime in which no restriction of use of property exists for anyone or any group. It is to this type of property (open access) the saying that “everyone’s property is no one’s property is applicable (Mbatha, 2005). The tragedy of this regime had been

confused with the “tragedy of the commons” by other scholars including Dales (1968) and Hardin (1968).

2.6 Efficiency of the property rights

In order to be efficient property rights must be clearly defined, secure, exclusive, accepted, understood and respected by all the involved individuals and should be enforceable (Guislain, 1997). Property rights become strong and efficient when the institutions behind them are socially legitimate, legally supported, and are accessible by and accountable to the property rights holders. When these conditions are met property rights become certain and the holding of the rights becomes secure and efficient (Olper, 2001; O’Driscoll jr. and Hoskins, 2003).

These rights should allow the holder to use the resources in any way he deems fit as long as it does fall in the category of permitted uses. The holder of the rights should be able to prevent others from accessing his resource and these rights should be transferable in order to allow resources to be allocated from low to high yielding uses (North, 1990). According to Meinzen-Dick *et al* (2004), it should be clearly specified as to who can use the resources, who can capture benefits from the resources and who bears the costs of the disruptive activity involving the resources. Alchian (1965) stated that defining of the property rights should be done in a way that makes it easy to be identified and exchanged at a cost that is low compared with the value of the underlying land. Another issue that should be taken into consideration is that the boundaries to resources should be clearly marked in order to reduce conflicts between resource owners that could have a negative effect on the efficiency of the property rights. The duration for which property rights are awarded should match the time frame during which returns from possible investments may be realised as this improves confidence for investment (Demsetz, 1967).

Allocation of property rights should be exercised based on the nature of the resource and on existing social arrangements. The consideration of the two factors will determine if it is appropriate to allocate rights to individuals or groups. Rights could be awarded to groups in situations where economies of scale exist in resource management or when

there are externalities that can only be managed at the level of the group (Ellickson, 1993). However, this requires the group to have clear definition of its membership, the responsibilities of individuals within the group to be well identified and strong internal management and enforcement mechanism such as penalties and other forms of punishment (Daftary, 2004).

As indicated earlier, for property rights to be effective and secure there are some conditions that should be met of which enforcement of property rights is part. These rights should be enforced irrespective of whether they are administered or supported by formal institutions such as formal law backed by the state's coercive power, or by informal institutions such as custom and religion (Guislain, 1997). Ability of the institution to enforce property rights is strengthened by the social legitimacy of that institution and its accessibility by and accountability to the rights holders. This has been evident in other African societies where customary ownership rights are viewed as more legitimate and the formal property rights rules backed by state's power of coercion have been ignored and this resulted in formal rights being ineffective in those areas (Meinzen-Dick *et al*, 2004). This has been noticed despite the fact that state backed property rights are viewed as the most efficient due to the governments' financial capacity to cover the costs associated with defining and enforcing property rights (Chikwendu, 1993). According to Eggertsson (1990), enforcement of property rights includes the excluding of others from the use of scarce resources. The process calls for the measurement and delineation of resources as well as monitoring, policing and enforcing rules of property rights. The enforcement of property rights can be performed, among others, by various institutions including communities, individuals and the state (Anderson, 2008).

The process of enforcement has been proven to be costly and there are multiple transaction costs accruing from monitoring, policing and enforcing of property rights. There are costs associated with the delineation of resources and exclusion of others from accessing the resources and other costs arise from the defining of the rights. For the process of enforcement to be effective, the benefits of any enforcement dimension should outweigh the costs of that enforcement dimension (Coase, 1960). The achievement of this

trade-off is one determinant of economic development and it is one of the reasons behind observable variations in the level of economic development among countries of the world. Countries that have been able to design institutions that are capable of achieving effective and low-cost enforcement have been able to move out of under-development relative to their less able counterparts (North, 1990).

2.7 Roles of Property Rights in smallholder development

Property rights depending upon their level of security provide assurance to the smallholder farmer that he will not be dispossessed of his land and water resources without proper compensation and this guarantees the farmer gets benefits from any activity involving the resources. These assurances and guarantees have an influence on the behaviour of the farmer that, in turn, impacts on the social, economic and environmental outcomes in the society. These outcomes then determine the level of the achievement of the major objectives of the national land and water policies including economic growth, environmental sustainability and poverty reduction (Van den Brink *et al*, 2006; Field, 2002; Lovei and Gentry, 2002).

2.7.1 Social Roles of Property Rights

Land and water are key sources of livelihoods for the rural people in the developing countries since the areas have been composed mainly of poor people with limited alternative sources of livelihoods. Access to these resources has been important in the achievement of social well-being in these areas (Deininger, 2003). In the rural areas, people with secure property rights to land and water resources possess one tool of reducing poverty as they have been able to grow food for consumption, though only at sustenance levels in most cases. This food production has ensured improved levels of nutrition and reduction of social disasters, such as malnutrition (Meinzen-Dick and De Gregorio, 2004).

According to Swallow *et al* (2005), holding of secure property rights has helped the holder to counteract social shocks to which poor people have been the most vulnerable such as high food prices that have not been affordable by a large proportion of

population. These poor people turn to their land and water as an alternative source of relatively cheap food. Rural people migrate to urban areas in search of jobs, though lately the rates of unemployment are rising in urban areas (Goldsmith *et al*, 2004). Therefore, these rural people have been forced to return to their respective places of origin, and if they had secure rights to land they turned to farming as a source of employment, food and income. Poor people have exchanged their land in order to meet the immediate and short term needs through activities such as rentals and sales (O'Driscoll jr. and Hoskins, 2003). Although, FAO (2008b) argued that these exchanges lead to further poverty among the poor unless they have other reliable sources of livelihoods, which is usually not the case in rural areas.

In the rural areas there has been great occurrence of conflicts over natural resources, particularly land and water, and this has been the result of not clearly defined property rights to these valuable resources (Vardhan, 2008). However, in rural areas where secure property rights have been predominant there has been relatively low occurrence of conflict over resources as farmers know the boundaries of the resources, and who should access or claim benefits from the resources. The punishment for contravening the property rights laws has been in place, is known to all and usually respected. This social order benefits the farmers because they do not experience any damage to their properties and they do not spend valuable resources trying to protect their rights and resources (Meinzen-Dick *et al*, 2007). These advantages created by the prevalent social order results in farmers spending time and money on the betterment of their farming enterprises hence increased productivity and returns.

There have been societies in which ownership of land and associated resources serves as proof of legitimate membership or citizenship and it is viewed as a sign of wealth and power and in such areas all members of the community strive to obtain secure ownership of these resources (FAO, 2008a). In areas where people do not obtain these rights, conflicts or even civil wars arise that have very detrimental effects to the economy, society and environment. In contrast, in areas where people have these secure rights to land, there has been a high degree of social satisfaction and order among community

members, hence great social cohesion that in turn facilitates other activities such as management of resources which are essential for development (Ellickson, 1993).

Secure ownership and control over land and water resources has been a major source of economic and political power, particularly in the rural areas where these resources have been the main, if not the only, available sources of livelihoods. Provision of secure rights to own and control these resources has been one strategy of empowerment of these rural people since this has improved their bargaining position in both economic and political processes (FAO, 2008a). According to Nugent and Robinson (2002) ; Alden-Wily (2002), this has strengthened the voice of the poor and consequently more influence in decision making regarding development initiatives by creating bases for democratic and participatory local government. This has led to the development initiatives aimed at meeting needs of the local farmers that in turn ensured the support of these initiatives by the local people. This situation has led to the betterment of the smallholders' farming activities since the basic services essential for agricultural growth such as roads and electricity among others have been provided (Gordillo *et al*, 1998).

There have been property rights systems that are based on the principle of gender discrimination whereby women are not awarded secure rights to resources that are crucial to their livelihoods as well as that of their families. This has led to negative social outcomes; particularly in cases where households are female headed because such households do not have means of food production and have no incentives to invest even if they have the potential of so doing (Deininger, 2003). By contrast, under property rights systems in which women are provided with secure access to land and water resources, the level of food production and availability has been relatively high. This has improved the households' expenditure on other items such as education of children, basic services and health. These property rights associated with gender equity have resulted in positive social outcomes that have led to the right direction towards the achievement of poverty reduction and economic development (Nugent and Robinson, 2002).

2.7.2 Property rights and use of resources

Property rights have been very important in the management and sustainability of natural resources such as land and water. Secure property rights provide incentives to the owners and users of the resources to conserve these valuable resources since owners and users are guaranteed of the benefits that come from the resources. Conservation could be achieved through various means including the adoption of better technologies, production and management systems. Sustainable utilisation of land and water resources requires only secure property rights irrespective of the administering institution (Meinzen-Dick *et al*, 2007).

Insecure property rights are detrimental to environmental quality as people do not have incentives to invest in the preservation and sustainability of the resources since they do not have a guarantee that they would reap the benefits from the resources. This has led to overexploitation of resources as people use them rapidly in order to get maximum benefits (Key *et al*, 1998). When property rights are secure people become confident to invest in the management and development of their land and water resources. In areas where people have secure property rights, the level of environmental quality has been relatively high as people have adopted soil and water quality improving elements such as fertilizers and manure. The farming practices such as crop rotation and appropriate use of and proper chemicals have improved water and land quality. The level of pollution particularly of water resources has been relatively low (McCulloch *et al*, 2001; Colby, 1995).

Secure property rights usually result in economic improvements that lead to sustainability of the environment (Anderson, 2008). People with secure property rights to land and water resources get financial gains from the productive activities involving these resources and these gains are used in the acquisition of technologies. Technologies such as irrigation systems provide efficient use of water and better waste disposal systems reduce the rate of water pollution and these ensure improved availability of clean water for irrigation and livestock as well as human consumption (Colby, 1995). However, Demsetz (1967) stated that the investment in some technologies requires the security of

property rights to be of long duration as it takes time to realise the benefits from other technologies.

According to Fraser (2007), trade has been liberalised in the world and this has exposed local farmers to international competition and provided them with access to international markets. People with secure property rights to land and water resources participate in the international trade of agricultural products because of the assurance of reaping benefits from their resources and they are linked to established actors in this arena mainly through contracts (Ashley and Maxwell, 2001). These international markets have strict requirements such as demand for environmentally friendly products thus, products produced under environmentally friendly conditions and practices. Therefore, to be competitive these farmers should ensure that they meet these conditions. The adoption of advanced environmental management techniques, therefore, leads to better environmental quality and sustainability in their respective areas (McCulloch *et al*, 2001).

In a social undertaking there are benefits and costs and the costs are negative or harmful impact on other people and their activities (Meinzen-Dick *et al*, 2004). Under the conditions of insecure property rights, people do not incur the costs of the effects of their activities on others as there are no restrictions and punishment with regard to the use of resources. Therefore, people use land and associated resources rapidly in order to satisfy their self interests; usually by obtaining maximum gains and that has led to overexploitation and degradation of land and water resources which has negative impact on other people and their livelihoods (Demsetz, 1967). According to Anderson (2008), secure property rights make it possible for people undertaking activities to incur the costs that the activities have on other people. In order to achieve profitability, people have to reduce the costs of their activities and one of the strategies used to achieve this is the reduction of harmfulness of the activities on the society. This has resulted in resources not being overexploited that, in turn, has led to the maintenance of environmental quality and sustainability of land and associated resources.

2.7.3 Economic Roles of Property Rights

Provision of secure property rights to people is an important strategy of reducing poverty and initiating economic growth as secure access to land and water resources present multiple economic opportunities to the people. People with secure rights to land and water resources could cultivate land for crop production and use water for the nourishment of the crops (Hayes *et al*, 1997). The availability of home produced foods reduces the pressure of high expenditure on food consumption that has been a major challenge to poor rural people particularly when food prices are high. Due to the advantage of saving on food consumption, people have income to spend on other needs and invest in other non-agricultural income generating activities (Meinzen-Dick *et al*, 2007). Those people in a relatively better socioeconomic position, even though in the poor category, may sell part of the produce and that leads to increased household income.

Investment in the resources necessitates the availability of capital that has been a major challenge to the rural people since they are poor and the solution to the problem has been the acquisition of credit from loan providing agencies whether formal or informal (Grossman and Kim, 1995). The financial institutions that provide loans and credit require loan seekers to meet certain conditions before credit can be provided. One of the conditions has been the provision of collateral so as to guarantee that the credit provided will be recovered in the event the borrower is unable to repay the loan. The only asset that rural people can provide as collateral is their land but this requires the client to have secure right to land under which foreclosure is possible in the event the loan is not paid back. Therefore, the rural people with secure rights to land have been able to obtain loans as they satisfied the conditions set by the loan providers (Lopez, 1997).

However, Deininger (2003) stated that most formal institutions prefer credit provision to large land holders over smallholders, which has posed difficulties for rural people. The reason for the preferential treatment has been that there are various costs associated with screening potential borrowers and the enforcement of repayment of the loans. There have been difficulties and costs associated with enforcing repayment of loans provided to smallholders and these have resulted in the exclusion of smallholders by credit providers

(Lovei and Gentry, 2002). The solution to this problem of the rural people has been the institutions that require presentation of a feasible business proposal and credit may be provided depending on the quality of the proposal (Van den Brink *et al*, 2006).

There have been great increases in population densities in many countries of the world and this has led to scarcity of several items that are crucial to the livelihoods of people and land has been one of the scarce resources important for livelihoods. This scarcity has led to an increase in the demand and value of land and this has resulted in people competing for the control and use of land and associated resources (FAO, 1997). This situation has presented various economic opportunities to the people particularly those with secure property rights to land and associated resources since one of the desirable characteristics of such rights is transferability. People can sell and rent out the rights to these resources when necessary and profitable. Holders of secure rights to land resources sell the rights and obtain windfall gains, especially when the prices of land are high and these people have invested this income in other agricultural activities to increase the productivity and gains (Alchian, 1965; Meinzen-Dick *et al*, 2007). Other land holders rent out the land or part of it as a way of increasing income and this additional income has improved their capacity to generate income as they have managed to improve the land based productivity or invested in other income generating activities.

The ability to transfer land without fear of losing rights to it has resulted in people renting out their land and then migrating to the urban areas to seek employment and this has been a major boost to their levels of income. Others, after accumulating adequate income to engage in more rewarding agricultural pursuits, return to their land (Nugent and Robinson, 2002). According to Van den Brink *et al* (2006), the transferability of property rights allows land and other resources to be transferred from low to high yielding uses. As a result of this capability, people have shifted the use of land to more lucrative undertakings such as housing and this has led to great financial gains that have seen the economic position of land rights holders improve.

However, the holders of property rights to land and associated resources should have information about the market prices of the resources to ensure that they gain more income by selling when the prices are high because when prices are low, sales result in low financial gains. These low financial gains from the sales of resources that are crucial to livelihoods have led to great poverty among smallholders especially where people do not have other sources of income and livelihoods (Lovei and Gentry, 2002; Csaki and Lerman, 1997).

2.8 Synopsis

Property rights define incentives that people face for undertaking sustainable and productive management practices and determine the extent and distribution of benefits from resources. Well defined and enforceable property rights are secure and have an impact on investment in and economic use of resources that in turn, lead to economic development and poverty reduction in rural areas. In the next chapter, description of Kat River Valley, methodology and methods employed for the determination of the role of property rights in rural smallholder development in Kat River Valley are discussed.

CHAPTER THREE

STUDY AREA AND RESEARCH METHODS

3.1 Introduction

This chapter provides information on historical background, description of the study area, physical factors, land ownership, natural resources management, and socio-economic conditions in the Kat River Valley (KRV). It covers the methodology used in the investigation of the socio-economic outcomes from property rights employed in Kat River Valley. Selection of the study area, orientation of the communities, selection and training of enumerators, data collection method, sampling procedure, and data analysis methods will be covered in the chapter.

3.2 Historical Background

According to North (1990), history is crucial to the development process since the present and future scenarios and decisions are connected to the past. It explains the changes that occurred up to the present and information gathered out of history that could be used in the future decisions. Historical events that took place in the Kat River Valley have a great influence on the present and future property rights to land and water resources, hence the levels of environmental sustainability, economic use of resources, equitable access to resources, economic development, and poverty reduction.

The area has been renowned for communities' reliance on natural resources for survival. People have been utilising land in various strategies for survival including fuelwood collection and different forms of farming and these activities have been supported by water from the Kat River. These have led to people settling on the river's banks and tributaries. The area has been occupied by different races that included "the Xhosa", "the Whites" and "the Coloured" people. In the late 1820s, there were conflicts between "the Xhosa" and "the Whites" and these were resolved by removing "the Xhosa" from their holdings and locating "the Coloured" in between the two warring races. It was believed that this placing of the "the Coloured" would reduce conflicts and their negative consequences (Hill and Nel, 2000). However, this has not led to the reduction of conflicts

as “the Xhosa” were angered by their removal and continued to fight “the Whites”. The constant conflicts hampered development progress in the area since it was not easy to realise productive and sustainable settlement under such conditions. This was later worsened by the Coloured peoples’ supporting of “the Xhosa” in the battle against “the Whites” (Logie, 1997).

The battle and aftermath have led to the changes in land ownership in Kat River Valley area as some Coloureds were expelled from their settlements as a punishment for assisting “the Xhosa” in the battle against the “the Whites”. This resulted in the dominance by “the Whites” in the area and they occupied the superior lands with regard to farming. Nevertheless, the Coloureds that assisted “the Whites” in the battles were rewarded with property rights to land.

In 1963, the homeland of Ciskei was created by the South African government of the day and this resulted in the incorporation of Kat River Valley into the homeland of Ciskei (Butler *et al*, 1978). The ownership of lands including those previously owned by “the Whites” was transferred to the homeland’s government while other lands were transferred to the Ciskei Agricultural Corporation (ULIMOCOR). The land was targeted for agricultural production but a large part of it was never allocated and the corrupt government officials opportunistically took over the land. Those who were allocated land were never provided with any necessary support and title deeds. Other people have been denied access to land and water resources (Mbatha, 2007). Even up to the present day, land tenure is an issue in the area, where the majority has no clearly defined rights to land resources, few people have private rights to land, and there are conflicts over resources and other parts of the land lay idle (Holtzhausen, 2006; Shackleton and Shackleton, 2006).

3.3 Description of the study area

3.3.1 Locality and extent of the study area

The Kat River Valley is a small basin in the Eastern Cape Province that is situated northeast of Grahamstown, in the foothills of the Winterberg and Amatole mountains. It

is a sub-catchment of the Great Fish River that includes the areas of Fort Beaufort, Seymour, Balfour and other rural villages (Hill and Nel, 2000). It forms part of the Nkonkobe Municipality which falls under Amatole District Municipality. The area is divided into three main parts including Upper, Middle and Lower Kat River Valley. It is about 80 kilometers in length and covers an area of 1600 square kilometers, with boundaries defined by the Elandsberg Mountains in the north east, the Katberg Mountain and the Ndidima range in the North West, the Kroomieberg in the west, and the Menziesberg and Juannasberg in the east (Motteux, 2001).

3.4 Physical Factors

3.4.1 Climate and Topography

The area is characterised by varying amounts of rainfall received throughout the year. In the Upper Kat the mean annual rainfall is about 1000mm with a decrease towards the Lower Kat that records annual mean of about 500mm and approximately 75% of the mean annual rainfall is received between October/November and February/March (Rowntree, 2005). In the Kat River Valley the mild conditions prevail with summer temperatures ranging between 20 and 35 degrees Celsius, and the winter temperatures range between freezing and 20 degrees Celsius.

The altitude ranges from about 600m in the lower parts to 1600m in the Upper parts of the Kat River Valley (Rowntree, 2005). Kat River Valley's topography is heterogeneous since it is characterised by a "basin" topography with significant areas of terrace and foot slope bottom lands, surrounded by steep mountain slopes. This topography is restrictive to development initiatives such as roads' construction and cultivation (Motteux, 2001).

3.4.2 Vegetation and Soils

The area of the Kat River Valley is characterised by great variations in natural vegetation. In the upper part, montane forest is the predominant vegetation with *Acacia Karoo* being the predominant type of vegetation in the eastern Thorn Bushveld. In the south, the area is characterised by *Acacia karoo*, *Euphorbia* species; *Diaspyrosdichrophylla* and *Olea europaea*. Due to the type of vegetation the area has been proved to have great potential

for supporting livestock, explaining animal farming in the area (Shackleton and Shackleton, 2006).

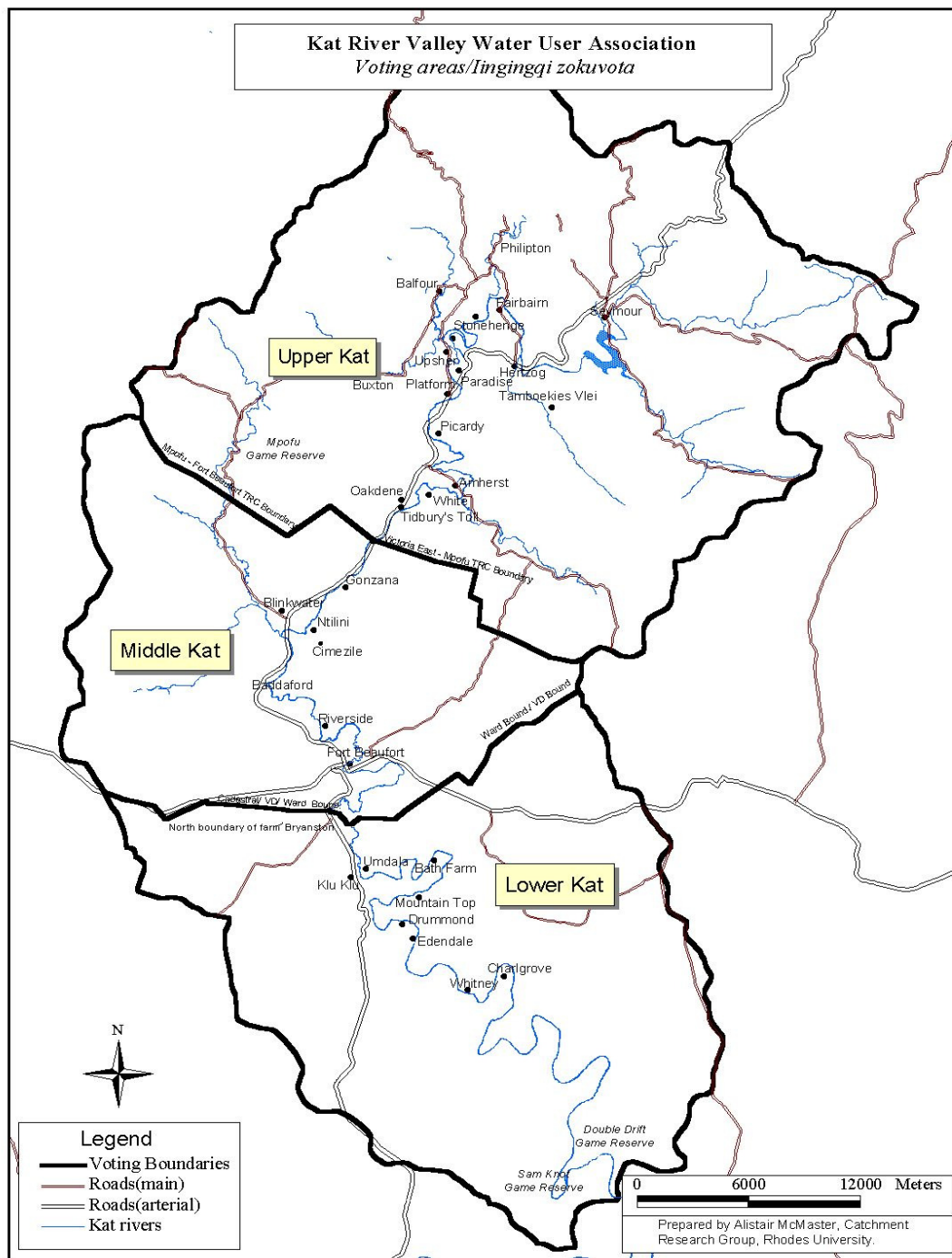


Figure 3.1: Kat River Valley map

Source: McMaster (2002)

According to Shackleton and Shackleton (2006), the area has great variations in soil quality but has been proved to be suitable for crop production due to predominance of alluvial soils between lower and upper reaches of the valley. Smit (2003) stated that fertile valley land will only be utilised through irrigation, using water from Kat River. However, Rowntree (2005) stated that this potential has been affected by poor practices leading to great degree of soil erosion hence decline in land and water resources quality particularly in the Upper Kat.

3.4.3 Hydrology

The villages in Kat River Valley are located near the Kat River and this has ensured a supply of water to these communities. The water is used for domestic consumption as well as for irrigated agricultural production. The Kat River Dam provides additional supplies of water to the Kat River communities and the underground water is available, although its extraction requires the use of expensive technologies (Holtzhausen, 2006). According to Shackleton and Shackleton (2006), there has been lack of technology for drawing water from these sources in the upper part of Kat River Valley while these technologies have been abundant in the lower parts of the valley.

3.5 Land Ownership

The area of the Kat River Valley is characterised by various land tenure systems that include private, communal, and state tenure. In the Upper Kat, large areas of land are owned by the State and other people in the villages do not have legal tenure to the land they have been occupying. Few people have private ownership to small pieces of land and most of the land in this part is disputed and currently stands idle (Rowntree, 2005). In the middle and lower parts that are dominated by white commercial farmers there are limited black commercial farmers. Private ownership of land is the predominant form of tenure in these reaches (Smit, 2003). This land ownership situation implies a variation in exclusivity, transferability and security of property rights that people exercise on land and water resources. These property rights variables have great impact on behaviour of farmers hence their performance and development (Place and Swallow, 2000).

3.6 National Water Policy and its objectives

The National Water Policy of 1997 aims to politically and economically empower previously disadvantaged water users such as rural subsistence farmers and rural women, and to give water access to the previously disempowered South African population in ways that protect the natural water resources from overuse and degradation (Water Allocation Strategy, 2005). This led to the promulgation and implementation of the National Water Act (NWA) of 1998 and subsequently the National Water Resources Strategy (NWRS) which in line with the constitutional imperative provide for the correction of such imbalances. The Act stipulates that equity, sustainability and efficiency are the guiding principles of water resource management in South Africa.

In order to achieve these objectives, according to Department of Water Affairs and Forestry (DWAF), the management of water resources should be delegated to locally established institutions. This also entails the decentralisation of economic water management to Water Management Areas (WMAs) as demarcated by central government. The use of economic tools, such as water permits and waste discharge charges, has been proposed to achieve a decentralised management of water resources, which would curb resource overuse and pollution as well as generate adequate revenues for the Catchment Management Agencies' (CMAs) financial viability (National Water Policy, 1997).

The proposed institutional arrangement is that CMAs should be created and be responsible for the overall management of water resources in each WMA (National Water Policy, 1997). The new approach has resulted in the integration of various local institutions such as Water Users Associations (WUAs), CMAs, Community Forums (CFs), Municipalities, businesses, etc.

Individual stakeholders and water users in Integrated Water Resource Management are represented by institutions like WUAs, CFs, etc., and in turn the institutions are represented in CMAs. This means that CMAs are the overarching administrative institutions in demarcated WMAs. Kat River Valley is part of the Fish to Tsitsikama

WMA and two institutions including Kat River Valley Water User Association (KRVWUA) and the CF as public platforms exist in the valley (Mbatha, 2005).

However, since the promulgation and implementation of the NWA, one principle that has not received the desired attention is equity, resulting in perpetuation of *status quo*. This is a picture that the Water Allocation Reform (WAR) seeks to change. The Water Allocation Reform Strategy (WARS) serves as the strategic link between policy intent and practical implementation of the provisions of the NWA providing the implementation of targets towards the realisation of the NWA. The strategic objective of the WARS is to redress past imbalances in the allocation of water. It stipulates national targets, which are inclusive of black women and are to be progressively achieved by the year 2024. In terms of these targets 60% of allocable water should be in the hands of black people of which half should be in black women's hands (WARS, 2008). The water allocation plans are developed and implemented within the context of Catchment Management Strategy where all DWAF's internal processes and initiatives are aligned to achieve the targets set for 2024.

3.7 Natural Resources management

In the Kat River Valley, the degree of land and water resources degradation has been high due to poor management of resources including overgrazing by livestock and environmentally unfriendly production activities. These have resulted in soil erosion and silting up of the Kat River (Rowntree, 2005). This has made rehabilitation of the degraded areas of great significance in the Kat River Valley.

Less than a decade ago, several villages took part in the rehabilitation activities with the assistance from the National Land Care programme of which the main objective was to safeguard large tracts of land and water sources (Shackleton and Shackleton, 2006). The Water Research Commission has funded the project aimed at empowering the rural communities in the Kat River Valley. The Commission has been working together with Rhodes University's Department of Geography in this undertaking. The initial focus of the project was the raising of environmental awareness and building capacity to manage

water resources at the local scale. The project was extended to facilitate the effective participation of a large number of village communities in the management of the catchment area (Holtzhausen, 2006).

The initiatives have resulted in significant short-term improvement in natural resources conservation and land productivity. For instance, there has been slight evidence of sediment trappings and improved growth rate of crops in many project areas (Rowntree, 2005). There have been short-term employment opportunities mainly in areas that initially had high unemployment rates. These demonstrate that if the project can be implemented on a large-scale the degradation of resources, low productivity and poverty could be reduced in the Kat River Valley (Holtzhausen, 2006).

3.8 Socio-economic Conditions

3.8.1 Population

According to Mujkanovic (2005), the total population is about 50 000 people, where about 90% of the populations are black. Out of the total black population, Xhosa is the predominant tribe. There are White, Indian and Coloured people living in the area though they form a minor part of the total population. More than half of the total population within the Kat River Valley lives in rural areas. Major part of this rural population is resident in the Upper Kat River Valley. However, the population density is decreasing because of high death rates associated mainly with HIV/AIDS (Edgren, 2005).

3.8.2 Infrastructure

There has been great variation in terms of availability and quality of infrastructure in the Kat River Valley area. In the lower parts of the area, there is a relatively good network of roads; there is widespread electrification, telephone connections and advanced sewage disposal systems. In the middle and upper regions, there have been limitations with regard to infrastructure, the quality and availability of road networks is relatively poor and the rates of electrification and telephone connections are low. The sewage systems in the upper region are under-developed as the bucket system is used for sewage in villages within this area (Edgren, 2005).

Kat Dam is the main primary bulk water infrastructure in the area. It is a structure with a wall which is approximately 55.6m high and a storage capacity of 350 000 cubic meters. The dam was commissioned in 1970 with the purpose of irrigating alluvial soils on the banks of the valley (Motteux, 2001). In the lower and middle Kat River Valley, there is piped and purified water sourced from Kat Dam and boreholes and the water has been used for household consumption and farming particularly citrus production. Availability of piped and purified water is relatively low in the upper Kat River Valley and these communities use unpurified water for both household consumption and farming purposes (Mbatha, 2005).

Smallholder and emerging farmers lack proper infrastructure necessary for growth and development. For instance, these farmers lack machinery and other inputs necessary for undertaking agricultural production and management activities (Rowntree, 2005).

There are educational institutions that provide services for pre-school, primary, and post-primary years. However, Smit (2003) indicated that high illiteracy levels characterise the Kat River Valley and this has contributed to high degrees of unemployment and overall poverty in the area though it is not the only factor contributing towards unemployment and poverty.

3.8.3 Economic Activities

There are no industrial and mining sectors in the Kat River Valley and there has been great reliance on agriculture as the main economic activity (Smit, 2003). Due to the availability of water from both Kat River and Kat Dam together with the suitability of soils for agricultural production, people have been engaged in agriculture (Shackleton and Shackleton, 2006). In the lower and middle parts of Kat River Valley there has been an abundance of commercial farmers dealing with citrus and livestock production. The citrus industry has been successful with major share of produce being exported and this is the major employer in the Kat River Valley. In the Upper Kat River Valley, there has been limited commercial farming practiced on the irrigation schemes that are found

around the area, People, generally, have been engaged in subsistence farming, though productivity has been poor (Hill and Nel, 2000). The poor production and lack of commercial farming have been attributed to a lack of ownership security and great degree of resource degradation (Rowntree, 2005).

The livelihood sources have been limited due to lack of formal and informal employment opportunities and this has led to high dependence levels in the area, particularly in the Upper Kat. People rely on state grants and migrant labour remittances for survival and this has led to Kat River Valley being considered a low income area (Hill and Nel, 2000). Mujkanovic (2005:32) supported this when stating that “Eleven percent of people have a cell phone, and about ten percent of the population has no access to a cell phone at all. Furthermore, about forty five percent of the population have no access to electricity and sixty percent of the population has no flush toilets.”

3.9 Selection of the study area

The area of Kat River Valley is characterised by different levels of development and access to land and water resources and these variations have been attributed to past political process (Gumede, 2008). The Lower Kat River Valley is characterised by private ownership of land and other resources and developed commercial farming. The level of development is high relative to that of other parts of the valley. In the Middle Kat River Valley there is private and communal ownership of resources and the level of development is second to that of Lower Kat River Valley. In the Upper Kat River Valley people have limited access to various forms of resources. Few people have private ownership of resources and others have insecure rights to resources. The communal ownership of resources is highly evident in this part of the valley. The general size of the land holdings is small relative to that of Lower and Middle Kat River Valley (Edgren, 2005).

The area of Fairbairn has been identified as the most suitable for this research since there are small-scale farmers who have private rights to land, farmers who work on the invaded State lands and those who farm at the Hertzog Agricultural Cooperative (HACOP). The

HACOP unit at Fairbairn is the only active branch in the Upper Kat River Valley (HACOP, 2009). There are various grazing lands that are utilised by members of the community under various conditions of property rights. All the groups of farmers are currently involved in farming.

Smallholder farming is practically done in the area, there are different forms of property rights exercised and there is a relatively high level of poverty and underdevelopment and all the mentioned conditions are the subjects of research interest.

3.10 Orientation of the communities

In order to ensure the success of the research, one of the strategies for the researcher was to strive for cooperation with the government officials, particularly those from the Departments of Land Affairs, Water and Forestry, Agriculture and Local Government. These Departments have close working relations with the rural communities in the Kat River Valley and provided important information relevant to this study.

Good relations with the communities were forged in order to achieve success in carrying out the research project. The researcher visited the local communities in the Upper Kat River Valley in order to present and discuss the problem, objectives, and significance of the research project with the local authorities. After the discussions, the authorities including the chiefs and headmen were well informed about all aspects of the project, therefore, were able to inform their people.

3.11 Selection and Training of enumerators

The selection and training steps were crucial since the validity of the information collected would determine the results and realisation of the objectives of the research project in the Kat River Valley.

The researcher was neither Xhosa nor Afrikaans speaking and this made it necessary to obtain the services of enumerators who besides English could speak Xhosa and Afrikaans fluently since these languages would enable them to communicate with the respondents

in Kat River Valley. They would be familiar with the cultural aspects of the respondents and this will improve their acceptability and cooperation with respondents.

The enumerators were briefed on the purpose and objectives of the research project and were orientated on the questionnaire to ensure that they understood what each question meant and required. The enumerators were informed of the difficulties that were likely to be encountered during data collection and the possible solutions to such difficulties were discussed. The importance of honesty with regard to manipulation of information was emphasised during the training phase.

3.12 Data Collection Method

3.12.1 Secondary Data

Library based research was carried out in order to perform a literature review, which helped the researcher to collect information about the related work done by other researchers in the research field (Punch, 2005). This research was focused on the property rights' emergence, evolution and efficiency, the impact of property rights on smallholder development, in particular, and the factors that influence efficiency of different property rights. The national land and water policies were viewed during this exercise. The sources of information that were consulted included journals, books, newspapers, magazines, experts' opinions and the internet. The reports and publications from the departments of agriculture, land affairs, water and forestry and local government were used in the research.

3.12.2 Questionnaire

Questionnaires were used for data collection in this study. They gathered information on demographics, land and water rights issues, investment, finance, resources use and management, production, opinions and attitudes towards property rights and the National Water Act of 1998. They were delivered by the researcher and the enumerators to the respondents giving them oral and written instructions. The face-to-face interviews were conducted in the respondents' dwellings and lasted for an hour at most. These interviews ensured that all questions were clear and understood by the respondents and allowed

further probing when particular answers were encountered until point of clarity was reached. The research team ensured that all questions were attended to during the interviews.

The questionnaire was dominated by open-ended questions due to the qualitative nature of this study. The questions were written in clear and simple English but the interviews were conducted in Xhosa or Afrikaans. The research team assured the respondents that information they provided was private and confidential. The questionnaire was pre-tested to identify any problems before doing the actual survey which ensured that problems were amended hence, the questionnaire was ready to be taken to the field. The exercise was done at the rural area of Zanyokwe and 20 households were interviewed.

Unstructured interviews were conducted with officials from Department of Land Affairs (DLA) and Department of Water Affairs and Forestry (DWAF) in the Eastern Cape Province. The purposes of these interviews were to find out the officials' perceptions of how the property rights situation affected smallholder farmers and how policy challenged or supported status quo in KRV. One official was interviewed from each department. The officials were selected by their respective departments based on their knowledge in terms of the information that was sought by the study.

3.12.3 Sampling procedure

A total of 96 households were randomly selected from the population of 480 smallholders. The decision was reached after consideration of time and cost of extended field survey, available financial resources, and subject of research interest. Given limited financial resources and homogeneous mix of property rights held within the area a large sample was not necessary. Fink and Kosecoff (1985) indicated that a sample size is usually influenced by time and cost, available resources, and the level of accuracy required. According to Leedy and Ormrod (2005), when there is great similarity with regard to subject of research interest a large sample is not necessary. An ideal sample size should provide the highest level of accuracy for the resources expended.

The technique of simple random sampling, which is one of the probability sampling techniques, was used for choosing sample units. According to Leedy and Ormrod (2005), this method ensures that each unit has an equal chance of being chosen for the survey. The households were taken as sampling units and individual household's head being the person interviewed.

3.13 Data Analysis

The methods and techniques employed in any investigation depend upon various factors including the nature/type of data to be collected (Leedy and Ormrod, 2005) as well as the purpose and objectives among others (Patton, 1990). The nature of data collected for the investigation of the role of property rights in smallholder development in KRV is qualitative. As a result, the study employed a predominantly institutional framework of analysis and the informal and formal institutional factors that were argued to have had contributions to both development and underdevelopment were highlighted and the recurrent themes were isolated for analysis and discussion. In that regard, institutional economists, particularly Williamson's (2000) hierarchy of society's institutions were employed for guidance. The analysis employed North's (1990) theoretical propositions in discussions of transaction costs.

A qualitative evaluation of the contributions of the factors to underdevelopment was carried out in the study. Factors that were consistently argued to have hugely contributed towards underdevelopment and hence high social transaction costs were assigned a high ranking of '3 points', while those which were argued to have had no detrimental contributions were assigned no ranking, which implicitly signals a 'zero point' value assignment. The factors that had least contribution were assigned a ranking of '1 point' and those with higher contribution were assigned a ranking of '2 points'. The rankings were as follows; '*minimum=1 point*'; '*medium= 2 points*' and '*high= 3 points*'. Based on the sum of ranking points assigned to each category of factors, deductive judgments were made on their contributions towards underdevelopment of the area. Analysis of variance (ANOVA) was used for the descriptive analysis whereby frequency and mean values were main descriptive indicators used.

Security is defined as freedom from interference from outside sources, continuous use, and ability to reap the benefits of labour and capital invested in the resource. Embedded in this description are three dimensions of land rights; breadth, duration and assurance. Breadth refers to the types of rights held. Generally, the more rights held the more secure those rights. Households with rights to alienate resources or to make long-term improvements on land would be considered more secure than those with only use rights to land. Duration refers to the length of time over which the individual/group may enjoy specific benefits while assurance refers to the ability of individuals to exercise their rights.

In this study, breadth was measured by the number of rights held to land. In the case of land when use, exclusivity and transferability were held it was ranked strong and when only two were held it was ranked moderate while it was ranked weak when only one type of rights were held.

Water and grazing lands are public goods and no community member should transfer and exclude others from this resource. Breadth of the water and grazing rights was measured by the possession of use rights. In this case, breadth was either ranked strong or weak. If use rights were held it was ranked strong and when such rights were absent it was ranked weak.

Table 3.1 Variables used for the determination of security of property rights

Variable	Definition	Indicators	Measure
Security	Freedom from interference from the outside sources, continuous use, and ability to reap the benefits of labour and capital invested in the resource	Breadth	Number and type of rights
		Assurance	Knowledge of boundaries. Enforcement and protection of rights
		Duration	Certainty/uncertainty on the length of time for exercising the rights

Assurance was measured by the knowledge of the boundaries of the resources and rights and the recognition, protection and enforcement of property rights. When there was knowledge of the boundaries and the recognition, enforcement and protection of the rights it was ranked strong and without either of the two it was ranked moderate. It was ranked weak when both were not present.

Duration was measured by the knowledge of the length of time for which property rights would be held. When there is uncertainty regarding the length of time, duration was deemed to be weak and it is strong when there is certainty.

3.14 Justification of the method of analysis

According to Williamson (2000), property rights are embedded in an evolutionary social structure. These institutions are complex with different parts that are somehow related to each other within the system. They associate with other variables that are related to development. These relations and changes affect distribution of power and resources hence economic behaviour and performance. These relations are crucial for the explanation of economic development in any setting (Hodgson, 1998).

The institutional framework of analysis facilitates in identifying and describing all factors that affect development and their actual impact on development. The findings from the framework helped the researcher to carry out quantitative investigation using appropriately chosen formal methods. It facilitates full understanding and explanation of the economic system. This method of analysis is not founded on rigid and prescribed guidelines aimed at certain expected outcomes. The methods designed in such manner often lead to explanation of real situation, credible findings and conclusions as data is not manipulated in order make it conform to models and expectations (Oosthuizen *et al*, 2005).

Mbatha (2007) used this institutional framework of analysis in the testing of the statement that private tenure leads to a higher status of economic development. It was

revealed that the true/real effect of private tenure could not be determined when impact of other associate factors is not considered which could lead to flawed findings and conclusions. Such findings and conclusions could lead to implementation of unsuitable/irrelevant resolutions and development initiatives and measures hence no economic growth and development.

3.15 Synopsis

The Kat River Valley is an area with great agricultural potential given its climate and physical characteristics such as soil and water quality that can contribute to economic growth and development. There is various tenure systems employed in this area, hence differences in property rights that people exercise on land and water resources. In the lower reaches private rights are exercised and large tracts of land are owned while in other reaches communal and unclear property rights are predominant. For the investigation of the role of property rights on smallholder development in KRV data was collected from 96 smallholders. The main focus of the study was on smallholder farming. Simple random sampling was the technique used in selecting a sample from smallholders in the study area. During data collection a questionnaire was administered through face-to-face interviews. Institutional economic analysis method that incorporated ANOVA was employed. In the next chapter results from the study area are presented, analysed and discussed.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND DISCUSSION OF PROPERTY RIGHTS ISSUES IN UPPER KRV

4.1 Introduction

The chapter presents the information collected from KRV, it provides an analysis of the information and discusses the Upper Kat case study. The first section presents the situation of the property rights to land and water resources in the study area. The second section presents the situation of the smallholder farming. The third section analyses and discusses the security and impact of property rights exercised by different people on different land and water resources while the institutional analysis and discussion of the whole case study is carried out in the fourth section. The quantitative evaluation of the social transaction costs contribution of various institutional factors is included in this section.

4.2 Situation of property rights to land and water resources in the Upper Kat

In the Upper Kat, residents had access to three types of land including residential, arable and grazing lands. The land is owned under different systems of property rights that means different rights were exercised on land resources. This section presents the property rights held on different lands under different tenure systems and the rights to water resources. Opinions and views regarding security and future of property rights form part of the presentation.

4.2.1 Property rights to residential land

All respondents indicated to have access to residential land. However, the lands were occupied under different conditions that is, different property rights were exercised on different residential lands. There were people who obtained their rights through inheritance from the previous White landlords who left the area during the consolidation of the Ciskei and other residents obtained rights shortly before democratisation of the country (Table 4.1). After further probing and greater interaction with respondents, it was realised that others, particularly Coloureds, were rewarded with private property rights

for assisting White Settlers in their numerous political and military battles against “the Xhosa”. Those with good political connections were made caretakers of the land by the Ciskei government and when the homeland collapsed these people took the land for themselves. They made up to 34% of the entire community and all these people were located on the eastern side of the study area and have been on the land for a period of 20 to 45 years. There are strong family relations on this eastern side of the community since there are only 3 family names across the whole side. They do not have title deeds to the residential land and they exercise use, exclusion and transfer rights. The majority (95%) of these residents know the exact boundaries of their land and all indicated that the rights were strongly enforced and protected by the law and that their level of security was very high. They were all certain about the future of their property rights to this land and were aware of the rules and regulations governing their rights to this land of which they were satisfied (Table 4.2). The majority (78%) lives in concrete block houses and their sites are fenced off.

Table 4.1 Property rights exercised on different residential lands

Acquisition of rights	Rights exercised	Rights prohibited	Period of occupation
Left by whites and Ciskei government	Use, Exclusion and Transfer (only to eastern section members)	Transfer to outsiders	Over 20 years
Invaded state land	Use	Transfer and exclusion	Over 19 years

The rest of the respondents claimed to have obtained rights to residential land through invasions, that is, they just occupied the land and erected settlements. These people claimed to have been on this land for more than 19 years. They established a committee that handled the administration of land rights. These people only exercised use rights to this land and half of them did not know the boundaries of their residential land. There were rules and regulations that governed their rights to this land together with penalties for trespassing. These people deemed the security of their rights to be very poor and the

future of their rights was deemed to be uncertain (Table 4.2). They live in mud houses and their sites are not fenced off.

Table 4.2 Responses on boundaries and views on security, future and legal status of property rights on residential lands

Method of acquisition	Knowledge of boundaries	View on security	Views on future of rights	Views on legal status of rights
Left by whites and Ciskei government	Known = 95% Unknown=5%	Good = 100%	Very good = 100%	Strongly enforced, protected and recognised = 100%
Invaded state land	Known= 50% Unknown=50%	Very poor = 100%	Uncertain = 100%	Unprotected and unenforced= 97% Protected and enforced = 3%

4.2.2 Individual property rights to arable land

Of the total population, 27% held individual rights to arable land and these people have been occupying the land for more than 20 years, while 3% occupied the land for less than 10 years. The majority (88%) of these farmers acquired the rights to this land by virtue of being left on the land by White farmers. Only 8% of the individual rights holders obtained rights through the process of land restitution and were in possession of title deeds and 4% obtained rights from the local committee. The majority (90%) of these farmers were Coloured.

Table 4.3 Property rights exercised on individual arable lands

Method of acquisition	Rights exercised	Rights prohibited	Period of occupation
Left by whites	Use and exclusion	Transfer	More than 20 years
Obtained through restitution	Use, exclusion and transfer	None	Less than 10 years
Granted by local committee	Use and transfer	Transfer	More than 20 years

The farmers who obtained rights through land reform's restitution exercised various rights including rights to use, transfer and exclude and those who inherited land from Whites also exercised use, transfer and exclusion rights (Table 4.3). These farmers had to notify authorities such as the local committee before exercising the rights to land and all indicated to be unaffected by this obligation with regard to land use aspirations. Those who obtained land from the Department of Land Affairs (DLA) through land restitution were not obliged to notify any authorities before exercising their rights. The majority (90%) of these farmers indicated knowledge of the boundaries of their land and 10% had no clear knowledge of their lands' boundaries. All individual rights holders indicated that their rights were legally enforced, protected and recognised. They also indicated that other people did not have any rights to their arable land. They were certain about the future occupation of their arable land and all deemed the security of their rights to this land to be very strong (Table 4.4).

Table 4.4 Responses on boundaries, security, future and legal status of property rights on individual arable lands

Method of acquisition	Knowledge of boundaries	Views on security	Views on future of rights	Views on legal status of rights
Left by whites	Known=90% Unknown=10%	Very good =100%	Certain=100%	Strongly protected, enforced and recognised=100%
Obtained through restitution	Known=100%	Very good =100%	Certain=100%	Strongly protected, enforced and recognised=100%
Granted by land committee	Known=100%	Very good =100%	Certain=100%	Strongly enforced, protected and recognised=100%

There were some rules and regulations such as prohibition of transfer of land rights and the infringement of these could lead to arrest, fines and to some extent expulsion from the agricultural land and all people indicated awareness of the rules and regulations as well as the associated penalties. They indicated satisfaction with conditions and administration of

the rights. The individual property rights system was their preferred system since they saw it as conducive for independent planning and better use and management of arable land and communal ownership was believed to be encouraging poor use and mismanagement of resources.

4.2.3 Property rights at Hertzog Agricultural Cooperative (HACOP)

The population of respondents with communal rights to arable land was 7% of the entire community and 43% of such holders occupied the land since 1994, while the rest only since 2003. The land rights were leased from the Department of Agriculture (DoA) in 1994 for the establishment of the irrigation scheme HACOP and the lease agreement was for a period of 10 years, which means it expired in 2004, though these farmers have continued to use the land after the expiry of the agreement. The scheme had branches in Hertzog, Phillipton and Fairbairn. However, the Fairbairn unit was the only operational branch at the time of the research (HACOP, 2009).

According to Mbatha (2007), in 1994 the scheme had 52 registered members. However, there has been a sharp decline in membership such that there were only 7 registered members at the time of the research. About half of the registered members joined the scheme less than 6 years ago while the rest joined in 1994 (HACOP, 2009).

Any member of the community could join the scheme by paying a fee of R150. Every month, each member is required to pay an additional R100 towards maintenance. Each member has been allocated a one hectare plot. The members designed both planting and irrigation plans that had to be followed by the members. The farm equipment was collectively used by members (Xola, 2009).

The use rights were exercised by the members while transfer and exclusion rights were not exercised. The local committee and DLA were the bodies that administered rights to this arable land. These farmers indicated that this affected them since the authorities at times rejected the proposals and implementation of their production and land use plans. They lacked knowledge about the extent of the boundaries of their land and indicated that

their rights to the land were not legally enforced, protected and recognised. This resulted in great uncertainty regarding their future occupation of the land as they did not know for how long they would occupy the arable land. The level of security of property rights on the land was deemed to be poor and very poor by 29% and 71% of the respondents respectively.

The land management system was acceptable since respondents indicated they were comfortable and unaffected by the arrangement. There were rules governing property rights, land use, farming operations and types of punishment for trespassing and all these were known, accepted and respected by all communal rights holders. There has been consensus regarding the direction to take in order to improve the scheme and any disputes among members have been successfully resolved. However, they were dissatisfied with the level of the security of their rights to this land. In 2001 they applied for this land to be permanently, clearly, legally and communally owned by them. At the time of the research there had not been any response from DLA despite several follow ups having been made (Xola, 2009). This group of farmers preferred communal ownership of the arable land since they mentioned that it renders it easy to obtain government services and support. They did not support individual property rights system citing uneven distribution of resources as the reason. This is supported by Mbatha (2007) statement that farmers at HACOP unit in Fairbain opposed the individual rights system. This negative attitude towards private property rights system is in contrast to Van Averbeké *et al* (1998) ; Dlova (2001) statements that these farmers expressed a desire to obtain title deeds for their plots.

When asked about progress on the application, DLA's officer (Modiba) mentioned that there was no progress at all. From the interview, it was realised that there were numerous obstacles to the processing of the land applications and claims. The situation of these communal farmers was worsened when the scheme lost part of the original land when DLA granted private rights to one of the individual community members without providing alternative piece of land to the scheme. Ever since, there has been great

tensions and conflicts between the land reform beneficiary and the scheme members as well as those people on the invaded state land.

4.2.4 Smallholder farmers on State land

There were White farmers who leased land from the Ciskei government for tobacco and vegetable cultivation between 1987 and 1993. After the abolition of the homelands governance system and shortly before democratisation of South Africa, White farmers left the area due to uncertainty that characterised the period and some people just invaded the land (Mbatha, 2007). This was confirmed by 53% of the respondents who indicated to have occupied their arable land through invasions. These farmers have been on the land for a period of about 16 to 25 years.

They only exercised use rights on the land and the restricted rights included those of transfer and exclusion. It was illegal to transfer the land and the infringement of such rules led to arrests, various fines as well as expulsion from the land. About half of these smallholder farmers did not know the boundaries of their land. They indicated that their property rights to the arable land were not legally enforced, protected and recognised. This group of small-scale farmers was uncertain about the future of their rights to this land. The security of property rights to arable land was deemed to be poor by this group of farmers.

They applied for private rights to residential land and communal rights to arable and grazing land resources at the same time as the HACOP members. They identified the lands they wanted to use for residential, crop production and grazing purposes and indicated these in their application. They preferred communal rights for both grazing and arable lands as they indicated positive attitude towards communal rights to arable land and water resources and they did not support the idea of private rights to water, grazing and arable land.

They had identified and targeted the areas that were not occupied and used. Progress had not been made at the time of investigation and obstacles similar to those responsible for

lack of progress on the application made by HACOP members were identified in the interview with DLA official (Modiba).

4.2.5 Property rights to grazing land

There is homogeneity with regard to the tenure system and type of rights exercised on grazing lands in the area. In this area there were two different grazing lands used by different sections of the community. The eastern section was only occupied by people with individual rights to arable and residential lands and had approximately 16 hectares (ha) of grazing land, while the western section occupied by people who invaded state land had access to 44 ha of grazing land.

4.2.5.1 Property rights to eastern grazing land

Livestock farmers from the eastern section indicated that they obtained rights to this land from previous White owners. The authorities (grazing committee) had to be notified before exercising any rights on the grazing land. All farmers exercised use and exclusion of only people from the western side and other villages, while other rights such as transfer were not exercised. The majority (92%) of these farmers indicated they were clear about the boundaries of their grazing land. The property rights to this land were seen as strongly protected, enforced and recognised by the law and all residents were certain and positive about the future of their rights to this land. Generally, the level of security of rights to grazing land was viewed as good since this was indicated by all. However, the users did not prefer communal use of resources, including the grazing lands, and they demonstrated strongly negative attitudes towards the communal rights system.

The whole group of users had knowledge of the grazing rules and regulations but when it came to observation of such rules different responses were provided with the majority indicating that other users did not observe the rules. A member of the grazing committee indicated that the grazing rules were not observed on this grazing land and the fences were intentionally destroyed by the users.

4.2.5.2 Property rights to western grazing land

This was the larger of the two grazing lands in the community and it was used by more people than was the eastern grazing land. Some users indicated that they gained access through land invasions, while others obtained it from the local committee. Users only exercised use rights to this land and other rights including transfer and exclusion were prohibited. The rights were exercised by all livestock farmers in the area. This section of the community indicated that even the members from the eastern section were not excluded although the latter excluded the former on their eastern grazing land. There has been some conflicts reported on this grazing land and they were mainly between users from the eastern and western sections. The boundaries of the land were known by 70% of the users (Table 4.5) while the remainder had no knowledge of the boundaries. The whole group of users indicated that their property rights to this land were not recognised, enforced and protected by law. There was uncertainty regarding the future of property rights to this land among all the respondents. All users of this grazing land indicated that the level of security of their rights to this land was very poor.

Table 4.5 Responses on boundaries, security, future and legal status of rights on grazing lands

Location of grazing land	Knowledge of boundaries	Views on security of rights	Views on future of rights	Views on legal status of rights
Eastern section	Known=92% Unknown=8%	Very good=100%	Certain=100%	Strongly enforced, protected and recognised=100%
Western section	Known=70% Unknown=30%	Very poor=100%	Uncertain=100%	Unenforced, protected and unenforced=100%

There were regulations that governed the use of this western grazing land and all people were aware of the rules and forms of punishment for breaking the rules. The rules were enforced by the local committee. However, a member of the local committee indicated that some rules were not observed in their entirety while others were no longer operational. The member also mentioned that the small size of the pasture in relation to

livestock population made it difficult to implement rotational grazing. The disrespect of the grazing rules and regulations was confirmed by the respondents as majority of them indicated it to be one of the major problems on this grazing land.

4.2.6 Property rights to water resources

All respondents had access to various water resources. The water was used for both farming and domestic purposes. There were differences in the types of water sources accessed by different sections of the community for certain purposes. The eastern section of the community used the river and the dam located on the section for domestic purposes. From table 4.6 it is seen that these people only exercised use rights to both water sources. These farmers mentioned that the communal use of water resources resulted in contamination and overuse by other members of the community. However, they all viewed security of their rights to these water sources as very good and the future of their rights was viewed as clear, known and satisfactory. They mentioned that their rights to the water resources were legally enforced, protected and recognised (Table 4.7).

Table 4.6 Property rights exercised on different water sources

Water source	Method of acquisition	Rights exercised	Rights prohibited	Period of occupation/use
Taps	Installed by DWAF	Use	Transfer and exclusion and use for farming	Less than 5 years
Dam	Local committee	Use	Transfer and exclusion	More than 20 years
River	DWAF and local committee	Use	Transfer and exclusion	More than 20 years

The western section of the community used water from the public taps for domestic purposes and they only exercised use rights to these taps. Exclusion of other people, transfer of water rights and use of this water for farming purposes were prohibited, as shown in table 4.6, and the breaking of rules resulted in arrests and various heavy fines. The local committee ensured that rules and regulations were observed on a daily basis. DWAF installed the taps for this section of the community while on the eastern section they were not installed due to individual ownership of the land and these individual rights

holders should install taps at their own costs. The users of the taps indicated that security of their use rights was very good. However, different views were given regarding the future of the rights to taps as 25% of the respondents showed certainty and the rest were uncertain (Table 4.7).

Table 4.7 Responses on security, future and legal status of rights to water sources

Water source	Views on security	Views on future of rights	Views on legal status of rights
Taps	Very good = 100%	Certain = 25% Uncertain = 75%	Strongly protected, enforced and recognised = 100%
Dam	Very good=100%	Certain = 100%	Strongly enforce and protected = 100%
River	Very good = 31% Poor = 69%	Certain = 31% Uncertain = 69%	Strongly protected, enforced and recognised = 33.3% Not protected and enforced = 66% Not sure = 3%

All residents depended on Kat River water for farming purposes and the whole community only exercised use rights to the river water since transfer and exclusion rights were prohibited by the authorities, including DWAF and local committee. The community members mentioned that water was always contaminated, overused and the supply was unreliable and only available when they least needed it and the water available to them did not satisfy their farming water requirements. This is supported by Van Averbeké *et al* (1998) when stating that farmers always experience water shortages in this area. This unreliability has led to farmers, especially at HACOP, curtailing the expansion of the scale of production. However, there were contrasting opinions regarding the security and the future of property rights to the river. Residents with individual rights to arable land (31%) indicated strong security, certainty and satisfactory future of rights to the river while the opposite was indicated by those with communal and state rights to land resources (69%) as shown in table 4.7.

When the community mentioned that there was inadequate water supply for farming purposes, the researcher believed that this could be addressed by Kat River Valley Water Users Association (KRVWUA). Therefore, the respondents were asked some questions related to the association and the NWA of 1998.

The majority of respondents (98%) were aware that constitutionally and legally they were entitled to use water, *inter alia* for domestic and farming purposes. They warmly welcomed the principle of allowing everyone a right to use water and the limitation of maximum level of water the whole community could use from the water resources. Only 14% of the respondents indicated that this will result in compromise of other intended water use objectives by the community.

It is shown in table 4.8 that, across the community, 72% of the farmers indicated to have knowledge of KRVWUA. Despite this knowledge by the majority, the level of membership was very low with only 8% of the respondents being members of the association. All respondents who were members held individual rights to arable land. Various reasons were given for non-membership and they included lack of clear rights, which was indicated by 48% of the respondents, dominance by citrus farmers (15%), lack of information about the association (24%) and the rest indicated to have just embarked on farming. Of the people who held membership, only 4 claimed to attend meetings of the association and the other 4 no longer attended the meetings citing, among others, dominance by white citrus farmers, all decisions biased against small-scale farmers and small-scale farmers' views and opinions not being taken into account. Surprisingly, when asked about payment of maintenance fees to the association all these peoples' response was that no payments were being made and this supported the statement in Mbatha (2007) that subsistence farmers never paid maintenance fees to the association. This non-payment was against one of the terms of NWA which stated that farmer members of the association must pay maintenance fees (DWAF, 1998).

Various reasons were given regarding the impact of KRVWUA on farming activities of the respondents. All communal arable land holders and some of those who invaded state

land for arable purposes mentioned that they did not benefit due to their lack of clear land rights and unknown boundaries of their land. Water scheduling was only done for lands that were clearly owned and with exact and known sizes. The individual arable land rights holders mentioned that they were not benefitting since they did not farm with citrus (Table 4.8).

Table 4.8 Responses on KRVWUA issues

Knowledge about KRVWUA	Membership status	Reasons for non-membership	Reasons for non attendance of KRVWUA meetings by non-attending members	Impact of KRVWUA on farming
Known =72% Unknown = 28%	Member = 8% Non-member = 92%	Unclear land rights=48% Citrus farmers dominance =15% Lack of information =24% Recently started farming=14%	White farmers dominance=100% Decisions biased against small-scale farmers=100% Smallholders opinions not taken into account =100%	No benefit due to lack of clear land rights and unknown boundaries=39% Not benefit since we do not farm with citrus=31%

According to Cousins (2008), various factors result in different preferences with regard to authorities that play key roles in the operation of land tenure systems. In Kat River Valley, the democratically elected local committees held power to administer rights to resources and the respondents indicated strong support to the bodies though some female respondents cited occasional discriminatory practices against women. The respondents cited experiences of corruption and abuse of power by traditional authorities in the past as the reason why they did not prefer traditional leaders to administer land rights.

The cited discrimination against women supports Claassen and Ngubane (2003) statement in Cousins (2008) that gender equality is not evenly exercised across different administrative bodies. This presents a challenge to Land Reform that the process ensures gender equity under any preferred system of land administration.

The section discussed different property rights systems and types of property rights exercised under different property rights systems on different types of land used by respondents. The administering institutions and opinions of people regarding the security, future and legal status of land rights formed part of the discussion. The rights exercised on water sources as well as opinions on their security, future and legal status were also discussed. The next section presents smallholder farming in different situations of property rights in upper Kat.

4.3 Property rights and smallholder farming in the Upper Kat

The section presents the situation of smallholder farming under different situations of property rights. The land and water use, investment and production aspects form part of the presentation. The institutions that have influence on smallholder farming are included in the section.

4.3.1 Smallholder farming of individual land rights holders

The previous section indicated that the area had two sections which were the east and the west section. The small-scale farmers who held individual rights to arable land were located in the eastern section of the area. All these farmers indicated that they have been farming their lands for over 20 years (Table 4.9). The sizes ranged between 0.25 hectare (ha) to 2 hectares per household. They planted various crops including carrots, potatoes, pumpkin, cabbage, spinach, butternut, beans, peas, maize and onions. All these farmers practised subsistence type of farming.

Table 4.9 Types of farming among different land tenure systems

Type of rights	Sizes (ha)	Type of farming	Crops grown	Years of farming
Individual	0.25-2	Subsistence	Carrots, potatoes, pumpkin, cabbage, spinach, butternut, beans, peas, maize, onions	Over 20
Communal	1	Semi-commercial	Carrots, potatoes, pumpkin, cabbage, spinach, butternut, beans, peas, maize, onions	15 years
State/invaded	0.5-1	Subsistence	Carrots, potatoes, pumpkin, cabbage, spinach, butternut, beans, peas, maize, onions	Over 20

They mentioned that they used their household income to finance the farming activities. The majority (63%) spent less than R200 on their farming per season, about R200-500 was spent by 25% and only 12% spent between R500-R1000. These smallholders have never accessed any loans and various reasons were given for that: they included lack of information about loans and how to get those (40%), while 60% indicated that they would be unable to repay loans. Lack of capital was cited as the reason for low investment in to farming.

It was discovered that, during the period 2004 to 2007, 72% of these farmers practised crop rotation on their plots and various reasons were given for the rotation of crops. These included prevention of degradation by 34% of the people who practised rotation while the rest rotated crops in order to identify crops that could do best in their plots. There was 28% that did not rotate crops and they alternated two crops on their plots and they indicated that those crops were demanding less water and did well in conditions of water scarcity which was experienced in the area (Table 4.10).

Table 4.10 Responses on crop rotation among different land tenure systems

Types of rights to arable land	People practising crop rotation	Reasons for crop rotation	Reasons for not practising crop rotation
Individual	Practise = 72% Not practised = 28%	Identify most suited crops = 66% Prevention of degradation = 34%	Only grow crops with low water requirements=100%
Communal	Practised = 100%	Prevention of degradation = 100%	Not applicable
State/invaded	Practised=66% Not practised = 34%	Identify most suited crops = 52% Prevention of degradation = 48%	Only grow crops with low water requirements=100%

A quarter of these farmers were doing nothing to improve fertility of the soil, while half and another quarter applied fertilizers and manure respectively, though they indicated that this rarely happened. There were some measures taken to prevent soil degradation and the measures included crop rotation and application of fertilizers by 44% and 19% only

applied manure, while 37% did not do anything to prevent soil degradation. From observation and further interaction with the community, the researcher noticed that majority of these smallholders only practiced what was decided upon by male members of the households.

In order to improve efficiency in soil use, 28% indicated that planting was done at recommended rates, 6% indicated that they planted at recommended rates and during suitable seasons while 66% did nothing to increase the efficiency.

All respondents indicated that they did nothing to improve quality of farming water. However, 53% avoided dumping refuse and any other harmful materials into the water sources, particularly the dam so as to prevent water pollution and contamination. As a measure to attain efficiency in water use, irrigation with water from the dam was only performed when necessary and farmers only irrigated at recommended rates and times. However, these farmers indicated that they used as much river water as possible whenever it was available. After further interaction with this community it was noticed that these smallholder farmers did not make any effort to improve their farming situation because they did not view farming as a source of income and employment and they indicated a desire to be employed elsewhere outside agriculture.

There were various implements/equipment that were owned by the farmers that included hosepipes and watering cans which were owned by 3%, 25% owned digging forks, spades and rakes, only 13% owned wheelbarrows, 3% owned ox-drawn ploughs and 53% did not own any equipment, while only one person (3%) owned a tractor. These smallholders mentioned that any implement they did not have was borrowed or rented from the neighbours. The most important improvement these people desired was the improved supply and reliability of water for farming purposes since they hoped that would improve the productivity which they all deemed poor at the time of the research.

Table 4.11 Production values from individual rights holding smallholders

Crop	N	Min (kg)	Max (kg)	Mean (kg)	Std. Deviation
Carrots	30	0	900	54.8	168.85
Potatoes	30	0	1875	154.2	408.16
Pumpkin	30	0	200	38.8	72.73
Cabbage	30	0	250	90.0	95.95
Spinach	30	0	250	68.3	89.52
Butternut	30	0	210	95.0	64.52
Beans	30	0	50	10.8	20.43
Peas	30	0	75	15.8	18.19
Maize	30	0	200	45.0	66.11
Onion	30	0	150	38.3	57.13

According to Joubert (2009) and Brutsch (2004), the production values of all crops are low among this group of farmers. The yield that these farmers obtained in all crops is far below the average. However, these people indicated that their production levels were affected by the destruction and theft of their crops by the people who lack rights to land resources. According to Tlou *et al* (1998), land issues are a source of conflicts in rural societies and feuds between neighbours are caused by conflicting claims of land rights.

4.3.2 Farming at Hertzog Agricultural Cooperative (HACOP)

The plots were located on the land that was leased by DoA to the Fairbairn community for the establishment of the irrigation scheme (HACOP) in 1994 and the lease agreement was for a period of 10 years that had already expired. There were only 7 members at the time of the research though it was indicated by members that the number was initially higher but the members did not mention reasons for the decline. Each member was allocated a 1 hectare (ha) plot and similar crops to those of individual smallholders were planted. The members mentioned that their objective was to satisfy household food requirements then sell the surplus (Table 4.15).

These farmers spent a minimum of R2000 per season on farming activities but they had never accessed any loans. They mentioned that their application and proposals were rejected by financial institutions because they did not have clear rights to the arable land which was one of the requirements of the institutions they had approached. However,

they obtained R450 000 as assistance from the Department of Social Development. The interviewed members could not explain the conditions and terms attached to the assistance except that it was one of the government's poverty alleviation strategies. The funds were used for infrastructure development and maintenance and were used according to the plan and budget designed by the members together with officials from the Department and they were strictly monitored by the Department.

Between the years 1998 and 2000, the scheme was provided with input support from Micro-projects Trust (MPT). MPT is the non-governmental organisation that was based in East London and funded by European Union for projects that brought practical benefits to local communities. The inputs supplied included seeds, seedlings, pesticides and packaging materials (Dlova, 2001).

Between the years 2004 and 2007, all the members practised crop rotation in order to prevent soil depletion. Fertilizers and lime were applied to the plots in order to improve soil fertility and crops were planted at recommended rates, times and during suitable seasons so as to increase efficiency.

The farmers avoided dumping any refuse into the river and ensured that substances such as used motor oil were disposed of carefully. Chemicals like herbicides and insecticides were applied with great care and at recommended times and rates with all safety precautions taken in order to prevent water pollution. Water was treated before use, if it was visibly polluted, and irrigation was done at recommended rates and times so as to improve the efficiency of water use. They mentioned that advice on better practices was sought from the extension officers in Fort Beaufort.

The indication of financial and extension support to the scheme is in contrast to Van Averbeké *et al* (1998:71) statement that "HACOP irrigation scheme did not receive any government funding and that all costs pertaining to farming are borne by the cooperative with the exception of water and that farmers rely on their own knowledge of crop production, acquired during their service as farm labourers".

They owned various inputs including disc and spike tooth harrows, plough, sprayers, planter, generator, small irrigation pipes and a tractor. There were contrasting views regarding the level of productivity on the land as 71% of the members saw it average and the remaining 29% deemed it to be poor. However, common views were shared when they all indicated that improvement would be made if the supply and reliability of farming water could be improved. Recently, they failed to get loans for building water storage tanks and installing advanced irrigation system due to lack of land rights.

Table 4.12 Production values from HACOP

Crop	N	Min (kg)	Max (kg)	Mean (kg)	Std. Deviation
Carrots	7	0	1200	445.7	529.74
Potatoes	7	0	2100	1207.2	712.05
Pumpkin	7	0	1500	464.3	619.62
Cabbage	7	1200	2300	1814.3	362.53
Spinach	7	0	2000	1307.1	757.42
Butternut	7	900	1800	1285.7	333.80
Beans	7	0	400	128.6	170.43
Peas	7	0	300	200	141.42
Maize	7	0	600	228.6	236.03
Onion	7	300	700	507.1	153.91

The yields of all crops are high compared to those of individual and farmers on the invaded State land. However, these yields are low when compared to figures in Brutsch (2004) averages. This supports Van Averbek *et al* (1998) statement that at HACOP yields are relatively low for irrigated agriculture.

Despite the relatively higher production levels these people experienced great losses since their crops rot in the field as they could not sign contracts with the bulk buyers, namely, retailers. A member of the scheme committee indicated that long term contracts were preferred by the approached retailers and that was impossible given the uncertainty of the future of their rights to this land. They only sold the produce to the street vendors in towns such as Fort Beaufort, Seymour and Alice, depending upon the availability of

transport. According to members of the scheme, the street vendors only purchased at lowest possible prices, which in most cases, were determined by the vendors and that did not result in any benefit on the side of the scheme.

4.3.3 Smallholder farming on invaded State lands

This group of smallholder farmers was located in the western part of the area and the sizes of their land ranged between 0.5 hectare and 1 hectare. Each person owned and worked a plot and they used their lands for the production of crops similar to those produced by the individual and HACOP farmers. They produced crops for household consumption but they indicated that in good seasons some produce was sold.

They used their own household income to finance their farming activities and 75% of them spent less than R200 per season, 20% spent between R200 and R500. The amount between R500 and R1000 was spent by 3% while only 2% spent above R2000 per season. None of these people ever received a loan and they mentioned various reasons: 79% citing lack of clear rights to land as the main reason for the rejection of their proposals and applications. Small size of land was the reason given by 7% of these farmers while 14% did not have information about how to get loans.

About 66% of these farmers were practising crop rotation while the remaining alternated between two crops. Among those who practised crop rotation only 48% did it in order to prevent soil degradation while 52% just wanted to identify the crops that would do best in their plots (Table 4.10). Farmers who did not practise crop rotation and all those who alternated two crops mentioned that they did that because the crops they planted had low water requirements and did well in conditions of water stress which was common in their area. It was realised by the researcher that most farming practices adopted were decided upon by males irrespective of whether they are effective or not. Women did not have any say regarding farming operations.

The majority (51%) and 2% of the farmers applied manure and fertilizers respectively so as to improve soil fertility, while the remaining did nothing to improve soil fertility. Crop

rotation and fertilizer application were undertaken for the prevention of soil degradation as indicated by 42% and 7% only applied fertilizers to prevent soil degradation while 51% did not take any measures to prevent soil degradation. Crops were planted at recommended rates by 9% of the respondents so as to increase the efficiency of soil use and only 4% mentioned that they planted crops during seasons that suited them most and 2% mentioned that they planted at recommended rates and during suitable seasons while 85% did nothing to increase the efficiency of soil use.

The majority (98%) of these farmers did nothing to improve the quality of water and only 2% indicated that water was treated before use if it was visibly polluted. Most (69%) of the farmers did nothing to prevent pollution of the water resources. There were several measures taken to increase the efficiency of water use, which included irrigation at recommended rates and times (47%) and 28% only irrigated when necessary that is, when plants were visibly water stressed. The remaining 25% just used water whenever it was available.

Only 2% of the farmers on State/invaded land owned hosepipes, another 2% owned wheelbarrows, 4% owned harrows and 42% owned spades, digging forks and rakes, and 4% owned ox-drawn ploughs, while 47% did not own any equipment. Of all these farmers, 47% mentioned that they wanted improved supplies and reliability of farming water, 33% wanted to have inputs such as fertilizers, herbicides and insecticides while 9% wanted to expand the scale of their production. There were farmers (11%) who wanted to have their plots fenced. There were different opinions expressed by these farmers regarding the levels of productivity as it was deemed to be poor and very poor by 34% and 66% respectively.

The production values from these farmers are more or less the same to the individual Smallholders and there is no significance in the difference between the mean values of these farmers and those with private rights to arable land that is proved by the value $P > 0.0001$.

Table 4.13 Production values from smallholders on the invaded state land

Crop	N	Min (kg)	Max (kg)	Mean (kg)	Std. Deviation
Carrots	59	0	90	36.6	36.55
Potatoes	59	0	125	69.5	43.56
Pumpkin	59	0	500	72.9	100.99
Cabbage	59	0	800	139.8	128.58
Spinach	59	0	600	77.1	109.98
Butternut	59	0	600	84.9	92.07
Beans	59	0	300	13.9	43.86
Peas	59	0	200	17.8	35.06
Maize	59	0	600	64.4	101.30
Onion	59	0	75	18.0	26.49

4.3.4 Livestock farming on grazing lands in the Upper Kat

The previous section highlighted that there were two separate grazing lands in the area with one located on the eastern section and the other on the western section. On both pastures various types of livestock were kept, including cattle, sheep, goats and donkeys. The livestock were kept for subsistence purposes although some farmers mentioned that sales were made at times of deep financial crisis. There were differences in the number of animals kept on each pasture with 120 cattle, 90 sheep, 68 goats and 29 donkeys kept on the eastern grazing land and there were 310 cattle, 345 sheep, 86 donkeys and 445 goats kept on the western grazing land.

On the eastern pasture all respondents mentioned that they used their own household income to finance their livestock farming needs with three quarters of the livestock farmers spending less than R200 per year and a quarter spent between R200 and R500 per year. They indicated that none of them had ever accessed any loan to finance the livestock farming activities and various reasons were given including the poor condition of pasture discouraging investment (65%), other farmers (35%) indicated that they had no information about financial institutions and how loans are obtained.

Table 4.14 Responses on expenditure on different grazing lands

Location of the grazing land	Methods of financing	Seasonal expenditure	Access to loans	Reasons for lack of access
Eastern section	Self-financing =100%	Less R200.00 = 75% R201.00- R500.00 = 25%	Never accessed = 100%	Poor pasture = 65% Lack of information about loans = 35%
Western section	Self-financing =100%	Less R200.00 = 66% R201.00- R500.00 = 34%	Never accessed = 100%	Poor pasture=30% Lack of information = 25% No ownership = 45%

In the western section, the situation regarding the financing of activities was the same as the eastern section as all farmers mentioned that they used household income to finance the activities. In this section, about two thirds (66%) spent less than R200 per year on farming activities and the rest between R200-R500. None of these farmers ever accessed a loan to improve the livestock farming and three quarters (75%) of these farmers indicated that they failed because they do not have rights to the grazing land and they could not invest under such circumstances and about 25% lacked information about loans and the financial institutions that provided them.

On the eastern grazing land the users indicated that they did not do anything to maintain productivity of the pasture and 8% indicated that veld fires were avoided while 92% did not take any measures to prevent the rangeland degradation. There was nothing done to improve the quality of water for livestock consumption and no measures were taken to ensure that water was efficiently utilised. The farmers indicated that rules were not observed therefore, it did not make sense to improve the pasture while other people were destroying the pasture.

It was the same case in the western pasture, as all users indicated that they did nothing to maintain productivity of the pasture and nothing to prevent rangeland degradation. In order to improve water quality for livestock 39% indicated that they avoided littering into the water sources while 61% did not do anything to improve water quality. The farmers

who did nothing for the betterment of the grazing land all indicated that they did not do anything because they do not own that land and could be evicted at anytime and hence no use improving the land.

There were no structures such as fences and dams on the eastern grazing land though it was mentioned by some farmers that initially the pasture was fenced off but the fence was destroyed by users. Some of the users owned livestock facilities such as kraals and feeding troughs. There are a number of developments that the users desired such as improved observation of grazing rules, stronger enforcement of grazing rules and construction of a dam in the rangeland. The users of the western rangeland indicated that their pasture was not fenced off and they also did not own any livestock farming facilities. However, the developments desired by these farmers were different from those on the eastern section as they wanted to see improved management of grazing, clear rights to the rangeland, pasture to be fenced off and extended and also wanted a dam. Other livestock farmers mentioned that they could not think about improvements before their position was clarified with regard to occupation of the land.

Table 4.15 Production and sales from different grazing lands

Location of the grazing land	Milk produce per animal per day(litres)	Prices of livestock sold	Reasons for prices	Views on productivity
Eastern	Cow = 1-2.5 Goat = 0.25-0.5	Sheep=R350-R450 Goat=R300-R400 Cattle=R1400-R3000	Poor condition of animals = 100%	Very poor = 100%
Western	Cow = 1-2.5 Goat = 0.25-0.5	Sheep=R350-R450 Goat=R300-R400 Cattle=R1400-R3000	Reduce stocking rate = 42% Poor condition of animals = 58%	Very poor = 100%

On the eastern pasture the production of milk from each cow was about 1 to 2.5 litres per day while from the goat about 0.25 to 0.50 litres of milk were obtained per day. Cattle prices were between R1400 and R3000 and sheep were sold at prices between R350 and R450, while goat prices were between R300 and R400. The farmers mentioned that prices were low due to the poor condition of the animals caused by mismanagement of

grazing and they all deemed the productivity to be very poor. In the western pasture, quantities of milk were the same as quantities produced on the eastern pasture and the selling prices for livestock identical to the prices from the eastern section. However, different reasons were given for low prices including poor condition of animals which was given by 58% of the users while 42% sold to reduce the stocking rate so they put up with low prices in order to speed up sales. The mortality rate has been high due to inadequacy of the pasture and productivity was deemed to be poor by all users.

The section discussed the situation of smallholder farming under different situations of property rights. The smallholder farming aspects discussed include land resources use, investment and production. The next section analyses and discusses the security of property rights and their impact on smallholder farming in the Upper Kat.

4.4 Analysis and discussion of the security and impact of property rights in the Upper Kat

The section discusses the security of property rights that people exercise on different types of land and water resources in upper Kat. The focus is on security aspects including breadth, assurance and duration. The impact of property rights on land and water use as well as productivity form part of the discussion.

4.4.1 Security of property rights to residential land

The farmers that obtained rights from the Whites and Ciskei government exercised use, transfer, and exclusion rights. The group that obtained rights through land invasions exercised use rights only since transfer and exclusion rights were prohibited.

All residents indicated they had access to residential land. Nevertheless, there were great differences regarding the security of their rights to residential land. For individual rights holders the breadth is strong due to the presence of use, transfer and exclusion rights. The rights are legally enforced and protected and the boundaries are clear, that is, the assurance is strong. The duration is strong since there is certainty regarding the length of

time for holding rights. This situation has resulted in relatively high investment that is reflected in concrete block houses and fencing.

It is different with people residing on the invaded state land since only use rights are exercised that means both the breadth and assurance are weak due to unclear boundaries and lack of enforcement and protection of the rights. The duration is poor because of uncertainty regarding the length of time for exercising their rights (Table 4.16). As a result, the investment is low as proved by mud houses, hence low cost housing.

Table 4.16 Summary of security of property rights to residential land

Types of rights	Breadth	Assurance	Duration
Individual	Strong	Strong	Strong
State/invaded	Weak	Weak	Weak

4.4.2 Security of individual property rights to arable land

For farmers who obtained land through restitution the breadth, assurance and duration are strong while those who obtained land rights from previous landlords/Whites and those who were granted land rights by the local committee have strong breadth of rights, strong assurance as well as strong duration of property rights (Table 4.17).

Table 4.17 Summary of security of individual property rights to arable land

Type of rights acquisition	Breadth	Assurance	Duration
Land restitution	Strong	Strong	Strong
Left by whites	Strong	Strong	Strong
Local committee	Strong	Strong	Strong

The economic theory states that individuals with secure property rights are motivated to manage and use their resources in a better way and they invest more in their resources which result in higher productivity. However, in this area the use and management of land is poor, investment is low and the productivity is poor among farmers with secure

land rights. This anomaly is attributable to various institutional factors that will be discussed in section 4.5.

4.4.3 Security of property rights at HACOP

The farmers that work in HACOP only exercised use rights to this land and it renders breadth of their rights weak and the situation regarding the assurance and duration of their rights indicates that these two aspects of the security of their property rights are also weak.

The situation of property rights to land has negatively contributed to growth and development of HACOP. The insecurity of the property rights has denied these farmers an opportunity to be water scheduled by KRVWUA as clear rights to land are required for water scheduling. This has led to water shortages, hence lower productivity as well as inability to expand scale of production. The advanced means of irrigation such as stone/brick built tanks and irrigation pipes could not be installed due to lack of secure land rights which was required by loan providers. It is evident that the situation of property rights has prevented the scheme from fulfilling its potential.

The scheme could not sign contracts with established role players in agribusiness as the approached retailers indicated a desire for long term contracts which were impossible given the insecure nature of the land rights. The failure to secure contracts has led to losses on the scheme as much of the produce rots in the field, particularly in good seasons. This led to street vendors being the main customers of the scheme and these customers were only willing to buy at relatively low prices and due to the lack of customers the scheme had to accept these low prices in order to prevent further losses.

Despite the external support from the Department of Social Development, the members had a desire to make improvements that required additional funding. Therefore, they approached several financial assistance providers for funding but were unable to get funding because they did not have proof of land ownership which was one of the main requirements.

4.4.4 Security of property rights to arable land on invaded state land

These farmers obtained land through invasions more than 16 years ago and they only exercise use rights to the land as other rights including transfer and exclusion are not allowed. It is evident that both the breadth and assurance are weak due to unclear boundaries and lack of enforcement and protection while uncertainty about the length of time for which the rights will be exercised led to weak duration.

The situation of property rights has led to farmers applying no effort to improve fertility of the land and also not taking any measures to prevent degradation of the land. The farmers experienced water scarcity since they could not register with KRVWUA in order to get adequate amounts of water for their farming as they had no property rights to land. These conditions have led to relatively low productivity among these small-scale farmers.

These smallholders were characterised by low investment in farming which was the result of small amounts of capital being invested by the farmers as well as relatively inferior and inefficient technologies/equipment used by these farmers. The smallholders who had a desire to improve their farming through the acquisition of funding from financial institutions were turned down as the loan providers required proof of land ownership of which they did not have. It is apparent that the development of these farmers was negatively affected by the situation of their property rights.

4.4.5 Security of property rights to grazing lands

According to section 4.2, for the western grazing land users, the breadth is strong while the assurance and duration are weak. For livestock farmers who utilise the eastern grazing land all security aspects including breadth, assurance and duration are strong (Table 4.18).

Table 4.18 Summary of security of property rights to communal grazing lands

Location of the grazing land	Breadth	Assurance	Duration
Eastern section	Strong	Strong	Strong
Western section	Strong	Weak	Weak

On the western grazing land, the security of property rights is weak which had negative impact on the livestock farming. This situation has not motivated these farmers to employ better practices in terms of use and management of the rangeland. They only grazed their livestock without applying any effort to improve fertility and preventing degradation of the rangeland. The situation has resulted in land degradation observed in the area which, in turn, has negatively affected productivity among farmers utilising the rangeland. On the eastern grazing land, the situation regarding attitudes, use and management of the grazing land is the same as the western grazing land which is contrary to economic theory when considering that these farmers had secure property rights to this land. The institutional factors that led to this contradiction will be discussed in the subsequent section.

4.4.6 Security of property rights to water resources

The farmers with individual rights to arable land had access to both the river and dam to which they only exercised use rights to the resources that is, the breadth is strong. The assurance to the dam is strong but assurance to the river is moderate since they do not have the full ability to exercise use rights to the river as they do not have information about when it will flow. Duration regarding both sources is strong.

The strong security of property rights to the dam has led to these farmers practising better management and use as reflected by them ensuring that they do not contaminate and pollute the dam. It also motivated these farmers to conserve water from the dam by only utilising it when necessary and at recommended times and rates.

Table 4.19 Summary of security of property rights to water resources

Type of rights to arable land	Type of water source	Breadth	Assurance	Duration
Individual	River	Strong	Moderate	Strong
	Dam	Strong	Strong	Strong
Communal and state/invaded	River	Strong	Weak	Weak
	Taps	Strong	Strong	Weak

However, their attitudes and approach to the river is different and it is attributed to the moderate assurance with regard to the river. These farmers do not do anything to prevent contamination of the river and they misuse water from the river since they use it even when not necessary.

As for farmers at HACOP and those on State/invaded land the breadth is strong with regards to both river and taps. On taps, the assurance is strong and it is weak on the river while there is weak duration with regard to both taps and river (Table 4.19).

The situation of weak security of water rights has some negative impact on the growth and development of the scheme and farmers on the invaded land. The previous section highlighted these farmers only had access to Kat River for farming and the flushing of the dam is only determined by registered and water scheduled KRVWUA members. This has resulted in these farmers experiencing water shortages or scarcity hence poor productivity due to water stress on crops. The situation of water scarcity has led to the farmers not expanding the scale of production, particularly those at HACOP since they had some idle land plots.

This situation of rights has led to mismanagement and misuse of the Kat River water by the farmers who invaded State land as they did not do anything to prevent pollution of the river and improve water use efficiency.

The section (4.4) discussed different property rights to land and water resources and their security in the area. Breadth, assurance and duration of the rights were the main focus of the discussion. The impact of the situation of the property rights was also discussed in the section. The next section analyses and discusses the institutional factors that affect development of smallholder farming in the area.

4.5 Institutional analysis and discussion of the impact of property rights of smallholders

In this section, the institutional factors that contributed to development of smallholder farming are outlined and the quantitative evaluation of the impact of the institutional factors is carried out in the section.

4.5.1 Factors affecting individual land rights holders to arable land

According to Williamson (2000), norms and customs form the foundations of social and economic behaviour. Based on this, it was obvious that these factors governed some of the practices of smallholder farmers in the area. It was discovered that the only farming decisions implemented were the ones made by men and this supports Tlou *et al* (2006) statement that males are dominant in farm decision making in the rural areas. This has negatively impacted on development since the practices were proved to be inefficient and has led to poor use and management of land resources, hence poor productivity in the area. This case together with the case of farmers on the invaded State land indicate that culture has rendered the Land Reform and Water Allocation Reform policies' objectives of gender equity, sustainable and economic use of resources unachievable in this area.

The lack of respect of property rights by farmers on invaded State land and HACOP has negatively affected development of farmers with individual rights to land. The farmers without secure rights to land purposely and frequently destroyed the crops on the land of the individual land rights holders and it is believed that this has led to low production levels observed among the affected farmers.

These small-scale farmers indicated highly negative attitudes towards farming as a source of employment and income. They had a desire to get employment in sectors other than agriculture. This has led neglect of agriculture reflected by poor use and management of land resources and low investment in to farming.

The individual rights holders lacked capital to engage in meaningful farming and this has led to other portions of land lying idle, non-adoption of better technologies, uses and management of land and water resources. These people could not access farming loans due to small land sizes and lack of information about loans; what they are and how they are accessed. It is evident that these conditions had a negative contribution towards development of small-scale farming in the area.

4.5.2 Institutional factors affecting farmers at HACOP

The scheme members prefer the current land management system and they all respected and accepted the constitution of the scheme. The rules and regulations were fully observed by the current members of the scheme and any disputes were internally resolved. Due to the small number of members, there was a more cohesive internal voice hence less conflicting perspectives on how to initiate growth and development of the scheme. These conditions have positively contributed to the well being of the scheme.

The scheme received external support from the Department of Social Development which was used for infrastructure development and maintenance. This support has resulted in better management of finances due to strict monitoring and guidance by the department's officials. The support has positively affected the farming operations at the scheme, though it fosters attitudes of dependency on the part of the farmers which in the long run could hamper growth and expansion of the scheme. The extension services have ensured that the technologies, land and water uses and management practices adopted by the scheme were of a good standard as members consistently approached the extension services department for guidance and advice. It is evident that the external support has positively contributed to the development of smallholder farming in the area.

4.5.3 Institutional factors affecting farmers on the invaded state land

The technologies, land and water uses, production and management practices were inefficient and detrimental to the development of small-scale farming in the area. However, they were sustained due to the fact that they were decided upon by men who were the sole farming decision makers. It is apparent that this norm has negatively contributed towards the development of small-scale farming in the area.

Like the farmers with individual rights to arable land, this group of farmers did not view farming as employment and an income provider as they indicated a desire to get employment in the other sectors of the economy. This view seems to have led to neglect of farming which was proved by poor use and management of land and water resources among these smallholder farmers.

These farmers were unable to improve on their farming due to the lack of capital which was stated by the majority of them. This lack of capital was also revealed by the small amounts on which these farmers survived. This has led to adoption of cheaper and inefficient technologies/equipment and management practices which has led to poor productivity among these farmers.

4.5.4 Institutional factors affecting grazing lands in the Upper Kat

The eastern grazing land users had negative attitudes towards communal use and management of grazing resources. These attitudes led to misuse and mismanagement of this grazing land and destruction of structures such as fences on the grazing land. The grazing rules and regulations were not observed. These factors led to degradation of the rangeland, hence poor livestock farming development in the area.

It was observed by the researcher and reported by people from the western rangeland that this land was used by the whole community even though people from the eastern section of the community never mentioned it during interviews. The size of the western grazing land was too small given the high population of animals kept on the 44 ha pasture. This

led to inconsistency in practising and enforcing basics such as rotational grazing. Some rules and regulations were no longer observed and operational as a result and the situation had led to deterioration in the condition of the rangeland.

Table 4.20 A quantitative evaluation of the contributions to underdevelopment: the case of the individual property rights holders

Individual rights holders	Institutional Factors	Quantitative evaluation of contributions to inefficiencies/underdevelopment			Total points
		Min=1	Med=2	High=3	
	1. Gender based decision making 2. Disrespect of property rights 3. Lack of capital 4. View of farming to be inferior and interest in other sectors	X	X	X X	
Index points		1	2	6	9/12

4.5.5 A quantitative evaluation of the contributions to underdevelopment/ inefficiencies

Disrespect of the property rights by other members of the community and the view of farming as an inferior source of employment and income have been the most detrimental institutional factors to development in the area. The two factors achieved a combined score of 6 points out of 12 points for all institutional factors that negatively affected development of smallholder farmers. Gender based decision making and lack of capital contributed to underdevelopment though their impact is less than that of the disrespect of property rights and view of farming as an undesirable source of employment. Both factors scored 1 and 2 points respectively (Table 4.20).

The same process of evaluation has been applied to the case of farmers in the HACOP irrigation scheme. The results indicate that the inefficiencies stemmed from the lack of property rights that is, the lack of property rights has been the detrimental factor to development of HACOP. From the results of the survey, it is evident that this was the single factor that negatively affected development of the farmers at the irrigation scheme as it scored 3 out of a total of 3 points (Table 4.21).

**Table 4.21 A quantitative evaluation of the contributions to underdevelopment:
the case of HACOP**

HACOP	Institutional Factors	Quantitative evaluation of contributions to inefficiencies/underdevelopment			Total points
		Min=1	Med=2	High=3	
	1. Lack of property rights			X	
Index points		0	0	3	3/3

In the case summarised in Table 4.22, the detrimental factors are not that bad as they only scored 7 out of 12 points. However, the property rights have the highest contributions to underdevelopment as they scored 3 points while gender, lack of property rights and view of farming as undesirable have a combined score of 4 points.

**Table 4.22 A quantitative evaluation of the contributions to underdevelopment:
the case of the smallholder farmers on the invaded State lands**

Individual rights holders	Institutional Factors	Quantitative evaluation of contributions to inefficiencies/underdevelopment			Total points
		Min=1	Med=2	High=3	
	1. Gender based decision making 2. Lack of property rights 3. Lack of capital 4. View of farming to be inferior and interest in other sectors	X X	 X	 X	
Index points		2	2	3	7/12

The same process has been applied for the evaluation of the cases of the grazing lands in the area. In the case of eastern grazing lands, the detrimental factors were bad as they scored 4 out of 6 points. The results revealed that disrespect of grazing rules and regulations is the most detrimental factor to development of the small-scale livestock farming on the pasture as it scored 3 out 4 points attributed to all detrimental factors. The dislike of the communal rights system scored a point (Table 4.23).

**Table 4.23 A quantitative evaluation of the contributions to underdevelopment:
the case of the eastern grazing land**

Individual rights holders	Institutional Factors	Quantitative evaluation of contributions to inefficiencies/underdevelopment			Total points
		Min=1	Med=2	High=3	
	1. Disrespect of grazing rules and regulations 2. Dislike of communal rights system	 X	 	 X	
Index points		1	0	3	4/6

In the western grazing land, the detrimental factors were quite strong as they achieved 7 out of 9 points. The results show that lack of property rights is the most detrimental factor to the development of the small-scale livestock farming in the area as it scored 3 points out of 7 that is scored by all detrimental factors. Small size of pasture and disrespect of grazing rules and regulations scored 2 points each (Table 4.24).

Table 4.24 A quantitative evaluation of the contributions to underdevelopment: the case of the western grazing land

Western grazing lands	Factors	Quantitative evaluation of contributions to inefficiencies/underdevelopment			Total points
	Foundational	Min=1	Med=2	High=3	
	1. Small size of pasture 2. Disrespect of rules and regulations 3. Lack of property rights		X X	X	
Index points		0	4	3	7/9

The lack of property rights to the Kat River water has been the single institutional factor that led to underdevelopment in terms of water use. The situation has led to water degradation and shortages, hence poor production and curtailing the expansion of the scale of production. This factor scored 3 out of 3 points attributed to detrimental factors (Table 4.25).

Table 4.25 A quantitative evaluation of the contributions to underdevelopment: the case of the Kat River water

Kat River water	Institutional Factors	Quantitative evaluation of contributions to inefficiencies/underdevelopment			Total points
		Min=1	Med=2	High=3	
	1. Lack of property rights to the river water			X	
Index points		0	0	3	3/3

The sub-section has presented the quantitative evaluation of the contribution of the institutional factors to underdevelopment/inefficiencies in the area. There are multiple institutional factors that negatively contributed to development of smallholder farming in the area and the lack of property rights to land and water resources has been the most detrimental of all such factors.

4.6 Synopsis

The chapter presented the results obtained from the Upper Kat with focus on the property rights to land and water resources and their impact on the development of smallholder farmers. The security of property rights was analysed and discussed and the institutional analysis was carried out to investigate the impact of property rights to land and water resources on smallholder development in the area. Quantitative evaluation of institutional factors' contribution to underdevelopment was employed in the exercise. The next chapter presents conclusion and recommendations from the research.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter outlines conclusion from the results obtained in this study. Policy recommendations are also discussed in this chapter.

5.2 Conclusions

Smallholder farming has potential to contribute to economic growth, reduce poverty, and hence contribute to economic growth. In the Republic of South Africa, this farming system has not fulfilled this potential. It is argued that smallholder farmers have to engage in meaningful agriculture, if they are to contribute to economic growth and development in the rural areas. Nevertheless, this can only be achieved in the presence of property rights that is, institutions that govern resource use. The property rights should be clearly defined, accepted, understood, protected and enforced in order for them to be efficient and effective.

The main question of the study was how the situation of property rights to land and water resources in the Kat River Valley affects smallholder development. The main focus was on how the property rights influenced land and water use as well as productivity among smallholder farmers. The results of the study agree with the economic theory that property rights affect economic performance and there are other factors that affect efficiency and effectiveness of the property rights.

In the Kat River Valley, there are few people who hold individual property rights to both residential and arable lands. The security of property rights to these lands is strong, according to economic theory, most economic development is the result of individual property rights. It is ironic that smallholder farmers with individual rights to land are among the poorest in the valley. This is caused by a lack of respect of these property rights by other members of the community, regard of farming as an undesirable source of

employment and that only farming decisions made by males were adopted. The security of their property rights to water sources is strong except on the Kat River water where ability to exercise their rights is limited. This resulted in great misuse and mismanagement of Kat River water among these farmers.

There are small-scale farmers who invaded state land and those who farm at the irrigation scheme (HACOP). They only exercise use rights to such lands and the security of property rights to land and water is insecure for both groups of small-scale farmers. The situation has led to misuse and mismanagement of land and water resources, low investment in farming hence low productivity, particularly among farmers on invaded State land. The farmers at HACOP were denied access to agricultural loans required for improving their farming and they were also unable to sign contracts with established retailers, which could have positively contributed to growth of these farmers. The two groups of farmers could not register with the KRVWUA in order to get adequate amounts of farming water and this has led to water scarcity and low productivity.

In the case of farmers who invaded State land, underdevelopment is deepened by gender based decision making, lack of capital as well as view of farming as an undesirable source of employment.

In the eastern grazing land, the property rights were secure. However, they did not have a positive impact on the use of the grazing as the users disliked the land management system and disrespected the rules and regulations which resulted in misuse, mismanagement and deterioration of the rangeland. The property rights are insecure on the western grazing land and this insecurity coupled with small size of pasture and disrespect of the rules has resulted in misuse and degradation of the veld.

It is concluded that farmers with private rights to land resources have secure property rights to land resources. However, they remain underdeveloped due to disrespect of their rights, gender based decision making, lack of capital as well as the view of farming as an undesirable source of employment. Farmers at HACOP and those on invaded lands have

insecure rights to land resources. This situation has led to misuse and mismanagement of these resources, low investment in farming as well as low productivity among small-scale farmers in upper Kat.

Based on this, it is believed that the research question has been answered and all the objectives of the study have been realised. The study's hypothesis that the property rights to land and water resources held by smallholder farmers in Kat River Valley do not help to achieve smallholder development has been proved right.

5.3 Methodological Remarks

The employed framework appears to be effective in identifying the property rights held, determining their security status as well as their impact on the development of smallholder farming. It has revealed all the factors that affect development and facilitated determination of the actual impact of property rights on development. Through this framework the potential development path was identified and the formulation of appropriate policies for smallholder development could be realised.

The quantitative evaluation strategy used for the valuation of contributions to inefficiencies of the institutional factors appears to be suited to the institutional factors prevalent in Kat River Valley. Generally the method is effective and appropriate for determining how the situation of property rights affects smallholder development in the rural areas.

5.4 Recommendations

Based on the results and findings in this study, two policy recommendations can be made. The options that can be considered in Kat River Valley in order to help smallholder farmers reach their full potential are outlined in this section.

➤ Consideration of the local context

One of the requirements for efficient and effective property rights is the acceptability by the communities. In the Kat River Valley, farmers at HACOP and those on invaded State

land prefer communal rights for both arable and grazing lands while those with private rights to arable and grazing lands prefer private rights for such lands. Therefore, policy makers should consider these when distributing land in the area. That is, land reform should focus on granting only the land rights that are preferred by people as it is believed that such rights could positively influence their behaviour and economic performance.

➤ **Strengthening of property rights**

Most economic development is the result of private ownership of resources including land and water. It was discovered that private rights to land and water are disrespected, hence inefficient and ineffective in the Kat River Valley. As a result, the government through its relevant ministries should ensure that the property rights to resources are protected and enforced in the Kat River Valley.

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APPENDIX Questionnaire

The role of property rights in rural smallholder development: case of Kat River Valley

(KRV) 2008 SURVEY:

ADULTS (18 YEARS AND ABOVE)

[WRITE WITH PENCIL!]

To be filled in by Interviewer:

1. HOUSEHOLD NUMBER:.....
2. NAME OF PRIMARY RESPONDENT.....
3. ENUMERATION AREA..... NAME OF PLACE.....
4. DATE OF VISIT
DATE OF SECOND VISIT (if necessary).....
5. INTERVIEWER'S NAME/CODE.....
6. INTERVIEW START TIME.....
7. FAMILY POSITION OF PRIMARY RESPONDENT.....
8. YOUR PHONE NUMBER OR CELL.....
9. INTERVIEW END TIME.....

To be filled in by checker

CHECK BACK

1. NAME OF CHECKER.....
2. DATE CHECKED.....

To be filled in by capturer

DATA CAPTURE

1. NAME OF CAPTURER.....
2. DATE CAPTURED.....

PART A: DEMOGRAPHICS

(Instruction to Interviewer! Mark an appropriate answer with X)

Gender/sex of household head

1.Male	2.Female
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Marital status of household head

1.Married	2.Single	3.Divorced	3. Widowed
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Ethnic group of household head

1. White	2. Black	3. Coloured	4. Asian
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Age of household head

1	2	3	4	5
18-30 years	31-40 years	41-50 years	51-60 years	Above 60 years

Educational level of household head

1.No formal education	2.Primary	3.Secondary	4.Tertiary
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Employment status of household head

1.Unemployed	2.Self employed	3.government	4.Private sector	5.Other specify
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Household Income per Month

1.Less R 800	2.R 800-1200	3.R 1200-1600	4.R 1600-2000	5.R 2000-2500	6.R 2500-3000	7. above R 3000
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Size of the household

1	2	3	4
Less than 5 people	6- 10 people	11-15 people	Above 15 people

Number of dependents

1	2	3	4
0-5	6-10	11-15	Above 15

Number of children attending school

1	2	3	4
0-1	2-4	5-7	Above 7

PART B 1: RIGHTS TO LAND

1. To what type(s) of land do you have access? Mention the area for each type of land. E.g. grazing = 3ha, arable = 2ha, etc.

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2. How did you gain access to each type of land? Also mention the source e.g. DLA,

Type of land	Method of acquisition

3. For how long have you been occupying this land?

Type of land	Period of occupation(In years)

4. Do you exactly know the boundaries of your land?

Type of land	1. Yes	2. No

5. If no to question 4, how are your land use objectives affected?

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6. What rights do you have on each type of land?

Type of land	Types of rights

7. Do you have to notify particular individuals, groups or authorities before exercising rights? If yes, mention them.

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8. How does this obligation impact on your intended land uses?

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9. Do other community members have rights to your land? If yes, mention type of land and other people's rights to it.

Type of land	Other people's rights on the land

10. How do other peoples' rights on your land affect your productive uses of land?

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11. What is the legal status of your rights to each type of land you occupy? E.g. protected, enforced, etc.

Type of land	Legal Status of rights

12. Are there any restricted uses/rights to land? If yes, mention those uses/rights.

Type of land	Restricted uses/rights

13. If yes to question 12, what is the punishment for disobedience?

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14. Do you ascertain the production targets/aims?

1. Yes	2. No

15. Which rights to land are important to you? Rank them in order of their importance.

	Grazing land	Arable land
a. Sell		
b. rent out		
c. give out		
d. lend out		
e. use only		
f. exclude others		

16. For how long are you going to continue exercising rights to this land? Mention type of land and expected duration of rights.

Type of land	Expected duration of rights (in Years)

17. How do you view the level of the security of your rights to land?

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PART B 2: RIGHTS TO WATER RESOURCES

18. For what purposes do you use water?

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19. Where do you get water for domestic consumption?

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20. Mention your water sources for farming purposes?

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21. What rights do you have to each of these water sources?

Water source	Types of rights

22. How did you gain rights to each of water sources? Also mention the source e.g. DWAF,

Water source	Method of acquisition

23. Do you freely exercise your rights to water sources? If no, explain this lack of freedom.

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24. If no to question 23, how does the lack of freedom affect your intended water use?

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25. Do other people have rights to your water sources?

1. yes	2. no

26. If yes to question 25, mention those rights and the water sources?

Water source	Types of rights

27. How does this situation affect your intended uses or production aspirations?

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28. Do you have to notify particular individuals, groups or authorities before exercising your rights to water resources?

1.yes	2. no

29. If yes to question 27, what is the effect of this on your intended productive uses of water resources?

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30. Are your rights to water sources legally defined and enforced?

Water source	1. yes	2. no	3. not sure

31. Are there any prohibited forms of water use? If yes, mention those uses.

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32. If yes to question 30, how are you penalised for not obeying the rules/regulations?

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33. How do these restrictions affect your production objectives?

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34. When is your water demand at its highest level?

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35. What is the impact of the access you have on satisfying this increased demand?

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36. For how long are you going to continue to have rights to water sources?

Water source	Expected duration of rights (in years)

37. How do you view the security level of your rights to water resources?

[illegible]

PART C: INVESTMENT AND LAND USE

Crop Farming

38. Type of farming

a. Crops- dryland

b. Crops- irrigation

c. Other (specify).....

39. What is the size of your farm land? (In hectares).....

40. For how long have you been farming this land? (In years).....

41. List all the main summer crops that you have grown in the following past years.

Year	Crops grown	Hectares
2004		
2005		
2006		
2007		

42. If different crops were grown, what were the reasons for growing them?

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43. If no different crops grown, what were the reasons?

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44. How do you improve the fertility of your land?

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45. What do you do to prevent degradation of your crop land?

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46. What do you do to ensure that your land is efficiently and effectively utilised?

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47. How do you conserve the water resources for your farming?

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48. What do you do to improve water quality?

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49. How do you prevent pollution of your water resources on the land?

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50. How do you ensure that water resources are efficiently and effectively used?

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51. Mention any improvement or development that you intend to make to your land, if any.

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52. Have you ever used or do you intend to use your crop land for non-farm income generation? State reasons for your answer.

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53. List any technologies/equipment that you have on your farm. E.g. plough, harrow, irrigation systems, etc.

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54. What buildings and farm structures do you have on your farm? E.g. store room, fence, etc.

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55. What is your opinion about your overall farm productivity?

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56. What do you do with your produce after harvest? Also mention quantities and values.

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57. How has crop farming contributed to the welfare of your family?

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Livestock and Pasture

58. Type of pasture 1. Natural
 2. Cultivated
 3. Other (specify).....

59. What is the estimated size of your grazing land? (In hectares).....

60. Indicate how many of the following livestock do you keep on your land?

Livestock kept	Number
Cattle	
Sheep	
Goats	
Donkeys	
Horses	

61. How do you make sure that the grazing land stays productive throughout the year?

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62. What do you do to prevent degradation of the grazing land?

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63. How do ensure that water resources are efficiently and effectively used for livestock watering?

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64. Mention the strategies that you employ in order to improve water quality for your livestock, if any.

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65. Have you ever used or do you intend to use your grazing land for non-livestock income generation? State reasons for your answer.

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66. What future development/improvement do you like to see on your grazing land?

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67. Mention any technologies and equipment that you have for livestock/rangeland farming.

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68. What buildings and farm structures do you have on your grazing land? E.g. shelter, fence, etc.

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69. How has the level of productivity of your livestock been?

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70. What do you do with your produce? Also mention quantities and value.

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71. How has your livestock farming contributed to the well being of your family?

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Finance Issues

72. . How do you finance your farming activities?

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73. How much do you spent on your farming per year?in SA rands.

Crop farming	Livestock farming
R=	R=

74. Have you ever accessed agricultural loans?

1. yes	2. no

75. If no, give reasons for your situation.

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76. If yes, where did you get the loan?

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77. If loan received, what were the loan conditions (collateral, repayment arrangement, etc)?

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PART D: ATTITUDES TOWARDS PROPERTY RIGHTS

78. How do you feel about sharing land and water rights with other people?

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79. How do you feel about individual/private ownership of land and water rights?

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80. How do you feel about lack/limited rights to land and water resources?

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PART E: ATTITUDES AND OPINIONS ABOUT THE NATIONAL WATER ACT

81. Are you aware that you are legally entitled to use water?

1. yes	2. no

82. How do you feel about every one participating in managing the water resources?

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83. How do you feel about allowing everyone a right to use water?

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84. How do you feel about the limitation on maximum level of water the whole community can use from the river/dam?

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85. How do you think the act has affected your farming activities?

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86. Do you know about Kat River Water User Association (KRVWUA)?

1. yes	2. no

87. What is your membership status in the KRV WUA? If no membership, state reasons for that.

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88. What are the functions of this KRVWUA?

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89. Do you participate in the meetings of this KRVWUA? If no, why?

1. yes	2. no
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90. How much do you think you contribute in the meeting proceedings you normally attend?

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91. Are you happy with your overall contribution in these proceedings?

1. yes	2. no

92. If no, what are your reasons for dissatisfaction?

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93. How do you feel about the work/operation of the KRVWUA?

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94. How has the KRVWUA impacted on your farming activities?

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