

A COMPARATIVE STUDY OF RURAL WATER GOVERNANCE IN THE LIMPOPO BASIN

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The logo of the University of the Western Cape, featuring a classical building with columns.
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WESTERN CAPE
University of the Western Cape

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KEY WORDS

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ABSTRACT

A COMPARATIVE STUDY OF RURAL WATER GOVERNANCE IN THE LIMPOPO BASIN

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In this thesis I examine and explore whether and if Integrated Water Resources Management (IWRM) inspired water reforms respond to- and address the diverse realities of women and men in informal (and formal) rural economies of Sekororo, South Africa and Ward 17 in Gwanda, Zimbabwe which are both in the Limpopo basin. South Africa and Zimbabwe, like other southern African countries, embarked on IWRM-inspired water reforms, culminating in the promulgation of the National Water Acts in 1998, four years after the attainment of South Africa's democracy in 1994 and 18 years after Zimbabwe attained independence in 1980. I argue that the adoption of IWRM, which emphasises second generation water issues such as demand management, water quality, environmental flow requirements etc, and not the development of water infrastructure, begs the question whether such reforms can make a meaningful contribution to the development agenda in countries where, during apartheid and colonialism, the water rights (among other rights) of millions of blacks were compromised because of unjust legislation and skewed underinvestment in water infrastructure.

I explore the emerging contradictions between the post-apartheid and post-independence water legislation (and related policies) on the one hand, and the rural realities of informal water use on the other by employing the 'hydraulic property rights creation' to analyse how people, as individuals and/or as groups, assert rights over water, and how such claims become legitimised through multiple arrangements. The negotiability/flexibility concept was used to analyse how resource rights and access are negotiated and contested in view of changing conditions and contexts within informal systems in the two study sites. Discourse theory was utilised to unpack and illuminate the ways in which power is

multi-locational and normalised in networks of everyday life, regulating social practices and relationships; while the multiple water use approach (MUS) was instrumental in addressing the limitations of sectoral segmentation of water as productive or domestic use by recognising that people's water needs are integrated and are part and parcel of their multifaceted livelihoods, and that the necessity to better meet both women's and men's multiple water needs is a main driver for integration within the water sector itself. The multiple water use approach concept addresses the issues of gender as well. For methodology and methods, the study mainly drew upon social science contributions from rural sociology and anthropology, through historical analysis, to document and analyse hydraulic infrastructure investments based on literature reviews, archival and textual analyses, interviews, surveys and participant observation.

Results indicate that state funding on water infrastructure development was biased towards formal irrigation, which caters for a small proportion of the rural population. There are dynamic investments in hydraulic infrastructure in Sekororo and Gwanda financed through private investments and NGO support. Poor management of public-owned and managed, domestic and productive water schemes have become important catalysts for local investments in water infrastructure. Results also show that there are a number of local level institutional arrangements that govern access to water sources in communal areas. These vary depending on the source (man-made or natural), ownership (privately owned or communally owned), yielding capacity and the purpose for which the water will be used. Traditional leaders, elected leaders and the relevant water point committees tend to complement and compete with each other as institutional pillars in enforcing rules of access and use. Results also indicate that water reforms, in their current form, ignore the development of adequate water infrastructure to harness water resources for social and economic development for rural small-scale users; without access to water/infrastructure, there is nothing to manage for rural small-scale users, hence, the focus and agenda of catchment management institutions tend to only cover the interests of large-scale water users and uses.

The study concludes that the informality of institutions and property rights in rural water governance seems to facilitate flexibility to allow for resource sharing, which is a common feature in the two study sites, where property rights overlap in both time and space with different degrees of intensity being applied in the management of different portions of the hydraulic landscape. We also conclude that permit systems as individual water rights based on an administrative act completely ignore existing uses and arrangements while favouring the administrative-proficient, and entail explicit discriminatory conditions with high transaction costs. The study further concludes that there is no service improvement for taxes imposed on water users and uses. Another conclusion is that customary systems have a holistic approach to water development and management in the use of multiple sources for multiple domestic and productive uses in both Sekororo and Mzingwane; hence overcoming counterproductive sectoral boundaries in services delivery while opening up new opportunities for women and men. The study also concludes that single purpose and resource-specific institutions such as catchment management institutions are not practical and relevant for managing water resources at the local informal level where people use multiple institutions and sources. It also concludes that without denying the gender and age hierarchies and potential ethnic-based exclusions in customary arrangements, and the power plays; self-supply and investment is still the main form of water provision for the rural poor and poorest. Finally the study concludes that there is need to support infrastructure for small-scale water users and uses.

DECLARATION

I declare that *A Comparative Study of Rural Water Governance in the Limpopo Basin* is my own work. All other sources, used or quoted, have been indicated and acknowledged by means of complete references. This thesis has not been submitted for a degree at another university.

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September 2011

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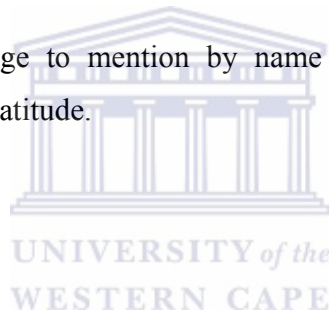


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ACRONYMS

AGM	Annual General Meeting
CAs	Communal Areas
CC	Catchment Council
CSP	Communal Stand Pipe
CMA	Catchment Management Agencies
DM	District Municipality
DWA	Department of Water Affairs
EMA	Environmental Management Agency
GRDC	Gwanda Rural District Council
Ha	Hectares
HDI	Historically Disadvantaged Individuals
HPRC	Hydraulic Property Rights Creation
IDP	Integrated Development Plan
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
LAA	Land Apportionment Act
LDA	Limpopo Department of Agriculture
LM	Local Municipality
MIG	Municipal Infrastructure Grant
NC	Native Commissioner
NWA	National Water Act
RAs	Resettlement Areas
RDC	Rural District Council
RDP	Reconstruction and Development Programme
RESIS	Revitalization of Smallholder Irrigation Scheme (RESIS)
SCC	Sub-Catchment Council
SFWS	Strategic Framework for Water Services
UNDP	United Nations Development programme
WMA	Water Management Area
WSA	Water Services Act
WSP	Water Service Provider

WUAs Water Users' Associations
ZINWA Zimbabwe National Water Authority



CHAPTER ONE: Introduction and Background to the Research Context and Agenda

1.1. Introduction

In the 1990s, South Africa and Zimbabwe, like other southern African countries, embarked on Integrated Water Resources Management (IWRM)-inspired water reforms (Manzungu, 2004) culminating in the promulgation of the National Water Act in 1998, four years after the attainment of democracy in 1994 (South Africa), and 18 years after independence (Zimbabwe). It is worth noting that IWRM originated in the developed North, which had completed its hydraulic mission, referring to the development of adequate water infrastructure to harness water resources for social and economic development (Allan, 2003). The adoption of IWRM raises questions regarding its applicability in a region such as southern Africa that is characterized by poor water access, mainly as a consequence of lack of water infrastructure (SADC, 2005) and endemic underdevelopment among the majority (Swatuk, 2008). By focusing on second generation water issues, which IWRM emphasises, such as demand management, water quality, environmental flow requirements among other things, that presuppose the existence of water infrastructure, the water reforms missed an opportunity to chart a practical course of action to confront real development challenges (Merrey, 2008). This assumes greater significance if it is remembered that prospects for attaining or quickening and sustaining water- related attainment of Millennium Development Goals (MDGs) in sub-Saharan Africa, such as Goal 1 and 7, are reported to be off track by at least 20 years in many countries including South Africa and Zimbabwe (UNDP, 2006).

It is debatable against such a background as to what purpose the water reforms in sub-Saharan Africa serve, if not to address real development challenges (van Koppen, 2003). Such a lack of coincidence between the development agenda and water legislation in Africa is unfortunately not an isolated occurrence. Similar observations have been made with regards to transnational water resource management (Lautze and Giordano, 2007; Merrey, 2009). One example of such a ‘poor fit’ has been the promotion of direct state

administration of all water resources based on a permit/licence system, on the grounds that such a system is efficient and the ‘most beneficial use of available water resources’ (GWP, 2006). As a consequence many rural communities in Africa who use water in their localities for small but critical productive water use on the basis of traditional principles have had their existing rights expropriated while new permits remain inaccessible due to cumbersome and costly administrative requirements (van Koppen, et al 2007). Given the foregoing, it is necessary to unpack the main elements of the water reform.

There are four central elements of the water reform which this study will further explore to unpack and illustrate how or whether there is a mismatch between water reform and local realities. The first element being that the water reform appears to neglect the infrastructure agenda for productive and domestic uses, and focuses on second generation issues such as the Water Act. In the process, state support to infrastructure development and maintenance for domestic/small-scale/multiple uses diminished and/or were neglected after the introduction of water reforms in Zimbabwe. In South Africa, subsidies to infrastructure development for small-scale water uses and users were withdrawn post-1994. The development, financing and maintenance of water infrastructure was left to water users with little or no support from local and national government. Support for such development largely came from non-governmental organisations although the support remained uncoordinated.

The second element that will be explored in unpacking the water reform is that of the state imposing a new layer on the hydraulic landscape through resource management institutions such as catchment and sub-catchment councils (CCs and SCCs) in Zimbabwe and catchment management agencies (CMAs) in South Africa. These resource management institutions are imposed to regulate different infrastructure users as well as direct water access such as livestock watering. At the local level, redress to the access of water in Mzingwane, like other catchments in Zimbabwe, is already underway, but still very little has been achieved in terms of making productive water available to the majority of smallholder communal area residents. In Sekororo, South Africa, there is

nothing on the ground yet in terms of the actual operationalisation of the catchment management agencies, however, from other evidence there is very little redress that has been achieved and the process has been halted.

The third element is that in both South Africa and Zimbabwe, the state appear to impose and recognise one legal system, the permits. Permit systems intrinsically discriminate against small-scale users in favour of the administration-proficient. The adoption of permit systems as single regime formally or factually dispossesses water claims under other plural legal systems especially in rural areas where colonial permit systems have hardly been implemented as yet. This questions the legitimacy of permits. The permit system raises the prospect and/or intent of war with local government. In Mzingwane, Zimbabwe, the permit system, despite the good intentions, became a rent seeking and perverted taxation system without service improvement. For example, primary water uses where no permit is required to use small quantities of water are relegated to second class exemptions. In Sekororo, South Africa, there is nothing yet at the local level, but national level is considering a similar arrangement. The fourth and final element is that of international rivers. It is however not the focus in this thesis, hence, it will not be addressed herein.

The threats posed by permit-based water policies to smallholders' agriculture-dependent livelihoods are a paradox for two main reasons. First, the quantities of water that are involved represent a small proportion of the total available resources, which means that there are no significant impacts on overall water use. This however, should not be misconstrued as advocating for the continuance of low level water use. Second, more often than not, water is used without state financial assistance unlike in formal irrigation schemes where huge public infrastructures/investments are often used inefficiently and ineffectively. From this perspective it can be argued that local investment helps to address the problem of economic water scarcity, which is widespread in Africa (see van Koppen, 2003). The desire to bring about state administration of water resources, thanks in part to IWRM, however well justified, can easily work against the 'redress' objectives of the water reforms. For example in South Africa, it is possible that the administrative

requirements that came about because of the water reforms may compromise access to water by Historically Disadvantaged Individuals (HDIs), a politically correct term for blacks, coloureds and women. The possibility of such a situation developing is real. The much fettered 1998 National Water Act (NWA, South Africa), celebrated for its progressive modern ideas on how to manage water resources, has not resulted in an improvement of access to water for productive uses on the part of the Historically Disadvantaged Individuals (HDIs) in communal areas of South Africa, although commendable effort has been made on improving water access for domestic uses. For example, to date, only 4% of the licensed new users have been allocated to HDIs in South Africa (Karar, 2008). There are also other problems that explain the poor water access by HDIs.

This study aims to explore and unpack what seems to be an emerging contradiction between the post-apartheid (South Africa) and post-colonial (Zimbabwe) water legislation and related policies on the one hand and the rural realities of informal water use and access on the other by debunking the first three elements of the water reform as explained above. Given this mismatch between the water reform and local realities, the principal objective of the study is to contribute to the empirical and theoretical understanding of ways and linkages in which institutions (formal and informal), networks and resource rights with regards to water are organised, negotiated and contested in poor rural economies of South Africa and Zimbabwe, and determine whether the prevailing formal institutional arrangements adequately address the informality of water use by examining the nature and pattern of investment in water infrastructure and other aspects of reform by rural communities.

The study adopted the concept of 'hydraulic property rights creation' as one of its underpinning theory so as to shed light on how people, as individuals and or as groups, assert rights over water, and how such claims become legitimized (Coward, 1986). Hydraulic property rights creation refers to the creation of value of water by means of establishing, and recognizing claims to water of a certain quantity and quality in a particular locality as a consequence of investments made in developing physical

infrastructure and related institutional arrangements for the purpose of abstracting, storing, conveying and/ or applying water to the field. People who invest in water infrastructure are entitled to use water while those who have not contributed to the investments can be excluded, although there are exceptions to the rule. For example drinking water tends to be made free to whosoever is in need (Derman et al, 2007; Nemarundwe, 2003; Matondi, 2001). Water is also availed to kith and kin and other community members through complex exchange systems. Investments may be individual, like investments in boreholes, small pumps or homestead wells, or communal like village reservoirs, communal boreholes and irrigation furrows, and these have a bearing on how the hydraulic rights are operationalised.

Processes of hydraulic property rights creation may be entirely ‘endogenous’ (or ‘local’ or ‘informal’), with claims recognized at the local level by communities, or they may depend upon government, formal Non Governmental Organisations (NGOs), or other outsiders in which case they are ‘exogenous’). However, the differences between endogenous and exogenous are not always clear-cut because local people interact with ‘outsiders’ in ways that blur the endogenous-exogenous differences. In the case of public investments, where governments build the systems, the state usually expects that users will take up at least some part of the investments in operation and maintenance, which usually gives the users a formal entitlement to the water. But it is also possible that the rights may not be clear at all or people are not claiming rights and abandon the scheme. The lack of clarity or interest and/or ability regarding such issues may lead to a process of ‘hydraulic property rights extinction’, where water users fail to enforce their water rights. Identifying causes of the extinction of hydraulic property rights, their interrelationships with institutions and the processes involved is an integral part of this study.

This study was developed as a comparative between two communal areas that have high economic water scarcities, are semi-arid and water resource use is central to the livelihoods of the residents. Murphree (1991) suggests that methodological frames for studies of natural resources should include comparison at various levels and be multidisciplinary. However, Ranger (1985:3) cautions against use of comparison that he

describes as “dangerous intellectual tools” if used by people who do not understand the context within which the society has developed or is developing. Despite this caution, the study will demonstrate that there are many contrasts, occurring at different levels and between different types of users over water (re)sources. Although the two research sites selected for this study Sekororo in South Africa and Gwanda in Zimbabwe both fall under communal land tenure and are in economically water stressed catchments, and are both in the Limpopo basin, there are many differences, similarities and dynamics both within and between the sites upon which grounds for comparison and contrast are based. The basis for comparing and contrasting the two paths (South Africa and Zimbabwe) is framed by empirically examining, documenting and analysing (how and in what ways): (i) the processes and genealogy of hydraulic property rights creation in the two countries in terms of access, use and control of the resource, and the implications of such rights on men and women; (ii) the state policies and legislation in place to govern and regulate the resource from the user level through to intermediate¹ and higher levels, and how they influence and are influencing the form property rights take; (iii) the institutional processes that people utilise to canvass and claim their interest and stakes in the resource (both formal and informal) and how such institutional processes emerge and evolve; and (iv) the power play and relations between and among stakeholders, institutions and policies used to control, defend and enforce claims to the resource. This study is therefore about contrasts between policy processes and legislation, property rights, places, people, contexts and communal areas within a shared hydrological basin.

1.2. Background and Context

1.2.1. The Context

Despite somewhat different ecologies and histories, water policy reforms in the two countries (South Africa and Zimbabwe) share certain features in common: an emphasis on decentralisation of authority, a call for greater participation by stakeholders in management, identification of watersheds (catchments) as the most appropriate

¹ Intermediate level is used here to refer to the middle-ground institutions that operate within the local government level such as local and district municipalities, rural district councils and subcatchment councils, NGOs and research centres/institutes.

ecological and administrative management unit, a focus on water as a scarce commodity to be allocated according to market principles (permits), as well as an expressed concern with increasing racial and class equity in distribution. The legal and institutional frameworks for water governance in South Africa and Zimbabwe have evolved in very different ways however (see Derman et al, 2007). In international and national policy circles, these features reflect a shift in thinking since the mid-1980s from an emphasis on supply-side features and consideration of water as a common property resource and a public good to viewing it from a demand-side perspective with emphasis on it as a productive and increasingly scarce asset to be managed by market principles. The policy reform and related political and economic changes underway in Southern Africa (particularly South Africa and Zimbabwe) make it their aim to improve access to resources regardless of gender, ethnicity or race² as well as encourage sustainable use of scarce resources. This thesis is designed to help push this process forward by providing necessary data and analysis on patterns of access to the critical resource of water by the majority, and highlight the major discourses and narratives that shape and define the process. It provides a conceptual analysis of how property rights are created and transformed through time and how they shape (and are shaped by) policy, legislative and institutional processes for governing water resources.

In this section I go beyond hydraulic property relations to look at some of the wider connections and interrelations between (and among) global discourses on broader issues of water governance and local realities as governments grapple with issues of reforming the water sector from national to local levels. I demonstrate how these discourses are negotiated, contested, and conceptualised by the stakeholders at different levels to broaden our understanding of such dynamism beyond the formal-informal, local-global binaries of property rights and institutions. In particular, I contribute to understanding the ways in which formal institutions intersect with the wide range of organisations glossed as “informal institutions” in economic terminology and customary ones in anthropological terms.

² Notwithstanding the accelerated land reform programme (since 2000) that degenerated into a racial one, water policy reform in Zimbabwe is not necessarily designed to segregate on racial grounds.

Since current water reform largely originates in international discourses and policies including the Dublin Principles, Agenda 21, inter alia, (Derman, 2003) I will address how these international policy changes are being understood and adopted for South Africa and Zimbabwe national water policies. Given that the water reforms have been funded by a range of donors, donors pay great attention to these international discourses and policies, often having played an important role in the formulation of such policies and discourses. In turn, these national policies and directives may be changed again when implemented at the local level. I will examine the changing international policies (e.g. FAO 1995, DFID 2000, GWP 2000 et al) and how these are translated and acted upon at the national and local levels in South Africa and Zimbabwe. During the 1990s and early 2000s, policy reforms put much emphasis on integrated water resources management (IWRM, see GWP, 2000). The premise appeared to have been that if we can get the institutions (laws, regulations, organisations) right, the water will easily flow to where it is needed, as well as managing scarcity. Consequently, many countries overhauled their water law and related regulations, and in many cases formal water titles were introduced or strengthened, in the form of registered water permits or water rights, as well as water levies and fees. The expectation was that formalising water use and introducing fees would stimulate more rational water use and development.

The results of these reforms have, however, been limited in Southern Africa and there is a growing realisation that without physical hydraulic infrastructure people in semi-arid environments will not be able to enjoy access to sufficient productive water (van der Zaag et al, 2010:138; van Koppen, 2010; see also Grey and Sadoff, 2007; World Bank, 2007). The analysis will focus at the empirical interface between the new water laws and dominant policy agendas of the water reform institutions (see chapters 7 and 8) on the one hand and the rural realities of informal water users (see chapters 4 and 5) on the other. The challenge and need of most rural people in Southern Africa in general, and Zimbabwe and South Africa in particular is to mobilise or obtain external support for investments in water resources development for multiple uses so as to enlarge the pie of available water resources for all, rather than sharing the limited pie that has been

developed to date. This seems at odds with the priorities and dominant discourses of governments and international water development and investment institutions. The following section reviews and analyses literature on how the dominant policy agendas of (global and national) water institutions are translated by (and through) government regulations, and how this impacts on rural households and institutions' attempts to access productive water.

1.2.2. Global Discourses and National Water Management Policies

International conferences and principles (UNCED Agenda 21, The Dublin Water Principles) as well as the World Bank, European Union, Asian Development Bank and other lending organisations have promoted the creation of decentralised Catchment, Watershed or River Basin Councils to assume many management functions from central government. At the heart of most of these efforts is the concept 'integrated water resources management' (IWRM), defined as follows: "IWRM is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems." (GWP³; the World Water Council⁴). IWRM encapsulates each of the four Dublin Principles:

Principle No. 1 - Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment

Principle No. 2 – Water development and management should be based on participatory approach, involving users, planners, policy-makers at all levels

Principle No. 3 – Women play a central part in the provision, management and safeguarding of water.

Principle No. 4 – Water has an economic value in all its competing uses and should be recognised as an economic good.

These four principles have been embraced by Southern African planners and inform, if not underpin, the character and content of current water reforms in the region (Derman et al 2001; Swatuk, 2005:873; van der Zaag, 2005). The stated goals of these reforms are

³ http://www.gwptoolbox.org/index.php?option=com_content&view=article&id=8&Itemid=3.

⁴ <http://www.worldwatercouncil.org/index.php?id=1764>

equity, efficiency and sustainability - the heart and nerve centre of IWRM. The means to achieve these goals combine activities undertaken at the global, regional, and national levels (Gumbo et al, 2004). Integrated water resources management provides justification for river basin management that calls for demand management and pricing policies anchored in several storylines (Molle, 2008). Policies, technical assistance grants, and development projects translate these concepts into concrete actions.

An intriguing issue is the social and political life of these concepts. In other words how do they emerge, spread, and influence policy and practice and intellectual production, how do they become resilient, sometimes hegemonic, adapt/mutate or just vanish? There are no easy answers to these questions, however, an attempt is made here to highlight the processes, events and outcomes of the IWRM-inspired water reform bureaucratic machine in general, and in Southern Africa, and how these are translated in South Africa and Zimbabwe. Concepts do not emerge from a vacuum, and can only be understood as social and political constructs shaped by the interplay of institutions, networks, interests and visions of the future (Mosse, 2004). Those involved with promoting IWRM supported the creation of the Global Water Partnership (GWP) while promoters of river basin management supported the establishment of the International Network of Basin Organisations (INBO); the GWP and the INBO have also established regional branches (Molle, 2008). All these themes (IWRM, basin management, IMT) have been supported by many donors, and have paved the way for innumerable MSc programmes, capacity building activities, field trips, international conferences, World Water Forums, and publications (Swatuk, 2005; Conca, 2006).

Development agencies like Sida, GTZ, USAID, AusAID or DFID, and UN agencies, have all contributed to these dynamics but none of them comes close to the role and influence of the international development banks, principally the World Bank. The Bank has always maintained a keen interest in the dissemination of ideas and has even recently morphed into a “knowledge bank”, claiming to be both a neutral gatekeeper and a major producer of knowledge (Mehta, 2000). A study commissioned by the Swedish government in 2000 concluded that “the World Bank continues to be dominant as the

main purveyor of development ideas” (Bretton Woods Project, 2007 cited in Molle, 2008). Molle argues that for national elites, models and frameworks such as IWRM offer solution to significant water management problems; they also offer a means to espouse the referential of bilateral and multilateral donors and to attract funds from countries eager to spread their model (2008: 145; see also Chambers, 1997). The models also bring legitimacy and embody a promise of success (Mollinga and Bolding, 2004), they are often mobilized in bureaucratic struggles in order to justify/impose a particular reconfiguration of the bureaucracy or decentralisation policies. Although IWRM has been largely adopted as international players wanted, by state bureaucracies, the concept has also internally been appropriated in different ways. It is within this conundrum that the water scarcity lexicon is widespread within the dominant IWRM paradigm which gives meaning and an immediacy to the looming water crisis, which is also a social construct. The visual imagery of a looming water crisis is a powerful framing device that demands equally dramatic measured solutions, such as the establishment of Catchment Councils, CMAs, sub-catchment councils, and water committees, along with heavy taxation/levies for water use. From the foregoing, the infrastructure agenda is missing in this framing of IWRM. Climate change largely heralded the return of the infrastructure agenda therefore making my analysis in this study more important (see also Molden, 2007; GWP, 2009).

This study aims to analyse the water governance frameworks in the two countries (see chapter 7 and 8) and how these processes, discourses and narratives are conceived and transformed within the Southern Africa region. Van der Zaag (2005), an IWRM proponent, observed that the momentum for IWRM in Southern Africa switched pace after 1997 when water ministers from the Southern African Development Community (SADC) and the European Union met and frankly discussed the challenges of sharing international rivers, where “...consensus was reached over the need for integrated water resources management” (2005:867). This culminated in the formation of WaterNet⁵ in

⁵ WaterNet is a region-wide programme funded by the Netherlands Development Agency, with technical assistance from IHE-Delft.

2000 and the Water Research Fund for Southern Africa (WARFSA)⁶ in 1999. In essence, WARFSA and WaterNet, and later the Southern Africa chapter of the Global Water Partnership “...together have jointly initiated the annual Water Symposium, which is gradually becoming *the* place to discuss water issues in Southern Africa” (ibid: 868). The activities of these institutions (WARFSA/WaterNet/GWP-SA) overlapped, paths crossed, and interrelations multiplied through conferences, professional associations, alumni and multilateral funding among other things. Through these influences they increasingly shared and disseminated a number of cultural and ideological understandings, values and practices that underpin the success of the IWRM policy model, and also provide a platform for sharing some of the challenges facing the concept. It is this self-reinforcing congruence that shaped the production of the IWRM policy model and its acceptance and fashionability among peer communities and policy elites in relevant political, financial, and hydraulic institutions in the region (see also, Swatuk, 2005, 2010; Molle, 2008).

Van der Zaag (2005:870) argues that despite its elusive and fuzzy nature, IWRM as a concept offers learning insights that its implementation requires real participation of stakeholders and transparent decision-making processes. This re-affirms, and perhaps re-defines the relationship between citizens and authorities and clarifies their respective roles; relationships which have been scarred by the colonial and post-colonial experience (Mamdani, 1996). As such, good governance lies at the heart of IWRM (Rogers and Hall, 2003). Regardless of the utility of the concept as articulated and argued by van der Zaag and others, they still acknowledge the fact that many people are still without adequate water and sanitation facilities, highlighting the political nature of water use decisions. Van der Zaag (2005:870) further argues that the new water institutions will have to address and resolve such fundamental challenges, even if this implies treading on political turf (see also Allan, 2003). Awareness of this fact will help guide the actions and inform the decisions made by water professionals in the region (Swatuk, 2004). By 2005, Swatuk in one of his most critical analysis of the new water reform system argues

⁶ Funded by the Swedish International Development Agency (SIDA). These two institutions (WARFSA and WaterNet, seek to build on the Dublin action agenda items regarding capacity and knowledge base building (see Swatuk, 2005:873).

that evidence of the implementation of the IWRM-inspired reforms in the SADC region shows “...that governments have been reluctant to devolve power to stakeholders; that rural dwellers are suspicious of the motives behind the reform; that already empowered actors dominate new institutions touting broad-based participation, and that new institutions have undermined existing forms of cooperation and conflict resolution, making matters worse not better” (2005:872). For Swatuk, the challenges with the reforms reflect the inherent and highly political nature of the process, where the new water architecture proposes a profound realignment of decision-making power in already fragile, underdeveloped states (ibid). Against this background, Swatuk contends that “it is important to reflect on the political nature of these activities and to reconsider (and be prepared to revise or discard) the basic assumptions and ideologies driving the reform process (ibid)”.

Selective borrowing from the original IWRM or river basin management models can also, more positively, be construed as an initial step on a common trajectory that gradually institutionalises decentralisation in resource management and democratization of decision-making (Meublat and Lourd, 2001). Models can also foster top-down bureaucratic approaches that preclude genuine participation of stakeholders (Miller and Hirsch, 2003); and they allow replication of capital intensive projects that meet the interests of a powerful coalition of construction firms, banks, politicians and bureaucrats (Ostrom et al, 1993; Molle and Renwick, 2005). We consider models such as IWRM-based water reforms to keep politics at bay by promoting ahistorical recipes such as the complete overhaul and recasting of ‘new’ water management institutions without acknowledging or being informed by already existing customary (often informal) arrangements. On catchment and sub-catchment councils, discourse on the future of water reform institutions tends to focus on representative democracy, achieved through successive stakeholder representative elections, and the rotation of catchment and sub-catchment councils, and CMAs without much thought and analysis on the power dynamics at play. I will study this for the case of catchment councils in Zimbabwe, in Sekororo, South Africa, there is no catchment management agency as yet.

1.3. Problem Statement

A key issue relating to resource access is how to characterize property regimes for descriptive and analytical purposes. Historically, property rights have frequently been depicted by terms such as "common property" or "private property" (Mukamuri et al 2006; Meinzen-Dick and Di Gregorio, 2004). However, such distinctions may be too general for detecting critical differences between existing resource tenure structures. In practice, natural resources are most often managed by more than one property regime (Murphree 1993), with a varying mix of legal, formal and informal elements. Much of the literature has focused only on the static context of property rights (Little and Brokensha 1986). The key distinction regarding the dynamic versus the static properties of such rights has thus tended to be lost. The static approach assumes that households will respond in predictable (and a priori defined) ways to incentives connected with the different tenure regimes. However, common pool resources tend to evolve over time, through external and internal pressures and changes, and the institutional changes that help facilitate, modify or create common pool resources are thus not well understood. A historical perspective is necessary to identify and isolate events or combinations of events that independently or in combination have impacted on creation, modification, weakening or strengthening of various facets of common pool resources. Thus, this study inevitably focuses on trying to understand history of institutions and organizations that are central for describing and understanding dynamic change processes related to common pool resources and the creation of rights.

The IWRM discourse revived and promoted the enforcement of permit systems with even greater force, without questioning its colonial purposes. The water scarcity lexicon used in some way to promote IWRM, has also served, unwittingly, to scuffle 'new' water development, rather focusing on sharing available resources. Although there is some ample evidence of physical water scarcity in some basins in Africa, there is growing critique that "if you build a dialogue around a belief in absolute scarcity you are going to get a limited range of outcomes specific to those assumptions" (Swatuk, 2005:877). This brings us to the poignant question, what do we mean by scarcity? Mwendera et al (2002) state unequivocally that SADC states use too little water and that this is an incontrovertible sign of underdevelopment. Van Koppen (2003:1048) argues that

Africa's available water resources have hardly been harnessed at all. She argues that water scarcity is more accurately understood as 'economic water scarcity' – the resources are available in most of Africa but the economic resources and incentives to develop that water is lacking. The above scenario (see also Molden,2007) is compounded by the changing climate, inadequate access to water and poor water quality does not only affect domestic supplies but also impacts agricultural production and the care of livestock, and increases the overall amount of labour that is expected to collect, store, protect and distribute water.

It would seem that what is lacking in most countries is not necessarily only the economic resources and incentives as noted by van Koppen, or the inability to recover costs as asserted by Robinson, but also a question of political will by those in power, especially owing to the insufficient budget allocations at the national level, which in turn manifests in local challenges in most district and local municipalities and rural district councils. These processes and challenges are influenced by national events, hence the need for a broader analysis of the background of the so-called 'local issues' of water access. Highlighting the dominance of global discourse on water scarcity, Savenije (2002: 744) argues that "...although the drinking water and sanitation issue is one of the largest societal challenges of the 21st century, it is a minor issue with regard to global water scarcity". It would seem that Savenije acknowledges the importance of water supply services, yet also highlights that such issues pale into significance when the global discourses of water scarcity are considered.

Failure to appreciate the dynamic nature of institutions governing water often leads to the proliferation of simplistic interventions for community management which undermine the dynamic nature of people's responses to property rights and institutional uncertainties. In this context, resources need to be viewed as both material and symbolic products rooted in contests of power. The conceptualization of how we see resources, their management and their interaction with local livelihoods raise a range of key questions about institutional dynamics. These touch on property rights, legal systems, and governance, as well as on

broader questions of knowledge, power and control. In this study, resources are viewed as both material and symbolic products.

Much of the earlier studies on resources in communal areas have been descriptive with little offering in the way of new theories or testing existing theories about rural livelihoods and dynamic processes that make those systems sustainable and amenable to flexible changes (Cousins 1993). Resource use must be put in the context of overall production strategy of farmers, their investments to infrastructure, and the attendant rights, rules and obligations derived by such investment. In all these discourses the infrastructure development agenda is missing leaving a huge gap in terms of options available for small-scale water users and their constituencies. This is where the concept of hydraulic property rights creation (HPRC) comes to the fore to try and unpack how “rights”, real access to invested water, HPRC, are locally conceived, conceptualized and contested. Hydraulic property rights creation refers to the creation of value of water by means of establishing, and recognizing claims to water of a certain quantity and quality in a particular locality as a consequence of investments made in developing physical infrastructure and related institutional arrangements for the purpose of abstracting, storing, conveying and/ or applying water to the field for multiple uses. The study is interested in how hprc alters use and access to the resource depending on both context and contest. Existing literature on use and management of common property as well as resources that are held by individuals shows that behaviour and practices of people with regard to resources change (Croll and Parkin 1992, Davies et al 1991, Richards 1997). What is still being contested is the nature of the change and the outcomes resulting thereof. Through a historical approach, this study seeks (in part) to fill these gaps by offering insights on how property rights and institutional arrangements emerge and evolve over time, and how this impacts on resource access.

New water laws and policies in South Africa and Zimbabwe such as the National Water Act (1998) and South Africa’s Water Services Act (1997) are difficult to implement owing to resistance by those with vested interests, especially in South Africa. Besides, implementing the laws and policies imply important institutional changes with little offering in terms of infrastructure development in the water sector. The framing of water legislation was done

with little or no consideration for the rules and norms that govern informal arrangements, hence the legal requirements for regulatory measures such as permits and licences might open up the possibility of the clever few to register or apply. Besides, the water reforms seem to be found wanting in terms of administrative justice where applying for a license might be too costly that it erodes the whole essence of redress for historically disadvantaged individuals (HDIs). A major challenge is not at community-level but at the intermediate level, where the current mandates and reporting structures of local government, line agencies, private service providers, NGOs, catchment councils and international programs often jeopardize providing for needs-based accountable and participatory infrastructure development and maintenance. As a component of globalization, external investments are driving property shifts. External investors want to deal with a private sector that looks familiar, with corporate structures and laws that protect private property. Unfamiliar common property entities are marginalised and avoided, when possible. Yet there is also a trend of the continuation, not without large struggles, for significant parts of communal areas to remain under local arrangements. These local arrangements are also in motion, striving for new ways to balance longstanding values and practices with new opportunities and constraints wrought by both internal and external pressures, where climate change is one of the most fundamental threats.

Whilst these IWRM-based approaches, policies and legislation have made important contributions in focusing attention on the importance of local institutions in natural resources management, they have tended to neglect the many everyday contexts within which institutions are located and their rootedness in local history and society. Within the same breathe; the whole discourse of IWRM-inspired water reforms in South Africa and Zimbabwe neglected the infrastructure development agenda for the rural majority and its importance in mediating access to water resources (see Van Koppen, 2010). The global discourse of climate change brought back the issue of infrastructure development to the centre of water resources discourse. Given this background the study seeks to analyse and understand interrelationships between property rights creation and investments, and decision-making institutional arrangements on accessing water resources; and the coping strategies employed by vulnerable individuals and households under increasing water scarcity and

climate change based on an in-depth analysis of both formal and informal institutions and processes.

1.4. Objectives, Research Questions and Hypothesis

The overall aim of the study is to examine whether and how IWRM-inspired water reforms respond to and address the diverse realities and needs of women and men from different races and classes in informal (and formal) rural economies.

1.4.1. Objectives seek to:

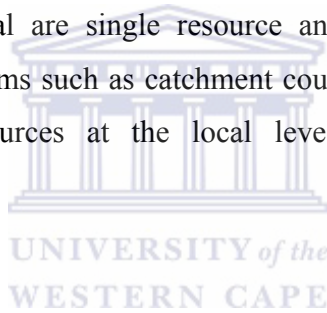
1. Describe, document and analyse the processes of how water resource management institutions come to life at the local level in poor rural areas;
2. Examine and analyse state policies and legislation that govern and regulate resources (across local, intermediate and national levels) and how they influence access and control over water resources at the local level;
3. Document and analyse whether prevailing formal institutional arrangements adequately address the informality of water use by the majority of rural small-scale water users;
4. Document and analyse the dynamics of power, interests and knowledge among stakeholders that shape institutions and policies used to control, defend and enforce claims to the resource;
5. Examine the relevance and usefulness of single purpose and resource-specific institutions for managing water resources at the local level where people use multiple institutions

1.4.2. Research Questions

Do IWRM-inspired water reforms adequately address the diverse realities of women and men from different races and classes in rural economies?

1. How and in what ways are hydraulic property rights established, conceptualised maintained and enforced in informal economies and why?
2. How and to what extent do prevailing formal institutional arrangements adequately address the informality of water use by the majority of rural small-scale water users?
If formal institutions should serve a purpose, what purpose should they serve?

- What/which institution should be responsible for infrastructure development? Are catchment management agencies and councils the appropriate vehicles for meeting the expectations of informal water users? How does this compare with local government?
3. How and to what extent do existing policies and legislation that govern and regulate access to and control over water resources influence (and are influenced by) hydraulic property rights creation? What are the national policies on paper? How are they operationalised? How are they implemented in Mzingwane and Sekororo, if implemented at all? How do they interface with practices?
 4. How and in what ways do power, knowledge and interests mould and pervade catchment management agencies and councils, and local arrangements, and give rise to differentiated access to and control over resources?
 5. How relevant and practical are single resource and resource-specific institutions wrought by the water reforms such as catchment councils and management agencies for managing water resources at the local level where people use multiple institutions?



1.4.3. Hypotheses

IWRM-inspired water reforms, setting universal standards (e.g. registration and permit applications) do not adequately address the diverse realities of women and men from different races and classes in formal and informal rural economies of South Africa and Zimbabwe. This is so because:

1. Water reforms (in their current form) ignore the first generation hydraulic mission (i.e. the development of adequate water infrastructure to harness water resources for social and economic development) for rural small-scale users; without access to water/infrastructure, there is nothing to manage for rural small-scale users. State support to infrastructure development and maintenance for domestic/small-scale/multiple uses diminished and/or were neglected after the introduction of water reforms in Zimbabwe. In South Africa, subsidies to infrastructure development for small-scale water uses and users were withdrawn post-1994. The development,

financing and maintenance of water infrastructure was left to water users with little or no support from local and national government. Support for such development largely came from non-governmental organisations although the support remained uncoordinated.

1. Although the formation and composition of catchment management agencies in Zimbabwe (and to a lesser extent South Africa) provided potential for more equitable water resource allocation, the process is less inclusive than envisaged; largely donor driven with sustainability problems; and it favours the interests of commercial large-scale users. I view the role of catchment councils and management agencies inter alia as protecting interests of small-scale users from abuse by large users, and to facilitate development and/or progression to more productive uses. Hence, the water reform process has failed to adequately address the issues of equitable resource allocation, stakeholder representation and inclusiveness for the majority rural small-scale water users because people are excluded.
2. Permit systems as individual water rights based on an administrative act completely ignore existing uses and arrangements while favouring the administrative-proficient, and entail explicit discriminatory conditions with high transaction costs. In Zimbabwe permits formally dispossessed customary arrangements in good colonial tradition; and later became just a taxation tool to address severe sustainability problems. In South Africa, permit system only remained a formal tool primarily applied among large-scale vested users. As existing lawful use pre-1998 is recognized, it also recognized customary arrangements. However, for new uses, it imposes a discriminatory license system or second-class exemptions of Schedule one.
3. Single resource institutions are not practical and relevant for managing water resources at the local level where people use multiple institutions. Through time (from colonial to post-colonial) small-scale rural water users in both South Africa and Zimbabwe relied on multiple (customary) institutions for managing water despite numerous interventions by the state. The introduction and/or emergence of single resource and resource-specific institutions under the rubric of catchment management agencies or councils brought by the water reforms became an additional layer on the (often congested) local institutional landscape. These single purpose and resource-

specific institutions are hardly relevant and practical for the majority of small-scale water users (and uses) who rely on multiple institutions, resources and sources for their livelihood.

Table 1.1: Linkages between the research questions, research objectives, hypotheses, data requirements and analytical tools used in the study

Research Objectives	Research Questions	Hypothesis	Data required/source	Analytical Tools
<p>The overall aim of the study is to examine whether IWRM-inspired water reforms respond to- and address the diverse realities of women and men from different races and classes in informal (and formal) rural economies;</p> <p>Describe, document and analyse the processes of how water resource management institutions come to life at the local level in poor rural areas;</p>	<p>Do IWRM-inspired water reforms adequately address the diverse realities and needs of women and men from different races and classes in rural economies?</p> <p>How and in what ways are hydraulic property rights established, conceptualised maintained and enforced in informal economies and why?</p>	<p>IWRM-inspired water reforms, setting universal standards (e.g. registration and permit applications) do not adequately address the diverse realities of women and men from different races and classes in formal and informal rural economies of South Africa and Zimbabwe</p>	<p>- Compile detailed qualitative data able to capture the dynamism through Focus Group Discussions (FGDs), interviews & survey: socio-economic & historical data on different water sources, uses and users; social networks & sharing arrangements; technologies involved, levels of investment and materials invested.</p> <p>- Mainly primary data, with augmentation from secondary data</p>	<p>Discourse analysis, Narratives, descriptive statistics, focus group study, and interviews.</p>
<p>Examine and analyse state policies and legislation that govern and regulate resources (across local, intermediate and national levels) and how they influence access and control over water resources; at the local level in rural communities</p>	<p>How and to what extent do existing policies and legislation that govern and regulate access to and control over water resources influence (and are influenced by) hydraulic property creation? What are the national policies on paper? How are they operationalised? How are they implemented in Mzingwane and Sekororo, if implemented at all? How do they interface with practices?</p>	<p>Water reforms (in their current form) ignore the first generation hydraulic mission (i.e. the development of adequate water infrastructure to harness water resources for social and economic development) for rural small-scale users; without access to water/infrastructure, there is nothing to manage for rural small-scale users</p>	<p>- Gather secondary data: review of policies, legislation, minutes and records of water institutions and government departments</p> <p>- Collect primary data on the operationalisation and implementation of policies and regulation; data on local, intermediate and national level stakeholders and participation – through FGDs and interviews</p>	<p>Narratives and descriptive analysis + stakeholder analysis and FGDs</p>

Document and analyse whether prevailing formal institutional arrangements adequately address the informality of water use by the majority of rural small-scale water users	How and to what extent do prevailing formal institutional arrangements adequately address the informality of water use by the majority of rural small-scale water users? If formal institutions should serve a purpose, what purpose should they serve? What/which institution should be responsible for infrastructure development? Are catchment management agencies and councils the appropriate vehicles for meeting the expectations of informal water users?	Although the formation and composition of catchment management agencies in Zimbabwe (and to a lesser extent South Africa) provided potential for more equitable water resource allocation, the process was less inclusive than envisaged; largely donor driven with sustainability problems; and favouring the interests of commercial large-scale users	Gather primary data: stakeholder participation, socio-economic status, quantities of water used and uses.	Narratives and descriptive analysis + stakeholder analysis
-Examine and analyse state policies and legislation that govern and regulate resources (across local, intermediate and national levels) and how they influence access and control over water resources at the local level;	How and in what ways do power, knowledge and interests mould and pervade catchment management agencies and councils, and give rise to differentiated access and control over resources?	Permit systems as individual water rights based on an administrative act completely ignore existing uses and arrangements while favouring the administrative-proficient, and entail explicit discriminatory conditions with high transaction costs	Gather data on stakeholder interactions, contestations and negotiations through observation, FGDs, interviews and document review	Discourse analysis, narratives and stakeholder analysis
Examine the relevance and usefulness of single purpose and resource-specific institutions for managing water resources at the local level where people use multiple institutions	How relevant and practical are single resource and resource specific institutions wrought by the water reforms such as catchment councils and management agencies for managing water resources at the local level where people use multiple institutions?	Single purpose institutions are not practical and relevant for managing water resources at the local level where people use multiple institutions	Gather data on stakeholder interactions, contestations and negotiations through observation, FGDs, interviews and document review	Narratives, stakeholder analysis and discourse analysis

1.5. Significance of the Study

Although there have been recent work on resources management at local levels in Zimbabwe and South Africa, most of it has either focused on areas with very high rainfalls (Matondi 2001), or wetlands and sponge areas (Sithole 1999, Derman 2000, 2003, 2005). Those that focused on semi-arid areas also tended to focus on the local as the opposite dichotomy of the global. Nemarundwe's work on negotiating access to water and forestry resources in the Romwe catchment of the Chivi district in Zimbabwe offer some insights on local level processes (2003). Ntshebeza (1997, 1999a and b) reported on the issue of land access and traditional authorities in South Africa. Van Koppen's earlier and recent work offers further insight in challenges faced in addressing inequitable access to water resources in South Africa and the Olifants Basin (2003, 2008). Research studies from the different parts of Zimbabwe point towards the existence of a set of interrelated norms of sharing of land and water that are essential for livelihood in terms of wetlands and dambos (Sithole 1999; Matondi 2001; Nemarundwe 2003; Derman et al. 2005, Derman et al, 2007). The widespread acceptance of these norms appears to be vital in the ways in which local communities handle poverty and food security. These local norms and practices resonate with the human right to livelihood in a broad sense, encompassing both clean drinking water and adequate access to water for subsistence farming and for securing livelihoods. This practice is not as common in South Africa for communal farmers. Neither the Zimbabwean land reforms nor the water reforms address how to assist those engaged in this type of small-scale agriculture (Derman et al, 2007). The IWRM-inspired reforms have been criticized but still not looking at infrastructure. There is very little understanding of operationalisation and impacts through intermediate level institutions at the local level in poor rural areas. With revived interest in infrastructure to adjust to climate change, it is important to understand local practice. This study will fill the gaps by providing data and empirical evidence to understand local practices.

Molle (2008:133), observed that South Africa and Zimbabwe provided good examples of how (IWRM)-inspired reforms were enthusiastically adopted by governments as a common ground for black and white water users with a promise to deliver equitable

access to, and sustainable use of, water resources by all stakeholders at catchment and regional levels, while maintaining the characteristics and integrity of water resources within agreed limits. However, after more than ten years of experience, expected benefits have not materialized (see also Manzungu, 2002; Schreiner and van Koppen, 2002; Merrey and van Koppen, 2007; Manzungu et al, 2010). Experiences for such failure varies between the two countries and reasons for stagnated water reform roll-out are diverse, the common thread seems to be the fact that powerful users tended to dominate catchment councils and “power asymmetries surfaced when hard-nose issues such as water sharing agreements were considered” (Molle, 2008: 134). Perhaps Merrey and van Koppen (2007) summed it up when they observed that in the Olifants river basin, the Kruger Park staff, mine owners and large-scale white farmers producing fruit for export markets soon dominated the process at the expense of rural black communities. In Zimbabwe Dube and Swatuk (2002) and Tapela (2002) highlight how the fast tracking of the process in the Save River Basin, resulted in a crass scramble for authority among the farming community where extant power relations were reproduced in the new institutions (see also Manzungu, 2002; Swatuk, 2005:875). Other groups identified by government as key stakeholders refused to participate (Kujinga, 2002). Latham (2002), Manzungu (2002) and Marimbe and Manzungu (2003) reported similar results. It is also interesting to note that in Zimbabwe, the catchment council manager is an employee of the Zimbabwe National Water Authority, is the government’s overseer in the whole process limiting the process to some form of decentralisation, but certainly not the devolution of power envisaged and envisioned in strategy and policy documents (see also Latham, 2002).

Although these studies developed major insights into our understanding of resource access, appropriation and allocation there is yet to be grounded research that focuses on water as a resource, and the infrastructure development agenda, in the semi-arid tropics, without the fragmented binary of domestic and productive uses as is often presented, but water as a resource with multiple uses as understood, conceptualized and contested by those who live with, use and control the resource. A much broader view and understanding of intricate household and local level allocation processes and rights

creation reflecting a range of individual and communal options, investments, negotiations and how these change over time in the aftermath of both pre- and post-colonial water reforms and climate change becomes a necessity. This study contributes to the growing debate and discussions on hprc, formal and informal institutions by offering empirical data that contribute insights (and where possible, foresight) and builds upon the growing body of knowledge and theory on resource rights, institutions and networks, and how such processes affect women's and men's access and control of the resource for multiple uses.

Anthropological and sociological work on institutions suggests useful ways in considering institutions and natural resources management in relation to countervailing rural realities in Africa (Mehta et al, 2006). Institutions are conceived in terms of practices and their social, cultural and political structuration; in terms of what people do, and their structural capacity to respond to events in shaping their own histories. This study sought to employ ethnographic approaches to the processes and relations operating within and between multiple sites (Zimbabwe and South Africa) to try and transcend the local-global and formal-informal divides. Finally, by offering an empirical examination and understanding of institutions, property rights and power this study highlights and explores the importance of analysing institutions and property rights as part of what people know or believe, as well as what they do. The results of the study aim at generating recommendations for adaptations in the law and in other public support that build upon people's ongoing spontaneous investments in water development. This will speed up and promote the increased access and productive use of water, which will enhance livelihood security and socio-economic development.

1.6. Outline of the Thesis

The thesis consists of ten chapters, (with six empirical chapters 4, 5, 6, 7, 8 and 9) with references and annexure.

CHAPTER ONE (Introduction and Background to Research Context) is an introduction of this study, it gives a background and context to (property rights, institutions and water

governance and) the challenges besetting water reform in South Africa and Zimbabwe. It also outlines the problem statement, and describes the objectives and research questions of the study as well as the outline of the thesis. CHAPTER TWO (Theoretical Framework and Literature Review) provides a detailed presentation and analyses of the main conceptual frameworks for analysing the interrelationships between and among natural resources, property rights and institutions. It presents the key concepts around which the study is built and how these concepts are interpreted and used in the study. CHAPTER THREE (Methodology and Description of Study Sites) sets out the methodology and methods used for data collection and analysis, why the methods were chosen, their utility and shortcomings, and challenges faced. This is followed by a detailed description of study sites and why the study sites were selected. The chapter also builds arguments for comparing and contrasting the two countries, South Africa and Zimbabwe. CHAPTER FOUR (Political History of Water-Related Investments and Institutional Arrangements in Mzingwane) examines and analyses the nature and patterns of investments in water infrastructure by rural communities in Gwanda, in order to understand how people, as individuals and or as groups, assert rights over water, and how such claims become legitimized. The chapter presents political and historical accounts of infrastructure investments and development of (natural and human) resources from the colonial to the post-colonial period assessing and analysing communal and private investments in water resources. CHAPTER FIVE (From Homeland to Democracy: The Politics and History of Water Resources Investments and Institutional Arrangements in Sekororo (B72a and B72c), South Africa) examines and analyses the nature and patterns of investments in water infrastructure by rural communities in Sekororo in order to understand how people, as individuals and/or as groups, assert rights over water, and how such claims become legitimized. The chapter presents political and historical accounts of infrastructure investments and development on (natural and human) resources from the colonial to the post-colonial period assessing and analysing communal and private investments in water resources. CHAPTER SIX (Hydraulic Property Rights Creation in South Africa and Zimbabwe – A Conceptual Analysis) provides conceptual and analytic insights on how the dynamic processes played out in South Africa and Zimbabwe (presented in chapters four and five) can be understood within the broader property rights

and institutions debates. CHAPTER SEVEN (Institutional Networks, Bureaucracies and Hierarchies of Power for Water Governance in Zimbabwe's Gwanda Communal Areas) provides detailed accounts, cases and analyses of power dynamics and intricate interrelations between and among: the policies, legislation and frameworks governing natural resources; the existing and resultant institutional arrangements; and the nature property rights and investments take. The chapter documents the dynamic processes of engagement, negotiations, contests, conflicts and sharing arrangements that exist. CHAPTER EIGHT (Bureaucracies and Hierarchies of Governance for Water Management in Sekororo, South Africa) provides detailed accounts, cases and analyses of power dynamics and intricate interrelations between and among: the policies, legislation and frameworks governing natural resources; the existing and resultant institutional arrangements; and the nature property rights and investments take. The chapter documents the dynamic processes of engagement, negotiations, contests, conflicts and sharing arrangements that exist. CHAPTER NINE discusses and analyse the findings drawn from Chapters 7 and 8; while CHAPTER TEN (Discussion and Conclusions) synthesises and reviews the key findings of the study in a thematic manner that allows for reflection on the key issues relating to research objectives and hypotheses. The chapter also provides the key concluding statements of the study.

1.7. Conclusion

This chapter provided a grounded background to the study by comparing and contrasting the historical and socio-economic trajectories in the water sector of the two countries. The chapter also outlined the problem statement, the justification of the problem statement, and the objectives, research questions and hypotheses to be explored in the thesis. It further provided an outline of the structure of the thesis. The next chapter presents the theoretical framework underpinning the study.

CHAPTER TWO: Literature Review / Theoretical Framework

2.1. Introduction

The chapter provides a detailed presentation and analyses of the main conceptual frameworks for analysing the interrelationships between and among natural resources, especially water, property rights and institutions. It also sets the foundation for exploring the nature of interaction of various actors in the management of common pool resources. Power relations and situated practices of different actors located in specific contexts and mediated by sets of changing institutions, which may lead to different outcomes are analysed. Most analysts dealing with institutional issues in community-based natural resources management make reference to the Common Property Resource (CPR) theory (see Ostrom, 1990; Sithole, 1999); hence it becomes imperative to commence the discussion from this viewpoint before exploring the alternatives presented by other scholars. The chapter elaborates the conceptual framework of the study of institutions and property rights in relation to investments in- and the use and management of common pool resources. A focus on property rights, investments and institutions leads into a discussion on the dynamics involved in private and collective management of resources such as water, and how access rights and control over resources are strengthened or weakened. Such processes are often context bound, with history shaping the evolution of contestations and negotiations around the resources in question as well as hydraulic property rights creation.

2.2. Property Rights, Institutions and Resource Governance

This section provides a review of literature aimed at demonstrating how conventional understandings of institutions neglect the everyday processes and contexts within which institutions are located and the overlapping domains between different institutional arrangements. Dominant theoretical approaches to understanding institutions are reviewed to illustrate the need for a radical shift and new thinking on relationship between institutions, property rights and power, and ways of viewing resources. This

calls for new forms of governance which addresses the questions of power and the overhauling of sharp dichotomies between local and the global as well as formal and informal processes.

In the natural resources management literature, institutions are considered to be key in sustainable livelihoods adaptation and natural resources management where institutions are understood and seen as central to successful policies. These analyses have tended to borrow from approaches grounded in the Common Property Resource (CPR) theory, with its related links to the New Institutional Economics (NIE) (Ostrom, 1990; Wade, 1988; Mehta et al, 1999; Murphree, 1996). The NIE became very famous for the transaction cost approach and the collective action approach, yet the two strands conceive of institutions in different ways despite sharing the same basic tenets. An analytically rich branch of institutional economics, the property rights paradigm, analyses the evolution and changes in property rights in society as a process of reducing transaction costs in exploiting new economic opportunities (Shah, 1996:24). Institutions are generally conceptualised as the 'rules of the game in society' which provide constraint on action (Ostrom, 1990; North, 1990). In the meanwhile, North (1990) sees institutions as the formal rules and conventions, including informal codes of behaviour or norms, which emerge to regulate human behaviour and interaction. Common property analysts such as Ostrom (1990) look at collective action dilemmas and focusing on the ways in which institutions or rules can be purposively crafted to produce collective action. However, much of the CPR literature tended to dwell on local situations, and on establishing the conditions under which collective action in resource management operates effectively, with emphasis on clear resource boundaries and relative socio-economic homogeneity among users (Ostrom, 1990; Wade, 1988; Mehta et al, 1999), although attempts have been made to use CPR theory to address global environmental problems (Keohane and Ostrom, 1995).

CPR analysis has also made meaningful contributions in directing attention on the importance of informal institutions in natural resources management. Bromley and Cernea (1989) highlighted the utility of CPR in showing how planners have erroneously

neglected and often delegitimized indigenous institutions governing resources. Without denying its utility as noted, CPR approaches have focused largely on purposive institutions with the assumption that institutions are designed (or ‘crafted’, in Ostrom’s terms) specifically to perform certain natural resource management functions, where emphasis is placed on matching of particular institutions to particular issues such as water management committees, forestry groups, and fishing groups among others. This contrasts with the complex matrix of institutions in which people live their lives, and in which natural resource management span across different resources and different institutions. The collective action focus also tends to shift attention away from the fact that institutions by nature are beset with conflicts, social difference, and diverse interests as much as they can serve to enhance cooperation. Thus policy suggestions often result in a focus on ‘getting the institutions right’ in order to guarantee or stabilize uncertain human behaviour through such action as establishing a formal legal system, fixed property rights and coded norms of behaviour.

CPR/NIE approaches also presuppose a non-interactive divide between formal and informal institutions where policy prescriptions have tended to focus on either state-level recommendations or on local level (often informal) institutions. This dichotomy fails to capture empirical realities in which interrelationships and overlaps link various institutional domains, refuting the existence of a straitjacket formal-informal divide. It is this ‘messy middle’ (Mehta et al, 1999, Lund, 2003) where institutional arrangements may be, highly contested and beset by ambiguity and flexibility to divergent interpretations. Yet within NIE and CPR approaches, there has been virtually no attempt to conceptualise this middle-ground, rather it has been obscured as an area of inquiry by the privileging of either the formal or the informal realm. Although CPR and NIE theories have successfully established a tradition of concern with the significance of local institutions in natural resources management underscored by robust theory especially appealing to economically minded policy makers, there is a growing inability of these theoretical perspectives to comprehend the complex institutional arrangements in which people live their lives in contemporary settings.

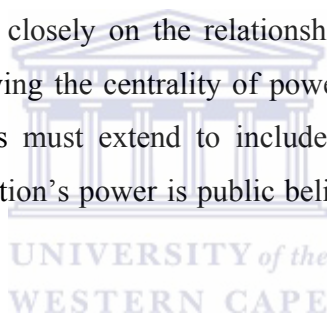
Notwithstanding the debates around CPR and NIE theories and their influence on institutions as indicated earlier, the last decades have seen a growth in the influence of supra-national and global institutions of governance which are increasingly embedded in a larger set of globalised economic and political processes such as IWRM and Community Based Natural Resources Management (CBNRM) which tend to shape and re-shape global discourse on natural resources governance.

Anthropological and sociological perspectives to natural resources management started ways of breaking down the local-global and formal-informal dichotomies and offer alternative insights and approaches concerning institutions. Sociologists of the middle-ground such as Giddens (1984) and Bourdieu (1977) argue that structure and action reinforce each other, thus conceiving of institutions more in terms of practice and less in terms of fixed rules. The argument follows that some action and practices serve to reproduce structures whereas other action has agency, subverting established norms and perhaps serving overtime to shift them (Mehta et al, 1999). This interplay of agency and structure only becomes visible through a historical sociology, where institutions are viewed as what people do – their practices – albeit those practices that are regularized over a period of time. In this perspective, institutions exist only in as much as they are continually practiced or invested in, and rules and norms cannot be considered apart from their constant making and re-making through people's practices. Consequently, formalization of an institution needs to be seen as a practice which regularizes other practices; for example the constituting of a committee with a chairperson, secretary and treasurer may be seen as an alignment with the state's legal forms and norms. Similarly, it can be argued that casting something as an institution, re-inventing tradition and presenting something as 'the way we have always done this' can equally be understood as a social practice to gloss over unwanted complexity, conflict and ambiguity (see Li, 1996; Nuijten, 1992; Lund, 2003). A practice-based approach to institutions helps to deconstruct the distinction between formal and informal institutions, which as shown earlier, characterises mainstream approach to institutions in natural resources management.

Giddens's structurationist perspective offers a conception of institutional dynamics that accommodates the structuration of power and influence, in a frame that is open to both agency and uncertainty. A growing body of work by anthropologists, geographers and social historians is using and developing this broad type of perspective on institutions as social practice in relation to natural resources management issues (Leach, 1994; Berry, 1993; Li, 1996; Cleaver, 1993). Emphasis is drawn to people's socially differentiated experiences in relation to the structuration of particular institutions, and to how people may draw differentially on a wide range of social and political institutions in order to obtain or defend access to the same resource (Mehta et al, 1999; Lund, 2003; Lund and Benjaminsen, 2003). These insights are similar to those formalized in work on 'forum-shopping' within legal anthropology (Benda-Beckmann et al, 1981, 1997; Meinen-Dick and Bruns, 1999, 2000). Anthropologists and sociologists have also argued for the need to incorporate the symbolic dimensions that people accord to resources, where struggles over resources are seen simultaneously as struggles over meaning (Agarwal, 1994). In this sense, the use and control of resources may be both material and symbolic means of renegotiating one's social position within broader social networks (Whitehead, 1984; Guyer and Peters, 1987). Hence, it is recognised that people are always members of multiple institutions and access to resources is influenced by people's positions in a wide variety of social networks not necessarily linked to resources management.

Understanding institutions as social practice also helps clarify the 'messy-middle' through its transcendence of local versus national or global distinctions in concepts and ideas. For example, anthropological work has amply shown how the concepts people practise in understanding their broader world are those of their everyday lives writ large (Mehta et al, 1999; Croll and Park, 1992; Parry and Block, 1989). Work on the sociology of knowledge, and in particular on feminist critique of science, have shown explicitly how people's perspectives on the world, and the questions they ask science of it, reflect their broader positions in social institutions (see Harding, 1987; Haraway, 1989). Over the last decade there have been attempts to move beyond the local in anthropology to include the 'global' without setting up dichotomies, for example the 'multi-sited' ethnography of Marcus (1995) and Appadurai (1996). Some work in this genre has

applied a structuration approach to processes of linking rural livelihoods to national and international processes, the actor-oriented work of Long and Long (1992) offers a good example. Yet, a rather different theoretical tradition has drawn on the work of Foucault and his concept of discourse, illuminated by the politics of anti-politics studies of Ferguson (1990) in Lesotho. In this perspective, rather than focusing on the structuration of institutions through the interplay of agency and structure, where both agency and structure 'have power', Foucault stresses the mutual production of institutions and knowledges, which embodies and reproduces relations of power (Foucault, 1980). In strong contrast with structuration theory, people's apparent agency (and even their belief in it) is ultimately a product of these relations, and is analytically relevant less for the creativity it brings to social life, than for the way it is structured by and constrained within dominant discourse. What discourse theory has done, notwithstanding its short comings, is to focus attention closely on the relationship between institutions and the knowledges they purvey, showing the centrality of power relations. It also emphasises that an analysis of institutions must extend to include the conceptual regimes of its publics, since part of an institution's power is public belief in the institutions categories, concepts and issues.



Amidst the diversity of tradition and contributions as shown in the literature presented, anthropological and sociological work on institutions suggests important emphases which stand out as useful ways forward in considering institutions and natural resources management. The first is a conception of institutions in terms of practices and their social, cultural and political structuration; of what people do, and their structured capacity to respond to events in shaping their own histories. Second is an ethnographic approach to the processes and relations operating within and between multiple sites, transcending local-global and formal-informal divides. The final emphasis is the conceptual linking of institutions, knowledge and power, suggesting the importance of analysing institutions and property rights as part of what people know or believe, as well as what they do. To this end the study will employ the hydraulic property creation, the negotiability/flexibility concept, the multiple-use water services approach and discourse theory to unpack and analyse the issues of property rights, resource access, institutional arrangements and

power relations. The four concepts and their usefulness for the study are discussed below.

2.3. Hydraulic Property Rights Creation and Institutions

Against the background provided above, the study adopted the concept of ‘hydraulic property rights creation’ as its underpinning theory so as to shed light on and understand how people, as individuals and or as groups, assert rights over water, and how such claims become legitimized (Coward, 1986; Sithole and van Koppen, 2008; Manzungu et al, 2010). Hydraulic property rights creation refers to the creation of value of water by means of establishing, and recognizing claims to water of a certain quantity and quality in a particular locality as a consequence of investments made in developing physical infrastructure and related institutional arrangements for the purpose of abstracting, storing, conveying and/or applying water to the field (ibid). As far as ensuring access to water is concerned, investment seems to be the single most important legitimation for laying claims to water.

This thesis adopted the concept of ‘hydraulic property rights creation’ as the core of vesting claims to water. This concept not only allows analyzing empirical processes but is especially relevant focusing on the alignment between the legislation and the major policy agenda in Southern Africa and sub-Saharan Africa of investing in rural water development (see also Van Koppen and Van der Zaag, 2010:2-3). On the basis of earlier conceptualization and empirical evidence (Coward 1986; Boelens and Dávila 1998; Mohamed-Katerere and Van der Zaag, 2003; Sithole and Van Koppen, 2008; Van Koppen and Van der Zaag, 2010; Bolding et al, 2010; Manzungu et al, 2010), the concept was operationalized as follows.

Hydraulic property rights creation is defined as the process of establishing recognized claims to water of certain quantity and quality on a particular site at certain timings (Coward, 1986; Van Koppen and Van der Zaag, 2010:3). Making investments in the physical infrastructure to abstract, store, and/or convey water and, thus, create such use value of water in terms of quantity, quality, site and timing, is the single most important

ground for vesting claims to water. Others who have not contributed to the investments can be excluded, although this does not normally apply in case of households and livestock accessing water for the most basic needs (see also Derman, Hellum, Manzungu, Sithole and Machiridza, 2005; Derman and Hellum, 2003; Derman and Gonese; 2002).

Investments may be individual (like investments in small pumps, boreholes or homestead wells), or communal (like village reservoirs and irrigation furrows). Processes of hydraulic property rights creation may be entirely ‘endogenous’ (or ‘local’ or ‘informal’), with claims recognized at the local level by communities, or they may depend upon government, formal NGOs, or other outsiders (publicly supported or ‘exogenous’). In the case of public investments, governments who built the systems can exert claims, but the public constructors mostly expect users to take up at least part of the burden of operation and maintenance, as a condition for their formal entitlement to the water conveyed. Lack of clarity on such hand-over and lack of other needed support may lead to a process of ‘hydraulic property rights extinction’: water could physically be made available, but nobody exerting claims, or hydraulic property reconfiguration where users re-arrange relationships to suit the prevailing hydro-political and social circumstances. Manzungu, Sithole, Tapela and Van Koppen (2010) contend that hydraulic property rights creation is related to land tenure where access to land situated above groundwater or near surface water is an important practical and sometimes also legal condition for vesting water rights. Servitudes may be obligatory, though. Van Koppen and Van der Zaag (2010) argue that the weaker land claims of tenants and (often) women affect their incentives to invest in land-bound infrastructure, unless arrangements with those holding the stronger land rights assure sharing of benefits.

Water is typically used for multiple purposes. In exogenous water infrastructure development, which typically follows the rigid fragmentation of the water sector bureaucracies according to single uses, either domestic or irrigation or livestock, or fisheries, the factual uses of these single-use designed schemes are, invariably, multiple as well. The concept captures these dynamics by highlighting several dimensions that bear out the fluid nature of hydraulic property creation and reconfiguration. I first treat

the default pattern of hydraulic property creation at different hydrological levels, namely local/village scale and the quaternary catchment scale before examining the effects of outside interventions on these hydraulic property regimes. In each country, the thesis applies the concept of hydraulic property rights creation to analyze a set of frequently occurring endogenous and exogenous, and individual and communal processes of water rights creation by small-scale rural users. They include groundwater development (manual and mechanized irrigation, domestic supplies, livestock, other enterprises) and surface water development (reservoirs of various sizes, recession agriculture, irrigation furrows and other enterprises).

Findings and comparative analyses will enhance our understanding of the nature and the triggers of water rights creation and the respective roles of communities and public agencies. The factual role of the new water laws are studied where possible, but such cases are few, because the new laws have hardly been implemented as yet in informal settings (see also Van Koppen and Van der Zaag, 2010). For each country a historical analysis of the relevant laws and early implementation of the recently promulgated laws, including the formal institutional set-up and institutional reforms, where applicable, is conducted to provide the context under which hydraulic property creation evolve. Also a quantitative and qualitative assessment of the numbers and volumes of informal water users and uses is made in the two countries to ascertain the prevalence of investments in water use and access dynamics. The results of the study aim at generating recommendations for adaptations in the law and in other public support that build upon people's ongoing spontaneous investments in water development. This will speed up and promote the increased access and productive use of water, which will enhance livelihood security and socio-economic development.

2.4. The Negotiability/flexibility concept

The negotiability/flexibility concept (Peters, 2004; Lund, 2002; Berry, 2002) will be used to unpack and analyse the processes of negotiation and power relations. The concept is based on the premise of understanding the property regimes and stresses that property regimes are about people and relations among them as well as about values and norms and

their enforcement. This means that careful attention has to be paid to the specific meanings and constructions, including narratives and stories, placed by different social actors on the principles justifying access, use and control. In response to this stress, recent research has pointed up the dangers of over-privileging notions of flexibility and negotiability in the social relations around natural resources in Africa, and the need to assess ongoing processes of exclusion and the production of winners and losers. The concept of power relations has been instrumental, at a variety of levels, and in interactions across these levels (Berry 2002; Lund 2002; Peters 2004). As a result, some interest groups have tended to benefit more than others, notably chiefs and headmen (e.g. in relation to powers of land allocation) and men (e.g. in relation to control of productive land and its income streams). The concept contends that both authority and rights have been constructed, and should be understood and analysed, in ways that are 'historical, contextual and contingent' (Lund 2002: 33). This concept will be useful in examining and analysing institutional arrangements in the two study areas owing to its utility to address power relations rooted in historical and contextual arenas. Processes of mediation, bargaining, conflict and power are important in institutional landscapes where uncertainties prevail regarding policies, norms, and legislation on access to and control over resources. This is an important aspect which the hprc concept, despite its overall analytical utility, does not adequately address.

2.5. Discourse theory

A rather different theoretical tradition has drawn on the work of Foucault and his concept of discourse, illuminated by the politics of anti-politics studies of Ferguson (1990) in Lesotho. In this perspective, rather than focusing on the structuration of institutions through the interplay of agency and structure, where both agency and structure 'have power', Foucault stresses the mutual production of institutions and knowledges, which embodies and reproduces relations of power (Foucault, 1980). In strong contrast with structuration theory, people's apparent agency (and even their belief in it) is ultimately a product of these relations, and is analytically relevant less for the creativity it brings to social life, than for the way it is structured by and constrained within dominant discourse. What discourse theory has done, notwithstanding its short comings, is to focus attention

closely on the relationship between institutions and the knowledges they purvey, showing the centrality of power relations. It also emphasises that an analysis of institutions must extend to include the conceptual regimes of its publics, since part of an institution's power is public belief in the institutions categories, concepts and issues. The discourse concept is very instrumental in this thesis to address the shortcomings of the concept of hydraulic property creation which does not directly address issues and relations of power.

2.6. Gender Analysis: the Multiple Use (MUS) Water Services

Concept

Realising the limitations of the three frameworks used in this thesis (as highlighted above), I adopted a gendered analysis of water access and management. Van Koppen (2002:2) argued that "...concepts used in the past intervention-oriented and theoretical research were inaccurate with regard to the specific character of water as a natural resource, and to the precise involvement of women and men in irrigated farming and water management". She further argues that water for productive uses in agriculture obtains its value only as input in an encompassing farm enterprise. In this context, argues Van Koppen (2002), gender analysis cannot just differentiate women for variables like class, race, ethnicity and age, as it did in the past. Gender analysis also needs to differentiate between women and men with and without their own farm enterprise. A conceptual distinction between patterns in agricultural roles that women play clarifies whether water management agencies deal directly with gender issues under their own mandates or not.

Multiple-Use water Services, or "MUS" in short, "is a participatory, integrated and poverty-reduction-focused approach in poor rural and peri-urban areas, which takes people's multiple water needs as a starting point for providing integrated services, moving beyond the conventional sectoral barriers of the domestic and productive sectors" (Van Koppen, Moriarty and Boelee, 2006:v). Van Koppen et al (ibid:2), argue that it is widely recognized by now that, in addition to good governance, decentralisation and participatory technology development, "it pays to think in a more holistic way", as

reflected in the concept of IWRM. IWRM has become the overarching consensus of the water community at the abstract level. At a more concrete level, the IWRM paradigm has been critiqued for being “amorphous and open to multiple interpretations, and perhaps most seriously for lack of practical tools and approaches by which to implement it” (Van Koppen et al, 2006:2; see also Biswas, 2004).

Van Koppen et al (2006:2) argue that the single most important reason why planning and design of water services on the basis of multiple water needs are still not the norm, in spite of water services providers’ genuine and intensive efforts to improve users’ well-being, is that people’s integrated need for and use of water do not match ways in which the water sector itself is organised, “...*the structuring of policymaking, implementation, subsidization and financing by government and, often to a lesser extent, by Non-Governmental Organisations (NGOs), private water services provision and commercial financing, is sectoral and top-down, dividing water services provision into a domestic sector, an irrigation sector, a livestock sector, a fisheries and aquaculture sector, etc*”. In this setup, each sector specialises in one single use and plans and designs its interventions according to what can be called a “single-use planning and design” approach where it is assumed that “other sectors” take care of the other water needs of their clients regardless of whether the “other sectors” are actually present or not. Van Koppen et al (2006:4) point out that this sector-based structuring goes hand in hand with efforts to formalise and standardise implementation procedures and norms for infrastructure, water quality, or water committees, especially by governments.

This does not sit well with the informal and highly variable water situation of the rural and peri-urban poor. In these informal poor rural settings, where the presence of public agencies is limited, the priority of infrastructure development for better water control tends to be low (Van Koppen et al, 2006). An individual’s own initiative and private sector initiative prevail in accessing water from rainfall, streams, ponds, springs, groundwater, or wetlands. Important synergies are derived from complementary use of multiple water sources, where access to multiple sources is also at the heart of strategies to cope with seasonal and annual droughts and floods. A MUS approach “...addresses the

challenges mentioned above by recognising that people's water needs are integrated and are part and parcel of their multifaceted livelihoods, and that the necessity to better meet people's multiple water needs is a main driver for integration within the water sector itself" (Van Koppen et al, 2006:2; see also Moriarty et al, 2004, and 2005). Van Koppen et al (2006:4) content that multiple-use water services in the interests of the poor stand for: "*water services planning and design that take people's multiple water needs as a starting point and that searches for incremental improvements in access to water across the range of needs within informal settings and a highly variable water situation*".

The MUS concept was adopted in this study for being implicitly gender-friendly at three broad levels. Improved well-being under multiple-use water services benefits women in particular in three ways. While the domestic sector already recognises the importance of improved domestic water supplies to alleviate women's and children's burdens, domestic-plus approaches add productive activities which are often around the household. Secondly, from a productive-plus perspective, the added device for domestic uses are often the most important, if not the only benefit of public irrigation investments for women (Hussain, 2005), especially in the past when women tended to be entirely excluded from newly introduced irrigation (Van Koppen, 2002). As women tend to spend a higher proportion of their incomes for family welfare than men, this also benefited their families (see also Menzen-Dick and Zwarteveen, 1998; Van Koppen, 2002). Finally, full-fledged multiple-use water services, which encompass women's and men's entire range of water needs, may take gender issues further to the centre stage of water services planning and design. If service providers take the multiple water needs of all users as a starting point in inclusive community-based participatory planning fora, women are likely to prioritise reducing their and their children's excessive labour demands of fetching water and watering animals, and to try and convince their male kin and service providers to support that (Van Wijk-Sijbesma, 2001). Meeting domestic needs would be discussed as their shared responsibility of men and women for household welfare. Van Koppen et al (2006:11) highlight that "*this would expose current divisions of the responsibilities for domestic water provision, in which women bear the heaviest labour burdens while men may contribute through, for example, well digging*". This does

not only provide greater scope for understanding the gendered nature of MUS, but also offers potential for inequitable burdens to be shared when new opportunities arise.

Most striking, the MUS concept was adopted for this study for its ability and potential to take everybody's needs as equally important from the outset, where opportunities to better use water for productive purposes would, a priori, be equally open to women and men. Following after Van Koppen et al (2006:11), such negotiated consensus between the genders at the start of the planning process "is a firm basis for technical design, institution building, and any water-prioritisation issue later". Analysis of local practice through alternative services approach using multiple uses of the same natural resource. Taking poor people's multiple water needs (quantities and qualities) as a starting point in new water public and private project-based (domestic-plus, productive-plus, or multiple use) schemes, the MUS concept is used in this thesis to further improve insights and understand the gender implications in implementing IWRM by offering a more gender-equitable approach to service provision. This also confirms what IWRM proponents GWP already stated, that MUS approaches are appropriate forms of implementing IWRM in poor areas with a backlog of infrastructure development and advancing the Millennium Development Goals (GWP, 2004).

2.7. Conclusions

This chapter has presented and reviewed literature on conceptual issues in natural resources management, and discussed the various conceptual frameworks used for analysing the empirical materials presented in the thesis. Common Property Resource theory provides a firm conceptual background for understanding natural resources management as depicted in the review of literature on property rights, institutions and resource governance in section 2.2. Although attempts have been made to use CPR theory to address global environmental problems much of the CPR literature tends to dwell on local situations, and on establishing the conditions under which collective action in resource management operates effectively, with emphasis on clear resource boundaries and relative socio-economic homogeneity among users. CPR approaches presuppose a non-interactive divide between formal and informal institutions where policy

prescriptions have tended to focus on either state-level recommendations or on local level (often informal) institutions. This dichotomy fails to capture empirical realities in which interrelationships and overlaps link various institutional domains, refuting the existence of a straitjacket formal-informal divide. Realising this shortfall, anthropological and sociological perspectives to natural resources management started ways of breaking down the local-global and formal-informal dichotomies and offer alternative insights and approaches concerning institutions. The study utilised the hydraulic property creation, the negotiability/flexibility concept, the multiple-use water services approach and discourse theory to unpack and analyse the issues of property rights, resource access, institutional arrangements and power relations. The four concepts and their usefulness for the study were discussed in detail in the chapter.



CHAPTER THREE: Methodology and Description of Study Sites

3.1. Introduction

This chapter sets out the methodological framework adopted for the study as well as presenting the background and context of the study sites, Sekororo (Olifants catchment, South Africa) and Ward 17 Manama (Mzingwane catchment, Zimbabwe). The study was located within a broader research project, the Challenge Programme for Water and Food (CPWF) and the “Mobility, networks and institutions in the management of natural resources in contemporary Africa” initiative. The qualitative research methodology forms the basis (if not backbone) of this study although some quantitative methods were also utilised. The bulk of the qualitative data presented in this thesis is drawn from a combination of ethnographic, participatory, key-informant and in-depth interviews, secondary review of policies and legislation, and archival records. In the methodology section, a detailed description is given of the research strategies adopted, methods of data collection and analysis, field procedures and experiences as well as challenges faced during fieldwork.

3.2. Research Framework and Research Methodology

Research Framework

Much of the analytic work of common property resources has been undertaken at group/community level. Blaikie (1992) suggests that analysis should be structured by a hierarchy of explanatory levels, for example, state, agrarian society, local CPR, household, and individual. Bradley (1991:303) underscores that within a "complex array of investigations, at different scales, and within different disciplines, the construction of synthetic images at the end, linked upwards to broader levels, yet relating concretely to individuals is not simple". An attempt has been made in this study to manage a hierarchy of scale investigations, each confined internally to its own particular sets of goals, but each linked to a broader and pre-configured structure. The level of entry for this study is the resource base. The resource was chosen as a point of entry because this is where the

user is effecting management (Murombedzi, 1990; Mandondo, 1997; Sithole, 1999). Davies et al (1991) argues that many environmental problems particularly those that threaten household food security are highly localised, despite the tendency for governments and international organisations to focus on global or aggregate issues and therefore understanding use, must be at both use and management levels. Bruce and Fortmann (1989) demonstrate that tenure on a resource is incredibly complex comprising, as it does, different layers of rights that sometimes overlap on different services and products derived from the resource. Therefore to "deal meaningfully with tenure one must deal with it at the parcel or field level that one can be certain of capturing variations in tenure by field managers within the household and so explore what maybe important gender based differences" (Bruce and Fortmann, 1989:23). Thus, by studying linkages between members of a household or a user group, one is able to see how many households use and access a wider range of resources (Haswell and Hunt, 1991); and be able to interrogate the institutions that mediate and control access and use of resources (Sithole, 1999).

This study was developed as a comparative between two rural areas in two countries with a high level of livelihoods dependent on subsistence farming; and where effects and implications of water scarcity, rainfall variability and climate change are most felt. Murphree (1991) suggests that methodological frames for studies of natural resources should include comparison at various levels and be multidisciplinary as highlighted earlier in the introduction chapter. However, Ranger (1985:3) cautions against use of comparisons that he describes as "dangerous intellectual tools" if used by people who do not understand the context within which the society has developed or is developing. Despite this caution, the study will demonstrate that there are many contrasts, occurring at different levels and between different types of users over different resource units. This study is therefore about contrasts between places, people, contexts, policies and communal areas in South Africa and Zimbabwe.

Research Methodology

As discussed in Chapter One, the major objective the study seeks to address is to contribute to the empirical and theoretical understanding of ways and linkages in which institutions (formal and informal), networks and resource rights are organised, negotiated and contested in rural economies of South Africa and Zimbabwe. To fulfil this objective, the study sought to answer a set of key research questions and test some hypotheses in order to contribute to the debate on the roles, processes and relationships between and among investments in hydraulic property, institutional arrangements in the broader water governance discourse. The study attempts to broaden knowledge on both the theoretical contributions to understanding hydraulic property creation and the emergence and evolution of rights in informal and formal processes in rural economies by offering empirical and grounded evidence. Next, I will discuss the qualitative research approach adopted for the study before going into details of the fieldwork processes.

3.2.1. Qualitative research methodology

Social research in a development project context on the dynamic processes of hydraulic property creation, institutional arrangements and power relations, and how they affect different actors is complex and requires that one use methods that will bring out the dynamism of the numerous intricate processes of social interaction. Qualitative methods were suitable for my study as they aim at capturing the myriad perspectives of participants in the social world. Qualitative research is inherently multi-method in focus (Flick, 1998; Denzin and Lincoln, 2000; Nemarundwe, 2003:53). The use of multiple methods, or triangulation, reflects an attempt to secure an in-depth understanding of the phenomenon in question. Objective reality can never be captured; we can know something only through its representations (Denzin and Lincoln, 2000:5). The multiple qualitative methods available to the researcher include case studies, situational analyses, network analysis, through participant observation, dialogue, visual methods, group discussions and key informant interviews. The majority of these methods played a crucial role in the process of data collection in the study.

3.2.2. Data requirements

Given the diversity of actors that influence or are affected by investments in hydraulic property creation; and the attendant institutions that evolve and emerge to govern access to the resources, the identification of the various actors involved in shaping institutional processes becomes key to the institutional analysis process. In line with the above, investments and materials invested in hydraulic property creation need to be interrogated and analysed in order to grasp the levels of contribution by the different actors; and the processes and types of claims they have for making such investments, as well as the defensibility of such claims in light of competition. Various actors, i.e. women, men, rich, poor, local and traditional authorities, individuals or groups' relationship to institutions are often shaped by their experiences and other social relationships (both formal and informal) within local and external spheres (Nemarundwe, 2003:54). Their actions need to be interrogated in the context of their history, economic activities, ethnicity, age, and gender so as to understand how action observed at a particular time at the local and intermediate level is a product of and has some effect on the wider political economic and social systems and institutional framework (Long, 1977). Hence, there is need to analyse historical processes and social relationships and how they impact on property right creation and institutions for water use and management. Socio-economic differentiated data is required for the understanding of how property rights and institutions influence or are influenced by actors belonging to various socio-economic categories that can be defined along ownership of land, livestock and water, type/level of investment, as well as other variations in wealth status among community members.

Identifying institutions and their membership is a major methodological challenge in a context where there are both formal (often visible) and informal (often hidden) institutions. This study maps out institutions and related structures in Sekororo and Mzingwane in an effort to understand the significance of local and external institutions on defining patterns and processes of property rights creation, and resource access and use. Within the institutions, actors have different interests, beliefs, agendas and power. In mapping and tracing the genealogy and processes of property rights creation and institutional arrangements, attention is paid to who participates in the formation of which

institutions, who are members of which institutional structures and why; and who has what rights and what and how much did they invest to secure such claims?

Other methodological issues relate to how boundaries have been defined within the context of a catchment/hydrological zones. The bio-physical boundaries of quaternary catchments in the two study sites were defined by and through operationalisation of policies and legislation relating to the National Water Act (1998, South Africa) and the Water Act (1998, Zimbabwe). While the biophysical catchment was defined by policy and legislation as stated earlier, this study attempted to define the social boundaries related to multiple and single resource use within the confines of the two study sites. It is assumed that defining the precise biophysical boundaries limits the understanding of how people in communal areas share natural resources within and across local, intermediate and global levels. I chose catchments as the broader delineating boundary for my study sites, starting with the Limpopo Basin, then Olifants catchment and quaternary catchment B72A and B72C in South Africa, and Mzingwane Catchment Council and Shashe Sub-catchment council in Zimbabwe. To augment the challenges beset by purely hydrological catchments, I then decided to use administrative boundaries at the local level such Wards and Villages. The reasons why I chose both hydrological catchments and administrative boundaries are given below. Watersheds delimit catchments within which water flows into streams that merge to form rivers, delineating sub-basins and basins that appear to clearly define boundaries for water management. Bruns (2007:33) argues that as water becomes scarcer in a basin, the scope of interaction and competition between users increases, increasing the need for, and potential benefits from, coordination among those sharing a common resource. However, other factors blur the seeming clarity of basins as management units (Cleaver and Franks, 2003; Bruns, 2007). In some cases administrative jurisdictions such as; municipal, district and provincial boundaries, transcend hydrological basins. Conceptual frameworks for integrated water resources management (IWRM: Agarwal et al., 2000; Rogers and Hall, 2000; Bruns, 2007:35) “offer the appealing prospect of coordinating solutions to many of these complexities, but may presume or be interpreted to require ambitious projects for design and implementation of elaborate new institutional arrangements”. From a community

perspective, however, if negotiation is costly, it may be most important to engage those affected, and are able to contribute to solving an immediate problem and crafting coalitions within and between communities (Bruns, 2007). Following Bruns's observation, the most relevant scope may be to cover a problemshed (Halaele and Knesse, 1973) rather than necessarily including an entire river basin or comprehensively integrating water resources management. Rather than clearly defined boundaries and complete membership, the immediate challenge from a community perspective may be to form an ad hoc coalition among a fuzzy set (Kosko, 1994) of people with widely differing stakes in a problemshed. Thus, both the hydrological and administrative boundaries/catchments were employed in this study (from the hydrological greater Limpopo basin, catchments and quaternary catchments to the administrative districts, municipalities, wards and villages).

3.2.3. Research strategy

Using a combination of ethnographic, participatory, key-informant and in-depth interview techniques, I carried out comparative studies (by comparing and contrasting) of institutions, policies and infrastructure investments to determine the processes and impacts of hydraulic property creation. While the empirical field research was designed at the quaternary and sub-catchment level, focusing on specific processes and patterns of investments, property creation and arrangements in water resources management, review of policies, legislation and other relevant materials was extended to national and basin wide application. A multi-method approach was adopted in order to produce detailed analyses of various stakeholders' strategies in influencing or getting around both formal and informal institutional constraints, while negotiating access to water access and investments in hydraulic property. I consulted and interviewed staff from local, district and provincial agencies (and where necessary national agencies), non-governmental and private organisations, and international donor organisations and institutions with responsibilities for water resources and management at the local level. Owing to the largely qualitative nature of the data generated from the study, the narrative approach is employed to present the data (Scott, 1985; Carr, 1986; Roe, 1995; Fortmann, 1995; Nemarundwe, 2003: 55). This is also compounded by the objective of my study to show

processes of investments in hydraulic infrastructure, the interactions and relationships of institutional structures, and the powerplay in these negotiations and contestations. Quantitative data was drawn from the hydraulic property and water use surveys, which were undertaken in 2008 in Sekororo, South Africa, and early 2009 in Mzingwane, Zimbabwe.

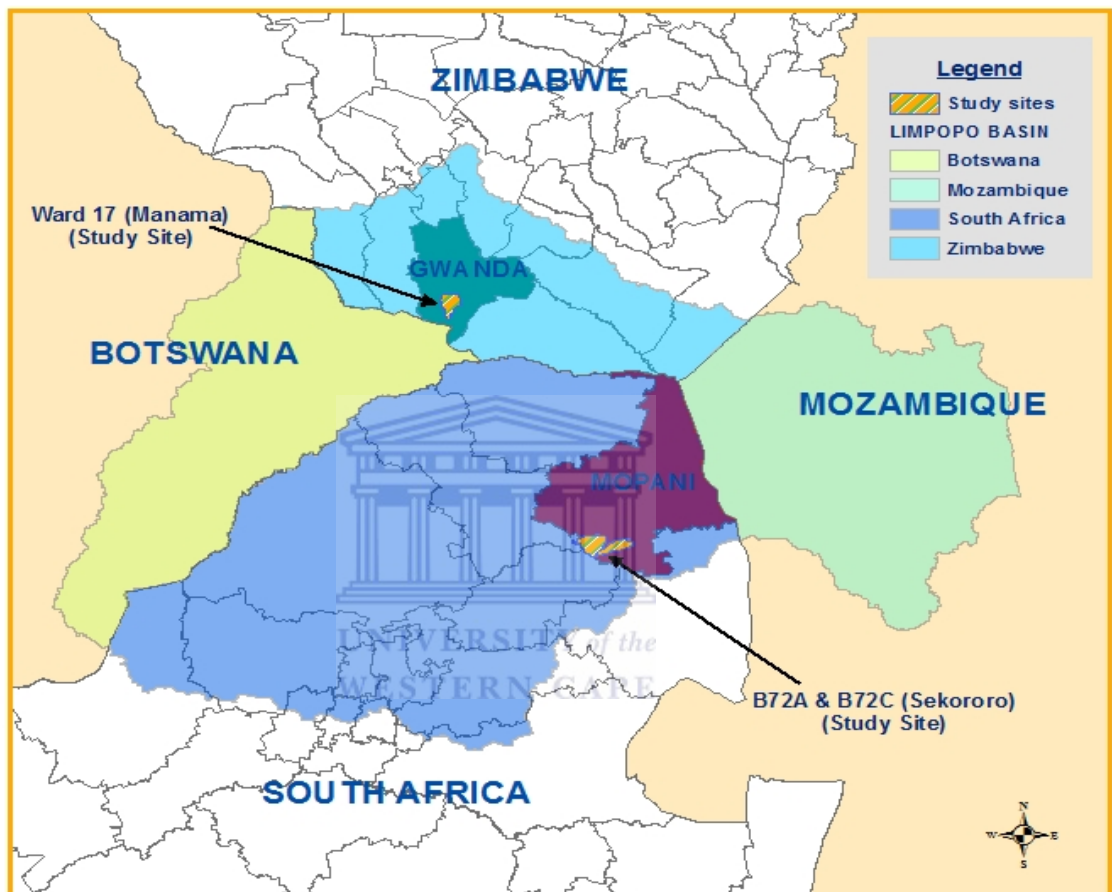
3.2.4. Identification and location of the study sites

The study was carried out in the greater Limpopo basin covering quaternary catchment B72A and B72C of the Olifants catchment management area in South Africa, and Shashe Sub-catchment Council of the Mzingwane Catchment Council in Zimbabwe. In South Africa, the study sites fell under the Maruleng local municipality, of the Mopani District Municipality. In Zimbabwe, the study site fell under Ward 17 of Gwanda Rural District Council. It should be emphasized here that the selection of study sites was based on the concepts of both hydrological and administrative boundaries. The justification for choosing a mix of hydrological and administrative units of analysis is given under section 3.2.2. Figure 3.1 below shows the politico-administrative units (districts) and hydrological catchment within the Limpopo Basin, and catchments on both the South African and Zimbabwean sides of the Limpopo.

In South Africa, research was conducted in Sekororo (quaternary B72A and B72C of the Olifants catchment management basin) in Mopani District, and Gwanda (under the Shashe Sub-catchment Council of the Mzingwane Catchment) in Gwanda district in Zimbabwe.

Specific details about each study site within the two countries are presented in sections 3.2.4.1 for Sekororo, South Africa, and 3.2.4.2 for Gwanda, Mzingwane, Zimbabwe.

Figure 3.1: Map showing administrative districts in South Africa and Zimbabwe within the Limpopo basin.



3.2.4.1. Sekororo - Letsoalo (Sekororo), South Africa

The study was carried out in quaternary catchment B72A of the Olifants river basin, which is part of the Limpopo basin. The basin is situated in the north-eastern part of South Africa. The Limpopo province is among the three least developed provinces in the country and has the lowest (0.49) Human Development Index (HDI), as reflected by the UNDP (2006). More than half (60%) of the population live on income less than the poverty income. The predominantly rural socio-economic landscape of Limpopo

Province reflects the inequalities inherent in much of South Africa's economy. Agricultural productivity is hampered by poor soil quality, markets, meager water resources, and inadequate water infrastructure development. The main stable sources of income are pensions and welfare subsidies from the government. Small-scale rainfed and irrigation subsistence agriculture provide a significant part of food requirements in good rainfall years (Magombeyi and Taigbenu, 2008; see also Manzungu et al, 2010).

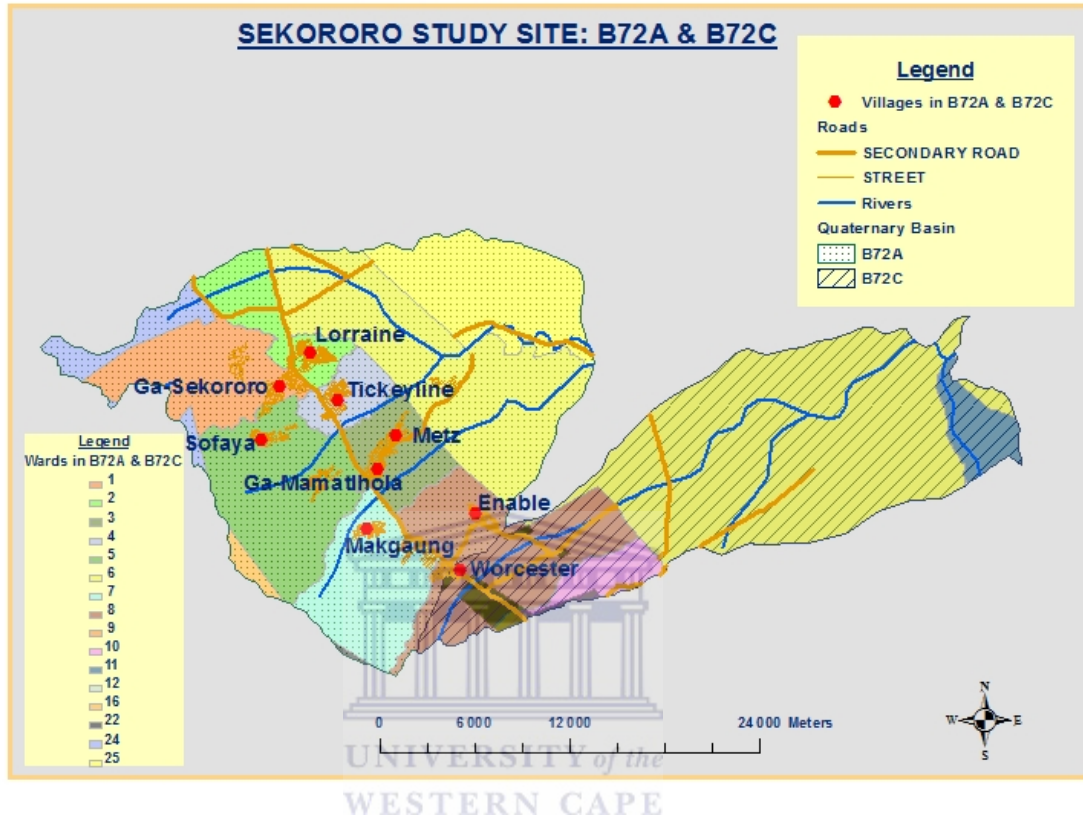
Sekororo-Letsoalo area is located within the quaternary catchment B72A of the Olifants River Basin, which is about 60km from Tzaneen in the Limpopo province. Eighty percent of the area falls under the former Lebowa homeland, which has an estimated total population of 56 000 (Magombeyi and Taigbenu, 2008). The study was carried out in four villages, which represented different levels of water endowment and water investment. This area is part of the Sekororo tribal authority and Letsoalo tribal authority and is located in Maruleng Local Municipality, Mopani District Municipality. The study area is composed of 14 villages located in the B72A quaternary catchment: Balloon, Bismarck, Enable, Ga-Sekororo (which includes Moshate and Mahlomelong), Lorraine, Madeira, Makgaung, Metz, Sofaya, Ticky Line (also called Hlohlokwe), and Turkey zones 1-4. According to Bohlabela district Water Services Development Plan (WSDP) the total population of these 14 villages was 56510 inhabitants in 2002 (Bohlabela district WSDP, 2003). Villages have different access to water resources depending on the distance from the mountains. Information of distance from the mountain was used as the basis for selection of villages where primary data was collected.

Table 3.1: Main agricultural areas in quaternary B72A quaternary catchment (and B72C for Worcester village)

Main Areas	Rainfall and Water Sources	Geology and Soils	Land Use and type of farming	Villages
Drakensberg mountains (altitude >600m)	Rainfall >700mm lots of springs		Nature reserve on the top, hillside farming on lowest slopes	Sofaya*, Madeira*, Turkey*, Ga-Sekororo*
Central plain, north of Makhutsi River	500-700mm, boreholes (60-80m) Makhutsi river	Alluvium, deep sandy loam soils	Commercial farming (tropical fruits, vegetables) Emerging farming	Trichardsdal, Calais, Nasionaal
Central plain, between Makhutsi and Malomanye Rivers	500-700mm in the West and <400mm in the East Wells, rivers, boreholes, irrigation canal	Makhutsi gneiss Deep clay and sandy soils	Small-scale irrigation farming (maize in rainy season, vegetables in dry season) Cattle grazing, dense settlements	Balloon, Sofaya, Ga-Sekororo, Lorraine, Tickyline, Madeira, Mertz, Makgaung
Central plain, south of Malomanye river	<400mm, Wells, no permanent rivers	Harmony granite, draining sandy soils	Small scale dryland farming (maize in rainy season) Human settlements	Turkey, Enable, Ha-Fanie, and **Worcester
Eastern plain	<400mm	Harmony granite	Game farming or extensive cattle grazing, nature reserve	Sparse farms

*Adopted and adapted from Mapedza et al (2008:12). *People from these villages have access to mountain slopes for farming. **Worcester is the only village in the study area that falls under quaternary B72C.*

Figure 3.2: Main Wards and Villages in B72A & B72C

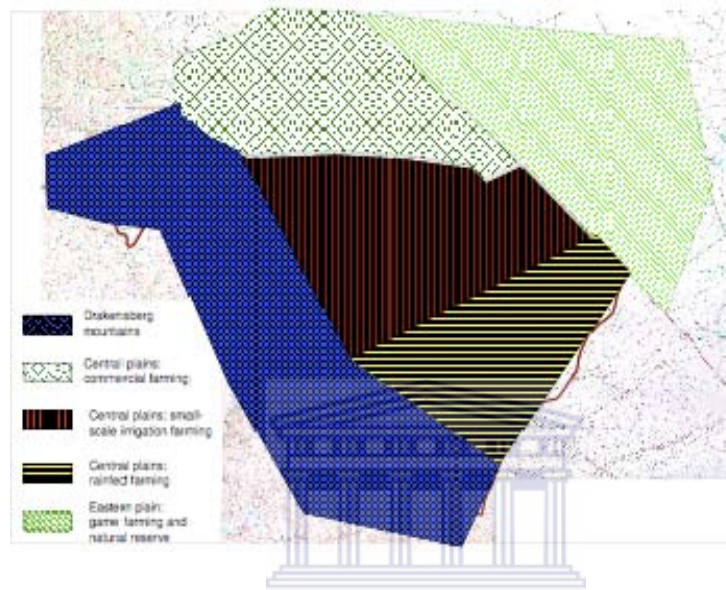


Research was conducted in four villages: Enable, Lorraine, Sofaya and Worcester. Worcester is the only village that falls within quaternary B72C. The map shows the administrative wards within the two quaternary catchments.

Figure 3.3 below shows the agricultural areas in quaternary B72A where game farming and preservation of nature are practiced on the eastern plain (marked in light green). Rainfed farming (marked in black & yellow), small-scale irrigation (shaded black & red) and commercial farming are practiced in the central plains (shaded chequered green), and shaded in blue are the Drakensberg mountains. The four study villages were selected based on annual rainfall, with Sofaya and Lorraine receiving (500 - 700mm) and are closer to the Drakensberg mountains, while Enable and Worcester villages receive (<400mm) rainfall and are further out from the Drakensberg mountains. It was assumed

that these villages are representative of the greater Sekororo (with a mix of relative water abundance and scarcity).

Figure 3.3: Agricultural Areas in Quaternary Catchment B72A



(Source: WaterNet/IWMI, 2009)

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The villages fall into wards 1, 2, 3, 4 and 5 of Maruleng municipality (Census 2001 boundaries). Wards 1, 2 and 5 are partly included in B72A. Wards 1 and 2 include some commercial farms; ward 5 includes commercial farms, private game reserves and part of other quaternary catchments. Ward 3 and 4 are completely included into B72A. The total population of these 5 wards was 59319 inhabitants in 2001. In order to select villages from which the sample was selected, it was necessary to stratify households based on water access and distance from the mountain. We assumed that the level of present water services is a determinant of willingness to pay for water services. From previous studies (Kanyoka, 2008; Magombeyi, 2008) in the area we also know that access to public water services vary across households. The only reliable and exhaustive information available on access to water services in the area is at ward level (Census 2001). Household information on water access is not available at village level.

Although 85% of the total population in South Africa has access to tap water, there is great variation in access to water across districts and rural and urban areas. In some rural areas, approximately 30% or less have access to tap water (Stevens, 2007). In the former homeland areas of the Olifants River basin, 45% of the population has water access which is below the RDP standard (Lefebvre, 2005). As is the case in many former homelands in South Africa, infrastructure development in Sekororo-Letsoalo area is very low and water and sanitation services are very poor. In 2002, it was reported that 73% of the population consume up to 10 litres of water per capita per day (Maruleng Municipality, 2002; Panesar, 2006). In addition, only 10 percent of its population is considered to have reliable access to water (Panesar, 2006). The economic and social water scarcity, the general prevalence of poverty and the informality of water in Sekororo, as well as the fact that the Challenge Programme on Water and Food Project number 17 which partly funded field research operated in the same area, rendered Sekororo as a suitable research site.

3.2.4.2. Ward 17, Mzingwane, Zimbabwe

The study took place in Gwanda District, which is situated in the South-West of Zimbabwe in Matabeleland South Province. Lying midway between Bulawayo and Beitbridge and abutting Botswana in the south, the district is situated within a hot, dry area that is subject to periodic droughts. The soils are generally light and sandy and the ecosystem is fragile. From an economic point of view the district is relatively poorly endowed and cannot support arable agriculture in a secure and sustainable manner (ICRISAT, 2008). The primary source of income and wealth is cattle, either managed on a commercial basis or, more generally, as part of subsistence agriculture practised by the district's peasant population (ICRISAT, 2008). There is some mining activity to the north of the district and a large cement factory. Otherwise the district is overwhelmingly agricultural and has few large settlements. Gwanda Town, the capital of the province is situated to the north of the district but is administratively separate from the Gwanda Rural District Council.

Figure 3.4 below shows the map of Ward 17, Manama in Gwanda District.

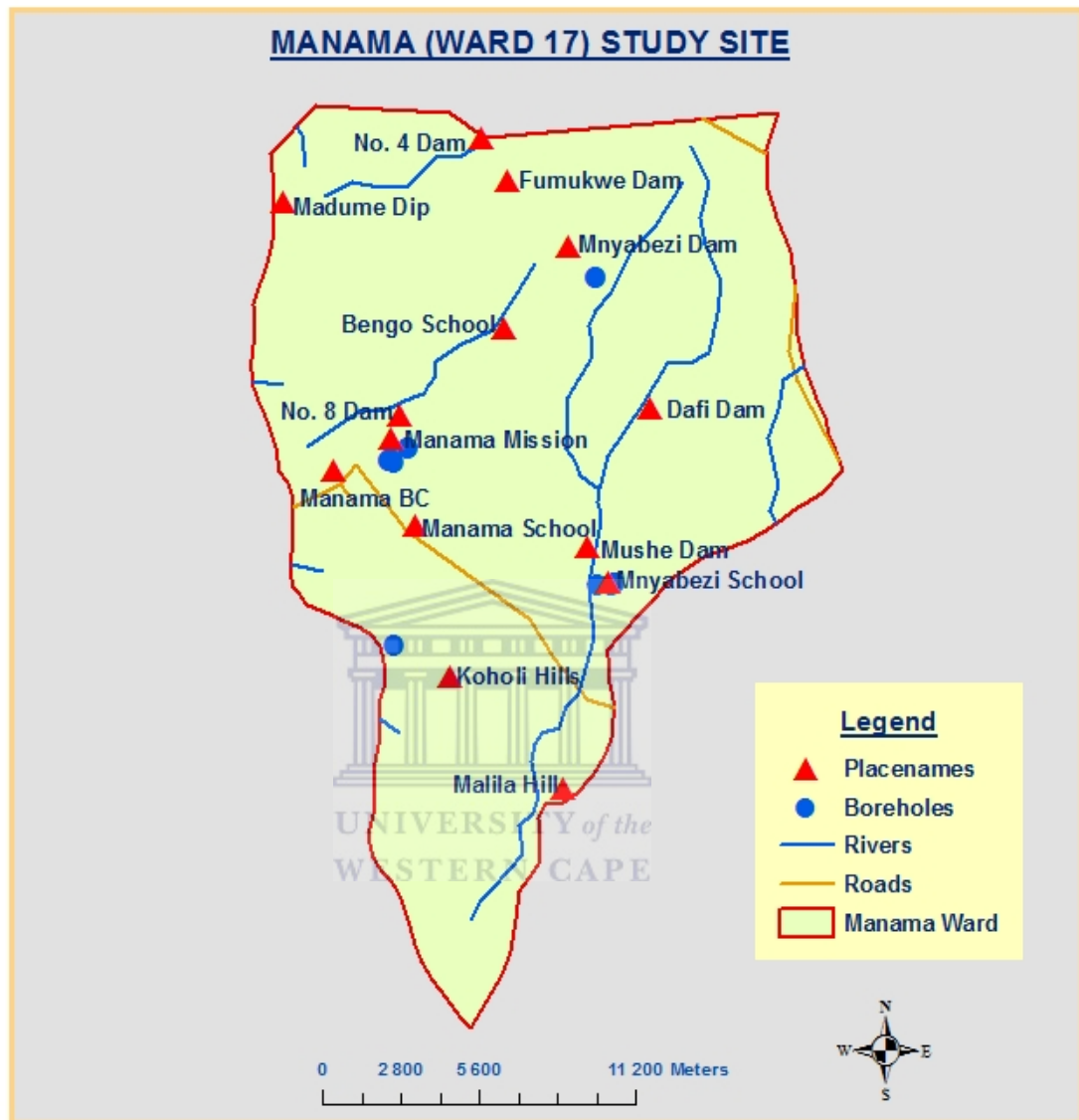


Figure 3.4 above shows the main place names such as dams, schools and diptanks as well as rivers and District Development Fund (DDF) boreholes. Private boreholes and those funded by Non Governmental Organisations (NGOs) after 1999 are not reflected in the database, hence could not be plotted on the Manama map as they are not geo-referenced. There was hardly any socio-economic and hydrological data on Gwanda, (Ward 17) hence this study will, in a small way, contribute in creating such data. The economic and social water scarcity, the general prevalence of poverty and the informality of water in

Gwanda district, as well as the fact that the Challenge Programme on Water and Food Project number 17 which partly funded field research operated in the same area, rendered Gwanda as a suitable research site.

The district's population was recorded as 119 744 in the last Census (2002:74). The vast majority of this population lives in communal land areas which, essentially, surround a belt of commercial farms around Gwanda Town and to the east around West Nicholson. There is one small-scale commercial farming area and one Safari area. The four villages: Fumukwe, Humbane, Mnyabezi D and Magaya where fieldwork was conducted are based in ward 17 (Manama) of the district's 23 wards. Ward 17 has a total population of 6 302, where 2 812 are males and 3 490 are females (Census, 2002:74). The total number of households in Ward 17 was recorded as 1 226, with an average household size of 5.1 (Census, 2002:74).

3.2.5. Research Methods

To address the issues raised by the research objectives and questions in any meaningful way required that the study use a range of methods from the social sciences. The level of analysis required ranged from detailed and in-depth case studies and interviews of households, groups and other social interaction over resource use to broader investigations to assess and tease out general views, perceptions and responses about particular issues. Multiple research methods and sources of evidence were used in order to capture the discourses and practices of the different actors. Triangulation was built into the data collection process so as to verify data collected. Participation in community gatherings such as meetings, weddings and church services was also important in the data gathering process. Residing in the study villages during fieldwork helped in establishing rapport with community members, providing leads and it facilitated the development of extensive social networks. Research methods used are presented in Table 3.1, followed by a detailed description of each of the methods.

Table 3.2 *Research methods, sources of data and unit of analysis*

Method	Properties	Sources	Unit/level of analysis
Resource (availability, access and control) and institutional mapping	Water resources, tenure and access to resources, legitimacy, Gender grazing and garden land, boundaries	Participants at village discussions and meetings; village leaders; women; water point committee minutes and records; RDC and local & district municipality offices; DWA and ZINWA offices;	Ward; Village; Household; Individual
Transects	Boundaries, land holdings, resource availability	Village members	Household, Village
Participant observation	Local practices, interactions, gossip, conflicts, gender, power relations	Meetings, workshops, role-plays, churches, funerals, parties, and informal gatherings such as bars and local taverns; food relief distribution	Village, Household, catchment and sub-catchment councils; local and district municipalities
Key informant interviews	rule-setting, compliance and enforcement, mediation, access, tenure, policy reform and implementation	Village, local & district municipalities, sub-catchment and catchment councils, provincial and national government water departments, archival records; NGOs	household, village, district, sub-catchment and catchment levels
FGDs	investments and materials invested, tenure security, gender, participation, conflict, sharing arrangements; power dynamics	ordinary women and men, boys and girls; traditional & elected leaders; project members and non-members; NGOs	Household, Village, Ward

Historical narratives	Investments; Tenure; Settlement history; Conflict and mediation	Traditional & elected leaders; community elders; archival records	Village; Ward
Case histories	Settlement history, resource availability, leadership, interventions	traditional leaders, the elderly, archival records	village, clan, household
Wealth ranking	Wealth indicators (livestock, income, land, equipment, water infrastructure)	PRA workshops, FGDs, traditional & elected leaders, interviews	Village Household
Historical trends	Resource availability, development and use	FGDs, PRA workshops, RDC, municipality, traditional & elected leaders, archival records	Village, Ward, catchment & sub-catchment, local & district municipality
Actor linkage matrix	Institutional interactions; power relations	Elected & traditional leaders; NGO and extension officers; water- point committees; catchment & sub- catchment councils; local & district municipalities	Village; Ward; District/municipality
Gender analysis	Division of labour; asset ownership; leadership; access	PRA workshops; community gatherings; meetings; households; NGOs; document review	household; village; catchment & sub- catchment council; local & district municipalities
Role-plays	intra & inter household relations; institutional interactions; power dynamics	participants at PRA meetings	Village; Ward

3.2.5.1. Narratives, village meetings and focused group discussions

Narratives are stories common to a group of people and they are called upon when needed, a basic resource that can be controlled. Locke et al (1999) argues that it is important to know who controls the stories in narratives, while Roe (1991) talks about narratives and counter-narratives. Roe (ibid:296) defines narratives as "*...caricatures of reality, but there is no pretence otherwise for many of them ...indeed when one story more than others becomes the way we articulate our feelings or make sense of the uncertainties and ambiguities around and in us, then the force of the narrative in question becomes compelling*". Adams and Hulme (1999) find that such narratives are operationalised into standard approaches with widespread application, often leading to the standardised blueprint approaches to planning that have been widely criticised. This thesis proceeds from the assumption that there are multiple narratives that prevail over the use and management of natural resources. The dominant and well-known narrative concerns "*externally derived notions of use, while the locally derived narrative is quite distinct and highlights adaptive and sustainable use behaviour*" (Sithole, 1999:43). However, as stated by Mukamuri (1995), there are various narratives which he calls text which can be manipulated and vary between and among various categories of social actors. In the thesis, cognisant of the arguments presented above, I placed emphasis on identifying particular sets of ideas, attitudes, perceptions, conceptualisation of, and views about water access, hydraulic property creation and institutional arrangements; and how these have been and are being contested and negotiated locally from within and from outside.

Mukamuri (1995) finds that people's responses can be defined as text that is socially constructed out of regular negotiations and contests. Fortmann (1995; see also Sithole, 1999) also discusses the use of stories as discursive strategies used by individuals or groups. Thus Rappaport (1995) refers to dominant narratives that are stories that everybody knows and these stories form the backdrops against which more localised stories are told. In using narratives, one has to be careful especially where narratives are based on traditional norms and practices. Sithole (1999) argues that such narratives can be taken for granted as social and political history yet they are not. For Locke et al

(1998) claims by different people for ownership of a resource emphasise aspects of truth since rights in a resource are highly ambiguous and contextual. The dominant source of information for this research was the use of individually or group constructed accounts and stories. In many instances these stories had multiple and embedded narratives about different issues and concerns facing the local people.

Following after Sithole (1999), discussions were divided into village meetings, focused group discussions and key interviews. Village meetings were much bigger gatherings that were convened during the early days of consultations and immediately after the research was initiated. The people who attended these village meetings were drawn from the village in which the meeting took place, and attendance for the meeting was open. In Mzingwane, it was easy for me to organise such village meetings, where as in Sekororo, I had to often arrange such village meetings to coincide with other key events that brought villagers together to such civic meetings. In many of the smaller meetings, the village was divided into age groups or by gender to facilitate greater participation rather than to focus on differences between social groups. Figures of attendance varied between 28 to 86 people at each big meeting while numbers could be as few as five people or as many as 14 for smaller meetings. Follow-up meetings held in the villages often confined discussions to a village unit under an induna. Attendance of women was much greater than of men, however, in the large village meetings, despite the assistance of a facilitator, women's participation was rather limited, consequently, such large meetings were only useful for consultation purposes and introductions. Real discussions were held in small focused meetings.

Focused group meetings were well attended and exceeded two thirds of each village at each sitting in Mzingwane (owing to low population density and to expectations of what might come out). In Sekororo, such meetings were attended by more than one third of the village; women had more interest and willingness than men to attend such meetings. While methodologically, the group meetings were a challenge, they exposed the researcher to the diverse views, preferences and priorities of different groups on a wide range of issues in the villages. Thus such groups were used to observe what Goebel

(1998) called the "*fault lines*" of power and the social dynamics within the village. However, the public nature of group meetings meant that there was a possibility to promote dissident views held by a small (and often powerful) group while silencing the majority views. Fortmann (1995:2) suggested that meetings of this nature are forums for discursive strategies where stories are an important "*oral manifestation of local discourse seeking to define and claim resources*". Responses at a village focused group meeting are therefore part of an existing or starting negotiation process where people reaffirm or assert views about different claims over resources or processes that are occurring.

Dissident views expressed by individuals within the groups reflected the polarity of interests within the community and were used as foci for further exploration on process and relationships between and within groups. Meetings and focused group discussions offered the researcher the opportunity to identify allegiances between groups, for example, observations were made on: which people were allied to which individuals or institutions, which people tended to support each other no matter what, which people were trying to suppress information and what information was being suppressed? Gestures such as sarcastic coughs, laughter, groans, grunts and facial expressions were also quite revealing while certain individuals or institutional representatives were making contributions. Such nuances were used to differentiate between narratives and counter-narratives. To follow-up on these subtle nuances, key interviews and more focused discussions were held with specific individuals representing or supporting a particular narrative to complement data generated from group discussions.

3.2.5.2. Key informant interviews and case histories

The purposive selecting strategy was used for identifying key informants. Variables taken into consideration in the sampling of key informants are gender, wealth, leadership position and in-depth knowledge of the area; as well as participants representing particular narratives identified during group meetings and focused group discussions. Unstructured and semi-structured interviews (see appendix) were undertaken with key informants including older members of the community, people active (and inactive) in

community institutions, ordinary people who use water resources in general, and those active in hydraulic infrastructure investments. Because of the sensitive nature of information about natural resource use conflict, levels of investments and materials invested in hydraulic infrastructure, this information was gathered through key informant interviews as it was deemed too sensitive to be discussed in a group setting.

Case histories were used as a basis for understanding natural resource use, struggles and strategies in the study areas. Elderly people deemed knowledgeable of the area and the history of settlement were interviewed to generate case histories. The snowball method together with the experience of research assistants who lived in the study area were used for the identification of key informants (the elderly and knowledgeable people) (see also Nemarundwe, 2003). The snowball method involves identification of, for example, one respondent deemed knowledgeable on a particular topic. After discussions with her/him, she/he is asked to identify other potential respondents on the topic being discussed and the same is done with each of the latter respondents. During fieldwork, after four or six case histories, the same names would come up when a respondent was asked to identify other potential respondents. Of particular interest, there seemed to be much fewer elderly people above seventy years in Sekororo than were in Mzingwane. The challenge of using case histories as a research method is that recollection is selective and often filtered (Sithole, 1999; Nemarundwe, 2003). When recollecting the past, it is seldom that the past is reconstructed in accordance with present ideas. Nemarundwe (2003) argues that in most cases important episodes or worst experiences are easily remembered. This approach was important for my studies because the struggles over property rights stories, histories and narratives constitute struggles over meaning from different stakeholders. To augment the limitation of selective or filtered recollection, I used archival records to triangulate and relate with the ground-truthing from the settlement and resource histories gathered with key informants.

3.2.5.3. Participant observation and role-plays

The power relations of actors, which may have a direct or indirect impact on institutions that manage resources are embedded in contested and contrasting discourses. Institutional arrangements often symbolise contested terrains between and among various actors (as groups or individuals), communities versus state, settlers versus immigrants, women versus men, and rich versus poor (Moore, 1996). Such contestations are often not expressed verbally by the actors or discussed publicly (Nemarundwe, 2003:64), but observations of interactions may yield important insights into how such relationships impact on resource management institutions and patterns of access to water by women and men. Participant observation was found useful in this study to tease out such hidden and often unspoken actions loaded with meaning. For example some of the information in this study was received through confidential voluntarism, gossip and the rumour mill within the study areas about certain alliances and enmity, hence, observations at meetings and discussions were useful in determining whether such confidential voluntarism or gossip had some basis on which they were founded. While participant observation is sometimes romanticised, it is worth noting that a stranger very rarely becomes fully part of the society that s/he studies. As Cheater (1986:22) argues, the 'social distance' based on class, race, education, culture, language and power is never really closed. This social differentiation makes total participation impossible. Participation and observation in community activities does not yield much usable data on its own, hence, it was necessary to ask questions in addition to observing activities. In instances and gatherings such as funerals, parties and churches it was improper to take notes and thus documentation was done immediately after the gatherings when the researcher and assistants would be alone, and while information gathered was still fresh in the mind.

Role-plays were developed and used in the study. The role-plays or drama were acted out by members of the community to show situations, relationships or events that occurred in the past (and present) in relation to resources management and use. Households were reluctant to discuss issues related to relationships, sharing arrangements and processes of negotiation for resources. Role-plays were used in the research to examine intra and inter-household relations as well as intra- and inter-institutional

interactions and relations over water access and use. In this method, villagers organised themselves into smaller groups and performed small plays that portray situations emanating from the checklist used by the researcher. The role-plays were highly interactive and wider participation clarified some issues and added aspects and new dimensions to the portrayal that would have been missing. After each role-play, the community interpreted the role-play and discussed possible outcomes of the contested issues and reasons were given for the interpretation (also see Sithole, 1999). In each role play it was possible to map relationships between actors and consider how participants interpreted (and debated) the role-play. The use of role-play was to collect information on processes of negotiations over resources, interactions between various users and behaviour norms or practices that are often described as mundane and remain hidden in discussions about natural resources use. For example role-plays were particularly useful for eliciting data on socio-economic status, sharing arrangements, networks and alliances running through the empirical chapters (4, 5, and 6).

Role-plays were performed by small groups of people, sometimes mixed groups of women and men and other times divisions of the groups was made by gender. These divisions proved useless because once people began to interact with the play, this was irrespective of gender because women started playing men and vice versa. Women are more willing to perform compared to men. However, though men took longer to organise their role-plays they still participate. Four role-plays were performed in each village during the two-year phase of field research. In many instances use of the role-plays proved doubly rewarding to the research as it gave back something to the community. As most role-plays were of current and past events, some of these were used to clarify ongoing (as well as futuristic) discussion and negotiation over resources amongst groups. In other cases they became the foci from which decisions about natural resources were made. Used in this way, role-plays were therefore similar to Forum Theatre or theatre for development (Boal, 1985; Cornwall et al, 1994). Boal (1985) describes theatre as necessarily political, because all the activities of man are political. As Boal (1985) states, the role-play becomes the rehearsal for action.

3.2.5.4. Hydraulic property and water use survey

One questionnaire was used in the study to generate qualitative and quantitative data on which broad generalisations could be made. Questions included in the questionnaire ranged from basic questions focusing on household characteristics, wealth and income data, to specific and more focused questions on claims/entitlements/rights to water based on investment in and maintenance of infrastructure that abstracts, stores and conveys rain/surface or ground water. It also included some questions collecting data on perceptions and views about use and management of water in informal economies. The questionnaire was pre-tested in neighbouring villages by trained enumerators together with the researcher. The pre-testing was done in adjacent villages to reduce respondents in the four villages of focus in South Africa and Zimbabwe. After the pre-testing, corrections were made to the questionnaire. Interviews were conducted between November and December 2008 in South Africa, and early January 2009 in Zimbabwe.

The questionnaire was designed after the initial participatory research appraisal activities that were done earlier from 2006 and towards the very end of the first and second phases of primary data collection in 2008. Terms and uses of resources were standardised on the basis of this early work. Overall, I worked with the same research assistants that I engaged from the beginning, who were again trained in administering the questionnaire. The training occurred over a period of one week in South Africa where as in Zimbabwe it took four days. The research assistants in Zimbabwe were very highly literate and comprehended the questionnaire, one male and one female. The male was a former temporary teacher and the female was a school leaver who passed her ordinary level examination. The choice of research assistants was based on literacy and facilitation skills. All the research assistants were privy to the ongoing discussions within their village about resource use and were themselves participant observers at meetings and events to which they became key informants. In South Africa, I had one male and three female research assistants owing to the uneasiness and reservations most female respondents had about fear of intrusion and security concerns with male research assistants (this will be elaborated under section 3.2.7.). All the research assistants in

South Africa were either married or had a child, except one. Their ages ranged between 20 years and 32 years, young and middle-aged.

Questionnaires were administered in all the eight villages of the two study sites. In total 240 questionnaires were administered, 30 questionnaires were administered per village in each of the eight villages. The questionnaires were administered at household level and interviews were conducted with either spouse found at the home by the research team. However, owing to male out-migration from both Sekororo and Mzingwane, most of the respondents were women. Sampling was done randomly for 20 questionnaires while purposive sampling was done for the remaining 10 questionnaires in each village.

3.2.6. Data analysis and interpretation

3.2.6.1. Survey data analysis

Most questions in the questionnaire were pre-coded. Data from the questionnaire was analysed using SPSS for Windows. Differences from South Africa and Zimbabwe and sometimes within villages in the same country were done using descriptive statistics and Pearson Chi-Square Tests. The data from the questionnaires are presented in the relevant chapters. Some data were analysed using wealth categories derived from all the income variables included in the questionnaire. Some of these variables were numbers of livestock, type of housing, land holding, household income, and source of water. Most of the data related to wealth and household characteristics is presented in chapters 4 and 5. Five broad categories of socio-economic class were generated for the data in Zimbabwe, ranging from the wealthiest to the poorest; while in South Africa, four broad categories of class were denoted, again ranging from the wealthiest to the poorest. I should highlight here that some questions that were relevant to the study were not analysed, as the data was spurious, for example questions relating to quantities of water, some respondents gave responses such as "enough or good" where specific quantities were required. The same goes for the amounts invested and the farm budgets. Consequently, data used in the study for these issues is derived from group discussions and interviews.

3.2.6.2. Qualitative data analysis

The qualitative data generated by the study was analysed using a thematic approach. This thematic approach entailed sifting data from in-depth interviews, group interviews, focused group discussions, case histories and informal discussions according to emerging themes. Ryan and Bernard (2003:85) argue that theme identification is one of the most fundamental tasks in qualitative research and is one of the most mysterious. The focus in analysing field data hinged on discovering themes and sub-themes in texts and other qualitative data like images, photos or artifacts (see also McLellan et al, 2003). Analysing text involved several tasks: discovering themes and sub-themes, winnowing themes to a manageable few (deciding which themes are important), building hierarchies of themes or code books, and linking themes into theoretical models (see also Bernard, 1994; Ryan and Bernard, 2003). Ryan and Bernard (2003: 85-86) underscore that “...discovering themes is the basis of much social science research. Without thematic categories, investigators have nothing to describe, nothing to compare, and nothing to explain. If researchers fail to identify important categories during the exploratory phase of their research, what is to be said of later descriptive and confirmatory phases?” In writing field notes, “the researcher acts as a kind of filter, choosing (often subconsciously) what data are important to record and what data are not” (Ryan and Bernard, 2003:100). In this sense, producing field notes is a process of identifying themes. Themes in this thesis came from both the field data (an inductive approach) and from the researcher's prior theoretical understanding of the phenomenon under study. Investigator's decisions about what topics to cover, and how best to query informants about those topics, are a rich source of priori themes (Dey 1993: 98). Even with a fixed set of open-ended questions, one cannot anticipate all the themes that arise before analysing the data (Dey 1993:97-98). The act of discovering themes is what grounded theorists call open coding and what classic content analysts call qualitative analysis (Berelson, 1952), or latent coding (Shapiro and Markoff 1997). Cutting and sorting of preliminary themes from field data was time-consuming but also rewarding. After the initial pawing and marking of text, cutting and sorting involved identifying words, quotes or expressions that seem somehow important and then arranging the quotes/expressions into piles of themes that go together.

Themes are abstracts and often constructs that the researcher identifies before, during and after data collection. Themes were developed based on both relevant literature reviewed for the study and from text recorded during interviews. During the process of identifying key emerging themes the preliminary analysis involved looking for evidence addressing the main objectives and questions of the study ranging from institutional processes and consequences of interaction, values and practices, how people acquire and maintain resource rights, and some experiences and processes from catchment councils and permits to sharing arrangements. With regards to the reliability and validity of the data and thematic analysis, Dey (1993:110-111) noted, “there is no single set of categories (themes) waiting to be discovered. There are as many ways of 'seeing' the data as one can invent”. Perhaps Ryan and Bernard posed the most important question regarding validity, thus, how do investigators know if the themes they have identified are valid? They argue that “there is no ultimate demonstration of validity, but we can maximise clarity and agreement and make validity more, rather than less, likely” (Ryan and Bernard, 2003:103). Theme identification involves judgement on the part of the investigator. If these judgements are made explicit and clear, then readers can argue with the researcher's conclusions (Agar 1980:45). Bernard (1994) argues that ultimately, the validity of a concept depends on the utility of the device that measures it and the collective judgement of the scientific community that a construct and its measure are valid.

Preliminary results of the analysis were shared with local people at community meetings held between September and November 2008. The feedback meetings and briefings were held with groups in each village in South Africa. The villagers specified that they would only want to discuss issues within their village without people from other villages (outsiders) whereas in Zimbabwe only one meeting was held in the Ward with all the four villages together in one seating without problems, despite my own hesitation and fear that the meetings might have presented problems with political party representatives in the Ward. To my surprise the meeting went smoothly. The feedback meetings in both South Africa and Zimbabwe generated a lot of interest as participants reflected and commented on the preliminary results. Comments, questions and clarifications from these meetings

formed an important component of the analysis and write-up of the thesis. I also presented preliminary results at a seminar held in September 2009 at the Institute for Poverty, Land and Agrarian Studies (PLAAS), University of the Western Cape, where valuable insights and feedback was received. A research paper on hydraulic property creation was published by the Challenge Programme on Water and Food (CPWF) and presented at the CPWF conference in Addis Ababa, Ethiopia, October 2008. Another research paper was also submitted for presentation at the WARFSA/Waternet regional symposium on water held in Victoria Falls in October, 2010 and the researcher is currently working on comments from reviewers for it to be published in a special journal with facilitation from the symposium organisers.

3.2.7. Methodological challenges and issues faced during fieldwork

I should highlight that whilst catchment and sub-catchment councils were readily accessible in Zimbabwe through attending meetings and workshops of these institutions, it was not easy to access such institutions in South Africa as district and local municipalities, and department of water affairs. In South Africa I was not allowed to attend such meetings, hence, I could only access some reports and minutes from these meetings. This was a huge challenge in terms of the depth, rigor and quality of the data collected, which might also reflect in the depth of the data I have in some sections of the thesis. To augment this shortcoming, I had to liaise with some staff members who attended such meetings for discussions and interviews in order to get more insights beyond the official and often summarised statements projected in minutes and reports. Although this went a long way in addressing the challenge, I should admit it can never be the same compared to the experiences I had on the Zimbabwean sites.

Here, I should also emphasise that manoeuvring through the data at the archives in Pretoria was made difficult due to financial constraints in translating documents written in Afrikaans, while archival records were easily accessible in Harare. Some remarkable differences were also notable with the choice and number of research assistants. In South Africa, I was advised that I should have a research assistant from each village the reason

being that there is so much emphasis on physical village boundaries such that it also encroaches onto the social arena. When I asked what was problematic with a research assistant from one village working with me in other villages, the most remarkable response came from an elderly man after the first village meeting in Lorraine, he said "...why is it that no one from another village is allowed to access water from this village and vice versa? If you can confirm that is how we live here, why would you want to bring an outsider to our village...so that they know our village secrets and strategies? The same applies; our people will not get favourable responses for you if you take them with you to other villages". There was unanimous agreement at the meeting that I should have a research assistant in each village. This was also confirmed by the traditional leaders and elected leaders. Their advice appeared to be a way to increase wages and avoid jealousies within the community. Working and dealing with four research assistants required a lot more attention in terms of resources (especially finances and time) as well as the risk of having different interpretations of my instructions and guidance which might affect the data collected. I tried to cover this challenge by making extra effort with each assistant during fieldwork where we reflected on each day's activities and clarified issues. On reflection, maybe the suggestion and final decision to have a research assistant for each village worked out as an advantage in that respondents were dealing with someone they knew. In Zimbabwe's Gwanda district, however, I only had two research assistants whom I worked with in all the four villages without encountering any such problems. Finally, I was also advised to hire female research assistants in South Africa because most of the key informants were women, and that households were generally not comfortable with male research assistants for security reasons due to fear of crime.

Language was also a barrier during my exploratory field visits to Sekororo. I had to rely a lot on translations for my interactions with villagers. I started learning the local language siPedi although I should admit it was very difficult. Within six months I could comprehend fairly well especially in terms of understanding conversations and following discussions. My speech improved as well through fits and stutter. By November 2007, my ability to converse in siPedi was fairly good although I had to be corrected on use of

(past and present) tenses here and there. I am still struggling to write very good grammar in siPedi to date. Maybe some of these challenges in South Africa were compounded by being considered a foreigner usually with derogatory connotations such as *mukwerekwere* used to refer to foreigners with some resentment. In Mzingwane, my experiences were much more positive regarding language. I was not and might still not be very fluent in siNdebele but I could hold my own from the outset, given my prior-knowledge of the language. Although I tried my best to address these challenges, I feel compelled to share them as they might still colour parts of my work in ways that I might not have been able to fully control.

3.3. Conclusions

This chapter discussed the qualitative methodology adopted for the study, and the various methods used for data collection in order to triangulate the information gathered. The methodological approach adopted in this study builds on conceptual issues discussed in Chapter Two. The chapter discusses the data collection process based on secondary sources such as archival records and documents kept at both the national, district and municipal levels to augment primary data collected from the field. The discussion on historical narratives as a method for generating information on local perceptions of historical processes points to the importance of such narratives as tools for justifying individual and/or group positions in a given context. The conclusion of the discussion on the importance of historical narratives is that they are part of deliberate discursive strategies of the various narrators to articulate and assert the basis and legitimacy of their own claims to the woodland and water resources found in the study areas. Narratives are used in this thesis as an analytical tool for understanding property relations and claims. The chapter also presented background information to the study site highlighting information relevant to the process of institutional analysis in the study area. Historical data presented in the chapter is drawn from a combination of secondary sources and oral histories that were generated from key informants and archival data.

CHAPTER FOUR: POLITICAL HISTORY OF WATER - RELATED INVESTMENTS AND INSTITUTIONAL ARRANGEMENTS IN GWANDA, MZINGWANE, ZIMBABWE

4.1. Introduction

The history of colonial rule in Zimbabwe is the history of how a small white minority (never more than 5% of the total population) used land as an instrument for racial domination and appropriated half of the total land area for white agricultural production and allocate the rest less fertile land for black subsistence use⁷ (Zachrisson, 2004). Access by rural households and communities to natural resources in Zimbabwe has been greatly influenced by the historical political economy of the country. Prior to independence, in 1980, land for native black people was largely limited to Tribal Trust Lands (TTLs), which constituted the most resource-poor lands in the country. Title to these lands was held by the state, but their various uses by local people were governed by traditional authorities. During the 1950s, Purchase Areas, consisting of about 50 hectare parcels, were made available for sale to native people. In contrast to the Tribal Trust Lands and Purchase Areas, which held most of the black population of Rhodesia, a small minority of white commercial settler farmers held title to large tracts of the country's most productive farmland. This unequal land (and water) distribution was not resolved at independence and is still at the root of many issues of access to natural resources today.

Unequal access to natural resources and associated social and economic problems was at the core of a number of post-independence policy changes. Tribal Trust Lands were renamed Communal Areas (CAs); Purchase Areas were renamed Small Scale

⁷ The picture changed drastically, if not dramatically, from year 2000 to date, where almost all commercial farm land has been acquired (grabbed) by the state under controversial and questionable political and legal processes. White commercial farmers who numbered 4000+ in 1996 were forcibly evicted from the farms in the continuing attacks leaving less than 300.

Commercial Farms (SSCFs). High levels of inequity and land degradation were evident in many CAs with high population densities. This led the government to create so-called Resettlement Areas (RAs) (Mukamuri et al 2007). Government purchase of some large scale commercial farms (LSCFs) led to the establishment of resettlement area landholdings that were allocated to households drawn from congested CAs. As is the case for land, water resources also faced similar challenges.

Water rights allocated under the Water Act of 1976, and earlier acts, enacted and legally reinforced by the colonial government attached water rights to land and led to inequitable allocation and access to water by favouring European areas mainly white commercial users. The water rights were held in perpetuity and were administered by a centralised Administrative Court sitting as Water Court. The majority of potential water users in the African areas, particularly in communal areas, were marginalised, dispossessed and discriminated. The first step was to vest all water in the white state with little or no recognition of prior arrangements. With the attainment of independence this changes from white state to the black state without addressing the dispossession and discrimination, where formally everyone can apply for water rights but administrative issues remained discriminatory in practice.

In response to this anomaly, the Zimbabwe Government enacted the new Water Act of 1998, which detaches rights to water from ownership of land and requires allocation of all water beyond primary (i.e. basic) needs through permits. The Act led to the creation of catchment and sub-catchment councils with the prime role of administering water allocation and water-related disputes at local levels, as well as processing and issuing permits. The Act sets limits for water uses defined as primary and commercial. Primary use refers to water use for domestic and human needs, support of animal life (other than fish farms and animals in feedlots) and for making bricks for private use of the owner/lessee or occupier of the land concerned or for dip tanks. The upper capability limit of private storage facilities for water is 5,000 cubic meters, above which a permit is required from the Council (ZINWA, 98). The Catchment Councils have been provided with authority to set practical limits on water use in order to safeguard public interests

where deemed necessary. This system has been designed to protect communal area people to an extent, in that communal people are represented by an appointee of the Minister in cases of disputes and threat to livelihoods. Detailed analysis of the water reforms under the new Act of 1998 is presented in Chapter 7.

Broadly defined categories of natural resource ownership, access and use may not capture the complexity of rights seen in actual practice. Realities on the ground, based on unpacking and understanding how people conceptualise property rights have the potential to unmask a great degree of complexity, characterized by disaggregated and disparate access to natural resources, as well as socially constructed patterns of access. Social relationships, kinship ties, demands for reciprocity and resource availability influence local practices of rights of access, over different types and locations of natural resources. In order to understand institutions and property rights regimes for natural resources in these settings, it is important to view the interface between human and natural resources, as embedded in both social and power relations, and as a reflection of how users and resource rights holders attempt to meet their livelihood needs (Nemarundwe 2003, p. 87). In this context, a nuanced definition and analytical approach is needed for a detailed comprehension of processes and activities that relate to (different) property rights regimes, across water (re) sources and other land-use categories.

Notwithstanding the good intentions under the ‘new’ policies and legislation in the post-colony, and conscious of the historical nature of resource access, the key objective this chapter seeks to address is to document and analyse the processes and genealogy of hydraulic property creation in Manama (Ward 17), Mzingwane catchment, in terms of access, use and control of the resource, and the implications of such rights on men and women. The questions this chapter seeks to answer are: i). how do different actors understand, conceptualise and present notions of hydraulic property rights, and why?; and ii). How and in what ways are hydraulic property rights established, maintained and enforced in formal and informal economies? The chapter sets out the analyses by documenting the property rights creation processes and investments dynamics from the pre-colonial to the post-colonial Gwanda communal lands under which Manama falls. It

quantifies and qualifies the levels and dynamics of investments in hydraulic property creation through both time and space by providing nuanced details on both private and communal infrastructure developments of varying proportions spread throughout the study area. The chapter also touches on interrelationship between property rights and the emergence and evolution of formal and informal institutions.

I examined the nature and patterns of investments in water infrastructure by rural communities in Ward 17 (Manama) by employing the concept of 'hydraulic property rights creation' to understand how people, as individuals and/or as groups, assert rights over water, and how such claims become legitimised (Coward, 1986; Manzungu, Sithole, Tapela and Van Koppen, 2010:10-13). Hydraulic property rights creation, as explained earlier in Chapters One and Two, refers to the creation of value of water by means of establishing, and recognising claims to water due to investments made in developing physical infrastructure and related institutional arrangements for purposes of abstracting, storing, conveying and/ or applying water to the field. Hydraulic property rights creation may be entirely 'endogenous' (or 'local' or 'informal'). Alternatively hydraulic rights may also be based on government, formal Non-Governmental Organizations (NGOs), or other outsiders in which case they are 'exogenous'. The difference between endogenous and exogenous is, however, not always that clear-cut because local people interact with 'outsiders' in ways that blur the endogenous-exogenous dichotomy (Manzungu et al, 2010: 12).

The chapter is organised into four main sections, where the next section presents a political and historical account of infrastructure investments and development on (natural and human) resources during the colonial period. It is followed by a section on communal and private investments in water resources in the post-colonial, which is further divided into eight sub-sections. The eight subsections are organised in the following order: overview of legal frameworks governing resource access; overview of resource access in Ward 17; investments in communal water infrastructure; private investments in water; institutional arrangements; institutions and property rights; changes

and continuities and impacts on resource rights; and in the final section conclusions to the chapter are presented.

4.2. Colonial government infrastructure development and investments in water resources development

This section sketches and highlights the application, effect and influence of the colonial policies on resource access in Gwanda South, and Ward 17 in particular, and demonstrates how the legacy of some of these policies endured into the post-colonial era. Materials presented here were largely obtained from historical analysis of archival records from the Gwanda district offices and the National Archives in Harare. Key informant interviews and focus group discussions were used to ground truth information from archival records.

The big land squeeze started in earnest in 1946 in Gwanda South with the implementation of the Land Apportionment Act (LAA) of 1930. By 1948, the Native Commissioner (NC) of Gwanda reported that the LAA had failed to segregate the races neither did he think that the Act had succeeded in securing an unassailable economic entrenchment in land (Yearly Report, 1948). The NC reported that only by providing some scheme of differential occupation coupled with developing the water supplies could the reserves accommodate the newcomers, people who were forcibly removed from their former prime land and re-settled in Gwanda. This is where we notice for the first time the public development of water infrastructure in Gwanda as noted below.

By way of a combination of sinking wells, drilling boreholes and dams, based on Tuli, Shashi, Hwali and Mnyabezi river systems, water points were dug by the local people who were organised into syndicates (“fifty well-sinking gangs recruited locally”) some three miles apart. At each well, about 5,000 acres of land was allocated to 10 families (a line) and about 250 heads of cattle (Yearly Report, 1948). During this period, and through the general centralization plan of the Tuli Division, 820 families and 8,000 cattle were squeezed in Gwanda reserve, Dibilishaba Block and what was to become Shashi reserve in 1950 (ibid). The NC of Gwanda estimated that during the next five years

(1949-54) another 2,165 families with 30,818 cattle, who still occupied European area in the District had to be accommodated in the reserves (NC of Gwanda to Provincial Native Commissioner, Byo 9/2/50). This meant that families closely related moved together after having been allocated a point by the local Development officer with the assistance of the Demonstrators (NC of Gwanda to Provincial Native Commissioner 6/9/50). As the NC of Gwanda reported, by 1952 there were 413 wells and “labeled as the king-pins of the centralization”, and over 50 boreholes and dams, meant to improve agriculture production and increase the pasture for grazing (Yearly Report, 1952). The main objective of developing water infrastructure, it would seem, was primarily to make the reserves to carry double the number of people and livestock as reported by the Native Commissioner of Gwanda, thus “The goal to be aimed at in this district is that every square mile of land for native occupation be made to carry double the population” (ibid). The squeeze and control was not only of livestock and people but also of water.



Insert/plate 4.1: Continuities - date signages on boreholes in Manama, Ward 17 showing the pre (1949) - and post- (1998) independence markings when the boreholes were established.

The population in Fumukwe/Manama (Ward 17) was settled in homesteads in settlement ‘lines’ under a kraalhead (sabhuku⁸). Such lines⁹ were part of an agrarian reform with

⁸ Sabhuku is derived from the role of recording and collecting tax by the kraalhead, thus the inferred meaning: the one with the (tax) book.

⁹ The advent of these lines and the role of the Sabhukus will be dealt with in detail in the section on institutions.

roots in the 1930s, to centralise crop cultivation to blocks and arable land where surrounding areas were designated as grazing ground for stipulated number of livestock (see also Murombedzi, 1994; Zachrisson, 2004). The colonial government forced villages to move their homesteads above the rivers thereby further separating grazing and agricultural land which further split up old village settlements (ibid, see also, Holleman 1969: 54-55; Weinrich 1971: 47). The land squeeze and the new settlers diversified the ethnic composition of the population and increased the competition for resources. This resulted in congestion and environmental degradation in tribal trust lands. Ranger (1989:247) remarks “What an ecological catastrophe the resettlement of Africans in the 1950s turned out to be...Africans themselves were not brought into the picture in respect of planning and implementation”.

In pursuit of tighter control of people, livestock and natural resources, the government passed the Natural Resources Act in 1941 to enforce conservation measures out of growing concern for soil erosion in the reserves. By 1945 a five-year plan for destocking in the reserves emerged as the main outcome to avert erosion. The plan was a drastic measure that affected villagers in Gwanda South economically and socially¹⁰, and was met with resistance and evasive tactics. Such tactics included leasing of cattle to relatives and kin living in neighbouring districts what was (and is) known as *amasisa*. The unsuccessful policy of the government to limit and control livestock as part of the implementation of the Land Husbandry Act (LHA, 1951), was met with a lot of resistance by livestock owners in Gwanda South in general and Manama in particular. Such resistance and opposition to various attempts by the government to limit and control livestock through various schemes can be interpreted as resistance to the individualisation of land holding on both grazing and arable land leading to changing property rights. Such change in property rights was, and still is, a threat to people’s social and economic system, and complicates people’s negotiability and access to networks. The struggle for control of livestock between Gwanda rural dwellers and the colonial government, and efforts to introduce or impose taxation and levies on livestock by the colonial

¹⁰ Cattle played a central role in the lives of ordinary people: was a symbol of status, used for lobola, used to create social bonds, and for rituals.

government, is a pattern that still holds today in Gwanda South. As we shall see, state efforts today, as then, to impose levies on cattle ownership has taken a new dimension, and is coming in the form of cattle levy through the Mzingwane catchment council. So far the efforts to impose a “water” levy on livestock have faced stiff resistance and its success is doubtful given the outstanding challenges as demonstrated in Chapter 7 on the hotly contested issue of the planned cattle/livestock levy by the catchment and sub-catchment councils.

Increasing popular resistance to the colonial administration and conservation measures resulted in the government creating local administrative structures in 1971 in order to tighten control over natural resources and people. This development marked the beginning of the Rural Councils (RCs) and conservation areas for LSCFs, now re-enacted into Rural District Councils (RDCs). The RDCs have been tasked to oversee day-to-day local government administration of rural districts. Chiefs, headmen and kraalheads in conjunction with the (district) Native Commissioner were the key institutions regulating access, where the traditional authorities acted as both overseer and enforcer of policies in reserves on behalf of the government. Public infrastructure (boreholes, wells, dams) was wholly owned by the state and only used by the villagers with the chiefs, headmen and kraalheads as custodians and enforcers. Maintenance was done by the local government with the assistance of locally recruited (and trained) technicians. There were very few, if any, privately owned boreholes and wells during this period. The use of natural resources such as informal use of streams in the area was regulated through communal access, where each household (and village) was allocated arable land and designated grazing land, a move away from open access and transhumance practiced before the onset of colonisation. However, there have been shifts from regulated access to open access and vice versa (with varying degrees in both emphasis and application), notwithstanding government policies in the post-colonial era. The next section presents and discusses infrastructure development and investments, and the policy changes and challenges in the post-colonial era.

4.3. Communal and private infrastructure investments: policies, challenges, changes and continuities in the post-colony

4.3.1. A brief overview of the legal frameworks governing natural resource access in Zimbabwe: post-1980

With the attainment of independence in 1980, the new Zimbabwean Government embarked on a land redistribution policy that resulted in the creation of Resettlement Areas (RAs). Officially, resettlement has been embarked on to redress colonial imbalances in access to land and water resources and to decongest overpopulated communal areas. The process has continued over the years, culminating in the Fast Track Land Reform (FTLR) exercise beginning in 2000. Pre-2000 resettlement was mainly located in areas of low potential, but recent ones, following the FTLR, have been more diverse, and moved to include areas with better soils and rainfall (Chaumba et al, 2006). The recent resettlement process was initially facilitated by the enactment of the Land Acquisition Act (1992) and has since been accompanied by the enactment of various legislative enactments aimed at governing access, use and benefit sharing arrangements, over natural resources, for both CAs and RAs.

Unequal access to natural resources and associated social and economic problems was at the core of a number of post-independence policy changes. Tribal Trust Lands were renamed CAs; Purchase Areas were renamed Small Scale Commercial Farms (SSCFs). High levels of inequity and land degradation were evident in many CAs with high population densities. This led the government to create so-called Resettlement Areas (RAs) (Mukamuri et al 2007). Government purchase of some large scale commercial farms (LSCFs) led to the establishment of resettlement area landholdings that were allocated to households drawn from congested CAs. As is the case for land within the CAs, title to the newly created RAs was held by the state. However, 99-year leases were granted to RA settlers while women and men's rights to land in CAs are governed by traditional allocations and inheritance mechanisms. In contrast, titles to landholdings within the SSCF sector are held by the various individual landowners. Thus, in addition to freehold title in the LSCFs, three types of land tenure emerged in Zimbabwe after

independence, each with different characteristics. These three types of land tenure are: communal areas (CAs), resettled areas (RAs) and Small-Scale Commercial Farming Areas (SSCFAs) (also see Mukamuri et al, 2007).

In terms of development of post-independence rural institutions, the Prime Minister's directive of 1982 introduced elected leadership through Village Development Committees (VIDCOs) and Ward Development Committees (WADCOs) into the rural institution landscape where communities historically recognized traditional leadership structures. The idea, as Mukamuri and others (2007) observed, was to initiate a bottom-up approach to local governance and development strategies, and democratise local governance structures given the suspected complicity of many traditional leaders in aiding and abating colonial policies. The new development, however down-played the role of traditional leadership therefore resulted in confusion over management and allocation of communal resources. Realisation of the resource allocation impasse between newly created institutions (VIDCOs and WADCOs) and traditional leaders led the government to enact the Traditional Leaders Act (TLA) of 1998. The TLA tried to harmonise functions between traditional leaders and elected leaders, but with more power being vested in the traditional leadership structures. Of particular importance, in this context, is the re-instituted traditional leaders' power to allocate land, the basis for natural resource access. Traditional leaders also have powers to resolve natural resource and social conflicts. Elected leaders such as councillors have been relegated to the function of facilitating development plans for their areas for submission to the Rural District Councils (RDCs).

The Zimbabwe Government enacted the Environment Management Act (EMA) (2002). EMA is an overarching law that seeks to promote integrated environmental management, public participation, environmental education and environmental awareness, all within the framework of sustainable development. More important is: i). the provision for the preparation of national and local level environmental plans for the protection of the environment; ii). The setting up of the structure and division of government functions from those of numerous major players in order to allow for efficient and effective

mechanisms for coordination and cooperation among all these players; iii). Establishment of an environmental fund. Of particular interest in the context of this study is that EMA promotes incentives, focusing on resource use communities to engage in benefit sharing arrangements for efficient management of resources. Assessments of environmental, economic, social and equity-related impacts of development are an integral part of EMA allowing on-site and off-site impacts of developments to be evaluated over different time frames. How the implementation of EMA impacts on both levels of investments and institutional landscape in the water sector strikes a keen interest for this study as outlined in the ensuing sections.

At the top of the hierarchical order of functions, EMA establishes a number of statutory bodies, which include a National Environment Council (NEC) (with advisory roles), an Environmental Management Agency (EMA) (implementation roles) and an Enforcement Committee (EC) (enforcement roles). Apart from implementing ecological and conservation functions, committees under EMA are tasked with developing and implementing incentives for the protection of the environment; and coordinating the production of, on five-year intervals, the State of the Environment Report. The EMA agency will be decentralised to the local levels, with representatives at the national, provincial, district and ward levels (although this has hardly happened as yet). Decentralisation of water administration has also been given particular consideration in terms of working with Catchment and sub-Catchment Council Committees, in accordance with the Water Act (Chapter 20:24). However, catchments have been defined without taking cognisance of overarching administrative boundaries. This is likely to cause confusion and conflicts among different actors and planning authorities.

New management regimes under EMA will require local authorities to establish environment committees to recommend to the RDC, measures for environmental protection and management. The committees will be constituted by various community members drawn from wards, as represented by Ward Councilors. Environmental sub-committees will also be established and members will be drawn from two or more wards. Also important is the inclusion of traditional leadership members, who will constitute

50% of the sub-committee. This may be positive, since traditional leaders are recognized as custodians of the land (natural resources) on behalf of communities. However, their participation in key decision-making arenas is uncertain, if not piece-meal, as the tradition is that environmental issues have been the privilege of the technical sub-committees, comprised largely of civil servants.

4.3.2 Overview of resource access in Ward 17 (Manama), Gwanda South (Shashe Sub-catchment council).

There are six villages in Ward 17 (Manama), although detailed fieldwork was primarily done in four of the villages, the study generally covered the whole ward. The village boundaries in Manama Ward are agreed upon verbally and are seldom physically demarcated, neither are the boundaries between villages and wards, except on maps (often used at and by centralized bureaucracies such as local and national government, far from the lived experiences in villages). The boundaries are often and not necessarily always, major landmarks such as local streams, trees, road networks, and homesteads. In most instances, the boundaries are fluid leading to negotiable access to resources across villages and wards. The fluid nature of boundaries serves as a coping mechanism for access to resources across villages and wards, whilst nesting confrontations and conflicts both between and among residents of lines, villages and wards. As livestock is the most important resource and source of income for many households, land and its grazing potential, as well as access to water become important for our understanding of property regimes, household characterisation and how access is negotiated and facilitated in the area.

A number of features of the social landscape in Ward 17 must be addressed for understanding the nature of access to common pool resources. Social differentiation entails local variations in resource endowments, including: education, employment status, land, water and livestock ownership, as well as other variations in wealth status among members of the community. From the fieldwork the researcher carried out, one can denote five clusters of households in Ward 17 (Manama) depending on their access to

resources (land, livestock, water, and on-off farm equipment) which have inferences and a bearing on social relations and property rights.

Table 4.1: Some Household Characteristics in Ward 17

Cluster (household typology) & percentage of hhds involved. n=120	Livestock	Land	Access to Water	Main cash income source	Participation in local institutions
Salaried and cattle rich households. Main breadwinner in these households, usually a man, inherited some of the cattle 10-15%	Livestock-rich families with 35-60 cattle, more than 15 donkeys, 80- 200 goats, 20-30 sheep.	Cropping land more than 5 acres; have a riparian garden and a homestead garden.	Have a private borehole within the homestead, and often another at the garden.	Salaried with a good formal job: teacher, civil servant, and often works in town. Invests salary in livestock, owns/rents a store/grinding mill.	Sometimes hold superior positions in committees when they accept nominations, but often they hardly want any involvement (very busy and don't have the time) except after retirement or when their interests are threatened.

Have 1 or 2 migrant workers (in town or across the border), local govt employees, war veterans, extension staff, retirees and pensioners. Brick under corrugated tin/asbestos, painted house, more than four rooms.	Invested in livestock, 10 cattle, 12 donkeys, more than 50-80 goats, several poultry	Cropping land 3-5 acres, have access to garden land	Access to communal boreholes, dams, have own (un) protected well, drums for fetching & harvesting water.	Remittances from sons/daughters or spouse.	Usually office bearers in local committees i.e. chairperson/treasurer. Participate actively with some (paid) travel to meetings. Nominated and voted by majority at meetings.
Usually headed by men, have brick house with four rooms or less. 20%	More than five cattle, full-spun of donkeys, 30-50 goats, some sheep, poultry, a scotchcart,	Cropping land usually 2 – 3 acres, access to garden land near communal water source,	Access to communal boreholes, dams, and have own unprotected shallow wells (usually within the garden)	agro-pastoralism combined with informal sector jobs such as building, brick-laying and, buying & selling	Turn up for community meetings, participate actively, sometimes contest for vacant positions in committees as ordinary members

Household headed by widowed, divorced and/or abandoned women, or elderly and destitute people 35%	Very few household in this category own more than three cattle, own some goats, almost all of them have poultry	Cropping land is less than an acre due to lack of labour and draft animals	Access water from communal boreholes, project boreholes, dams and unprotected wells.	Voluntary work, piece-work for others, beer-brewing, harvesting and selling Mopani worms	Main active members in nutrition project gardens. Rarely visible and audible in meetings, and hardly hold leadership positions
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Source: field data 2006-2008

The table 4.1 above shows the typology of households in Ward 17.

Table 4.2: Overview of infrastructure for domestic and productive uses by Village

Village	Infrastructure/Technology	Condition/Status of infrastructure	Management Oversight
Fumukwe	2 Dams	Bad: heavily silted and dry-up during the dry season	Water Point Committee (WPC), traditional leaders, Councillor, and Cooperative Committee
	7 private boreholes	Excellent: fully utilised & maintained	Household/owner
	8 communal boreholes	Good: 3 boreholes need maintenance	WPC
	7 shallow wells	Wells inside gardens are excellent, those on the riverbed are badly maintained	Household/owner
	8 households with drip-kits	Only 3 households still use the drip-kits, 5 are clogged.	Household/owner

Mnyabezi D	3 private boreholes	Excellent and well maintained	Household/owner
	6 communal boreholes	Good: 2 broken down and not working	WPC
	2 shallow wells	Good although they dry-up easily	Household/owner
	1 dam	Bad: heavily silted	WPC, traditional leaders, Councillor
	3 households with drip-kits	Good, 2 used and 1 is clogged.	Household/owner
Humbane	4 private boreholes	Excellent and well maintained	Household/owner
	4 communal boreholes	Good, 3 working and 1 broken down.	WPC
	3 shallow wells	Bad, trampled by livestock.	Household/owner
	6 households with drip-kits	Good: all six are fully utilised, need for unclogging.	Household/owner
Magaya	2 private boreholes	Excellent and fully utilised.	Household/owner
	1 deep well	Excellent and fully utilised	Household/owner
	3 shallow wells	Good, fully utilised although they dry-up in winter	Household/owner
	2 households with drip-kits	Good, well utilised	Household/owner

Please note that all boreholes in the four study sites in Gwanda are the bush-pump type which is manually operated by hand to pump water.

As can be seen from the table an emerging pattern is that individual/private water sources are better managed than communal water sources. At the local level are found different local institutions that have responsibility over local resources including water. Traditional leaders tend to have jurisdiction over other resources apart from water while state and NGO-funded/supported agencies tend to concentrate on water or specific resource units. Communal water (re) sources such as boreholes, small dams and wells are a mix of state-funded infrastructure through the District Development Fund¹¹ (DDF) and Non-Governmental Organisations (NGOs). In all the four villages, the majority of boreholes that are functional are those funded and supported by NGOs, while the state-funded boreholes, under the ambit of the RDCs tend to suffer neglect owing to the economic collapse that accelerated over the past 10 years. Access to water resources, within each of the villages, is influenced by institutions deriving from historical native customs and norms, state sponsored structures, and donor-assisted programmes. Historically, local institutions have been based on rules and norms that derived from hereditary chiefdoms and their governing of natural resources. These institutional structures and the values that underlie their establishment are currently persisting, albeit at times in modified forms, alongside government-sponsored regional and local governance structures, and donor-sponsored local organizations that are connected with various non-governmental organizations (NGO)-based development initiatives. This has resulted in a multi-layered structure of institutions and organizations, at times with unclear boundaries and overlapping mandates, which has come to represent a major challenge to rural households' access to and use of natural resources, such as land, water and woodland resources. Apart from domestic water uses, which are very important in the semi-arid villages, water for gardens and for livestock is ranked as one of the most important water uses in this region.

¹¹ The role of DDF for siting, drilling and maintenance of boreholes in communal areas has been shifted to RDCs since 2005.

Table 4.3: Importance of gardens, water sources/equipment and financing, n=120

Type of garden & water source	Person/institution who financed the gardens and water sources	Person who does most of the work	Percentage of households involved	Importance of gardens for household income	Importance of gardens for household consumption
Riverin garden	Individuals/households	Women	10%	Very important	Very important
Dam garden	RDC and NGOs	Both	20%	Very important	Very important
Borehole garden	RDC, DDF, NGOs, Private (individuals/households)	Both	65%	Very important	Very important
Home garden	Individual/household	Women	5%	Not important	Very important

Table 4.3 highlights the types of gardens and water sources that the households access as well as the institutions that financed the gardens. It also indicates the importance of gardens for the households.

Boreholes are the most important source of water for gardens in Ward 17 and are financed through personal investment, NGOs and local government through the Rural District Council (RDC) and the District Development Fund (DDF). The main water source for home gardens are boreholes within the homestead which are financed through personal investments, remittances and sale of livestock¹². There are borehole gardens in Ward 17 which are meant for targeted populations like elderly and widowed women, and child-headed households. Borehole gardens are gardens found near or around a borehole as the main water source. These are normally financed by NGOs where a fully equipped borehole, fence for the garden and some garden implements such as watering cans, hoes and seeds are provided at the onset of the project. There are four such projects in Ward 17 and only members/selected beneficiaries have access to both the borehole and the

¹² See Table 1 for details

garden land with the right to exclude non-members. The NGOs which facilitated and financed such projects are: World Vision, Germany DED, Kip Keino Association and Mvuramanzi Trust. There are borehole gardens financed by NGOs where only the fully equipped borehole is provided and members of the community, in consultation with their leadership, allocate small pieces of garden land to households in the village. The NGOs involved in this arrangement include EU-ECHO and Red Cross.

In all the gardens in the four villages of Ward 17, members use buckets for watering their crops. The selection process for beneficiaries to such projects, levels of investment, access to land near/around the borehole demonstrate the negotiability and prevailing power relations. An example is given in Box 4.1 below and more details are also provided under section 4.3.3.

There are three small dams with a proliferation of networks of gardens in Ward 17. The gardens are mostly situated on the foot of the dam wall to minimize soil erosion. For all the dams, households and individuals with gardens are not allowed to fetch water for irrigating their gardens directly from the dam for fear of water borne diseases such as bilharzia, but through both shallow wells and ponds dug/found on the stream-bed. The rules for accessing such water are set by the funder of the project (dam) and the community leaders in consultation with community members (villagers). Only livestock is allowed to have direct access to water from the dams. However, incidents of people smuggling/poaching water from the dam at night with scotchcarts for building houses and moulding bricks are often reported. Water obtained from shallow wells is often treated with ash to minimise incidence of diseases.

Box 4.1: Case 1 - Lutheran World Federation funded dam and Qinisela Cooperative

Plans to build a small dam at the confluence of Danger and Fumukwe streams were initiated by the colonial government in 1976 but construction of the dam was shelved before the project started owing to the escalating liberation war. After independence in 1980, a group of villagers started gardening on the stream-banks at the confluence of the two streams. Their major challenge was shortage of water during the dry season for their gardens and livestock. During one of its field tours, members of the Lutheran World Federation (LWF) were approached by the villagers to assist with boreholes and a dam.

In the early 1990s, the LWF agreed to fund the construction of a small dam for the villagers by providing funding and hiring earth-moving equipment. Construction of the dam took a year to complete, and villagers who were interested in the gardening project were asked to contribute labour and a bag of cement per household. Those who contributed were asked to form a committee to oversee the management and maintenance of the dam, and households with gardens. The committee comprised of men and women, with a male chairman and a female treasurer and five other members. In 2001, the political meltdown in the country took its grip on the management of the dam and the beneficiaries with small gardens dotted on the foot of the dam wall. War veterans in the area demanded that a new cooperative should be formed with additional beneficiaries to the project, where extra land was demarcated for garden expansion, and some original members of the project who were found on the politically-wrong divide had their gardens annexed.

The birth of Qinisela: The ‘new’ cooperative was re-named Qinisela, which means “be brave”. The cooperative has 13 members/households, 6 men and 7 women. After the March 2008 elections in Zimbabwe, some of the women whose gardens were annexed managed to demand the return of their land, with the assistance of the headmen and the councillor, they got back their gardens, although smaller in size. Two of the members are alleged to have

Box 4.1 is an elaborated case example of communal investment in water infrastructure by villagers in Fumukwe village with the assistance of the Lutheran World Federation.

4.3.3. Public investment in water, levels of investment and materials invested

Most of the respondents (80%) from the 120 households interviewed in the four villages have invested in water through various mechanisms and in varying proportions. The majority of the communal infrastructure, especially boreholes, small dams and deep wells were funded by NGOs and local government (both pre- and post-1980). NGOs that directly facilitated and funded the (construction and) rehabilitation and provision of water

services in Gwanda district include: Mvuramanzi Trust, EU ECHO, WV, CARE, PLAN, and DED, The Red Cross, Lutheran World Federation, and Kip Keino Association.

Table 4.4: Investment in Public Water Infrastructure in Ward 17

Infrastructure invested in	Type/level of investment	Proportion of households investing
Boreholes	Contributed poles and labour for fencing the boreholes, and building the water trough for livestock and laundry.	Majority of households (78%) contributed through labour. Men contributed through bricklaying and fence mounting, while women carried the poles
Small dams	Households contributed labour during construction of the dams: carrying stones, clearing the land and cooking food for the contractors	For the donor LWF funded dam, households contributed labour and a bag of cement each. Men helped with digging and land clearing, while women helped with carrying stones and cooking for the contractors
Unprotected wells	Digging the well, cleaning the well, maintaining the well	It is mainly men who contribute labour for digging and maintaining the wells, while women clean the wells. All households that use the wells contributed labour
Dip tank	Fetching water to fill the tank, cleaning the tank and money for dipping chemicals	Most households (85%) contributed labour to fetching water, villages rotate on fortnightly basis to fill the tank, only those with cattle are required to contribute labour and cash (US\$1 per cow per quarter)

Project/Nutrition gardens	Fencing equipment, labour and land clearing	Only selected beneficiary households were required to contribute labour in clearing the land and putting up the fence. Contribution and participation was 100% by all households
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As seen from **Table 4.4**, many households invested in water infrastructure especially through labour contributions.

Most respondents reported that NGOs contributed the most in public water investment (67%), followed by local government (RDCs) with 28%, national government trailed with 3% and private investment with a reported 2% investment in communal water infrastructure. This might be attributed to the heavy investment in rural water supply and sanitation by the district council in collaboration with and, funding from international agencies. The Gwanda District Integrated Rural Water Supply and Sanitation Project (GDIRWSSP) 1995 – 2000, funded by the Australian government under the auspices of UNICEF, is one such project. The main activities of the project revolved around creating new boreholes, rehabilitating old ones and headworks construction. It forms the backbone of water services infrastructure for Gwanda Rural District Council (GRDC).



Insert/plate 4.2: Some communal water infrastructure in Manama, Ward 17

In the whole of GRDC, during the implementation of the project, 261 new boreholes were sunk through private initiative, against a total of 230 by the project, and 50 by international NGOs (UNICEF, 2005). Against this background, 211 old boreholes were refitted with new pumps while 35 old boreholes were rehabilitated and flushed; and 80 community wells were deepened and 4.663 shallow wells were implemented (UNICEF, 2005). This shows the level of investment in communal water infrastructure in the district two decades after independence. Through private initiatives and investments, people are prepared to sacrifice to get water for domestic and productive uses, especially for their livestock, brick-making and gardens (see section 4.3.4 on private investments below).

There was a lack of institutional clarity among the partners in the GDIRWSSP where it was recommended (by the IWSD 1997 Report) that the provincial level should confine itself to an advisory role, the District Administrator to take the coordination role and the RDC be recognised as the project manager. Groundwater Development Consultants

assessed the quality of the DDF borehole drilling services in the project, and noted the following: DDF failed to submit activity completion reports, sticking rigidly to one borehole design, limited decentralisation within the organization, poor quality parts, and late invoicing. There was also lack of appreciation by DDF of the need to involve local communities in the process of headwork construction and they failed to train sufficient team members for this task. The GRDC cancelled its drilling contract with DDF and engaged private contractors for both siting (Hydro Utilities) and drilling (Modern Technology)¹³, after exposure to the problem of dry-boreholes. The contractor (Modern Technology) sold their equipment without the RDC's knowledge before completing the drilling of the outstanding number of boreholes.

The number of water points under the management of villagers increased from this period onwards and practically all water points have Water Point Committees (WPCs) who have been trained under the GDIRWSSP. The same applies in Ward 17, where all communal boreholes, wells and dams are managed by elected committees with traditional leaders and the GRDC as oversight mediation managers and compliance enforcers if and when there are disputes. A large number (220) of village pump mechanics (VPMs) were trained. 50 out of 108 villages in Gwanda district have their own tool kit, but the others are able to call upon a ward-based kit¹⁴. Through the implementation of the project, the downtime of boreholes with problems has been very much reduced.

4.3.4. Private investments in water infrastructure

The bounded nature of private water sources (fencing, access rules) allows their owners to control access, particularly for non-personal uses. In contrast water sources that transcend boundaries, such as rivers, have suffered from a lack of management control. The bounded nature of some water (re) sources is also correlated with attracting capital investments such as boreholes, wells and dams. In the previous section, we reported on one private drilling

¹³ As we shall see under private/individual water investments in 4.3.4, Modern Technology was enterprising and managed to enter into agreements with some households and drilled boreholes where they were paid in cattle rather than cash, outside the ambit of the GDIRWSSP. This increased the number of people with private boreholes in Gwanda District, and Manama.

¹⁴ The Ward Kit for Manama is not traceable, rumours abound that the former councillor converted the kit to own use

contractor who was innovative by creating demand for private water infrastructure. He offered to drill boreholes in return for individuals and households, making his services available to 276 families in the whole Gwanda district (UNICEF, 2005), of which 8 households in three villages of Ward 17 benefitted. The drilling entrepreneur accepted payment for his services in cattle, and likewise, negotiated siting of the borehole with the beneficiary, explaining the technical to intertwine with the social, as much as accepting payment in cattle, something unheard and thought of with DDF. Whilst such water supplies are not communal, they take the pressure off the local community boreholes and indicate a high level of investment potential, initiative and capability by households when the right incentives are available. In the ensuing sections, data on private or individual household initiatives and investments in water infrastructure in Ward 17 and their implications on property rights and institutions is presented.

Table 4.5: Investment in water infrastructure by individuals/households

Type of Investment	Number of households who own	Costs & Funding Sources
Boreholes	12 (total number of private boreholes is 14)	Many respondents who paid cash for borehole drilling didn't remember the exact figures. 8 households that benefited from drilling services by Modern Technology paid between 5 and 7 cattle for an equipped borehole.
Deep well	2	Financed through savings, pension and remittances. Costs involved included digging and lining the well.
Unprotected well	15	The only cost involved is unpaid labour within the household
Water drum(s)	56	Mainly used for water storage. Each 210 liter metal drum estimated to cost between US\$30 and 50. Financed through sale of goats.

Brick-making	6	For 2 of the households primary investment was in a borehole, financed through livestock sales and savings. Hired labour used to make bricks for sale. The 4 other households without boreholes engage in brick-making as the main source of income, financed through unpaid family labour.
Cement	14	Primarily used for mounting and casting the borehole casings, and lining the walls of deep wells. Financed through savings, salaries, remittances and sale of livestock
Scotchcart (Watercart)	63	Financed through: livestock sales, remittances, salaries and piece-jobs
Watering can (container)	116	Financed through piece-jobs, sale of garden produce, sale of livestock and savings.
Material for brewing beer	5	Beer brewing is done by the lowest-income earning hhds, mainly as payment for people who attend work-parties to help with household labour such as ploughing, weeding and harvesting.
Gardens, boreholes for irrigating gardens	52+	Labour for clearing the land and for fencing. The cash rich hhds use pole & wire fencing, while the cash poor use thorns and bushes.
Drip-kits	19	Donated by Practical Action (an international NGO) for free.
Rooftop water harvesting	36	By those with brick under asbestos/corrugated zinc, including containers (mainly 210 litre drums) in wet season
Draft Power (Cattle/donkeys)	63	Financed through: inheritance, remittances, salaries and lobola (bride-price) when daughters are married-off. Used for ferrying water by those with scotchcarts.

Although private investments in infrastructure shown in the table confer and guarantee exclusionary rights to the investor, no private borehole owner in Gwanda exercised those rights; rather there is a general norm of sharing private water sources with kin and neighbours within the local networks. Sharing however is not always guaranteed by the investor. For example Mr. and Mrs. Sibanda (from Fumukwe village) own a borehole which was financed through the war victims' compensation fund paid out to liberation war veterans. They use the borehole for irrigating a flourishing homestead garden and for making bricks for sale. Like other private borehole owners, they allow neighbours to access water for drinking and cooking during the wet season, while only allowing close kin to access such services during the dry season. As such, during the wet season, as many as 12 households access drinking water from their borehole and the number reduces to four households during the dry season. Mr and Mrs Ncube who own a local groceries shop in Fumukwe village on the other hand have two boreholes, one within their homestead and the other within their riverin garden. They only allow very close kin access to drinking water at their riverin garden borehole, whilst no one is allowed access to water from their homestead garden in a container larger than five litres. They have a homestead garden and a poultry project at their homestead. The garden borehole is used for irrigating the garden and for watering livestock during the dry season when most streams and communal small-dams dry-up.



Insert/plate 4.3: Private boreholes for multiple uses - domestic, irrigating garden, brickmaking enterprise, and sharing with neighbours and close kin. The type of fencing shown is used for protection against vandalism by livestock and other villagers.

To access water from private boreholes and deep wells, people have to ask for permission from the owner, and observe the rules set out, for example: closing the gate to the garden after use, not to allow unaccompanied kids to the garden borehole, and helping the owner with garden chores. Access to other uses such as livestock watering, gardening and brick-making is hardly extended to non-household members, be they kin or neighbours. These interrelationships between property rights and local decision-making institutions in communal area water resources management in a dynamic socio-economic environment warrants detailed examination based on an in-depth analysis of both formal and informal institutions. Sections 4.3.5, 4.3.6 and 4.3.7 highlight some of these nuanced observations.



Insert/plate 4.4: Private water sources, uses and donated technologies (drip-kits) used in Ward 17 as shown above.

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4.3.5. Institutional arrangements and access to water

The study investigated access to various man-made and natural water sources that are either owned communally (such as boreholes, deep wells, dams, shallow wells, rivers and streams) or privately (mainly deep wells, boreholes, and shallow wells near homesteads and in household gardens). The study also investigated the existence of local institutional arrangements that govern access to the water sources for different and multiple water uses. In all the villages, boreholes and family deep wells are the main sources of cooking and drinking water. Dams and rivers/streams tend to be mainly used for livestock watering, gardening and brick making. However, a number of sources can be accessed for multiple uses, depending on general water availability in the area. For example, a number of boreholes are used to provide water for cooking and drinking, gardening and livestock watering. Households with private boreholes reserve the use of their boreholes for livestock and gardens during the dry season, while competing with others to access water from public water sources.

Access to household water sources, especially for cooking and drinking, can be extended to neighbouring households. This is common with the majority of the households who own the water sources. The feature that water is essential for life and perceived as a ‘God given good’ discourages exclusive rights over water (see also Derman, 2000, 2003, 2005; Derman and Hellum, 2005; Nemarundwe, 2003; Matondi, 2001; Mukamuri et al, 2005). People who deny others access to water for cooking and drinking are often regarded with disdain and fall short of being labeled *umthakathi* (witch/wizard). There is a stated belief and fear that denying others access to water for cooking and drinking purposes will result in privately owned sources being poisoned and or vandalised. These features and social relations serve to increase access to water sources that are privately owned. However, increased access is less common when it comes to other uses like gardening and brick making. Many of the households with gardening water sources would argue that the water is enough for their gardens only.

There are a number of local level institutional arrangements that govern access to water sources in communal areas. The arrangements may vary depending on the source (man-made, natural and yielding capacity), ownership (privately owned or communally owned) and the purpose for which the water will be used. Rules are put in place by the relevant committees such as dam and borehole committees, commonly referred to as water point committees (WPCs)¹⁵, local leaders, the users and institutions such as the Ministry of Health and the RDC. For sources such as public boreholes and deep wells users are expected to contribute towards the maintenance of the water source. This can be in the form of money, labour or food for people who would be doing the work. The quantity of water abstracted can be restricted during times of water stress, especially droughts that are endemic in Gwanda South. This is achieved by preventing use of equipment such as drums, scotchcarts, wheelbarrows and limiting the number of 20 litre containers of water that can be abstracted per day. With regards to access to sources such as shallow wells and shallow wells dug along riverbeds (*sediba or mifuku*), there are rules that are put in place to maintain hygienic standards and provide fairer

¹⁵ The term water point committee (WPC) was popularized by NGOs in Gwanda South, where upon completion of a borehole, the funding and/or facilitating NGOs and local government organs prescribe the formation of such committees to oversee the specific/designated water (re) source. Each borehole in Ward 17 funded by a different donor has its own elected committee.

distribution among the users. Access to gardening water sources is also characterized by rules and regulations that seek to promote fairer distribution of water and reduction of produce theft.

With uses such as gardening, livestock watering and brick making besides promoting fairer distribution and conservation of water the arrangements give first priority to cooking and drinking. The arrangements tend to be more adhered to if they relate to boreholes and dams especially those used for community gardening projects. Generally, communities tend to have few problems in monitoring water abstraction and punishing offenders. Traditional leaders, elected leaders and the relevant water point committees tend to complement and compete with each other in developing institutional arrangements and enforcing them. Sanctions vary from verbal warnings, suspension from using the source, being asked to contribute towards repairing of the pump and general maintenance and fines in the form of a goat, chicken or in monetary terms depending on the offence committed and the type of water source. There are instances in Ward 17 (though not very common) however, where war veterans and accomplices, running on the wave of political mayhem, disregarded some of the sanctions, disobeyed the rules and norms with the backing of the political party, ZANU PF, and emerging as a new institutional cluster with a lot of power. This brought with it some loop holes in the enforcement system, and opportunities for some as they found a window to escape punitive measures under the guise of protection from the war veterans.

4.3.6. Conceptualising institutions and property rights

Studies on common-pool resources display that graduated and disparate levels of complexity and “fuzziness” exist across resource types and rights. In order to understand institutions and property rights regimes for natural resources in these settings, it is important to view the interface between human and natural resources, interface as embedded in both social and power relations, and as a reflection of how users and resource rights holders attempt to meet their livelihood needs (Nemarundwe 2003, p. 87).

Dichotomization of access and use into formal and informal rights, often used to differentiate between official and non-official allocation and access to natural resources,

is not always analytically helpful. Realities, as reflected by empirical materials presented in this chapter, show that both categories of rights are operational for water, woodland and grazing resources (see also Nemarundwe 2003, Moyo, 2005; Mukamuri et al, 2005). This dichotomy is more relevant for the CAs than for the SSCFs, the latter being held under private tenure (see Matondi 2001). Access rights in the communal sector have tended to remain flexible because of loosely defined boundaries and the existence of elaborate extended family and social networks. Villages commanding grazing resources share with those with less and sharing of water points across villages is the norm rather than the exception.

The informality of institutions and property rights also seems to facilitate flexibility to allow for resource sharing, which is a common feature across the different water resource types (communal, 'project', and private). For example, water points (dams, wells, boreholes) are constructed by either government or donor agencies and used by people in specific villages who are not, officially, the intended beneficiaries. Similarly, and as practiced by the colonial government, in communal areas like Gwanda, official settlers were registered by the government agency as bona fide beneficiaries while unofficial settlers have been accepted by local leaders or by local people who have allowed others to settle in undesignated areas. Such redistribution of resources is made possible by social networks, power relations and other societal dynamics in the community, and may reflect political developments and social capital among others. Our findings show that access to natural resources is in many but not all instances determined by community-derived rules and regulations, which community members collectively monitor, regulate and enforce (McCay and Acheson 1987; Ostrom 1990; Dasgupta 1993). This is particularly true for access to meet 'basic needs' - in the case of water for drinking, basic household use and limited livestock watering rather than universal access.

Mainstream perceptions on legal and policy aspects of property rights regime often view practices as conforming within well defined and operationalised legislative and policy frameworks. The legal prescriptions are viewed as defining parameters for access and use but may not always be enforced in practice. In Zimbabwe, legal aspects relating to access

and use of resources are contained in a number of specific Acts (see section 4.3.1); these generally ascribe entitlement and access, while communities are more concerned with practical issues relating to actual use. However, changes in official policies may be ineffective or may not respond to practices (and expectations) by individuals and communities who use local strategies that seek to guarantee continued access and livelihoods. Changes may, however, be induced at the local level due to environmental and socio-economic conditions (Sithole 1999, Matondi 2001). This reflects the robust and reflexive nature of communal natural resources management institutions, and their coping mechanisms and flexibility as regards uncertainty and other pressures and challenges.

Conceptualizing property rights also involves understanding values that underlie rules. The important value attributed to water mitigates against misuse of this resource, particularly in the dry parts of the country like Ward 17, Manama, in Gwanda South. Fears of desiccation and the adverse effects of drought, help shape a strong reverence to water and its associated taboos. This explains why controls over water use and access by different community members, is a product of socio-cultural construction, negotiation and networks. The emergence of 'new' generation institutional complexes (what I call hybrid institutions) such as WPCs although operating under strict instructions from the funders and founders, also adopt the norm of sharing water in varying degrees to non-members and neighbouring villages. It emerges from the study results that ownership of water sources does not lead to exclusive use of the water resources by the owner¹⁶. There is little difference in terms of access for cooking and drinking purposes between privately owned and improved water, points and communal ones. Private access to water is regulated by social networks, kinship ties, and cultural values. Social controls that prevent exclusive use include the fear of poisoning or bad rapport with neighbours, and the possibility that other people may refuse to co-operate with the owner especially in work parties (*amalimo or nhimbe*)¹⁷ and cooperative cattle herding in the dry and/or drought season (*lagisa*)¹⁸.

¹⁶ Even though the owner can exercise such exclusionary rights, in theory, but for practical purposes, fear of resentment, and for mutual beneficence, choose to exercise limited control over such sources by allowing others access for drinking and cooking.

¹⁷ Where participants are often rewarded with beer for helping with assigned tasks, though mainly practised

4.3.7. Changes and Continuities, Property Rights and Impacts on Resources

Pressures of population, poverty and changing political and social expectations and actions all bear on the use of resources, normally leading to changes in both their quantity and quality, and to changes in the rules governing their use (see Mukamuri et al, 2005). The effective application of rules governing use of water may be associated with differences in the nature of the resource and the nature of people's willingness to observe social norms. The study confirms the higher level of effectiveness of control of the use of water by local norms, whether through elected committees or traditional authority. One component causing local institutions to be more effective and efficient, as regards management of water as compared to grazing land, can be seen in the encouragement for investment in private areas. Such investment is typically in boreholes, shallow and deep wells, and also in small dams due to incentives of exclusive access and use for individuals or defined groups (within the volume limits specified by the Water Act 1998). In effect, this involves near-exclusive access, within the context of limited sharing of water from private wells and boreholes, which helps to accommodate for the basic domestic water requirements of other members of particular social networks. Sanctions or various exclusion mechanisms that limit water access to communal sources (wells, dams, boreholes and water points) accommodate basic primary uses by individual households¹⁹. The exclusion mechanisms limit water point degradation and promote equity in individual households' access and use of water.

Investment in water extraction has attracted donor interest, which reflects a potential to improve rural livelihoods, reduce hardships and, perhaps, the potential to create a more effective institutional setting for water than for other resources. Study results show that access to the different types of water resources is central to both agricultural and non-farm income generating activities of households as well as groups throughout the year.

by widowed families

¹⁸ Lagisa is a semi-transhumance cattle herding process long practiced by the Sotho and Ndebele in Gwanda, where during times of drought, they move with their cattle to the Tuli and Shashi River frontier for grazing and watering. They settle in camps for up to five months until the onset of the first rains.

¹⁹ Water for drinking and cooking, is often limited to not more than two 20 litre containers per household per day depending on the strength and tightness of social relations with the owner.

This in turn creates higher incentives for public and private investment, generally (but not invariably) higher social incentives for institutional management, and lower transactions costs for governance of most water resources (Mukamuri et al, 2005).

The results raise interesting questions regarding the relative balance of power between local government structures, traditional leaders and communities, as well as the associated conflicts between top-down versus bottom-up approaches to natural resource management. The Traditional Leaders Act (1998), which empower traditional leaders and involve local people in community resource management, may be difficult to implement given existing local government structures such as VIDCOs and WADCOs and their importance for water infrastructure development. It has been observed that pressures to overlook norms and traditional institutions tend to increase with population pressure and with changes in the location and mix of populations, the very heart of Gwanda district as a frontier from the colonial to the post-colonial period as observed earlier in this chapter. We also noticed from the historical analysis that institutions are also shaped by the manipulation of leaders; where traditional leaders and elected leaders compete and/or compliment each other depending on circumstances and benevolence from the state. The question to ask is whether existing institutions are sufficiently secure to promote investment and yet flexible enough to accommodate multiple uses of water. Despite their competitive and dynamic interactions, local level institutions in Gwanda seemed to be responsive and capable of accommodating such issues. The need here is for institutions governing resource access and use to accommodate both equity and efficiency in allocations to various groups of people over time, thus contributing to sustainable livelihoods and development.

Increasing pressure on norms, traditional and formal institutions surrounding natural resource access and use is seen in Gwanda associated with increasing population, changing technology, and rising economic hardships. Changes in formal institutions are evident in the enactment of the Traditional Leaders Act. But there is also evidence that social norms and informal institutions have evolved locally in relatively flexible ways responding to pressures of current needs. New institutions encouraging the participation

of women often accompany external-donor introduced and funded projects, such as irrigated community gardens, often called project or nutrition gardens, which tend to have been emphasized by NGOs in Gwanda South. These institutions have resulted in conflict over leadership and changing resource control roles between women and men. Donor-funded projects encourage women to take leadership roles much to the dismay of men. In some instances, where external donors have introduced projects, there has tended to be evidence of lack of ownership and accountability by community members, as shown in instances where communities fail to organize themselves to repair borehole equipment leading to appropriation by the clever few who rehabilitate the boreholes and set new regulations governing access. Where women have the leadership roles in these initiatives however, there has tended to be greater accountability and ownership of these projects, a case in point is the Ncedisizwe Cooperative (N-Coop). N-Coop was founded and funded by World Vision in Fumukwe village, in settlement line number 12. The cooperative comprised of one man and six women with all the leadership positions in the committee held by women. The cooperative was primarily funded and founded to facilitate the production of vegetables for vulnerable households. All the households who belong to the cooperative reported having surplus produce. It would seem the cooperative has been successful in meeting its members' needs since inception.

4.4. Conclusions

The chapter sketched and highlighted how the application, effect and influence of the colonial policies on resource access in Gwanda South, and Ward 17 in particular demonstrates a continuing and enduring legacy of some of these policies into the post-colonial era. This is compounded by pressures of poverty and changing political and social expectations impacting on the use of resources, leading to changes in both their quantity and quality, and to changes in the rules governing their use. The unsuccessful policy of the government to limit and control livestock as part of the implementation of the Land Husbandry Act (LHA, 1951), was met with a lot of resistance by livestock owners in Gwanda South in general and Manama in particular. Such resistance and opposition to various attempts by the government to limit and control people and

resources through various schemes endured in the post-colonial times and can be interpreted as problems of implementing (natural) resource management legislation policy where this is incongruent with information and practice of affected communities/people on the ground; and the need for adaptation of formal and informal institutions at local levels to accommodate the changing social, economic, political and physical environment. Changes in natural resource legislation by the state, such as land and water, which is perceived to influence property rights and social relations of communal smallholders was, and still is, considered a threat to people's social and economic system, and is perceived to complicate people's negotiability and access to networks. The struggle for control of resources, and efforts to introduce or impose taxation and levies by government (or its agencies) is a pattern that still holds today in Manama, as it was in the colonial period.

We also observed that when water is physically available (both surface and ground water) people invest in accessing it for multiple uses, where those who invest in private water infrastructure hold stronger and overarching rights to both the infrastructure and water conveyed. Rights are locally and broadly conceived as the ability to set, stipulate and enforce one's claim to the resource either as a direct result of investment, strong networks and kinship or simply by being an outright beneficiary/stakeholder of a communal resource. That is how hydraulic property rights are created, understood and interpreted in practice (see Chapter 7 for details on taxation and imposition of levies).

In order to understand institutions and property rights regimes for natural resources, it is important to view the interface between human and natural resources, as embedded in both social and power relations, and as a reflection of how users and resource rights holders attempt to meet their livelihood needs. Availability of particular forums or platforms such as water point committees, traditional leadership and the district council can make negotiations possible by providing spaces within which problems and topical issues can be discussed. Critical analysis of community-based natural resources management and institutional arrangements provides a basis for understanding how communities act to secure rights to water. This is demonstrated by empirical materials on

how communities act to defend (and/or prolong) customary rights to water, and to manoeuvre within a plural framework of national and local laws, and other normative orders regulating access to water by increasing the number of beneficiaries on targeted projects to be more inclusive. This provides potential implications for changes in resource access to mirror and reflect the changes in plural customary arrangements. Mainstream perceptions on legal and policy aspects of property right regimes often view practices as conforming within well defined and operationalised legislative and policy frameworks bounded and defined by formal and informal access. Dichotomization into formal and informal rights, often used to differentiate between official and non-official allocation and access to natural resources, is not always analytically helpful owing to normative sharing arrangements and practices.

Gender considerably influences access to resources and associated livelihoods activities. Male household members and children spend relatively more time on livestock activities whilst women spend more time working in gardens and generally, but not invariably, on water collection. Essentially, women provide the labor and management for collection and use of domestic water and water for gardens where they earn and control most of the income from sale of garden produce in Gwanda, whilst men tend to provide the labour and management of water resources for cash income generation such as brick-making and livestock watering, and where capital is applied.

CHAPTER FIVE: From Homeland to Democracy: The Politics and History of Water (Re) Sources Investments and Institutional Arrangements in Sekororo (B72A and B72C), South Africa

5.1. Introduction

From the beginning of South Africa's history, water has played an important role in the shaping of the country, not only demographically but also politically. Water availability helped to determine where and how humans lived and influence the way they relate to each other (Wolf, 1995:12). The 1913 Land Act became the first marked and clear distinction between African Reserves and White areas. Pursuant to the passing of the act plus the 1936 Land Act, 87% of the country became known as the "white land" and 13% as African Reserves (Ross 1999). The implementation of the act created a dual and parallel economic and political development with a heavy bearing on the nature and course of water resources development in South Africa from the colonial, apartheid and post-apartheid periods. Like all major hydraulic missions throughout the world, the hydropolitical history of water resources development in South Africa have been made possible by a number of factors including access to water, land and finance. This is an important point to note when discussing water investments in South Africa where often there are claims to the effect that there is no or little demand for productive water among the Historically Disadvantaged Individuals (HDIs). What is often forgotten is that the current demand for water use that white farmers exhibit is a result of sustained support (in the form of access to water, land and finance) by the white minority government for many decades, which was also found to be the case in Zimbabwe (Manzungu and Machiridza, 2009).

In the 1990s, South Africa, like other southern African countries, embarked on Integrated Water Resources Management (IWRM)-inspired water reforms (Manzungu, 2004)

culminating in the promulgation of the National Water Act in 1998, four years after the attainment of democracy in 1994. The much fettered 1998 National Water Act, celebrated for its progressive modern ideas on how to manage water resources, has not resulted in an improvement of access to water on the part of the Historically Disadvantaged Individuals (HDIs). For example, to date, only 4% of the newly developed water has been allocated to HDIs (Karar, 2008). There are also other problems that explain the poor water access by HDIs. This chapter examines critical issues that affect water investments in South Africa, namely access to water, technology, infrastructure and finance. With regards to access to water we examine the water allocation mechanisms that are contained in the national legislation in relation to how they improve access to water on the majority of black rural communities whose water rights were largely expropriated during apartheid, and how this affects local investments.

Notwithstanding the good intentions under the ‘new’ policies and legislation in the post-apartheid state, and conscious of the historical nature of resource access, the key objective this chapter seeks to address is to document and analyse the processes and genealogy of hydraulic property creation in Sekororo, South Africa, in terms of access, use and control of the resource, and the implications of such rights on men and women. The questions this chapter seeks to answer are: i) how do different actors understand, conceptualise and present notions of hydraulic property rights, and why; and ii) how and in what ways are hydraulic property rights established, maintained and enforced in informal economies? The chapter sets out the analyses by documenting the property rights creation processes and investments dynamics from the colonial, apartheid to the democratic and post-democracy Sekororo communal lands. It quantifies and qualifies the levels and dynamics of investments in hydraulic property creation through both time and space by providing nuanced details on both private and communal infrastructure developments of varying proportions spread throughout the study area.

I examined the nature and patterns of investments in water infrastructure by rural communities in Sekororo (B72a and B72c) by employing the concept of ‘hydraulic property rights creation’ to understand how people, as individuals and or as groups, assert

rights over water, and how such claims become legitimized (Coward, 1986; Manzungu et al, 2010). Hydraulic property rights refers to the creation of value of water by means of establishing, and recognizing claims to water due to investments made in developing physical infrastructure and related institutional arrangements for purposes of abstracting, storing, conveying and/ or applying water to the field as explained in detail under Chapter 2. Hydraulic property rights creation may be entirely ‘endogenous’ (or ‘local’ or ‘informal’). Alternatively hydraulic rights may also be based on government, formal Non-Governmental Organizations (NGOs), or other outsiders in which case they are ‘exogenous’. The difference between endogenous and exogenous is, however, not always that clear-cut because local people interact with ‘outsiders’ in ways that blur the endogenous-exogenous dichotomy (Manzungu et al, 2010: 12).

5.2. From forced removals to homelands: a brief overview of colonial water legislation and infrastructure development in South Africa

The institutional and legal developments regarding the country’s water resources date back to the arrival of white settlers in South Africa in the 17th century. Africans had their water laws. These regulations mainly dealt with the pollution of streams and laid certain requirements (RSA, 1970a). It was in the 19th century that laws regarding the allocation of water resources among different users started to develop. The codified water law for the established Union of South Africa only came in 1912, two years after the Union of South Africa.

In 1951 the government established the Tomlinson Commission (TC) to investigate the socio-economic problems of the reserves with a view of increasing their human carrying capacity (Davenport and Saunders, 2000). Plans were put in place to combat soil erosion and large numbers of people had to be moved off the land under grand apartheid (Beinart, 1994:154). For Geldenhuys (1984:11) “*It was the first time that territorial separation was legislatively explicitly linked to ethnic separation*”. The TC report was published in 1956 and encouraged industrial firms to decentralise their activities and establish

factories on the border of the reserves. Water played an important role in the development of the homelands, where a typical homeland's economy consisted of a small number of people employed in tertiary activities such as teachers and nurses while the majority were subsistence farmers with an emphasis on dryland production of crops (Bantu, 1970:22; Hattingh, 1972:81; Davenport and Saunders, 2000:461). Thus reproduction of the labour force of blacks in the homelands was the rationale behind this type of development (Bantu, 1964:200). It would seem, from the ensuing argument, the TC report was the blueprint for agricultural development in the homelands. By 1956 there were already 122 irrigation schemes in the Bantu areas with a total of 13 300 morgen under irrigation (Houghton, 1956:121; Bantu, 1970:22). The 1956 Water Act came as a response to South Africa's increasing urbanisation and industrialisation, unlike the 1912 Act which mainly focused on irrigation. The water Acts were for white development and from a water resources management perspective, water was mainly mobilised in the homelands to stimulate irrigation agriculture from the mid-1950s and early 1960s²⁰. In July 1966, the government appointed a Commission of Inquiry into Water Matters which culminated in the establishment of the Water Research Commission (RSA, 1970a: xii). Small dams and water supply systems were constructed by government to keep the black populations out of designated "white areas" throughout the 1970s and 1980s up to the 1990s. The next section provides detailed analyses of key legal frameworks governing water investments in South Africa from the transition period in the 1990s to post-1994.

5.3. From Homelands to Democracy: Water allocation and Water-related investments in South Africa

5.3.1. A brief overview of the legal frameworks governing natural resource access in South Africa

Access to water in South Africa is formally governed by two pieces of legislation namely, the National Water Act (Act 36 of 1998) and the Water Services Act (Act 108 of 1997) (Republic of South Africa, 1997; 1998). The Water Services Act governs domestic

²⁰ This period coincides with the development of Sofaya and Lorraine irrigation schemes in the study area.

water supply services and delegates responsibilities for such services to Water Services Authorities (WSAs), such as municipalities and water utility parastatals and private firms.

The National Water Act identifies water rights as pertaining to basic human and ecological needs for water. Such uses are termed the 'Reserve' and are given priority in water allocation. All other uses are regulated through 'registration' and through different types of 'authorisations'. The four types of water authorisations are Schedule One, General Authorisations, Existing Lawful Uses and Water Use Licences. Schedule One describes permissible uses of water that do not require a licence and do not have to be registered. Water use activities that fall under Schedule One include those that, due to the small quantities used, have a very small impact on the water resource and therefore pose minimal or no risk. The uses that are covered under Schedule One are indicated in Box 5.1.



Box 5.1: Schedule One water uses

1. Taking water directly from any water source for domestic use in households provided that water users have lawful access to that water;
2. Storing and using run-off water from a roof;
3. Small gardening that is not for commercial use;
4. Watering animals for subsistence use;
5. Using the water surface or surrounding land for recreational use; and
6. Using water for emergencies, such as firefighting and drought relief.

Despite the identification of the list of water uses under Schedule One, it is significant that there has been no official mention of the quantities that are involved. The discourse around Schedule One water use is that ordinary people who use water are not informed

and that the water is not significant. The preoccupation is with large water use for which numerous studies, time and money is spent.

General Authorisations are permissions that allow slightly larger volumes of water use from less stressed sources, such as rivers and aquifers. Such authorisations allow people to use water without a licence provided that the water use is within the conditions stipulated in the General Authorisation. For example, limits are placed on water use depending on the nature of use and the capacity of the resource to accommodate use without significant degradation. Examples of general authorizations include abstracting a limited amount of water from certain rivers and groundwater sources as well as storing a limited quantity of water in a dam. The authorisations are granted by the Minister and published in the Government Gazette. In view of the wide range of water use activities and the logistical implications of registering myriad of individual water users, general authorisations are used as strategies to cut down on unnecessary administrative efforts. General authorisations may also attach conditions relating to water management activities, such as monitoring and reporting, in accordance with Section 29 of the National Water Act. More significantly however is a reluctance to give a blanket generalization for example for a communal area. It appears that providing water to communities under schedule one and general authorisations is not considered by policy makers, as something that cannot be wholly ignored because it exists in law but is not pursued with any conviction. This is ironical given the potential such water can contribute to improving rural livelihoods. Water licences are mechanisms for regulating water use that exceeds the limits outlined in Schedule One and General Authorizations, and apply to any new (post-1998) water use that is not covered by Schedule One or General Authorizations.

In instances where users have legally used water since prior to the National Water Act of 1998, provision is made for 'continuation of existing lawful use'. Such users should register that use and continue using water without having to apply for a licence. This provision is a transitional measure intended to allow existing lawful water users to continue using water under the same conditions, until water use is formally licensed.

Water licences give new water users formal authorization to use water, and specify the conditions under which the water can be used. Licences are issued by 'responsible authorities' namely, the Department of Water Affairs (DWA) or future Catchment Management Agencies (CMAs). Currently, the licensing procedure requires new and potential water users to apply for a licence with the responsible authority namely, the Regional Office of DWA, who forward to Head Office. This regulatory function is envisaged to devolve to CMAs when these become fully operational.

The question that can be asked is whether the water law permits improves the water rights of the HDIs and how this influences investments in water infrastructure by rural communities. Experiences to date suggest that there is evidence of administrative discrimination in water allocation. This is because although the 1998 National Water Act, which was meant to redress the past injustices in water access, ushered in a number of interventions, which among other things, abolished riparian right system, other caveats were put in place, which tend to retain the status quo. For example a licence-based water allocation system that is meant to protect public interest, is high on the agenda of state officials. The implementation of the new water allocation system has been bedeviled with numerous problems including verification of actual water use and compulsory licensing, and has got priority whilst redress is enshrined in a strategy but hardly implemented. The problem has been worsened by the fact that even those avenues that are contained in the law for empowering HDIs, such as General Authorisation have not been utilized. Instead there are allegations of lack of effective water demand on the part of the HDIs. The question that needs to be answered is whether the fundamental issue is one of capacity deficiency for hprc or administrative injustice. The preoccupation is with large water use for which numerous studies, time and money is spent. This has provided a distraction to address urgent livelihoods issues as is the reluctance to register black water user associations which could empower communities to secure their water rights. There are several options that could be pursued, including formalising existing traditional committees at village and ward level.

Pursuant to the aforementioned, the Free Basic Water (FBW) policy was officially launched in July 2001 although the pace of implementation in rural areas has been slow due to varying technical, financial, political and logistical problems at local and municipal levels (Balfour et al., 2005) as attested by key events in Sekororo. The only notable interventions done so far for public water supply were that by Non Governmental Organisations (NGOs) (and local municipality) like Mvula Trust and World Vision, and the very slowly progressing Mametja-Sekororo Regional Water Scheme scheduled to be completed by 2011²¹. In general domestic water service delivery in the study area is poor and the aging infrastructure is badly maintained. A significant proportion of households consume less than the recommended RDP and UN standards (Morardet et al, 2009). Household engagement in water use for productive purposes is limited by scarcity of access to water resource.

5.3.2. Investment in water, levels of investment and materials invested: 1994 and beyond

As already said the prosperity of white agriculture was a result of state support. In this section we assess the degree to which the post-apartheid state has supported investments in water infrastructure by the HDIs. One area where the state support has been demonstrated relates to smallholder irrigation schemes that were developed by government as part of social integration in homeland areas during the apartheid era. In the Limpopo Province there are 126 smallholder schemes that became dysfunctional following sudden withdrawal of state subsidies by the post-apartheid government after 1994 (Tapela, 2009). This appears to have resulted in a deepening of food and livelihood insecurity within rural communities adjacent to irrigation schemes. However, since 2001, there have been moves to resuscitate smallholder irrigation farming.

Significant government expenditure has been directed towards rehabilitation and development of irrigation infrastructure and ‘revitalization’ of crop production in these communities. Between 2001 and 2004, the Limpopo Provincial Department of Agriculture set aside a total of R224 million (US\$22.4 million) to fund an initial phase of

²¹ Personal communication with the technical services manager Mr. Mashala June 2009

the Revitalisation of Smallholder Irrigation Schemes (RESIS) Programme. A further R248 million (US\$24.8 million) was allocated towards funding the second phase or “RESIS-Recharge”, of which R84 million (US\$8.4 million) was budgeted for 2005 to 2006 and R164 million (US\$16.4 million) for 2006 to 2007. Revitalisation of underused irrigation schemes has been bolstered, at the macro-economic policy level, by the Department of Agriculture’s identification of irrigation development as one of the five priority areas for the Accelerated Shared Growth Initiative for South Africa (AsgiSA). RESIS and RESIS-Recharge have also been supported by the Limpopo Provincial Growth and Development Strategy (PGDS), which states that resolving challenges of poverty, unemployment, food insecurity and rural development in the province will depend largely on investment and growth in the agricultural sector.

With progression from RESIS to RESIS-Recharge, however, there has been a shift in the focus of government interventions. The RESIS Programme aimed at “re-building socially uplifting (and) profitable agribusiness” through “a comprehensive programme to structure, train and capacitate smallholder farmers to run their scheme profitably and sustainably” (de Lange, 2004). The objectives of RESIS-Recharge have shifted towards infrastructure development and the involvement of white commercial farmers or “strategic partners” in crop production in the schemes²². Strategic partnerships or ‘joint ventures’ provide a useful context for examining the manner in which hydraulic property rights creation issues, particularly those pertaining to land tenure rights and water access, have been grappled with amid attempts by the RESIS and RESIS-Recharge Programmes to commercialize small-scale irrigation farming. Since the earlier phase of RESIS, the predominant type of strategic partnership in the various study areas has been contract farming. Mayson (2004) defines this type of joint venture as an agreement between small-scale farmers and private investors, such as established commercial farmers or processing and/or marketing firms, in which farmers commit to supplying an agreed quantity of goods of a special quality. In exchange, the farmers receive payment for produce as well as support with credit, training and extension services, production machinery and other resources.

²² Interview with senior officials of the Limpopo Department of Agriculture in Polokwane, 12 March 2008.

There also have been efforts to support rainwater harvesting through a grant and loan scheme where people can construct tanks that is managed by the DWA. After a delayed start, the project seems to be underway. There is no record of the people in the study area benefitting from the facility. Apart from state-sponsored rainwater harvesting interventions there are also individual and NGO attempts and initiatives to invest in water infrastructure as will be shown in subsequent sections.

5.3.3 Household Characterisation and Resource Access in Sekororo

The quaternary catchment B72A and B72C is part of Ga-Sekororo-Letsoalo tribal authorities (or simply Sekororo), with a large part of the catchment (80%) falling under the Lebowa homelands, and an estimated total rural population of 56,000 (South Africa Census, 2001). Table 5.1 shows the number of households and total population of the four study villages of Enable, Lorraine, Sofaya and Worcester. As highlighted earlier, the Limpopo province is among the three least developed provinces in the country and has the lowest (0.49) Human Development Index (HDI). More so, levels of poverty are relatively high, with 60% of the population living in households with an income less than the 'poverty income' (Limpopo PGDS, 2004). Poverty income is defined as "the minimum monthly income needed to sustain a household and varies by household size". The predominantly rural socio-economic landscape of Limpopo Province glaringly reflects the inequalities inherent over much of South Africa's space economy. The highest concentration of poor households lives in former homeland areas like Sekororo.

Box 5.2 History of the Sekororo-Letsoalo area

- Before the arrival of European settlers in the 1830s, people lived on the higher plateau and mountain slopes which enjoyed better soils and rainfalls than the lower plain which, moreover, was infested with tse tse fly and malaria. The elevation also allowed for watching enemies, like the Swazis, coming. The traditional farming system was agro-pastoral with a clear distribution of roles between men (preparation of land for cropping, breeding of livestock) and women (in charge of the crops and domestic tasks). The plots close to the rivers were occupied first. Cattle grazed on communal lands and were protected at night in the family kraals.
- 1830: Louis Trichard one of the leaders of the Great Trek stayed in Trichardsdal on his way to find a trading route between the Highveld and Delagoa Bay (now Maputo). These first contacts with Africans were friendly.
- Gradually relations turned sour with increasing competition for fertile and well watered land. From 1850s, European colonisation started. European farms (mainly cattle breeding) expanded on the more fertile and better watered lands included the Sekororo area. Black population was increasingly forced into taxation and labor provision.
- After the 1st world war, in 1920, a number of British settlers formed the Officers Colonial Land Company (OFCOLACO) and started farming. After several attempts of livestock farming and various crops and the collapse of the company, land was purchased by individual farmers who opted for tropical fruit production (mangoes, paw-paw). They built a first irrigation canal from the Selati River with the support of government. The irrigation system was run successfully until severe droughts of the 1960s. The basis of inequitable economic relations between African population and white settlers, which later become the core of the economic and political power of the apartheid system, was put in place: easy access to land and water resources for white farmers, abundant and cheap labor provided by black populations. However, contrary to other regions like Sekhukhune land and countries outside South Africa, this area did not provide many migrant workers to the mining industry in the Highveld.
- The Land Acts of 1913 and 1936 further reinforced the exclusion of black Africans from access to land, as they were assigned to a limited portion of the country, the reserves. After 2nd world war, war veterans were given land in the area and started orchards of mangos, bananas, and vegetables. Black inhabitants provided agricultural labor organised through black foremen, under harsh conditions.
- In 1948, the new government of apartheid introduced the department of agriculture and water affairs as well as the conservation department, under which the “betterment policy” demarcated land into residence, cultivation and pasture zones for Africans. Hillside farming was forbidden, and so did the cutting down of trees and cultivation near river beds. Some white farmers left and forced removal of people from different tribes and origins (Sotho and Shangaan speaking people) started, resulting in the weakening and even destruction of the social fabric. Increasing population on a limited land quickly resulted in over exploitation of natural resources (overgrazing, depletion of water). Land was allocated by traditional authorities (and sometimes formalized in writing through a Permission to Occupy)
- In the mid 1950s, impoundments were constructed across rivers and streams to hold water for irrigation and domestic use in the adjacent white areas. This marked the intensification of irrigation schemes in the area. With the powers of allocating water in the government’s hands, water provision to black farmers was considerably limited and often frequently interrupted.
- 1960s: creation of the Selati Irrigation board, which was assigned powers and functions in accordance with the 1956 Water Law. A new canal was built with government support and water allocation made to 12 white properties (total scheduled area of 998ha).
- 1970s: Creation of the Lebowa homeland, which was the most important one in Transvaal. Farms in the Selati catchment were bought by the South African Development Trust for the purpose of consolidating the Lebowa homeland, some of them being leased back to white farmers in the meantime. New black immigrants joined existing villages and Shangaan-speaking people were forced to move to a new homeland, Gazankulu. All these displacements caused major tensions among the population.
- In 1984, proclamation of the Lekgalameetse Conservation Area on the Drakensberg escarpment. In 1986, extension of Lebowa homeland, eviction of some white farmers. The Lebowa government started to build electricity and domestic water supply infrastructures.
- The election of a democratic government in 1994 brought about considerable relaxation of the rules inimical to the development of the black population. Control over land and water management loosened with withdrawal of people previously employed to manage land and water. As a result, cultivation on the mountain slopes for short term food crops; tree felling and cultivation near riverbanks increased. Irrigation schemes were no longer maintained. Land claim and restitution process were and are still translated into the settlement of new emerging farmers, supported by the new agricultural policy.

(Sources: Ramay and Beullier, 2005; Liebrand, 2006; Van Koppen, 2007a; 2007b; Mgombeyi and Taigbenu, 2008; Mapedza et al, 2009; Manzungu, et al, 2010)

Agricultural productivity is hampered by poor soil quality, meager water resources and inadequate water infrastructure development. The soil types are sandy loam to loamy sand and are generally poor and highly susceptible to erosion. The main stable income source constitutes pensions and welfare subsidies from the government, with small-scale rainfed and irrigation subsistence agriculture providing a significant part of food requirements in good rainfall years (Magombeyi and Taigbenu, 2008). The following paragraphs and tables provide analyses of resource access in the four villages where the study was conducted.

Table 5.1: *Number of households and total population in four villages in the Sekororo area*

Village	Total number of households	Total population
Enable	459	2 756
Lorraine	1 445	8 667
Sofaya	515	3 089
Worcester	186	1 115
Total	2 605	15 627

Source: Maruleng Municipality IDP Review 2005/2006.

Table 5.2 below summarizes the socio-economic characteristics and categorization of the households in Sekororo. There are variations in wealth status across villages, as the highest number of wealthy households (Bahumi), 73, is in Lorraine village, Sofaya had 23, Enable had 8, and Worcester has 2. Most salaried people, especially public sector employees such as teachers, nurses, extension officers and local government employees reside in Lorraine and Sofaya villages. On the other hand, the poor and poorest households are predominantly in Worcester and Enable villages. It is important to highlight that most wealthy/rich households do not necessarily have larger livestock heads than the Magareng and Bahloki groups, although they tended to have bigger pieces of land. It would seem livestock is not considered as a symbol of wealth by the most affluent households unlike the middle and poor sectors of society.

Table 5.2: Household Characteristics in Sekororo (B72a and B72c²³)

Wealth Ranking Cluster (and income sources)	Livestock	Land	Access to water	Main Cash income source	Participation in local institutions
Bahumi (rich/wealthy): own and drive expensive cars, and big houses. Some own shops and Bar Lounges. Chiefs also belong to this cluster.	Hardly have cattle, when they do they often have less than 5, some goats, several chickens.	Arable land ranges from 2 to 40 ha, irrigated homestead garden	Private borehole, tap inside the house and yard, more than 5000 litre storage or roof-top water harvesting tank/container, water vending	Salaries, business enterprise, savings, pensions.	Rarely involved in local level institutions except for offering support to candidates of their choice
Magareng (middle/working class e.g. teachers, nurses, and extension officers): largely depend on salaries. Some have cars. Most Indunas fit this group.	Have more than 10 cattle, few households also have goats and chickens.	Arable land ranges from 1 ha to 2 ha, very few have homestead gardens	Tap inside yard or within 100 metres, 2000 litre rooftop harvesting tank, multiple 210 litre storage containers, water vending	Salaries, savings, pensions.	Hold key positions in both ward and village committees, often as chairpersons. Are seen as better representatives

²³ Three of the four villages chosen for the study Enable, Lorraine and Sofaya are located within the quaternary B72a, while the fourth village, Worcester is located in B72c.

Bahloki (the poor): depend on social grants, RDP-style houses (four rooms).	Have less than 6 goats, less than four donkeys, 2 cattle, and several chickens	1 acre to 0.5 ha cropping land, member of community gardens,	CSP ²⁴ often 200metres away, river/stream, multiple 25 litre containers for harvesting/fetching and storing water,	Social grants, piece jobs such as security guards, vending and farm-labour	Actively participate in local institutions and contest for positions, often elected as secretaries, treasure etc.
Bahlokihloki/Badidi/Baditsana (the very poor): depend on piece jobs such as digging toilets, herding cattle, house-cleaners	Only have a few chickens	1 acre cropping land, member of community garden	CSP often 200metres away, river/stream, less than 5 x 25 litre containers for harvesting/fetching and storing water.	Social grants, piece jobs such as digging toilet-pits, herding cattle, house-keeping/cleaning.	Very active in targeted government and donor funded projects, often as beneficiaries and representatives of beneficiaries

Source: Own primary field data

5.3.4. Access to domestic water, and infrastructure for domestic water supplies

Domestic water infrastructure in the four villages includes communal stand pipes (CSPs), boreholes; rainwater harvesting tanks (see Table 5.3). The quantity of water used by a household is related to number of water sources, the quality or state of infrastructure, and the attendant institution mandated with the oversight for handling water issues. Table 5.3 shows the quantities of domestic water that are consumed in the four villages. The most common sources of water vary depending on the village. A yard tap connected to DWAF system is a common source in Sofaya. Communal standpipe (CSP) is the main source of water in Worcester, whilst the river is the mostly used source in Enable.

²⁴ CSP: Communal Stand Pipe, used generally to refer to public communal taps.

Table 5.3: Summary of infrastructure for domestic water supplies in Sekororo

Village	Infrastructure	Condition/status of infrastructure	Management oversight
Enable	12 Communal stand pipes (CSPs)	Bad: only 5 functional, maintenance required	Water committee, induna
	4 private boreholes	Good	Individual/household
	1 communal borehole (supplies the reticulation line)	Good: erratic diesel supplies for the pump	DWA/Maruleng municipality
	2 concrete storage tanks & reticulation line	Bad: leakages, blockages & vandalism common	DWA/Maruleng municipality
	2 jojo tanks	Good: Not yet in use	DWA/Maruleng municipality
	264 rooftop harvesting tanks	Good: some require attention	Individual/household
Lorraine	61 private boreholes	Excellent: fully utilised & maintained	Individual/household
	21 CSPs	Bad: only 3 functional. Maintenance & system upgrade needed	Water committee, induna
	3 boreholes	Good: only 1 functional	DWA/Maruleng municipality
	1 steel storage tank & one concrete tank & reticulation line	Bad: leakages, blockages and vandalism common	DWA/Maruleng municipality
Sofaya	>276 yard taps	Fully utilised & good state	Water committee/induna
	<8 CSPs	Fully utilised & good state	Water committee
	4 concrete tanks & reticulation line	Good: maintenance challenges	DWA/Maruleng municipality
	Canal	Good: but badly needs maintenance	Irrigation committee/LDA
Worcester	11 CSPs	Bad: only 8 are functional, need maintenance	Water committee/induna

	24 jojo tanks & reticulation line	Bad: only 8 being used. Maintenance required	DWA/Maruleng municipality
	2 boreholes	Bad: only 1 being utilised, diesel supplies sporadic	DWA/Maruleng municipality

Source: *Own primary field data and (Manzungu et al, 2010)*

The quantity of water used by a household is related to number of water sources, the quality or state of infrastructure, and the attendant institution mandated with the oversight for handling water issues. Table 5.3 shows the quantities of domestic water that are consumed in the four villages. The most common sources of water vary depending on the village. A yard tap connected to DWAF system is a common source in Sofaya. Communal standpipe (CSP) is the main source of water in Worcester, whilst the river is the mostly used source in Enable. A number of households ask for water from neighbours who in some cases sell this water to them especially in Lorraine village where public communal standpipes and yard taps do not work well and households are obliged to use alternative sources. Hence it is not surprising that obtaining water from water vendors is the most common source for households in Lorraine, where households reported that they buy water for R1 for a 25litre container and some pay R15 per 250litre container of water.

Domestic use is used here to refer to household uses such as cooking, drinking, cleaning and bathing. Note, most households in Sekororo do not have flushed toilets.

Table 5.4: Overview of domestic water use in Sekororo

Water availability	Village	Litres/head/day	% satisfied with water quality
Scarce	Enable	31	10.3
	Worcester	19	3.3
Abundant	Lorraine	20	46.7
	Sofaya	19	70.0

Source: *Own primary field data*

In Enable people obtain most of their water from the river and from rainwater harvesting rooftop tanks because of the unreliability of the reticulation system. The highest per capita water consumption in Enable was however compromised by the fact that the water was of poor quality as attested by only a tenth of the respondents approving its potability. In Sofaya the per capita consumption was low despite a reasonably well functioning reticulation system because a third of the village was not connected to the reticulation system. Due to the fact that water is physically relatively abundant, people invested in infrastructure to connect their own yard taps to the main reticulation line for an average connection fee of R150 (once-off payment). In Lorraine the public water reticulation system is almost non-existent owing to vandalism and neglect. The village depends entirely on the 61 privately owned boreholes. Despite the existence of private boreholes the rather low per capita consumption in Lorraine indicates intra-village variability as most households do not have boreholes. The low perception of water quality is because some households supplement the water they purchased from the borehole owners (vendors) with water from the river. In Worcester, except for the two days per fortnight where and when the communal stand taps yield water, almost the entire village depends on water from the stream and stream-bed dugouts, and it is of poor quality. It is important to note that per capita water consumption fell below the recommended consumption of 50 litres per day (Gleick, 1999). It should be noted however that domestic water use is more than consumption.

Except for private boreholes almost all the water sources are considered to be unreliable in the greater Sekororo. Even households with private taps connected to the main reticulation line cannot have water supply at all times hence their reliance on multiple sources for water. Respondents ranked sources of water from the worst to the best based on quality and distance to the source. The source of water is positively and significantly related to the water quantity and multiple uses, where as indicated earlier, those with yard taps, and those with private boreholes enjoy multiple uses of water at their disposal. There was a positive relationship between household income and access to private taps, boreholes, water quantity, and multiple uses. Households that have higher incomes can afford to have private taps and hence have higher water consumption. It is not conclusive

why there is no single household with a private borehole in Worcester village. Explanations provided seem to point towards the general prevalence of poverty within the village, which ranks as one of the poorest in both socio-economic terms and water availability and access terms. The high prevalence of private boreholes in Lorraine is also another notable exception. During group interviews and discussions, it was explained that most people employed by government reside in two villages, Mertz and Lorraine, hence, they were able to afford to invest in boreholes and pumps. There were also stories of selling cattle to raise money for the purchase of boreholes. Generally, households with higher incomes can afford to have better access, exposure and affordability to technologies such as pumps, boreholes and storage facilities.

Levels of participation in construction, operation and maintenance of public infrastructure varied from one village to another. In Worcester village, there was a remarkable contribution in both cash and labour in construction because of the high dependency on the few public community stand pipes. In Sofaya, labour contributions were also high in digging the trenches for the connections from the reticulation line to yard taps. Each household was required to contribute labour. Failure to contribute to one aspect of the different phases (of communal infrastructure) did not seem to curtail the rights of those who failed to participate due to kinship ties and weak enforcement by the authorities. In general there is a willingness to contribute to maintenance of infrastructure that people depend on.

5.3.5. Public and Private Investments in Water Infrastructure and Technologies

5.3.5.1. Public communal investments

This section documents the dynamics of local investment in water infrastructure by communities in Sekororo. It provides evidence of local initiatives in developing infrastructure for domestic, crop production and other productive uses. The examples that are given include situations where people initiate things by themselves, adapt public schemes and use government and NGO-supported infrastructure. Table 5.5 shows water

infrastructure that is also used for productive purposes. In this case investment is not limited to physical artifacts –it also includes investments in time.

Table 5.5: An Overview of water infrastructure in Sekororo

Water Resources	Village	Own Infrastructure	Public/NGO infrastructure
Scarce	Enable	4 boreholes	264 roof-top harvesting tanks (RHTs),12 CSPs, 1 borehole, and 3 storage tanks
	Worcester	0	2 boreholes,4 storage tanks, 11 CSPs,
Abundant	Lorraine	61 boreholes, 7 pumps, 1 furrow	56 ha abandoned scheme, 3 CSPs
	Sofaya	276 yard taps	72 ha abandoned ²⁵ , except 5 ha WV supported,2 boreholes,3 storage tanks, drip kits

Source: Own primary field data UNIVERSITY of the WESTERN CAPE

As explained under the domestic water uses, the table shows that where there is physical water availability, people invest in infrastructure. It is important to note that some of the infrastructure is used for both domestic and productive water use. As water is needed everyday for basic domestic consumption, frequency of supply, reliability of supply, nearby fall-back options, and distance of water source is very important for households and a good indicator of the quality of water services. Supply of water, reliability of supply and distance determines how water is used and stored for multiple uses. People with access to year-round reliable supply of water within short distances engage in more multiple uses and use more water than those without reliable supply, and have to cover longer distances to the water sources. Only 61 households in Lorraine and 4 in Enable reported that water is available to them everyday and at all times owing to private

²⁵ This refers to the unutilized 72 ha irrigation scheme owing to the withdrawal of subsidies by the government.

boreholes. 276 households in Sofaya, all with yard taps, have access to water every day for limited hours. Most of the households in Worcester and Enable have access to water from the reticulation line (through CSPs) twice per week. However, during the wet season, 264 households in Enable have water available to them everyday and at all times due to the prevalence of roof-top water harvesting tanks that were funded by World Vision. As a coping strategy, they store harvested water and maintain access to other multiple sources of water like vending, the communal stand pipes from the reticulation line and rivers. Water harvested is usually reserved for use during the dry season. Based on the frequency and reliability of supply, Sofaya has the best water access whilst Worcester has the worst owing to a limited number of water sources, and infrequent supply from the CSPs. The next section (section 5.3.5.2) provides detailed examples of the various self-initiated investments observed and documented in Sekororo.

All the 120 households which were surveyed reported that they store water in containers ranging from 20 litres to 7000 litres in capacity. This is mainly because the frequency of supply of water is poor for most of the villages and they say that this is sometimes attributed to bursting of pipes and other infrastructure failures. There is lack of water security, people are not certain about the times of water supply as they sometimes go for periods sometimes lasting up to three weeks without piped water in Enable, and Worcester, and up to one week for Lorraine. Only Sofaya is relatively water secure, because people hardly go for more than three days without piped tap water. Most people in the Bahloki and Baditsana/Bahlokihloki categories report that they use the 25 litre and 250 litre containers to store water. A household has on average 6 small containers (20-25litre) and 2 big containers (200-250litres) for storing water (i.e., a storage capacity of 520 to 650 litres, 87 to 108 litres per person). This is enough water to cover basic needs of 25l/person/day if water comes every five days or twice a week, but not enough if they stay without water for a week. Only 7% of the population reported that they have jojo²⁶ tanks and these have a capacity ranging from 1500litres to 7000litres. These large storage

²⁶ Jojo tanks are green plastic containers of various sizes that come with an inscription “Jojo” from the manufacturer.

containers are primarily owned by households with boreholes and/or are wealthy (the bahumi).

5.3.5.2 Self-initiated Investments

a. Pump schemes

Self-initiated pump-schemes are found in Lorraine village. Pump-scheme is used to refer to farming system where motorized water pumping is applied to draw water for irrigation. There are seven farmers who abstract water for irrigation from Makhutswe River using privately acquired pumps. The pumps are shared with eight other farmers for which they are required to contribute labour for moving pipes as well as fuel for the pumps. The total area that is irrigated by the 15 farmers is 36 ha. Irrigated plot sizes range from half hectare to 7 ha with 1.2 ha being the average. Some of the farmers with irrigated plots across the river also own plots within the Lorraine irrigation scheme, a public-funded scheme which has fallen into disuse (see below). Apart from investing in the pumps, piping and fuel, farmers have also to invest in land clearing. No hired labour is used for operating the pumps. The man transports the pump using a wheel barrow from the homestead to the plot and vice versa whenever irrigation is undertaken. Purchase of fuel, checking fuel levels and carrying out general maintenance is the responsibility of the male members of the household. Female members mainly engage in weeding, transplanting and harvesting crops. Crops grown include maize, tomatoes, beans, carrots, sweet potatoes, beetroot and spinach among others.



Insert/plate 5.1: Direct abstraction of water from Makhutsi river for irrigation in Lorraine. Source: Own primary field data

The right to water conveyed by the pumps is related to the investment made. As one farmer put it, “If you did not provide for it, invest in it, you therefore cannot measure it or levy it, let alone license it”²⁷. He qualified his statement by explaining that most of the farmers struggled to raise money to buy the pumps and pipes for irrigation without external support, hence such farmers exercised full control regarding the ownership and usership rights. In these contexts informal law prevails. According to the farmers the state should not and could not be allowed to levy or license the farmers’ use and enjoyment of their sweat, because it (the state) did not provide the infrastructure. To safeguard their interests farmers did not readily provide information relating to their irrigation activities. Although ownership and entitlement to the water conveyed is exclusive to the investors, actual usage is shared with those close in social circles such as kin, good neighbours and friends. However, they are required to make one form of contribution or another, especially through financial payment for fuel used by the pump.

²⁷ Personal communication December 2008

b. Boreholes

As noted earlier private boreholes are only found in two villages. In Lorraine there were 61 boreholes while Enable had three. In Lorraine village water is used for backyard gardening, car wash, and water vending. Boreholes in Enable are also used for backyard gardening. Reasons for investment in boreholes were given as insurance against general water scarcity due to both natural and dysfunctional local institutional arrangements, and as a form of social security. For some few respondents the investment was precipitated by problems they faced as new entrants in the villages where they were often given the last priority as new comers, or no connection as infrastructure was already built, hence problems of new connections in an existing scheme.



Insert/plate 5.2: Borehole pumphouse and storage tank, and drip irrigation in Lorraine

Areas irrigated by each household on their backyard gardens vary in size from 5 x 10 metres to 8 x 15 metres. Most households with boreholes in Lorraine village have drip-kits for their backyard gardens which they bought (the kits) from a local agricultural warehouse in OFCOLACO. The motivation behind the usage of drip-kits seems to be an effort to minimise the electricity costs for the borehole pump. Crops grown in backyard gardens include onions, tomatoes, rape, cabbage, beetroot, beans and peas. Most backyard gardens are operational for the greater part of the year except during the rainy season when rainfed maize is planted, in which case supplementary irrigation is required. Households with boreholes and backyard gardens do two to three crops per year. The other benefits derived from borehole investment is sale of water, where people without boreholes paid 50 (South African) cents up to early 2008 and R1 from August 2008 for

20/25 litres of water. The charges are meant to offset the electricity bill for the borehole pump, which have increased due to increases in ESKOM tariff charges.

c. Rainwater harvesting

A case in point of individual hydraulic property creation, through water harvesting and storage, is that of a brick-making enterprise in Enable village. This was illustrated by one individual who invested in a brick making machine at a cost of R11 400, a run-off harvesting tank with a capacity of 10000 litres, and twelve 200litre drums. He has three employees to make bricks for sale. The three labourers make an average of 480 bricks per day where each brick costs R1.20. During the dry season, the entrepreneur uses his truck to fetch water from the river using the 200litre drums three times per week. Like elsewhere, investing in this infrastructure ensures exclusionary ownership and usership rights over both the water conveyed and the products realized.

d. Off-river gravity furrow irrigation

The off-river gravity furrows are found in Lorraine village and are used on land in the 56 ha formal gravity irrigation scheme which became derelict after 1994 when the state withdrew subsidies. The scheme was abandoned because farming had become too costly without subsidies. The other important reason was that the management committee failed to get the scheme running.



Insert/plate 5.3: Off-river weir, furrow and irrigated plots in Lorraine

A group of 12 villagers (9 women and 3 men) resuscitated irrigation of their plots by investing in a new furrow (see insert 5.3). They each own 0.4 ha and collectively work on 4.8 ha, where they grow an assortment of crops including beans, vegetables, tomatoes, sweet potatoes under (flood) irrigation between May and August. The furrow is locally known as *mezero*²⁸. The resuscitation of furrow irrigation began with the initiative of three women and one man, and then the group grew to 21 before some of the members dropped out after failing to honour the requirement to contribute labour for digging and cleaning the furrow. The main costs incurred by the furrow irrigators included labour for the initial digging of the furrow and building the impoundment across the river. Digging

²⁸ *Mezero* is plural for furrows.

the furrow was primarily done by men while the laying of stones, earth and the plastic sheet on the ridge of the impoundment was done by both men and women. Furrow maintenance (cleaning up) is primarily done by women on a rotational basis. This is where the importance of control is demonstrated. Members are physically present all day in rotation to ensure those who did not contribute do not use the water, and to guard against vandalism by livestock. It is mainly women who spent most of the time in the field as watch persons. The farmers involved have a working informal arrangement where if members do not participate in the maintenance works or such other duties as required of them, such members would not be allowed to access water. The general oversight for dispute resolution and rule enforcement rests with the *induna* for the village.

The main challenge the farmers face is water scarcity due to competition for water from the pump-irrigators. The upstream furrow irrigators were accused of diverting the whole stream/river flow to the detriment of the downstream pump-irrigators. The problem between the furrow irrigators and the pump-irrigators was solved amicably after one of the furrow irrigation members became creative by perforating the plastic sheet on the impoundment to let some flow go through. This eased the tensions between the two groups. There is hardly any technical and financial support available from the state for this group of farmers. Both the furrow and pump irrigators face huge water scarcity issues owing to the massive diversions by upstream white commercial farmers. When asked if they was any dialogue of effort to channel or communicate with the upstream white commercial farmers, one of the pump irrigators responded using an analogue thus “...we, the small scale down stream farmers are like the leaves at the tip of the tree, and the white commercial farmers are like the trunk and branches of the tree...we are powerless, we can not do anything to them”. It would seem that there is a general unwillingness to engage with- or fear of - white commercial farmers.

e. Hillside cropping in Sofaya

There is a rapid increase of farmers abandoning their plots in the 72 ha Sofaya irrigation scheme to clear land and farm on the mountains in Sofaya village. The patches of land cleared for cultivation on the hillside are hardly accessible except for one gravel road

used to ferry farm produce back to the village. There were more than 35 farmers involved from three different villages practicing hillside farming. On the hillslopes facing Sofaya village, only villagers from Sofaya and Mahlomelong are allowed to farm there. On the other side of the mountain, people from other villages also have plots. Box 2 shows a typical story.

Box 5.3. Narratives of hillside farmers

The three male farmers introduced us to five more farmers, three females and two males. We staged our first “group meeting” with the farmers as almost an incidental event. All the eight hailed from Sofaya village, and all have irrigation plots allocated to their households, either directly to them or as heirs to their parent’s plots. The farmers were motivated to move and farm on the mountains for various reasons ranging from uncoordinated farming management in Sofaya, government interference, withdrawal of government support, lack of enough water to irrigate, vandalism of crops by livestock, to high costs of inputs such as fertilizer and hiring of tractors for ploughing. In the hills the farmers do not use fertilizers and tractors, hence the production costs are much lower rendering hillside farming more favourable and lucrative compared to the derelict irrigation scheme. They did not have to ask for anyone’s permission to have access to the pieces of land they have. As one of them put it “...if you have the energy to clear the land and work the land, all you do is work on it”.

Source: Own primary field data



Insert/plate 5.4: Hillside farming in Sofaya

Plot sizes on the mountains range from 0.2 ha to 1.6 ha. The crops grown on the mountains are not irrigated. The mist and morning fog help cushion the crops from the dry-spell often experienced during the rain season. The total irrigated area falls between 10 and 15 ha²⁹. The main cost incurred by the farmers was land clearing, sometimes with help from others on rotational basis. Crops grown on the mountains include maize, sweet potatoes, pumpkins, beans and other cash crops. Farmers do two crops per year, with maize and sweet potatoes during the rain season, and beans immediately after the maize harvest. Yields from mountain farming are reportedly much higher than on the irrigation scheme. Farmers report harvests of between one and half to 5 tonnes per ha per season.

Farmers on the mountains have full control of the pieces of land they work on, which they unequivocally call “our land” as opposed to their abandoned plots on the irrigation

²⁹ This is a rough estimate, it can be a little more or less, we were not given the opportunity by the guards and ploholders to visit all the plots.

scheme often sited as “government land”. They were clear that on government land, they had very few liberties on what to do, and there was hardly any attempt to attend to farmers’ problems on time, unlike the mountain plots where they enjoy full ownership and usership rights. The farmers allege that many people are not interested in farming on the scheme because there is no support from government anymore, and when support does come, it is piecemeal and often comes a little too late for the farmers. On the mountain plots, however, farmers use donkeys for cultivation, and sometimes resort to hand-hoeing especially for the second crop in the season, a much cheaper and sustainable option for them.

5.3.5.3. NGO-assisted activities

a. Irrigation in Sofaya

World Vision helped to fund a group of five women to irrigate a 1.5 acre piece of land within the 72 ha greater Sofaya irrigation scheme. The name of the project is Ikarameleng³⁰. The support was in form of a fence (within the main perimeter fence) of the Sofaya irrigation scheme, ploughing using a tractor and inputs such as fertilizer and seed. It also included drilling of a borehole and construction of two underground brick and concrete storage reservoirs. The Limpopo Department of Agriculture (LDA) also contributed by providing and installing ‘ready made, high pressure drip kits, some of the highest quality on the market. The group won the local municipality women’s group of the year for two successive years, and came third on the district municipality competition. Produce from the plot is sold both within Sekororo and as far afield as Pretoria and Johannesburg with support from WV. Crops grown range from groundnuts, rape, tomatoes, maize, beetroot, spinach, carrots, sweet potatoes to beans, onions and cabbages. The drip-kits from the LDA were in derelict state for almost a year and parts of the kits were burnt. The women removed the kits and resorted back to flood irrigation. The point to underscore here is that Ikarameleng still gets water from the main canal, hence the underground water reservoirs built with funding from WV are meant to be an exclusive buffer for the project members only, and not other farmers within the greater Sofaya irrigation scheme.

³⁰ Loosely translated, it means ‘Respond for yourself or by yourself’.



Insert/plate: 5.5: Irrigation canal and irrigated plot at Sofaya Irrigation scheme (top), and donated fence by World Vision to a group of women (bottom)

Although World Vision made an effort to assist some farmers, the 0.6 ha plot is really a drop in the ocean for the expansive 72 ha scheme. The total irrigated area for the whole scheme in 2006-2007, 2007-2008 and 2008-2009 cropping seasons was less than 5

hectares. Many farmers complained of high costs of production, lack of coordination among farmers, water shortages and crops being vandalized by livestock. On the other hand, livestock owners, some of whom are plot holders in the scheme, counteract by arguing that if people do not want to cultivate their plots, they will not stop using the uncultivated parts of the scheme as grazing pastures for their livestock, and the unused water from the overnight storage dams within the scheme for livestock watering.

b. Water harvesting and borehole irrigation

The most outstanding examples of roof-top water harvesting storage are found in Enable village, where more than 250 households invested in rooftop-rainwater-harvesting storage tanks with financial and material assistance from World Vision. The tanks were constructed using brick, cement and concrete to harness rain water from rooftops of houses. The beneficiaries were selected by World Vision staff in consultation with local leaders³¹. The tank sizes range from 2000 to 7000 litres in capacity. Water from the tanks lasts up to six months on average from the end of the rain season into the dry season, depending on priority of use and size of household. Water harvested is used regularly during the rain season and is saved for important household uses only from February onwards. The owners of the tanks have exclusive entitlement to the water harvested and stored.

³¹ It was highly politicized during and after the implementation owing to the central position of one of the WV staff members who also happen to command a lot of respect within some religious denomination, with allegations rife that most of the beneficiaries were from that religious group.



Insert/plate 5.6: World Vision funded rooftop harvesting tank in Enable. The number 264 stands for the 264th beneficiary from the World Vision funded project in the village.

The intervention by World Vision prompted other villagers who did not benefit from the project to invest in their own tanks as well. Many preferred to purchase the cost-effective and reliable plastic tanks, commonly referred to as jojo tanks. In the other three villages, there is a higher prevalence of jojo tanks than brick and concrete ones although not as many compared to Enable. Poorer households (without external intervention) rely on smaller storage containers such as 210 litre containers and numerous smaller 20/25 or 30 litre containers to keep up with the erratic and unreliable (and sometimes chaotic) water supply services.

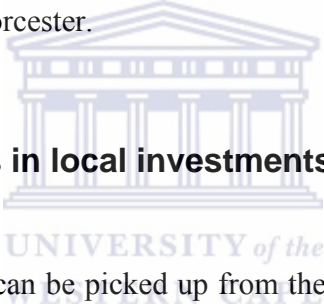


Insert/plate 5.7: Jojo tanks for communal water supply in Worcester. The tanks are owned and managed by the Maruleng local municipality and the DWA regional offices at the Oaks.

In Enable, Sofaya and Worcester, World Vision supports groups of women and men with water access through provision of water pipes, building of water storage tanks and fencing equipment. This exogenous intervention in the three villages delineates between those who benefit and those who cannot benefit from the project, it is not necessarily public in the sense of all the village benefitting nor is it private. The Worcester Garden Project (WGP) has a membership of 33 households, with a committee to oversee use and management of members' activities as prescribed by the funder. World Vision funded the drilling and equipping of a borehole, built a concrete storage tank (about 10000litres capacity) and a 7500 litre jojo tank to irrigate one acre of land subdivided into rows. Each household within the Worcester garden project was allocated five rows measuring 5 metres in length and 8metres in width where they can grow crops of their choice. The

total irrigated area for the Worcester project, just like the Enable one, is almost 0.6 ha. Crops grown in the two 'projects' include tomatoes, onions, rape, cabbage, maize, spinach, carrots and beetroot among others. The produce is mainly for household consumption with some managing surpluses to sell.

Water conveyed by the borehole and stored in the tanks is for access by project members only. Project members cannot use such water for other purposes such as domestic uses and livestock watering, not even in extreme times of scarcity. October 2007, there was no water in Worcester village for three weeks and yet water was available at the WGP, and no one used that water to meet their domestic use needs, not even the committee members. The project committee, in liaison with both the induna and the village WC enforce such control measures. This compliance might be attributed to the general extreme scarcity of water in Worcester.



5.3.5.4. Common threads in local investments: Individual and group rights

A number of common threads can be picked up from the cases that have been described above. These threads relate to the connection between individual investments as it relates to the community within which the individual finds himself/herself. First it is clear that in Sekororo there is evidence of willingness and ability to invest in water infrastructure and related activities such as land clearing, for example. The investment was found to vary according to the socio-economic status of the individual/household and water availability as well as from village to village. The main private financing arrangements available include each or a mix of savings, sale of livestock, pensions and grants, and retirement funds. A notable examples is one where a farmer took out a soft loan from a bank to have a borehole drilled and equipped at his home for a total cost of R36, 000 and another farmer sold his three oxen to purchase an R9000 water abstraction pump, while some women used their welfare grants from government to pay for usage of pumps from other farmers to cover fuel costs. One couple intimated that they paid between R1,250 and R2,500 per hectare for land clearing. Most households estimated that they took between

one and two months to get the job done. Fencing the land was another important development cost and was estimated at R 1000 per hectare.³² Each borehole owner has a storage container to which water pumped from the borehole is stored. The containers vary in size from 5000litres to 10000 litres with a cost of between R3400 to R 5800³³. A 5000 litre jojo tank costs R3400 whereas a 10000 litre tank costs R5800.

Exclusiveness of property rights generally varied with ownership of the infrastructure and the type of security such as fences that curtail others from accessing the resource, yet sharing of both water for irrigation and domestic uses is not uncommon under social arrangements organised along kinship, friendship and religious lines where reciprocal relations exist. In other instances, such as access to private boreholes, the relationship is that of patron and client or buyer and seller where anyone can access water provided they are able to pay the R1 per 25 litres of water required by the borehole owners. Although sharing is common within villages, it is remarkable that there is no sharing of water between and among villages even under instances of severe shortages, hence one's geographical location determines and sometimes restricts their access to water. The physical boundaries separating each village from the other act as resource access boundaries, where no member from another village, regardless of their relations with members from neighbouring village, are simply not allowed to access water from 'communal/public' systems despite being close. This also applies to daughters who married in other villages (out from their village). It requires further research to explore reasons for this.

5.3.6. Institutional Arrangements and Access to Water

There are different committees and structures for the different villages, and within villages. Some individuals are found in more than one committee. Villagers may elect the same people into different committees. In Worcester, some members are nominated by the induna, where such nomination became a vote of confidence that spurs the individual to perform better as they are obliged to avoid embarrassing their nominator. In such cases, nomination becomes highly significant and much more valued than being

³² From focus group discussions held in Lorraine December 2008.

³³ Estimated costs provided by the respondents

elected by compatriots. Private water source institutional arrangements are products of reciprocity i.e. social networks of actors created through the family, kinship ties, and good neighbourliness extend to include patron-client relations where one sells and others purchase a commodity (water). NGO supported committees might not necessarily have the legal backing or clout enjoyed by both the traditional and modern authorities, hence they draw their allegiance from the people due to the material and financial support they provide which are time bound and dependent on donor support. When NGOs withdraw support, these committees lose their vibrancy like what happened to some water committees when Mvula Trust left Sekororo.



Insert/plate 5.8: Worcester water committee meeting July 2007

Table 5.6: Villagers' perceptions of water-related institutions

Category	Structure	Constitution	Perceptions	Mandates/Comments
Traditional Authorities	Induna	Lineage nominee/hereditary	Very active	Land, water, livestock, woodlands and pastures
	Chief	Lineage nominee/hereditary	Very active	Land, water, livestock, woodlands and pastures
Local government	District municipality	Elected	Active	Water supply, infrastructure investment
	Local municipality	Elected	Active	Water supply, investment in infrastructure, maintenance
	Ward	Elected (councillor)	Active	
Government department	DWA	Appointed	Active	
	LDA	Appointed	Active	

NGOs	Sekororo Water Supply by Mvula Trust	elected water committees	Active during Mvula presents & inactive after NGO left	Provision of infrastructure and capacity building support. Heralded the formation of water committees in Sekororo
	Worcester Garden Committee	Elected committees	Very active	Provision of infrastructure, setting up committees, and other support
	Enable Garden Committee	Elected committee	Very active	Provision of infrastructure, setting up committees, and other support
	Sofaya Women's Group	elected water committees	Very active	Provision of infrastructure, setting up committees, and other support
Interest Groups	NAFU	Elected	Dormant	
	Matsivo Savings Group	Voluntary subscriptions	Active	Moral and material support for livelihoods and during bereavement

Source: Focused Group Discussions (field data)

Committees are defined as active when they: have meetings; solve problems, collect fees, enforce sanctions, and fulfill public obligations.

Local level institutions' survival highly depends on the trust local people have in them as a direct consequent for meeting their needs and interests. Institutions such as traditional authorities tend to be more accountable to the people as compared to formal and modern institutions such as the municipality and Department of Water (formerly department of water affairs and forestry). Traditional authority therefore tends to be more popular at the local level despite their (traditional authorities) own frailties in dealing with the messiness of minute power issues (see Table 5.6). The Department of Water and the local municipality tend to emphasize the management of water, a specific resource, while the traditional authorities and attendant informal institutions appear to be there to manage

social-relationships that influence different actors' access to an array of natural resources that include land, woodlands and water. This gives traditional authorities a holistic approach to resources management unlike the 'formal' institutions that tend to be sector oriented.

Public supported infrastructure collapsed in three of the villages leading to private initiatives re-inventing part of the schemes through individual initiative with or without help from external agencies. There is a diversity of rules regulating access to public infrastructure, where most of the communal infrastructure such as CSPs, boreholes and tanks are considered to be the property of the municipality and department of water, and only those two entities are associated and burdened with the day-to-day maintenance and control of the infrastructure. Yet in terms of access to water conveyed by the infrastructure, the rules of access tend to vary according to village. Despite all the challenges, private investors still share water conveyed by their pumps with other farmers and villagers through social (informal) arrangements that exist among the farmers.

Although traditional authorities generally base their power on the benevolence of their subjects to follow their leadership a closer analysis in Sekororo (and elsewhere e.g. Mzingwane in Zimbabwe), showed chiefs and indunas re-align themselves with organisations and institutions perceived to bolster their positions. For example, one narrative has it that the Blyde initiative to bring water to the greater Sekororo villages is aptly named the Mametja-Sekororo Regional Water Scheme after canvassing by the paramount chiefs Sekororo and Mamejta to the municipality. Yet the counter-narrative by the chiefs indicate that it was the municipalities (district and local) that realised the indispensable character of the traditional authorities, hence the recognition by naming the new scheme 'Mametja-Sekororo'. By naming the grand water supply project after the chiefs, they portrayed the traditional leaders as key elements in the project, despite the fact that they played very low-key roles. Keeping and updating the village register is another instrument of power, and key in managing and controlling people's use of natural resources such as water and land. In cases where one negotiates with the induna to have siblings or spouse working away from the village for more than 12 months registered as

ordinary resident, whose interests are represented on a daily basis, this is used to either inflate or deflate the status of the induna, and of the households in question in maintaining the key networks in place.

Local level structures are often made up of the same individuals, operating in different capacities in the different structures. There is a maze of institutions in Sekororo dealing with water issues. There is often no formal definition and communication of which organisation should be doing what yet a closer analysis reveals that rather than being independent entities, local level structures are often made up of the same individuals, operating in different capacities in the different structures. For example, all the indunas are either directly involved in the different committees in their village, or they appoint or nominate a representative. This renders conflicts in objectives and interests of different organisations neutralized by having the same individuals sitting in the various committee structures, yet this also is the reason why some committees are not meeting. Kinship ties in Sekororo influence who holds what positions especially in water committees, project committees and civic committees. Examples include the Worcester induna who nominated one of his relatives to the water committee; and the World Vision garden project where the NGO appointed some members of the garden project without going for elections only to turn out that two appointees are related to some WV staff. Both the traditional and modern authorities find themselves having to deal with cases of adjudicating in an environment of growing resource scarcity. Actors shift their allegiance from one institution to another as part of the strategies of ensuring security of resource access. Institutions that bring quick responses and benefits at a particular time get the most favours and NGOs become very handy in this regard.

While the local municipality and department of water may survive and thrive owing to the legal backing by formal legislation statutes such as the Water Services Act, indicators on the ground point towards huge challenges of infrastructure vandalism which might render the modern institutions to become shadows of what was intended of them, unless traditional leaders are made an integral part of the monitoring system. Conflicts relate to the legitimacy of certain traditional leaders in the community owing to past claims to

particular positions and confrontations. For example, in Enable village, the induna faced resistance when he tried to impose participation by all villagers in some traditional rituals. Some villagers did not attend nor participate citing their religious beliefs. This apparent defeat of the induna prompted widespread disregard and lack of respect for the leader. Yet, during our survey, we observed that the induna in Enable village is named as the main and best placed authority to settle water issues in the village. This makes it difficult for villagers to challenge the traditional authorities publicly but resort to passive resistance techniques.

5.3.7. Scope and Implications: Infrastructure Investments and Productive Uses

The above cases documenting the dynamics of local investment in water infrastructure in four villages in Sekororo area raise the important question of what does this all mean for the wider South African society. As indicated in the methodology section the four villages were carefully chosen to represent the different water situations that are found in the Sekororo area. Between them the four villages account for 28% of the total number of households and population in the greater Sekororo area. Statistically this is a representative figure of what happens in Sekororo. We limit our extrapolations to investments in productive water use because this makes it possible to compare with state initiatives meant to assist individuals and groups of farmers to invest in water infrastructure as reflected by investments in irrigation schemes. In domestic water supply it is accepted that the state will directly invest in water infrastructure. As can be seen from Table 5.6 there was a positive correlation between water availability and investment. In water scarce villages although people engage in infrastructure investments for water conveyance, harvesting and storage, what they use the water for is very limited to primarily domestic uses and small backyard garden irrigation. It is also significant that it is in the water scarce villages that we see little private investment. The cross-cutting common thread is that where and when water resource availability as well as access and supply is assured, people are willing to embark on larger-scale productive uses, beyond their domestic needs.

Table 5.7: Number of households irrigating specified area in Sekororo

Average irrigated area (ha)	Enable (Water Scarce1)	Lorraine (Water Abundant1)	Sofaya (Water Abundant2)	Worcester (Water Scarce2)
<0.002	5	0	48	18
0.05	1	4	0	0
0.2	0	1	3	0
0.4	0	0	6	0
1	0	1	0	0

The data also raises issues that pertain to regulation. As can be seen from Table 5.7 the proportion and number of households tends to be larger for small irrigated areas and vice versa. This has practical implications regarding how the regulation of water use for these categories of farmers can be implemented. Depending on the thresholds that are agreed upon the administrative burden can increase or decrease. Efforts to legislate the numerous small quantity users, whether for productive uses or otherwise, would involve dealing with thousands of applicants/clients. If the focus is restricted to the real huge water quantity users, the process will not only be feasible but also avoid the tedious and messiness of dealing with too many insignificant water users. This underlines the importance of correctly focusing the implementation of Schedule One use, General Authorizations and licenses so that these are responsive to the needs and demands of informal water users, who, as we have demonstrated in this chapter, are willing to invest in water infrastructure. Such an approach can help alleviate the high poverty levels. Unfortunately the current approach of seeing and hearing no evil about Schedule One use and General Authorisations, while it may appear to provide sufficient leeway for informal water users is counterproductive as illustrated by the reluctance to issue community-wide authorizations. This is a policy position that needs to be clarified.

Table 5.8: *Distribution of irrigated area as a proportion and number of households in Sekororo, extrapolated for all households in Sekororo*

Size (ha)	% villages	No of households
<0.002	69	7 728
0.05	5	560
0.2	4	458
0.4	6	672
1	1	112

Source: Own primary field data, and Manzungu et al (2010).

For both domestic and productive water use there is a need to revisit the institutional arrangements so that they respond to issues on the ground. For example with regards to domestic water supply while state law apparently is accepted and adopted through the local municipality, DWAF and allied government departments, provisions and confirmed by the integration agreement between the municipalities and DWA, new rules and the new institutions are renegotiated and reinterpreted in the context of already existing norms and institutions. The composition of most water committees, managing communal infrastructure, reflect the significance that traditional leaders and their families place upon them in the wider struggle over property rights. In all private connection to the main reticulation line in Sekororo, the chiefs have been actively consulted, paid a connection fee ranging from R150 to R260, and were among the initiators of the refurbishment of the water infrastructure. They were also instrumental as mediators and adjudicators where and when members of a communal property venture have disputes. With regards to productive water use we see some of the institutional actors that are relevant in domestic water supply and new ones such as the Limpopo Department of Agriculture. There was an overlap between DWA, Limpopo Department of Agriculture and the local municipality in terms of service provision, dispute settlement, and leadership control. This puts and/or leaves chiefs in a powerful position. The institutional deficiencies illustrate that it is not physical scarcity that is the problem. In the Sofaya irrigation scheme land and water were not scarce and yet the 72 ha scheme lay idle with people preferring to go up the mountain to cultivate. During group discussions most

people were tired of the “collective” or “communal” blanket recommendations that the Department of Agriculture was keen to impose. In such circumstances the Department of Agriculture would have better served by consulting the cultivators. But that by itself would not have been enough. The Department of Water Affairs would also have been better served by opening up channels of communication with the cultivators with a view to making the cultivators form a water users association as provided for in the law. This has not happened in Sekororo, where DWA officers insist water for productive uses is the responsibility of the Department of Agriculture, and vice versa. From our evidence, it would seem that DWA is responsible only for domestic water supply in Sekororo, while the Department of Agriculture is responsible for productive uses.

5.4 Conclusions

Most wealthy/rich households do not necessarily have larger livestock heads than the Magareng and Bahloki groups, although they tended to have bigger pieces of land. It would seem livestock is not considered as a symbol of wealth by the most affluent households unlike the middle and poor sectors of society. It is also wealthier households that tended to have access to private boreholes.

Although public water schemes are formally designed for one single-use, they are invariably used for other non-planned uses as well such as canal water being used for multiple uses by households in Sofaya village. Water agencies may try to prevent this as ‘illegal’, usually in vain. This bias towards single water uses, as reflected by the apparent single focus on domestic water supply by DWA at the local level in Sekororo, and solely water for productive uses by the Department of Agriculture is anchored in administrative sub-sectors according to single uses, so the domestic sub-sector, irrigation sub-sector, and livestock sub-sector.

The chapter also showed that households with better water access in terms of good frequency and reliable supply, as well as short distances to the water source tend to have higher water consumption levels, and for multiple uses. In contrast people in water

scarce villages, where water supply is infrequent and unreliable, tend to restrict their water uses to domestic uses.

Traditional leaders play an important role in managing water resources owing to their power in managing the allocation of land. Hence, despite efforts to democratise resource management at the local level through elected councillors, traditional leaders seem to remain more relevant. The prevailing perception amongst people in Sekororo seems to point towards favourable ratings for traditional leaders as better enforcers and arbiters in local water disputes compared to the ad hoc and often fragmented interventions by the different and competing local and national government agencies.

There are dynamic local investments in infrastructure development initiatives in Sekororo. Most of the initiatives are self-funded through personal savings, sale of livestock, and pension grants. On the other hand, there are numerous NGO and government supported interventions such as rainwater harvesting tanks, fences and drip-kits. The overall conclusion is that support for infrastructure investment in water development is essential and should be scaled up in order to maximize benefits for the majority of rural poor households.

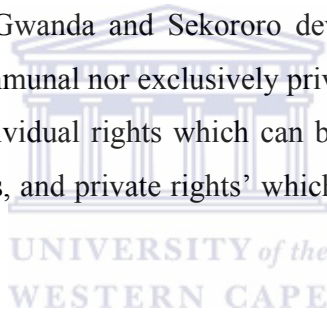
There are various water committees at the local level in Sekororo, yet there is no direct and clear linkage with intermediate institutions such as municipalities, where linkages exist, they are often weak and do not account to the constituent of water users/stakeholders. This leaves a huge operational void in terms of both scaling up and out of the institutional structure. There are several options including formalising existing traditional committees.

CHAPTER SIX: Hydraulic Property Rights Creation in South Africa and Zimbabwe – A Conceptual Analysis

6.1. Introduction

The research results presented in chapters four and five focused on patterns and processes of investments in water infrastructure and the creation of property rights in Gwanda and Sekororo. There are striking historical parallels between colonial- and apartheid-era policies and practices on rural governance of resources and contemporary government planning in the two research sites. This chapter provides conceptual and analytical insights on how the dynamic processes played out in South Africa and Zimbabwe (presented in chapters four and five) can be understood within the broader property rights and institutions debates. Mainstream institutional approaches and arrangements for water governance in South Africa and Zimbabwe barely address the arena of water governance and civil organization below those of large-scale bureaucratic units created by governments at sub-national levels. Local government has not effectively penetrated downward into this landscape with their bureaucratic structures, their incursions into it being unenforceable and frequently appropriative. Given this vacuum in effective bureaucratic institutionalism, rural populations have had to rely on management forms which derive in large part from their pre-colonial, colonial and post-colonial heritage of communalism, with a shift in the locus of decision-making from centre to periphery, and vice versa. Recent scholarship has pointed out major deficiencies in any simplistic programmatic application of this assumption. It isolates the local from larger societal structures; assumes local homogeneity in the face of manifest differentiation; is ahistorical; ignores power relationships; and tends to be overly determinative. In the light of these critiques a social constructionist stance is adopted which regards institutions as being highly dynamic and flexible, subject to constant manipulation by individuals or interest groups for their own instrumental purposes. It is this dynamism, negotiation and interplay of stakeholders that necessitates a broader and closer analysis of the role investments in property rights creation play in mediating access to resources.

The concept of hydraulic property rights creation is used here to elaborate and critically analyse the role of investments in communal and private infrastructure and the resultant property rights regimes and institutional arrangements that emerge. The concept places the locus for institutional development and rights creation firmly in the province of local collectivities themselves (the resource users); it is they who have the prerogative and power to seek centripetal consensus to counter the centrifugal tendencies of sectional interest. This is with regards to users in both public and private investments. The concept also entails understanding the existing patterns of rights and their embeddedness in social, political and economic institutions. For people to make effective claims requires a number of complementary strategies and conditions often manifested in social relations and identities, where existing rights as claims are legitimised by social structures and norms. The mere designation of rights alone is not enough to ensure their realisation. Communities in Gwanda and Sekororo developed hybrid forms of rights which are neither typically communal nor exclusively private. Hydraulic rights consist of a bundle of collective and individual rights which can be categorized as: ‘group rights, project rights, communal rights, and private rights’ which are often guided by normative plural arrangements.



As highlighted in Chapter 1 and subsequent chapters, hydraulic property rights creation is defined as the process of establishing recognized claims to water of certain quantity and quality on a particular site at certain timings (Coward, 1989; van Koppen, 2009; Manzungu et al, 2010). Making investments in the physical infrastructure to abstract, store, and/or convey water and, thus, create such use value of water in terms of quantity, quality, site and timing, is the single most important ground for vesting claims to water conveyed. Others who have not contributed to the investments can be excluded, although this is lesser the case for all those needing drinking water and for household and community members. Investments may be individual (like investments in small pumps or homestead wells), or communal (like village reservoirs and irrigation furrows). Processes of hydraulic property rights creation may be entirely ‘endogenous’ (or ‘local’ or ‘informal’), with claims recognized at the local level by communities, or they may depend upon government, formal NGOs, or other outsiders (publicly supported or

‘exogenous’). In the case of public investments, governments who build the systems can exert claims, but the public constructors mostly expect users to take up at least part of the investments in operation and maintenance, as a (pre-) condition for their formal entitlement to the water conveyed. Lack of clarity on such hand-over and lack of other needed support may lead to a process of ‘hydraulic property rights extinction’, where, water could physically be made available, but nobody exerts claims. Hydraulic property rights creation is useful in this analysis informed by the broader significance of institutional arrangements and water investments for the evolution of resources governance in Southern Africa and Zimbabwe as demonstrated in chapters four and five.

This chapter explores the process of property rights creation which may be entirely ‘endogenous’ (or ‘local’ or ‘informal’), with claims recognised at the local level by communities, or they may depend upon government, formal NGOs, or other outsiders (publicly supported or ‘exogenous’). The emphasis underscored here is that the very notion of property is a human construction and not a natural “occurrence”, thus property arrangements set the rules concerning how people relate to one another with regard to water (land and technologies). The chapter also highlights how property can be altered as and when new ideas come into play, re-shaped in response to novel and innovative technologies. Finally, they can be re-done when political or economic power shifts within the contextual environment and society involved. There is emphasis on the notion that property situations contain multiple property forms and are not always mutually exclusive (private taps/boreholes are private in ownership, with various accesses negotiated with others, and does not necessarily imply exclusive usage). Several forms of property may co-exist in a given place, where each property alternative is constructed and maybe changing in reaction to one another and to other factors. The ability of some actors to select the arena of law, custom, or convention that will favour their objectives (forum shopping) invokes the importance of political-economic and cultural forces beyond the legal sphere that determine who can use law, custom or convention, when and for what purposes. Within this access terrain, the notion of property is located as one aspect of factors in a larger array of institutions, social and economic-political relations and strategies that shape benefit flows. In this sense, access analysis requires attention to

property as well as illicit actions, entitlement relations, networks and the histories of these factors. The next sections will provide material evidence and analysis to demonstrate and underscore the issues highlighted above.

6.2. Access, Infrastructure and Investments: Implications and Observations from Sekororo and Mzingwane

Analysing water (and other resources') access in Sekororo and Gwanda involved a three-tier process that started with identifying and mapping the flow of benefits from the different water sources by individuals, households, and groups within the community. The second phase entailed identifying the mechanisms by which different actors involved gain, control, and maintain the benefit flow and distribution. The final stage anchored on an analysis of the power relations and networks informing the mechanisms of access involved in situations where and when people obtained water within the villages.

A salient feature in the two chapters is the co-existence and hybridisation of different forms of rights which combine private, project (often donor funded), family based and village based forms of water governance. Government agencies in Sekororo and Gwanda do not have the resources to fulfill their managerial mandates and need to incorporate the services of the broader rural populace, often through multiple entry-points inter alia traditional leaders, local committees and networks. Rural households in these circumstances, in-place and beyond the effective control of government, are the real arbiters of environmental destiny and should be given the proprietorship role that this position dictates, beyond mere stewardship. Although these structures seem localised, informal and far removed from state driven set-ups; they are not mutually exclusive and immune to internal and external influences such as new technology, laws and policies that apply at the regional and national levels, let alone the globalised discourses on natural resources management, and scholarship.

6.2.1. Rules of access, rights and enforcement of sanctions

Rules of resource management guarantee not only a sustainable mode of utilization but also guarantee equal chances of access for all members of a community. The existence of

a differentiated set of rules makes it fairly easy to decide if somebody contravened established norms and standards. For example, the existence of acknowledged civic committees, water committees, chiefs, private owners, and local government structures as accepted institutions making and enforcing decisions on communal management of resources makes it possible to establish and sanction transgressions. But how does this apply in Sekororo and Gwanda? Rules of access for communal resources and their enforcement varied from village to village as much as between Sekororo and Gwanda. In Sekororo, rules of access for communal resources in the four villages are presented in the paragraphs below, followed by evidence found in Gwanda.

Some rules for water access in Sekororo include: i). first come first serve basis, ii). each person is allowed to fill-up a maximum of four 25litre containers at a time, iii). containers larger than 30 litres are not allowed, iv). if more than one person from the same household is in the queue, the other household members should join the rear of the queue, v). no illegal connections. These rules are conceived by water users (especially women), water committees and the Department of Water Affairs (DWA). Application of the rules varies and are interpreted and perceived differently by the stakeholders across villages. For example, in Enable, a person can fill up all their containers, regardless of size before others have their turn, while in the drier parts of Sofaya village, households that footed the bill for maintaining communal water infrastructure set access rules to restrict usage. A good example is where one woman moved the CSP within her homestead and only allows access to other villagers between 6am and 6pm, where only ten neighbours are allowed access anytime of the day, and there is compliance. The most outstanding observation was when the municipality water truck delivered 4000litres of water in Enable and all the water benefitted only two households who were first in the queue. They brought a number of large containers each with a maximum storage of 210litres, to collect water from the municipality water tanker. To move this water to their homes, they used smaller 25litre containers and wheel-barrows. Claims abound of how some households manipulate the system by conniving with the truck drivers to notify them of any impending deliveries, what time it will be made and the place. That information gives one an edge over others, and often benefits the politically powerful and the socially

well-connected, far from the rhetoric of equal access. The subversion of the rule on quantities in Enable was necessitated by the failure of the induna and water committee to sanction the first violators of the rule, hence water access from both CSPs and municipal truck has turned out to be open access (organised) anarchy as illustrated above. The village of Enable is also notorious for illegal connections to the reticulation line, with 12 such connections observed and recorded owing to the lackluster performance of the WC, induna and inaction by DWA after numerous complaints. Sofaya, in contrast, has enough water to provide for other villages downstream, for example there is a pipe which crosses Sofaya to supply Tickey Line. However, because of political conflict, villages cannot agree on sharing water. Sofaya village gets water from streams in the mountain, which is stored in 5000litre and 10000litre reservoirs that feed into the reticulation line. More than 70% of the households in Sofaya have yard-taps, a privilege compared to Enable and Worcester. There are huge variations within the four villages in Sekororo in terms of water availability, its frequency, and the rules that govern and regulate access.

Enforcement of the rules and regulations vary across villages for communal property rights. Worcester village is the driest village in Sekororo, and that's where maximum enforcement of rules is observed especially by the users. As the participants at the focus group discussion in Worcester clarified *"It is not about the water committees enforcing sanctions or dealing with violators, it's about the people who feel the pain of water shortages defending their rights, men and women who queue to get water. If we don't stand up and fight for what belongs to us...no one will"*. The water committee (WC) in Worcester is quite active and effective. Its actions made an impact on the decision to set up new tanks and standpipes in the village. Coordination between municipality and DWA, the two key water service delivery and enforcement units, is not easy. Representatives from the two departments can sit together in a meeting but when it comes to implementation every institution is doing its own thing. There is acknowledgement that there is a big rift between DWA and Maruleng municipality in the region generally characterised by mistrust, resentment and suspicion, where DWA members strongly feel that the municipality water services department should be integrated into DWA and not the other way round. DWA is still the water services provider in the area. According to

the law the municipality is responsible for taking care of the reticulation and use of water, not DWA. DWA is only responsible for filling up the tanks and maintaining the infrastructure. The main narrative from DWA is that the municipality does not and is not planning properly and heavily under-resourced. Hence, it does not help much to integrate the local DWA functions into the municipality water services division. Rather, it is the municipality water services division that was supposed to be integrated into DWA. The counter-narrative as succinctly presented by key members of the municipality points towards differences between political promises made by elected officials and concrete service delivery issues and targets as lived and practiced.

Owing to the lack of integration and separation of duties and responsibilities between DWA and the municipality, many residents of Sekororo kept asking the same question thus “If operation and maintenance of existing infrastructure is questionable and liable to neglect and vandalism with existing infrastructure, what guarantee is there that the Sekororo-Mametja water supply project (pipes and accessories) will be treated differently?”. A closer analysis reveals that the challenge in Sekororo is not the lack of infrastructure but rather there is lack of capacity and coordination to maintain what is there, and the ability to synchronize institutional efforts by fragmented and competing sectors. This analysis concurs with findings by Mvula Trust (1999) where they observed that although government was able to silence its critics by stating that three million people had received water (post-1994), it placed too much emphasis on the physical infrastructure such as taps and pipes. Not enough emphasis was placed on the sustainability of these projects (Van Wyk, 2001). The counter argument provided by both DWA and the local municipality is that infrastructure vandalism has been a way of protest in the fight for democracy; hence, communities still believe that vandalism is an option to have their voices heard. They often cite lack of community education and mobilisation as the main cause without taking reflective and self-introspection of the very institutions that are responsible for water service delivery. There seems to be concerted efforts by government departments and allied agencies to always pass on the blame to someone or some other institution.

In Gwanda, the majority of the communal infrastructure, especially boreholes, small dams and deep wells were funded by NGOs and local government (both pre- and post-1980) with villagers making contributions through labour, materials and cash as presented in chapter four. Several NGOs facilitated and funded the (construction and) rehabilitation and provision of water services in Gwanda. Private investments in infrastructure in Gwanda confer and guarantee exclusionary rights to the investor, although there is a general norm of sharing private water sources with kin and neighbours within the local networks. The tendency and trend in Gwanda, like elsewhere in Zimbabwe, and as also shown earlier in Chapter 4, (see Derman and Hellum, 2003, 2005; Derman et al, 2007; Nemarundwe, 2003; Matondi, 2002) is for private owners of water resources to allow access for drinking water to kin and neighbours regardless of them having exclusionary rights. The feature that water is essential for life and perceived as a 'God given good' discourages exclusive rights over water and acts as a normative sanction to encourage sharing away from issues of who invested what. People who deny others access to water for cooking and drinking are often regarded with disdain and fall short of being labelled *umthakathi* (witch, plural is abathakathi). As indicated earlier, there is a stated belief and fear that denying others access to water for cooking and drinking purposes will result in privately owned sources being poisoned and or vandalised (Nemarundwe, 2003). These interactions and social relations serve to increase access to water sources that are privately owned although increased access is less common when it comes to other uses like gardening and brick making. Many of the households with gardening water sources would argue that the water is enough for their gardens only.

Thus, while rules and regulations for accessing water can be propelled by stakeholders, WCs, indunas, chief, district councils, municipalities, NGOs and governmental agencies; the very same rules are negotiated and undone by corruption; political networks and powerful alliances with and within the community and the state (see also Bolding, 2002; Mehta, 1998; Cleaver, 1998). Such unbundling and violation of rules tends to undermine and dissolve communal rights and serve the interests of those with privileged access to political power and strategic information. People may create 'new practices and institutions' to take care of what the custodians of the rules and regulations could or

should have done. The events observed in Gwanda and Sekororo suffice to illustrate this point. One distinctive phenomenon observed in the two research sites is that access to communal water sources is geographically-bounded. In Sekororo, communal responsibility has been redefined where the 'community of users' has been reduced to inhabitants of one village. As stated earlier, only members of a village can access such resources, and there is non-negotiable access for non-village members (including daughters married out to neighbouring villages, from their own village), yet in Gwanda, although there are certain restrictive measures in place that delineate access by village, access to water for drinking and cooking is not denied anyone, even if they are not from the village in question. These activities do not proceed according to fixed rules; rather, they have an ad hoc character. Therefore the institutions governing resources under such circumstances cannot, as Douglas (1985) and Mosse (1997), argue, be merely viewed in terms of individual economic costs and benefits as espoused by much conventional institutional theory. They argue (Douglas, 1985; and Mosse, 1997 in Mehta et al 1999:30) that such views do not make room for the fact that material interest cannot be separated from social relationships, or for the fact that natural resources management also proceeds out of shared assumptions concerning issues such as justice, fairness and reciprocity.

Cleaver's (1998) research in Nkayi district in Zimbabwe reinforces the view that institutions governing water management are opaque, flexible and contingent. Conventional institutional theory would have us believe that most water management practices take place through formal bodies such as water committees. Cleaver's research findings, as with our findings in Gwanda and Sekororo also demonstrate and/or suggest that most of the action concerning water takes place outside the formal realm in the context of the daily practices of everyday life and through regular forms of social interaction mediated by existing social networks. The management rules portrayed here are not undisputed and are actually changing over time, gradual in some instances and rapid in other instances. Berry (1993:104) observed that "People's ability to exercise claims over land remains closely linked to membership of social networks and participation in both formal and informal processes". This social and political

negotiation over resource rights means that people are not operating simply as individuals independent of context; they are social actors engaged in processes of negotiation with a wide range of social and political implications. In consequence of people's continuous investment in the 'means of negotiation as well as the means of production' (Berry, 1993:15) 'rural institutions often operate as arenas of negotiation and struggle, rather than as closed corporate units of accumulation and resource management' (ibid:20-21), as is conventionally assumed. Thus property rights regimes are characterised by; often ambiguous rules, flexible membership of organisations (unlike state and NGO pro- and pre- scriptions), and overlapping and contested boundaries.

6.2.2. Sectoral fragmentation in water governance: narratives and counter-narratives

According to the Water Services Act (WSA) of South Africa, the municipality is responsible for taking care of the reticulation and use of water, not DWA. DWA is only responsible for filling up the tanks and maintaining the equipment such as boreholes and storage reservoirs. This has often led to allegations and counter-allegations between DWA and the municipality. The DWA narrative claims the municipality is not planning properly and is inherently inefficient. The manager of DWA at the Oaks claimed "*I've never seen a project put in place by municipality from A to Z which works and is sustainable. They invested in storage tanks and boreholes without testing the water or purchasing the pumps. Municipality is even failing to pay the electricity bill. They have a tank that they used only for funerals. 'Why should I have to die to get water? Maybe I died because I was thirsty'*". The counter-narrative is that the municipality claims that it wants changes and is keen to re-allocate water for multiple uses, and not only for domestic uses, yet the DWA seems less interested apparently because it wants water to remain in the same hands. There is a strong belief within the municipality that there is a big difference between political promises and concrete service delivery issues, where water service delivery falls within the municipality's mandate.

The on-going Sekororo-Mametja regional water supply scheme meant to ease water problems has already created some antagonism between the two government

departments. According to DWA, the infrastructure, planning, financial and capital costs for the project are the sole responsibility of the municipality. DWA will only take over the operation and maintenance of the project after the construction and installation by the municipality. The water services technical manager at Maruleng municipality asked a poignant question, thus: *“If operation and maintenance of existing infrastructure is questionable and liable to neglect and vandalism, what guarantee is there that the Sekororo-Mametja water supply project (pipes and accessories) will be treated differently?”* A closer analysis reveals that the challenge in Sekororo is not lack of infrastructure but rather a lack of capacity and coordination to maintain what is there, and the ability to synchronize institutional efforts by fragmented and competing sectors. It also becomes apparent that the new structures and institutions (DWA and municipality) are not necessarily new in terms of water management; rather they are more pronounced as new institutions of power. In light of the above, and pursuant to hydraulic property rights creation, the questions arises, who safeguards the property, DWA or municipality? The answer lies in the cooperation and/or smooth integration of the two institutions.

In Gwanda, the battle-ground is often between and among elected leaders, hereditary leaders, project leaders (usually NGO-supported) and war veterans. The designation of some boreholes as single purpose water sources (i.e. gardening or livestock watering or drinking) and the selection of beneficiaries for NGO-funded projects brought the multiple institutions involved in water management to a confrontation. The true characteristics of some of the institutions involved, and the roles they claim to have in water governance are better illustrated by the conversation or should I say confrontation at a focus group discussion (FGD) of local leaders in Ward 17. The Rural District Council (RDC), represented by councillors has the primary responsibility of water supply and sanitation in rural Zimbabwe. Discussing resource access at the FGD, the councillor vehemently remarked: *“I am a legitimate leader, elected and backed by the majority...am the official representative of the people in this ward. The chief and headmen assist here and there but their role is not representing people to government and on development issues. So you cannot come here in this ward and talk to people without my knowledge or permission”*. The headman of Fumukwe village responded, in sarcastic fashion, thus

“...we are the custodians of the land on behalf of both the dead and the living. In this village, no one except the chief, headmen and sabhuku can and has authority to allocate land without consulting us. How does one claim to be a leader of the people when they do not have anything to give?” The VIDCO chairman, often representing interests of party politics weighed in with the councillor in claiming (and legally so) that land belongs to government. War veterans, although not an institution renowned for resources management, often take opportunistic chances to either veto or violate standing norms and practices. The management of resources in Gwanda is about how people negotiate their situations for accessing water. The primary institutions that play instrumental roles are those with access to power especially war veterans.

The war veterans have on several occasions managed to revoke some decisions made by NGOs in selecting beneficiaries for nutrition garden projects without much resistance owing to their excessive use of force that sometimes culminates into outright violence. For example, World Vision selected beneficiaries for a nutrition garden in Ward 17. The NGO supplied and funded the beneficiaries with an equipped borehole, fenced garden land, cans for watering and hoes for cultivation. Just a few days after the project commenced operation, war veterans challenged the selection criteria used by the NGO arguing that those selected to benefit tended to be overwhelmingly members of one political party, the Movement for Democratic Change (MDC). They argued that this was done at the expense of members of the Zimbabwe African National Union Patriotic Front (ZANU PF). Consequently, the war veterans unilaterally decided to add double the number of beneficiaries to the project in order to even out the numbers between the two political party members in the project. Hence, war veterans have become a vocal and powerful institution in their own right. The NGOs, the chiefs and headmen, and local government representatives often do not have the power to intervene.

Most of the challenges and observations made in Mzingwane (and Sekororo) point towards the remnants of ‘invented traditions’ left by colonial rulers (Berry, 2002). Berry (ibid) argues that far from disappearing with the end of colonial rule, invented traditions proliferated, complicating the relationship between popularity and legitimacy post-

colonial. Cognizant of these power-play dynamics, resource users in the four villages in Gwanda invoke multiple rules and appeal to more than one authority, creating space for negotiation and manoeuvre. As Berry (2002:656) puts it, people continue to seek resources and influence through multiple channels, renegotiating relationships in the process. Hydraulic property rights do not necessarily operate in isolation, but offer exclusionary rights which are socially negotiable in accessing resources to suit prevailing circumstances.

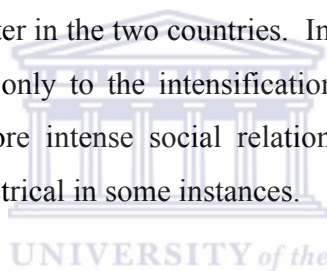
Donor attempts to eliminate inequity and foster democratic and equitable access to water resources and associated benefits neglect crucial aspects concerning coping with resource-scarcity challenges. Consequently, we have witnessed the proliferation of simplistic interventions for community management which override on-the-ground realities and undermine the flexible and dynamic character of local institutional arrangements, their dynamic responses to socio-cultural, economic and political contexts within which they are embedded. What donor interventions have done, in part, and notwithstanding some notable benefits observed in improving poor women's and men's access to water; is to try to implement cross-cutting measures that force inclusivity and democracy on society that is inherently heterogeneous and manifestly stratified in political, social and economic terms. This has often led to half-measured success owing to the one-size-fit-all type of interventions, and the creation of new kinds of property (project rights) which produces fundamental changes in resource access. Mixed experiences with donor intervention observed in chapters four and five illustrate this point. The World Vision and government supported intervention in Sofaya irrigation scheme and the management of Worcester garden project in Sekororo; and the case from Mzingwane where war veterans contested the selection process of beneficiaries highlighted above are some of the illustrative examples.

6.3 CONCLUSIONS

Analysing the materials presented in chapters 4 and 5 allows the revisiting of the HPRC concept (Coward, 1986), and the dynamics that it presupposes and engenders. It is clear from the analysis given in this chapter, that hydraulic infrastructure in semi-arid

environments is a key resource and often a pre-condition for livelihood security. Hydraulic infrastructure ties different people together, moreover, the investment needed to develop water infrastructure often transcend the capacity of the individual irrigator or household, leading to multi-ownership arrangements. Thus invariably complex productive practices, social interactions and economic transactions emerge around hydraulic infrastructure. These interactions, if they endure over time and lead to patterned behaviour, in fact reflect the existence of institutions.

It is generally true that instances of hydraulic property creation that are primed on private investment provide the investors with primacy in deriving the benefits of their investments as well as obliging them to take care of maintenance duties, this manifested in the general notion of normative sharing arrangements in both private and communal infrastructure for drinking water in the two countries. Increased investments in land and water infrastructure leads not only to the intensification of the use of land and water resources, it also leads to more intense social relations. It was observed that such relations became more asymmetrical in some instances.



Other asymmetries which have been observed are to do with the kind of patronage that is wielded by different leaders on communal infrastructure. We noticed that external intervention such as the drilling and equipping of boreholes, provision of fencing equipment and other inputs by NGOs in Mzingwane tends to lead not to property extinction as postulated by Coward (1986) but to hydraulic property reconfiguration, where a set of new leaders (war veterans; women etc) is added to the existent set of leaders.

CHAPTER SEVEN: Institutional Networks, Bureaucracies and Hierarchies of Power for Water Governance in Zimbabwe's Communal Areas

7.1 Introduction

This chapter provides detailed results/answers to the following questions a). How and to what extent do existing policies and legislation that govern and regulate access to and control over water resources influence (and are influenced by) hydraulic property creation? What are the national policies on paper? How are they operationalised? How are they implemented in Mzingwane, if implemented at all? How do they interface with practices? b). How and to what extent do prevailing formal institutional arrangements adequately address the informality of water use by the majority of rural small-scale water users? If institutions should serve a purpose, what purpose should they serve? What/which institution should be responsible for infrastructure development? Are catchment management agencies and councils the appropriate vehicles for meeting the expectations of informal water users?; and c). How relevant and practical are single purpose and resource-specific institutions wrought by the water reforms such as catchment councils and management agencies for managing water resources at the local level where people use multiple institutions? The chapter provides detailed accounts, cases and analyses of power dynamics and intricate interrelations between and among: the policies, legislation and frameworks governing natural resources; the existing and resultant institutional arrangements; and the nature property rights and investments take. Focus centres on how local government through Rural District Councils (RDCs), catchment and sub-catchment councils, government departments (veterinary, agriculture and lands, forestry) interrelate on policies, legislation and frameworks governing resource access and control interact with both the users (rich and poor, men and women, new and old residents) and other institutional structures (local networks, traditional authorities, elected leaders) in accessing, managing and controlling the resource. The chapter

documents the dynamic processes of engagement, negotiations, contests, conflicts and sharing arrangements that exist.

The main focus of this chapter is to address the policy implications emanating from the disjointed scale problem between local/regional institutional patterns and intermediate institutional structures such as sub-catchment councils, RDCs, local and district municipalities and other departmental agencies. The key challenge this chapter addresses is how intermediate-level public/private/NGO support agencies for water development and governance build upon the strengths, while overcoming the weaknesses of informal water arrangements. Related questions include: How can new institutions for managing the new infrastructure become more robust and sustainable by tapping the strengths of informal water arrangements? How can “project rights” to newly developed water (and often land) be allocated more equitably and efficiently to both women and men water users for domestic and productive uses? Which public support is fundamental for catalysing informal infrastructure development and supporting more informal construction, operation and maintenance? The chapter will endeavour to address these questions by presenting empirical materials from the Mzingwane catchment. The next section presents background and context to the water reform policies and laws in Zimbabwe, and the implications and processes for the implementation of such policies and laws in practice.

7.2. Background to national and intermediate ‘water-reform’ management institutions

7.2.1. A synopsis of water governance laws and policies in Zimbabwe

Catchment councils are established by the Minister of Rural Resources and Water Development³⁴, in consultation with the Zimbabwe National Water Authority (ZINWA). ZINWA is a parastatal formed after the passing of the ZINWA ACT (Chapter 20:25) in 1998. The functions of ZINWA are to advise the Minister on the formulation of national policies and standards on water resources planning, management and development, water

³⁴ The name of the Ministry has changed over the years but the duties of the minister responsible remain the same.

quality and pollution control and environmental protection, hydrology and hydrogeology, dam safety and borehole drilling and water pricing among others (Zimbabwe, 1998b). According to the Water Act (Chapter 20:24), it is the responsibility of the Minister to:

- Fix the number of members representing water users in the river system who shall constitute the Catchment Council and the manner in which they are elected or appointed,
- Assign a name to the Catchment Council,
- Prescribe the procedure at the meetings by the Catchment Council in discharge of its functions, and
- Fix the remuneration and allowances payable to members of a Catchment Council from funds allocated from the Water Fund.

Catchment Councils on the other hand, are supposed to undertake several functions which include the following: prepare an outline plan for its river systems, determine applications and grant permits for water use, regulate and supervise the use of water, supervise the performance of sub-catchment councils, and resolve conflicts among water users (Zimbabwe, 2000a, Manzungu and Kujinga, 2002). Statutory Instrument 33 and 47 of 2000 define a stakeholder as any person under the jurisdiction of the catchment/sub-catchment Council who has an interest in water. The main stakeholder groups constituting membership of catchment and sub-catchment councils include communal farmers, Commercial Farmers Union (CFU), RDCs, Small-Scale Commercial Farmers (SSCF), resettlement farmers, Indigenous Commercial Farmers' Union (ICFU), Zimbabwe Farmers' Union (ZFU), large scale mines, urban authorities, industry, small-scale mines and any other stakeholder group that the sub-catchment council may identify (Zimbabwe 2000a; see also Manzungu and Kujinga 2002).

Sub-catchment Councils (SCCs) have jurisdiction over sub-catchment areas, where the composition of SCCs does not differ from that of Catchment Councils (CCs). SCCs consist of elected representatives from all the stakeholder groups. The maximum number of the representatives per catchment or SCC is 15. Stakeholder representatives on the

SCCs elect their own chairperson and vice chairperson who then represent them on the CC. The functions of SCCs are as follows:

- Regulate and supervise the exercise of permit allocation including ground water use,
- Monitor water flows and use in a CC in accordance with the respective allocations,
- Promote catchment protection,
- Monitor waste discharge,
- Assist in data collection and participate in catchment planning,
- Collect rates and fees, and
- Collect levies (Zimbabwe 2000b).

The Minister of Rural Resources and Water Development has powers to abolish a CC or SCC, alter the area for which it was established and to change the membership or the name of the sub-catchment council (Zimbabwe 1998b). The Water Act (Chapter 20:24) and the ZINWA Act (Chapter 20:25) also stipulate that each catchment council should have Catchment Outline Plans (COPs). COPs should:

- Indicate major water uses,
- Proportion of the potential yield allocated to different water uses,
- Indicate maximum permissible levels of exploitation of water and relevant quality standards,
- Phasing of any development and priority of that proposed development,
- State the relationship of the development proposals with neighbouring river systems,
- Identify reserved area for dams and water for future use and benefits for the environment,
- Indicate priorities in utilisation and allocation of water taking into account CC policy guidelines provided by the Minister, and
- Provide for changes in priorities of use due to the availability of water or social or economical priorities (Zimbabwe 1998b).

The Ministry of Rural Resources and Water Development approves catchment outline plans.

7.2.2. Operational Guidelines and Rules for Catchment and Subcatchment Councils

According to the Water Act (Chapter 20:24) and statutory instruments 33 and 47 of 2000, stakeholder representatives of CCs and SCCs are supposed to hold office for a term of three years (Zimbabwe 1998; 2000a and 2000b). If a stakeholder representative wants to resign from the CC or SCC, he or she has to write a letter of resignation to the chairperson. Furthermore, a representative who absents himself or herself from three consecutive meetings without previously obtaining leave of the CC or SCC will have his or her position declared vacant. A catchment or sub-catchment council is required to give notice of every meeting to each representative, giving date, time and place of the meeting, together with the agenda, at least 14 days before the date of the meeting. CCs and SCCs are not supposed to discuss any matter that is not on the agenda unless at least two thirds of the members present agree to the matter being discussed. Two thirds of members of a CC or SCC constitute a quorum (Zimbabwe 2000a, Zimbabwe 2000b).

Between the 1st and 31st of October of each year, CCs and SCCs have to convene their annual general meetings (AGMs). The main purpose of each of them to hold AGMs is to receive and consider the chairperson's report, consider the adoption of the financial statement of a CC or SCC, elect members to fill any vacancies and to transact any business that may be appropriate (Zimbabwe 2000a, Zimbabwe 2000b). Applications for water permits are forwarded to the catchment council for consideration. Applicants pay a fee of Z\$2000³⁵ for their application forms to be processed. The various monetary payments are set by the Minister, in consultation with the CC. Statutory instrument 47 of 2000, section 14, subsection 1 and 2 stipulates two requirements which have to be fulfilled before a water permit is approved by a catchment council (Zimbabwe 2000b; see also Manzungu and Kujinga, 2002). The stipulations are that, "*The Catchment Council shall notify...any other persons whose interests are likely to be affected by such application and shall be given a period by which objections and comments maybe*

³⁵ Although the amount is stated in the statutory instruments, the figure changed dramatically, like everything else, during the hyperinflationary and political meltdown experienced between 2000 and early 2010, before the introduction of multi-currency system.

lodged". An applicant shall be allowed time to make representations before a catchment council at a time, place and date set by the catchment council. Having provided the background and guidelines, the next section examines how these policies are operationalised and implemented in the Mzingwane catchment council and the Shashe subcatchment council under which Ward 17, Gwanda falls.

Although it might sound clear cut how members of CCs and SCCs are elected or appointed in written text, the reality of representation and the selection process for communal area representatives is riddled with power play and contestations. For large scale commercial water users, their representation and selection of members in CCs and SCCs seemed orderly and in line with provisions in text. This can be attributed to the generally organised manner amongst large-scale water users owing to the need to avoid unnecessary confrontation amongst them. In contrast, communal area water users are represented by traditional leaders, the RDCs, ward councillors and the ZFU amongst others. This, as shall be demonstrated in sections 7.3.1 and 7.3.6, presents challenges that often manifest in contestations and power play, at the expense of substantive issues.

7.3. Catchment and Subcatchment Council Processes: Experiences from Mzingwane Catchment Council and Subcatchment Councils

The researcher attended meetings of the Mzingwane catchment council and the Shashe sub-catchment council in order to document the processes, debates and outcomes of the deliberations between and among stakeholders in the catchment. Where attendance at meetings was not possible, the researcher relied heavily on records of minutes of the meetings and interviews with stakeholders who attended the meetings. Although effort was made to cover the issues of the Mzingwane catchment council deliberations in detail, emphasis was placed on the intermediate level institution, that is, the Shashe sub-catchment council and its inherent stakeholder representatives. Analysis from the Shashe sub-catchment council (SSC) meetings highlight important issues upon which deliberations were based. The key themes and processes documented and analysed in Mzingwane catchment under the SSC include: attendance of meetings, stakeholder

contributions, livestock levies, changing representatives, water permits, and travel and subsistence allowances. These themes and issues are covered in detail in sections 7.3.1, 7.3.2, 7.3.3, 7.3.4 and 7.3.5.

The table (7.1) below shows the surface water resources in Shashe subcatchment council (SSC) and provides data on indicators such as potential capacity, current usage, and percentage utilisation. The table is instrumental in that it gives a background to some of the revelatory processes and deliberations about the resource in the sub-catchment. The SSC meetings and agendas are based primarily on the water resources outlined in the table, the stake upon which negotiations and deliberations are based for both equitable sharing and allocation.



Table 7.1: Surface Water Resources in Shashe Sub-catchment

Sub-Catchment	Sub-zone	River Name	Total Potential 10 ³ m ³	Present Utilisation 10 ³ m ³	% Utilisation
SHASHE	BM	Umchabezi	144000	11412	7.9
	BR	Ramaqabane	84000	81033	96.5
	BS1	Hwali	22000	1874	8.5
	BS2	Lower Shashani	56000	11600	20.7
	BS3	Upper Shashani	72000	18935	26.3
	BS4	Lower Semukwe	24000	732	3.05
		Upper semukwe			
	BS5	Upper semukwe	78000	15535	19.9
	BS6	Sansukwe	26000	3548	13.6
	BT1	Lower Tuli	44000	2022	4.6
	BT2	Mid Tuli	32000	2670	8.3
	BT3	Mwewe	84000	3716	4.4
	BT4	Mtshелеli	166000	17573	10.6
	BT5	Upper Tuli	92000	9529	10.4
	Sub total			924000	180179
Grand Total			2314000	487667	21.1

Source: Zimbabwe National Water Authority, Bulawayo Offices: 2009.

From the table, it can be noted that there is general under-utilisation of the water resources in the SSC except for Ramaqabane River. This underscores the point that the problem is not of physical water scarcity, but also that of economic water scarcity, where resources are not available to develop the water resources to full potential. What the government, ZINWA, CCs and SCCs lack are economic resources and political will to develop water infrastructure.

7.3.0. The Issues Discussed

7.3.1. Attendance at Meetings and ‘Travel & Subsistence Allowance’

*“Our challenge is how to bring together small and big users so that they can appreciate the issues at stake and see what role they can play”*³⁶ This statement, poignant as it is, characterises and embodies the challenges of CCs and SCCs in handling multi-stakeholder and interest groups towards a common goal on water issues. An analysis of attendance at meetings by the various stakeholders in the Mzingwane CC and the Shashe sub-catchment council between 2006 and 2010 show that attendance was generally low, where a number of stakeholder representatives failed to attend meetings without prior notice or excusing themselves. The stakeholder representatives from most of the communal areas, the councillors, failed to attend almost half of the meetings convened, while the representatives of large-scale commercial farmers (the few left after the 2000 land reform and attendant race relations issues), and representatives of large agricultural estates attended almost all the meetings. For example, the chairman of the Mzingwane Catchment Council, Mr. Ncube, represents Mwenezana Estate, a very large commercial irrigation enterprise with a very big stake in the water sector in the dry catchment, thus he participates actively and never failed to attend a meeting³⁷. The Gwanda Rural District Council (GRDC) representatives also attended all the meetings. This could be attributed to the fact that almost all the meetings are held in Gwanda town where the GRDC offices are based, and that the vice-chairperson of the sub-catchment is also an employee of the RDC. Chief Mate, one of the first female chiefs in Zimbabwe also attended 60% of the meetings. She was also the only female stakeholder representative in the CC who was present at all the meetings that we attended, where the rest of the stakeholder representatives are male. Our observations at three of the meetings we attended, the chief never spoke or raised any issues. Although it might be an accepted norm that the chief does not speak or address audiences directly but through a representative, she hardly utilised this privilege either. Some councillors pointed out that the chief hardly contributes anything because she is not elected by a constituent, but is forced into the

³⁶ Discussions with Mr. Phaniel Ncube, Mzingwane Catchment Council chairman 2009.

³⁷ Interviews with the Catchment Manager, Mr Rosen October 2008, and July 2009.

system as a stakeholder representative by the authorities. The Zimbabwe Farmers Union (ZFU) representatives hardly attended more than three meetings. This could be attributed to the power issues between the councillors and headmen as to who represents the interests of communal area stakeholders at these meetings. The councillors however, were the preferred de facto representatives of communal farmers, and they attended 45% of the meetings scheduled. Their preference was not by their constituents, but through their position as representatives of the RDCs at the ward level, where most people regard them as merely an extension of the remote institution. The attendance patterns of the different stakeholder groups highlight that the SSC meetings were generally poorly attended by representatives of small-scale water users.

The catchment manager, appointed by the Zimbabwe National Water Authority (ZINWA) attended all the meetings and had the highest number of representatives at all catchment council meetings. The ZINWA representatives, that is the catchment manager and his/her technical support staff, through the catchment manager's office, was one of the most active stakeholder representative in the meetings as well. When issues of ZINWA dominated stakeholder representation at CC meetings were raised, the catchment manager argued that there are no regulations which require that there be a balance of stakeholders from different interest groups on catchment council except provision that all sub-catchment councils must be represented³⁸.

The low attendance levels by small-scale water users, particularly primary water users, is largely attributed to the lack of interest by catchment and sub-catchment councils on deliberating issues of primary water use, except the proposed and contentious livestock levy. Everyday issues of water use and water infrastructure, for example rehabilitation or construction of new infrastructure, for small gardens, brick-making, beer-brewing and water for domestic uses in communal areas were hardly on the agenda of the meetings. The councillor for Ward 17 highlighted that attending the Shashe sub-catchment council meetings makes him drool with envy when he hears about all the water that large-scale

³⁸ Interviews with ZINWA staff at Bulawayo offices October 2008. See also Derman, Ferguson and Gonese (2000).

commercial farmers and people in Gwanda urban have, yet he was also quick to point out that, sub-catchment council business is about people who pay for water. The attendance records of meetings also helps us in understanding the importance and probably value of the stake in water, and the effort the players invest to safeguard and defend their interests. Although it might seem as though the communal areas stakeholder representatives are less interested in attending such meetings, their biggest handicap is budget for transport to and from Gwanda town to their constituencies. Given that catchment and sub-catchment councils have been battling to generate income, especially after the decimation of the large-scale commercial farming community, the situation became dire for the sub-catchment councils to the extent that the payment of travel and subsistence allowance virtually stopped, and with it attendance to meetings by representatives of small-scale water users.

Issues of travel and subsistence allowance for representatives of stakeholders to attend meetings were raised on almost all the occasions meetings were held. The Shashe sub-catchment council paid what the chairman called nominal travel and subsistence allowances. Information on how much the travel and subsistence allowances paid per stakeholder representative per seating was not easily available. Unlike catchment councils, sub-catchment council representatives, particularly those from communal and resettlement areas, do not have the financial resources required to attend meetings, hence financing travel and subsistence becomes one of the topical issues they raise at such meetings. The sub-catchment councils are hardly generating enough and sustainable revenues from the commission they get for water levies, so they have to rely on well-wishers and donors for the institutions to remain viable, at least in terms of multi-stakeholder representation.

It would seem wider political processes and economic problems have curtailed the pace and direction of the reforms for all the stakeholders. The frequency of holding meetings has been reduced from monthly basis to a meeting every two or three months due to lack of resources. This has tended to affect the effectiveness of the Mzingwane catchment and sub-catchment councils. Only representatives from large-scale commercial water users

and ZINWA had the capacity and financial resources to attend catchment council meetings.

7.3.2. “If you don’t provide it...you cannot levy it?”

The new water levies and sub-catchment council’s right to levy permit holders provides for the sustainable financial and economic viability, as scheduled in the laws and statutory instruments. There was also discussion on the proposed cattle levy (livestock levy) at one of the most intensely debated catchment council meetings. Previous submissions to the Ministry had asked for the catchment to be allowed to levy farmers for the cattle they own, the rationale being that Mzingwane is a cattle rearing area, and that all cattle rearing activities in the area are commercial activities, regardless of how many beasts one owned. The issue also touched on the justice of imposing the levy since places, such as Beitbridge has no water to talk of, and farmers would resist on the grounds that they could not be charged the same as farmers in wetter parts of the catchment. It was also not clear how the levy would be collected, whether the sub-catchments would collect the levy by themselves, or they would liaise with existing structures such as the Department of Veterinary Services or chiefs and councilors. Mzingwane is the only catchment council proposing for this levy in Zimbabwe. Below is a full account of the debate and exchanges at the meeting. The following is an account of the conversations.

Mr Moyo a councillor and livestock owner was the first to pose a question on the proposed cattle/livestock levy, and the whole conversation ensued thus:

“Whose water are we asking the farmers to pay?”

To which the catchment manager responded

“Every livestock (that is) cattle should pay”.

Mr Moyo interjected again thus

“The catchment council should involve all stakeholders, and review the proposed levy issue...because we cannot implement what we agreed in year 2000, six years later...when will this thing (the levy) be effective?”

Again the response that was given came from a ZINWA official,

“...when and as the minister ascend and agree”.

Mr R. J. Moyo explained that “...*the issue of water is a problem not only for drinking but in general. Therefore legislation that was passed in 2000 cannot be implemented ad hoc just like that*”. Mr Sibanda, one of the representatives from ZINWA responded that “...*cattling (livestock-keeping) is commercial and that is where levies will be collected per mombe per mombe (per beast per beast)*”. Again Mr. R .J. Moyo interjected and challenged the meeting to clarify how the proposed levy will be implemented in a catchment like Mzingwane with very variable water availability, thus, “*Tell me, Mwenezi where there is water, compared to Makhado where there is hardly any water to talk about, how do you implement and operationalise it? People are fighting to have water for drinking in some parts of the catchment; moreover some of us are poaching water*”. It was explained that earlier in 2000 when the legislation about the livestock levy for Mzingwane CC was mooted, they had agreed on a fee of Z\$10 per beast across the catchment, but the figure has to be reviewed in light of the hyper-inflationary environment besieging Zimbabwe at the time. After intense arguing, Mr R.J. Moyo indicated that he agreed to move on to the next item on the agenda on the basis of progress for the meeting, not because he was happy the issues about the proposed levy were adequately addressed. As a parting shot, his last remark was “*You can charge me water when it is there, not when it is not there and I have to travel long distances to access it. So if you do not provide it you cannot levy it*”. The catchment council chairman, Mr. Ncube responded with certainty thus “*It is the president’s water*”, to much laughter in the meeting room. Up to March 2010, the proposed levy had not been implemented in Mzingwane catchment, still waiting for the Minister to give the council permission to implement the levy. It would seem that the Mzingwane catchment council is assuming that the catchment and sub-catchment councils are representative bodies so there is no need to consult again with a wider population. However, the discussion on livestock levy serves to highlight the challenges of representability at these meetings, and question the appropriateness of catchment and sub-catchment councils as viable platforms for addressing the needs of the majority smallholder farmers in communal areas. From the foregoing, it would seem that CCs and SCCs do not provide the best forum for deliberating the agendas of communal area stakeholders, yet they appear to be

more robust and spot-on in addressing the objectives of large-scale water users (see section 7.3.6).

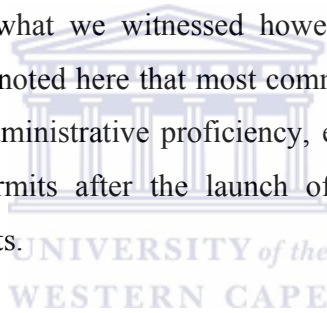
Catchment councils still face the problem of how to finance their operations, and still rely heavily on donor funding. Money is needed to pay staff salaries (the extra hand requested by data collectors, for example), to buy equipment (computers) for day-to-day running of office, and to rent office space. To go round this problem the solution is perceived to lay on the 'supply' hence the proposals to introduce new levies. One member complained that it was unfair to introduce levy after levy (today you ask people to pay for one thing, the next day you ask them to pay for another). A closer analysis and repeat interviews and discussions with the chairman of the Mzingwane CC eventually provided more information on the problems curtailing the introduction of the levy. Mr Ncube, the Mzingwane CC chairman indicated that the Minister had only written a letter endorsing and authorising the catchment council to implement the proposed levy instead of a government gazette as required by the law, hence, the catchment could not implement the levy on the basis of a letter. The catchment council found another way around the problem and resorted to levying water use for livestock on the basis of landholding capacity and land tenure, where the levy is only charged on all land designated as commercial land in the catchment at a flat rate of \$1 (USD) per beast per year. This new arrangement solved the problem of the catchment council since the measure did not require a gazette or letter. The council does not require to individually count the number of livestock each commercial farmer owns, rather, they calculate the land-holding capacity for livestock, for example, if commercial farmer X has 40 ha with a livestock (cattle) holding capacity of 50 cattle, X will be charged (USD) \$50 per year regardless of whether he/she has more or less than 50 cattle. The chairman of the Mzingwane CC argued that it is a fair system, where people are only charged for water use. However, collecting the levy is still economically not viable given the costs incurred in collecting the levies. It would seem that the issue of imposing a livestock levy on communal smallholder farmers has been shelved, at least for now.

Issues of how to link the water user to the sub-catchment and catchment council are issues the CCs and SCCs grapple with daily and there seems to be no easy way out. Suggestions on how cattle levies are to be collected bring to the fore these issues. Sub-catchment councils are not known on the ground level, yet at this level there are already cattle levies being collected (dipping levy). Issues such as how sub-catchment councils can work with the existing structures remain thorny given the lack of downward accountability by the SCCs and CCs. Questions were raised on whether there is need to add another tier to implement policy at the water user level given the largely normative and plural arrangements practiced. If councilors and headmen/women are brought into the structures, how will politics at village level affect the running of water affairs at that level? From our findings, we observed that although sabhukus and councillors compete for control and power within the villages, they also give each other room to manoeuvre. Although it is possible for sub-catchment councils to be entirely represented at the lowest tier, it is also possible that the existing structures can be used to work together with other departments (like Veterinary Services) in the same way the Zimpost (Postal Office) and the Zimbabwe Republic Police work with other institutions (for example, Zimbabwe Broadcasting Holdings) in the licensing of radios.

7.3.4. Renewal of Permits and Issuing of New Permits

The Mzingwane CC has experienced a lull in the renewal of permits by water users. One of the items often raised and discussed at meetings was whether people were renewing their permits. Records of the MCC meeting held on Tuesday 22 August 2006 show that the renewal of permits in the catchment has slowed down in three of the four sub-catchment councils, except Upper Mzingwane SCC. The Mzingwane catchment council (MCC) and ZINWA agreed on the process to be followed when applying for water permits. In that arrangement, the four sub-catchment councils will collect water permit application forms from ZINWA offices. People who want to apply for water permits are required to go through the sub-catchment councils. An application fee is chargeable for all applications. This was done to discourage petty applications. Sub-catchment councils collect the application fees and forward the completed forms and money collected to the

ZINWA. From the ZINWA, if the application is approved, it would then be passed on to Mzingwane Catchment Council for possible final approval. Such processes are done during full catchment council meetings of the Mzingwane catchment. It is during such meetings where and when the catchment manager presents such an application for approval. If the catchment manager presented an application for approval, the chairperson of the catchment council simply asked the other stakeholder representatives, particularly those from the sub-catchment area from where the application originated, if they had any objections. If there were no objections, the chairperson would ask any two people to support the application for approval. If and when there are two people to support the application, the catchment council would issue a provisional water permit to the applicant. During our observation of Mzingwane catchment and sub-catchment councils between 2006 and 2009, we did not witness the approval of a provisional water permit or full water permit, what we witnessed however, was the renewal of some existing permits. It should be noted here that most commercial farmers and other large-scale water users, owing to administrative proficiency, easily managed to convert their existing water rights into permits after the launch of the Water Act of 1998 and subsequent statutory instruments.



From the initial stages to date, the reform process has centred on commercial water such as changing water rights to permits and the development of a new water allocation and pricing system. These are issues which most immediately affect commercial farmers, urban authorities and mines whose activities underpin both the user-pay principle and the general Zimbabwe economy. While these large-scale water users use most of Zimbabwe's waters, they comprise only a small percentage of the total number of users. The majority of water users, that is, communal and resettlement area residents use the resources for domestic purposes and for small-scale (also often commercial) agriculture, livestock, brick-making, gardening and other production. Although exemptions of primary water uses are observed in Mzingwane, there is no clear cut definition or explanation on the upper limit of primary and the lower limit of commercial water uses. These are issues that the catchment council and sub-catchment council grapple with

especially with regards to the majority of small-scale water users, some of whom engage in what might be called commercial uses.

7.3.5. Funding of Catchment and Subcatchment Councils

Catchment councils are funded through the ZINWA while sub-catchment councils are supported through levies on permits. This renders many sub-catchment councils barely useful and sustainable since they have few or no permit holders. In Mzingwane, the four sub-catchment councils largely depend on ZINWA and the catchment council for funds. The resource challenges (financial, skills and capacity) besetting the MCC spell disaster for the four sub-catchment councils. One of the primary aims of the reform process was to make water management self-financing. In pursuit of that goal, commercial water users pay for the water they use or store as well as pay a levy for the general management of the water sector (Dube and Swatuk, 2001). The levies collected by sub-catchment councils are meant to help them finance their operations. The ZINWA asked all sub-catchment councils to collect water levies on its behalf at the rate of Z\$25 000 000 (twenty-five million)/ML per quarter for directly abstracting water and Z\$220 000 000/ML for providing raw water from its water sources. Out of the amount that each sub-catchment council collected, it would get a commission of about 10%. However the commission is not adequate to cover their operational costs. Another key observation from our discussions and interviews with CC and SCC staff is that the new water management institutions do not have an association which could be used for lobby and advocacy for instance advocating for higher commission rates. The catchment manager reiterated that such an association might also be used by the catchment councils and sub-catchment councils to lobby the Minister to accelerate the implementation of amendments to the Water Act, and other pertinent issues like the proposed livestock levy for Mzingwane.

I observed that most of the white commercial farmers with farms invaded by the ruling Zimbabwe African National Union Patriotic Front (ZANU PF) party supporters and those with farms designated for settlement were no longer paying rates. This strained the financial revenue of the catchment and sub-catchment councils. The Mzingwane

catchment and sub-catchment council representatives agreed that they would not force the embattled commercial farmers to pay the levies. The council also decided against enforcing the acquisition of permits by the ‘new farmers’, a politically correct term for the land invaders. According to the chairman of the MCC, it would seem that the decision not to force the invaders to apply for water permits was more to do with the fear of reprisal from politically well-connected invaders and government (and ZANU PF party) officials who dominate the land reform beneficiary list. All the four sub-catchment councils of the Mzingwane catchment have not been able to collect much in levies owing to the dwindling number of white commercial farmers, and also to the fact that the catchment does not have many commercial water users. From 2000 onwards, the levies and rates charged for commercial water use were lagging behind hyper-inflation rates prevailing in the economy.

As noted earlier on issues of travel and subsistence, the capacity of catchment and sub-catchment councils to function effectively was negatively affected by the lack of financial resources. There are other dimensions that compromised the capacity of the new institutions such as lack of sufficient knowledge, experience and information of the stakeholders concerning the various aspects. There is also the fact that all decisions of the Mzingwane catchment council and sub-catchment councils had to be sanctioned by ZINWA. For example, rates collection was hampered by the fact that ZINWA had not put in place the necessary regulations in time to match the sky-rocketing inflation. The same bottlenecks also slowed the processing of permit applications as ZINWA had to make up its mind on the various issues. The chairman of MCC highlighted that the catchment council was not yet self-financing and could not afford to pay for office expenses, high travel and subsistence allowances for stakeholder representatives, and financing the implementation of the catchment outline plans (COP). It is not clear who has the responsibility for human resources in the MCC and SCCs although the chairpersons of SCCs appear to have a bigger role. An analysis of the CC and SCC human resources reveal that most of the SCC and Mzingwane catchment staff, recruited by the CC, are technical persons who are conversant with water management issues, but might not have the requisite administrative and management skills to deal with the day to

day operations of the catchment and sub-catchment councils. The CC and SCC pay salaries for their staff members. There is generally high staff turnover in sub-catchment councils due to low salaries and poor conditions of service. There is no accounting procedures manual for reference in purchasing and recording of transactions across the four sub-catchment councils. Funds obtained from commissions, levies and from donors are all handled in one bank account. Payments of levies can be done through permit holders making direct payment at the sub-catchment office, payment done through posting of cheques to the sub-catchment council, and the collection of levies by outreach officers from permit holders in their areas. All the money collected is banked into a sub-catchment council's bank account. The sub-catchment council retains the commission from the money collected and remits the rest to ZINWA. The sub-catchment council writes a cheque to ZINWA.

7.3.6. Catchment and Subcatchment Council Agenda-setting and concerns of communal area farmers and residents

In trying to analyse who sets the agenda of issues and topics discussed at catchment and sub-catchment councils, I attended CC and SCC meetings and workshops. The meetings and workshops were augmented by records of minutes of previous meetings, interviews and discussions with stakeholder representatives. Communal and resettlement area stakeholder representatives brought issues that are instrumental for their constituents such as silted dams, broken down boreholes and the need for more water infrastructure such as irrigation schemes. These issues often came up in meetings, sometimes outside the agenda set for the meetings. A key observation made was that stakeholder representatives of communal and resettlement areas do not see the value or benefit of being involved in catchment and sub-catchment council business where they are more “spectators than players”³⁹. He (the councillor for Ward 17) pointed out that water management issues such as the administration of permits, rates, levies and finances for offices of the CC and SCC seem to have dominated the issues and business of catchment and sub-catchment councils. He asked a critical question that helped to clarify some of the challenges stakeholder representatives of communal and resettlement areas face, thus

³⁹ Personal communication with councillor for Ward 17, 21 October 2008.

“when are we going to have irrigation development in communal areas and construction of dams for ordinary people discussed in these meetings?” It is apparent from observation of CC and SCC business that those interested in water development such as communal and resettlement farmers tended to see no benefit or incentive to fully involve themselves in the catchment and sub-catchment council agenda that does not seem to include the core issues of water infrastructure development which address their most pertinent challenges. This is despite the fact that the establishment of catchment and sub-catchment councils has created, in principle, an opportunity for all water users to be represented and participate in water planning, development and management.

The use of English in meetings and the presence of technocrats with experience in water management issues did not seem to provide an even platform for the participation of the small-scale water users such as communal farmers. Similar observations were made by Sithole (1999; 2001) where she noted that conducting catchment council business in English hindered other stakeholder representatives who were not fluent in English from making contributions. The use of language as an excuse for non-contribution was easily shot-down by the catchment manager who argued that representatives who do not participate in meetings are not necessarily hamstrung by language, in fact their challenges are to do with their legitimacy as representatives of a constituency because they are often either hand-picked or nominated by the politicians or the RDCs, and therefore did not represent people with a stake in water. How and on what basis do such people contribute, he asked? Whereas other stakeholder groups such as large-scale commercial farmers, mining and urban authorities had appropriately elected/appointed and accepted representatives from their constituencies, the communal areas were represented by diverse representatives ranging from the chiefs, councillors and the rural district councils to sabhukus, who do not necessarily speak with the same voice, nor articulate and push for issues of the constituent, but seem to view their representation as a source of power and authority to silence and ward-off competitors. Councillors were particularly vocal and imposed themselves as official elected representatives of communal area water users on the basis that they were popularly elected by their constituent, at the ward level. As such, their argument seemed to win over the CC and SCC owing to the favours they

received from the GRDC. On the other hand, local level water committee representatives and traditional leaders also claim a stake at representing the same constituent. One would assume that such diversity might work to the advantage of the communal area water users, yet this was often not the case. The chief argued that what is required is for the people at village and ward level to elect people who will represent and articulate their issues at catchment and sub-catchment councils. Sustainability of the new institutions seems to depend to a large extent on the perceived and tangible benefits flow to the water users (as WUAs) which in turn will motivate the WUAs to honour their obligations to the councils.

In their common focus on water there are huge gaps in understanding, knowledge, experience and priorities between different stakeholder sectors, especially between and among the large-scale commercial users (farmers and miners) and small-scale farmers. However, the biggest disappointment for communal area water users is the government which acts as both their de facto representative and as an intermediary. The government is de facto representative of communal area water users in the sense that the Minister of water resources serves to protect the interests of small-scale water users, while at the same time, the government, through the RDC act as representative of the communal areas. The government's shortcomings, from the perspective of the communal area water users, include inadequate resources to respond to communal area water needs, and inability to collect revenues from these areas for services provided, not as mere rent-seeking, to make government programmes sustainable. Despite sitting on huge amounts of dam waters in the catchment, government is seen to have failed to make such water available for productive uses by communal area users. *“Although we might not have a lot of money or other resources in our villages, why has the government not given us a chance to have access to water infrastructure such as dams and boreholes? They say white people and big companies in town pay for water, yes; they pay because water is made available to them. If the government makes water available, what will stop us from paying for using it if we can also enjoy irrigation farming? The NGOs can testify to the willingness and ability of our people to invest in water infrastructure as long as they see*

*or perceive the benefit. What we lack is necessary support”.*⁴⁰ I also observed that with the emphasis on water permits and levies by the CCs and SCCs, the interest of communal area farmers and water users, who are not interested or required to apply for permits, gets lost.

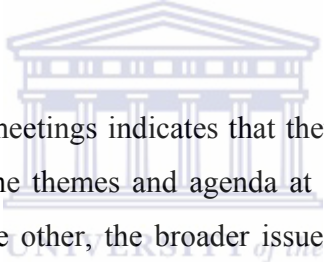
The marginal position of small-scale farmers in communal areas in the catchment and sub-catchment council processes and agendas is underscored by two principal factors. To begin with, they rely on small dams, boreholes, deep and shallow wells which also serve as sources of primary water supply, and have yet to receive much attention and focus in the water reform process. Secondly, many of these users are unlikely to become water permit holders and may not contribute significantly financially to catchment and sub-catchment councils. The only exception for Mzingwane catchment might be the introduction of the livestock levy which would also rope in many communal farmers who own livestock as catchment and sub-catchment clients. This apparent marginalisation flies in the face of the new Water Acts and policies which aim to attain equity in the water sector. The current water laws and policies and the institutional arrangements underlying them might need to be revised if a more inclusive approach to water management is to be realised.

7.4. Institutional Linkages, Resources, Representation and Power

The operational concept in water reform has been stakeholder participation. In the broadest sense, anyone who uses water might be well considered a stakeholder. Under the Water Act (Chapter 20:24) of 1998 and experiences from the catchment and sub-catchment councils, it is clear that stakeholders are drawn from identifiable categories of users which represent economic sectors (urban, industrial, agricultural, small-scale farmers and mining). This system of representation makes it difficult to move away from existing strong vested economic interest in water management toward a more inclusive model. My findings seem to resonate with Derman et al (2000: 15), in their observation

⁴⁰ Focus group discussion with ward committee members, October, 2008.

that it seems “the government has assumed the role of speaking for the disadvantaged or those without the means to insure their own access to water”. This represents a continuation of the long-standing pattern of centralization of power by the state, ‘speaking for the people’. Mechanisms need to be found for the poor to speak for themselves through deliberative platforms that enable stakeholders a platform to voice their concerns and interests. In this regard communal area people and their representatives argue that ZINWA, CCs and SCCs must consider investing in the participation of third tier units such as water user associations and water point committees at village and ward level. This might also include hosting SCC and CC meetings within the ward or village where the majority of people live. The ZINWA, CC and SCC representatives from powerful stakeholders are most financially able to meet the cost of travel than placing the budget and burden of travel costs on poor smallholder farmers.



The analysis of CC and SCC meetings indicates that they focus on a limited number of topics and issues. Although the themes and agenda at CC and SCC meetings slightly varied from one meeting to the other, the broader issues, especially the consistent and persistent ones, remained the same in most of the meetings. What is often not adequately analysed is who is setting the agenda at CC and SCC meetings? A closer assessment of catchment council and sub-catchment council records, and observations from meetings reveal a consistent pattern of how powerful stakeholders representing large-scale farmers, commercial estates, and the ZINWA almost always have their way at setting the agenda for meetings. Powerful stakeholders still dominate, and make the most contributions. The stakeholder representatives who attended meetings regularly were also the same people who dominated the proceedings in both catchment and sub-catchment council meetings. White large-scale commercial farmers have an interest, experience and expertise on water issues for productive uses, but probably because of race relations at the moment they are reluctant to participate actively. Rural District Councils in the Mzingwane catchment in general, and the Gwanda Rural District Council in particular, had some of the highest attendance in catchment and sub-catchment council meetings. The RDCs felt obliged to attend most of the meetings owing to their strategic position as

local government representatives at district level, and also to assert their authority as official representatives of the ordinary people. The Gwanda Rural District Council (GRDC) took over responsibilities from the DDF and other government agencies for rural water supply and sanitation, hence they felt strongly that they represent the biggest constituents in terms of population, and yet use disproportionately low quantities of water, for which CC and SCC considered primary use, and not central to their deliberations. The silence or failure to raise issues by the GRDC at CC and SCC meetings might be a sign of financial constraints to invest in water infrastructure for the majority of communal area dwellers. It might also be an issue of exercising privileged authority and power without the accompanying responsibilities.

What kind of accountability exists between stakeholders and the groups they represent? There seems to be weak accountability to the stakeholders by the representatives. The communal and resettlement farmers are not well represented by the Zimbabwe Farmers' Union (ZFU) an organisation of mainly communal and small-scale farmers. Not all communal and resettlement farmers are members of the ZFU. This poses issues of legitimacy regarding their status of representing communal and resettlement area farmers. The ZFU representatives at CC and SCC meetings and workshops often give feedback to members of the organisation only, and not on a regular basis. There seems to be some downward accountability although there is hardly any recorded sanctions on ZFU members who did not provide feedback to their constituent. The Rural District Council (RDC) and traditional leaders also represent the communal and resettlement areas. Representatives of the RDCs are chosen and often appointed by the chief executive officer of the RDC in consultation with the District Administrator, to be part of the CC and SCC, yet they seldom report back to the communal and resettlement constituents, rather they report to their head-office. There is very limited accountability to the rural communities by the RDC representatives. The role of the RDC as stakeholder representatives of communal and resettlement areas is synonymous with centralization of power and authority by local government structures, where the government claims to represent and speak for the ordinary people, yet it is hardly accountable to them in processes and procedures of catchment and sub-catchment council issues. Another

challenge is geographical representation as some of the stakeholder representatives are not known by the stakeholders who are supposed to have chosen them. The stakeholder representatives cover large areas and have problems with transport to effectively service the areas especially in communal and resettlement areas where distances are quite long.

What expectations do these different stakeholder groups have of the water reform? From our observations, the stakeholders do not speak with one voice as there are fundamental differences among them as their views and the policies they support or oppose are often contradictory. I noticed that the socio-economic background of stakeholders determined to a large extent their participation and contribution in the debates. This might explain why representatives from communal areas did not participate in the discussions, let alone afford to attend meetings due to lack of financial resources. The views of large-scale commercial farmers and urban authorities differed from communal area farmers. Communal area stakeholder representatives and their constituents were more concerned with livelihood issues such as fixing boreholes for domestic water supply, watering livestock, and for irrigating small vegetable gardens. Yet within the communal areas, there seems to be huge differences on issues of priority and emphasis between women and men, where men tended to be concerned with infrastructure investments in small dams and boreholes for productive uses such as livestock watering, brick-making and medium to large scale irrigation. On the other hand, women's concerns, though not uniform, generally tended to shift towards prioritizing small amounts of water for vegetable gardens, small livestock such as goats, and clean portable water for domestic uses. As has been noted in 7.3.5 above, regardless of how important their concerns and issues, communal area stakeholder representatives and their constituents have found it difficult to get these issues discussed and debated in catchment and sub-catchment councils. Their response, often with financial and material assistance from donors, has been to form water committees at the village and ward levels. It is in these local level institutions where women took active roles in both management and maintenance of water infrastructure, and participate as office-bearers in these committees. Yet in the framing of the water reform legislation, third tier organisations are hardly legally recognised although there have been efforts to connect them to CC and SCC. These third

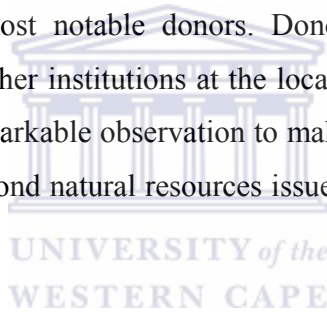
tier organisations are also poorly funded and their sustainability and sphere of influence hangs in the balance, beyond the village and ward levels within which they operate.

At the catchment level there is a Catchment Manager who is an employee of ZINWA and who according to the water act is responsible for the day-to-day management and administration of the affairs of the catchment council. The relationship between the Catchment Manager and the catchment council appears confusing, where the manager is employed by ZINWA and thus accountable to ZINWA but works on the advice of the catchment council. It is organizationally confusing that the day-to-day management and administration function is the responsibility of the manager whilst on the other hand the manager acts on the advice of the council and is not supervised by the council. It is also not very clear as to whom the catchment manager is accountable, ZINWA or CC or both. Therefore the power of the Mzingwane catchment council over the catchment manager is not clear and seems rather unenforceable. To further complicate issues, observation of the CC and SCC operations show that although the new institutions (CC and SCC) are legal entities, they remain part of ZINWA, if not its appendages. There is minimum autonomy considering that catchment council's operations and financial obligations and accountability are to ZINWA. The catchment manager's office provides secretariat service to the CC. Each sub-catchment council in Mzingwane has plans to recruit their own secretaries/treasurers/bookkeeper who are paid and thus accountable to the SCC and not necessarily to ZINWA. If and when the SCCs are able to finance such positions, they will retain autonomy from ZINWA, but as of 2008, only Shashe sub-catchment council was seeking to recruit a bookkeeper and rent offices from where s/he will operate.

As reported earlier, and worth repeating here for emphasis, is the lack of financial resources by the Mzingwane catchment council and the Shashe sub-catchment council to pay for travel and subsistence allowances owing to low or non-generation of enough income from water rates, levies and permits. This did not only undermine the attendance and participation by mostly financially constrained communal area stakeholder representatives, but also faced legitimacy issues in terms of the acceptability of their decisions within those constituencies. The lack of financial resources also undermined

the autonomy of the institutions where they had to rely on well-wishers and donors for financial help. This lack of financial autonomy and lack of accountability by the ZINWA, catchment and sub-catchment councils to their constituencies both within their organisational level, and to their subordinate constituents, (the third tier structures), often a result of up-ward accountability, made it difficult for stakeholder representatives to enforce the decisions made. Another key observation is that the autonomy of catchment and sub-catchment councils is undermined by the fact that the state, through the ZINWA and office of the catchment manager, allocated to itself disproportionately huge powers, in contradiction to the democratic ideals of the reforms.

Local and international non-governmental organisations (NGOs) and donors contributed the most funding for water infrastructure and institutional set-up for the reforms, with GTZ and SIDA being the most notable donors. Donors and NGOs calls for more meetings when compared to other institutions at the local level, from village to ward, to district. The important and remarkable observation to make is that the main attraction for attending such meetings is beyond natural resources issues, but food relief and inputs are a good lure as well.



There seem to be a common understanding especially among the communal area stakeholders that the micro-catchment level (ward size as a guide) should be adopted as the lowest tier for integrated natural resources management. Yet the challenge is what type of representation and who to represent them remains an issue of substantial contestations and negotiations. Elected leaders like councillors are more swayed to push for the adoption of the Ward as the lowest tier unit given that councillors are elected to represent an administrative Ward in Zimbabwe, hence, giving them more leverage and clout in jockeying for representing the communal area people. In principle, councillors are the lowest tier representatives of local government as councillors of the RDCs. During fieldwork community members voiced their concerns and fear that if councillors represent them in all the issues, worse still, water issues, there is less room for continuity given that they are political representatives serving the interests of the party for which they won the ticket. For example, councillor Moyo for Ward 17 was elected on a Zanu

PF party ticket and never intervened when and where community members complained that liberation war veterans were interfering with donor-funded projects and imposing beneficiaries. Alternative representation lies in traditional leaders, who are also fighting for space and power to represent the communal area constituent in catchment and sub-catchment council issues. Chiefs have become de facto representatives of their constituencies across all catchment councils in Zimbabwe, while headmen/women are not guaranteed such space; they have to fight for it. This created tensions within the community and opportunities for forming a common water user association or water user representative group at this level remain largely remote. This flies in the face of catchment and sub-catchment council initiatives and calls for integrated water resources management where traditional leaders on the one hand and elected leaders on the other, argue that community representatives should be the focal-point at CCs and SCCs. Informal and formal communal areas water user groups can benefit from forming a union like other stakeholder groups.

7.5. Livestock, Water and Gender in Semi-arid Catchment and Subcatchment Council Business

Although women constitute the majority of water users there is a remarkably low involvement and representation of women in catchment and sub-catchment councils. Mr Ncube, the Mzingwane catchment council chairperson explained that this is so because women's water use is usually confined to primary water use. A closer analysis at the issues deliberated at catchment and sub-catchment council meetings leaves no doubt that the priorities and agenda of small-scale water users, particularly women, hardly make an impression to CC and SCC whose priorities are paying clients who use water for commercial purposes. While it appears that women are active members of third tier organisations, very few have been elected to SCCs or CCs. The questions to ask is who speaks for their interests on CC and SCC and what might be done to facilitate their direct participation in the new water management institutions and support their use and access of water for productive uses? Although these issues have not commanded the attention of those most active in catchment and sub-catchment councils, women have managed to carve out some useful networks and alliances at the user-point and within broader social

arrangements at the local level. It was evident from our fieldwork that when water projects, if not water reform, moved to the grassroots level, women took on active roles.

The election process for catchment and sub-catchment members has not taken a deliberate effort to ensure that there is gender balance in the council. Below is the gendered nature of the four sub-catchment councils of the Mzingwane catchment.

Table 7.2: Number of Councillors in Each Sub-catchment by Sex

Sub-catchment Council	Total number of members	Women
Lower Mzingwane	15	0
Mwenezi	15	2
Shashe	15	1
Upper Mzingwane	15	0
Mzingwane Catchment	15	1

Source: Mzingwane Catchment Council Reports

The table above shows clearly the under-representation of women in catchment and sub-catchment councils. Only 3 of the 60 councillors are women. Although there are several factors explaining this skewed representation in the Mzingwane catchment and sub-catchment councils, the key ones revolve around the main activities in the semi-arid catchment, livestock keeping. The very nature of livestock ownership is a gendered issue. From colonial to post-colonial strategies, owners of large cattle herds could often evade the various destocking measures of the state by leasing cattle to relatives, often living in adjacent districts in Matabeleland under a system called *amasisa*. Leasing of livestock to relatives although primarily male dominated, is also filtering to women as well. This helped in making women beneficiaries of such leases to be de facto stakeholders when livestock and water issues are deliberated at the local level although this has yet to manifest in representation at local, SCC and CC levels. In Ward 17, as elsewhere in Gwanda district and the greater Mzingwane catchment, individualisation of land holding on arable and grazing lands leading to changing property rights, was, and

still is, a threat to people's economic and social system, and it poses a threat of sidelining women in the process.

Owning livestock (*izifuvo*) is the mainstay of the economy for many rural households and the villagers see it as the number one source of income. Gender differences in the livestock holding in Mzingwane (as elsewhere in Zimbabwe see Scoones and Wolmer 2002:26) are substantial with cattle as the main means and indicator of male power. What has, been underestimated are women's strategies of building up small stock and gardening as individuals as well as households and farming projects. Women can easily own, buy and sell smallstock, yet it is difficult to do the same for cattle. To buy cattle one has to be registered and be able to produce a record of dipping through a government dip registry with the Veterinary Services. This provides an obstacle for most women due to male dominance in the cattle industry. Realising this obstacle, women in Mzingwane are increasingly involved in purchasing and ownership of donkeys which they use as draft power to hire out in order to earn their own incomes, independent of their male-counterparts. Women are hardly represented in grazing committees and livestock committees in Mzingwane, as much as they are not generally represented in sub-catchment and catchment councils. The proposed livestock levy to be effected and made payable per livestock (cattle only) might bring communal area farmers to the CC and SCC business as paying water users yet it will perpetuate the gendered nature of ownership, and hence representation. Like their small vegetable gardens that do not attract the radar of CC and SCCs, women's investments in smallstock (sheep, goats and chicken) also unintentionally keep them on the sidelines when and where water issues are discussed, debated and negotiated at intermediate and higher levels.

7.6. Conclusions

Water rights in Zimbabwe have always been torn between what the law says (legal) and what is morally right (legitimate). The problem does not seem to go away because while the legitimate issues are recognised, they are seldom legalized as illustrated by changing definition of primary water right; beneficial/efficient use of water versus social realities; lack of clarity between what is called economic and what is called social; and most

importantly, merit of centralized and decentralised management where a hands-off approach by the state can expose smallholder farmers to injustices while an overbearing state can emasculate local innovations.

The regulations framing the new water management system are moulded on a large scale commercial farming model without giving much thought to the needs of the new and innovative forms of irrigated cropping that are gradually emerging within the common property regimes in the communal lands. In communal areas and resettlement schemes both men's and women's access to water still relies heavily on customary use rights. This study (see chapter four) revealed that while social norms have precluded the pricing or denial of water for life-sustenance purposes, there is some limited evidence of pricing of water, from private and public sources, for uses in irrigated gardens, as well as barter of water for access to land, labor or draft power. This might be an opportunity from which the CC and SCCs can penetrate the communal areas, especially through new water infrastructure development and rehabilitation of existing infrastructure, rather than mere awareness campaigns without tangible benefits to the ordinary people. This will render catchment and sub-catchment council business meaningful and relevant to the communal area users as a constituent. More financial support from government and donors could also leverage the participation of more community members in productive water use, and their involvement in water reform institutions.

From the initial stages to date, the water reform process has centred on commercial water such as changing water rights to permits and the development of a new water allocation and pricing system. These are issues which most immediately affect commercial farmers, urban and rural authorities, and mines; whose activities underpin both the user-pay principle and the general Zimbabwe economy. While these large-scale water users use most of Zimbabwe's waters, they comprise only a small percentage of the total number of users. The majority of water users, that is, communal and resettlement area residents use the resources for domestic purposes and for small-scale (also often commercial) agriculture, livestock, brick-making, gardening and other production. For the communal and resettlement area constituents, the catchment and sub-catchment councils have

generally neglected them due to two main reasons, firstly that they are primary water users and therefore not regulated, and, secondly because the communal area constituent will pose a huge administrative burden in terms of monitoring and implementation if they were to be regulated and licensed.

It would seem wider political processes and economic problems have curtailed the pace and direction of the reforms for all the stakeholders. Although the reform process has been going on for twelve years, it is too early to reach any firm conclusions about the impact of the reform on stakeholder representation and participation, institutional arrangements and gender equity. However, patterns, trends and inferences can be drawn on the nature and direction of the reform through tracing the reform processes. I have observed on the whole that catchment and sub-catchment council members are dedicated to their basically voluntary work. Given the fact that the Mzingwane catchment and sub-catchment councils have gained momentum and are performing well, that is holding meetings through deliberative platforms and processing permit applications, under difficult circumstances, it might be necessary to keep tracing and tracking the water reform processes as the political and economic environment in the country (hopefully) improves and stabilises.

On the surface catchment and sub-catchment councils appear to be downwardly accountable as they are elected by stakeholders (see 7.2.2). However, who the stakeholders represent and the criteria for such representation is poorly defined especially for the small-scale communal water users. The most active, powerful and best organised stakeholder groups, the large-scale commercial farmers, miners and urban and rural authorities have largely defined the agenda and deliberative processes for the new institutions, as much as the agenda is also determined by the water reform laws and policies. Sustainability and acceptance of the new institutions will depend to a large extent on the perceived and tangible benefits flow to the water users (as WUAs) which in turn will motivate the WUAs to honour their obligations to the Councils.

Finally, underlying political and economic ideologies seem to be in perpetual conflict. For example, the noble political objectives of millennium development goals (MDGs) are undercut by such concepts as beneficial use of water, which punishes smallholder farmers by relegating them to second class primary exemptions with little or no scope for improved productive uses through infrastructure development. Therefore, interventions aimed at optimising and reallocating water use, assuming shared interests, attempting to monopolise water allocation decision in a single forum, and pursuing comprehensive, anticipatory planning such as ambitious river basin planning like IWRM inspired catchment councils may fit poorly with the dynamics of community collective action based on normative plural arrangements. So they may be prone to being ignored, resisted and rejected by the majority of smallholder water users. Modest institutional modifications that fit the dynamics of community collective action and help secure rights and resolve pertinent issues may meet with greater success apart from being sustainable.



CHAPTER EIGHT: Bureaucracies and Hierarchies of Governance for Water Management in Sekororo, South Africa

8.1. Introduction

This chapter provides detailed results/answers to the following questions (South Africa):

a). How and to what extent do existing policies and legislation that govern and regulate access to and control over water resources influence (and are influenced by) hydraulic property creation? What are the national policies on paper? How are they operationalised? How are they implemented in Sekororo, if implemented at all? How do they interface with practices?

b). How and to what extent do prevailing formal institutional arrangements adequately address the informality of water use by the majority of rural small-scale water users? If institutions should serve a purpose, what purpose should they serve? What/which institution should be responsible for infrastructure development? Are catchment management agencies and councils the appropriate vehicles for meeting the expectations of informal water users?; and

c). How relevant and practical are single purpose and resource-specific institutions wrought by the water reforms such as catchment councils and management agencies for managing water resources at the local level where people use multiple institutions? The chapter provides detailed accounts, cases and analyses of power dynamics and intricate interrelations between and among: the policies, legislation and frameworks governing natural resources; the existing and resultant institutional arrangements; and the nature property rights and investments take. Emphasis centres on how local government through district and local municipalities, Department of Water Affairs (DWA) and other government departments (health, agriculture, and cooperative governance), service providers (bulk water), NGOs and tribal authorities interrelate on policies, legislation and frameworks governing resource access and control interact with both the users (rich and poor, men and women, new and old residents) and other institutional structures (local networks, elected leaders) and NGOs in accessing, managing and controlling the resource. The

chapter documents the dynamic processes of engagement, negotiations, contests, conflicts and sharing arrangements that exist.

8.2. Background to South African Water Reform Institutions and Policies

8.2.1. A Synopsis to Legal, Institutional and Policy Frameworks in South Africa

The history of South Africa's water policy, law and institutions reflect the increasingly complex needs of multiple stakeholders (agriculture, mining, industry, cities, the newly enfranchised) represented by different state forms and their characteristic political regimes: the Dutch East India Company; The British Empire; the Union of South Africa; the apartheid and post-apartheid republics (Swatuk, 2010: 521). These political regimes have all used central state-power to serve particular interests. Present-day water policy, practice and management are the result of historical dynamics not easily displaced by generalised discourses of good water governance under various guises and rubrics inter alia integrated water resources management, river basin councils, and catchment watersheds among others. This section will highlight the processes and challenges in reforming the water sector 1994 onwards as the historical aspects prior to 1994 were covered in some detail in chapter 5. With the abolition of the ten South African 'homelands' (which exercised various degrees of self-government under apartheid), the jurisdiction of the new Department of Water Affairs and Forestry (DWAF) became countrywide. The then Minister of Water Affairs and Forestry initiated a process to review all the water related legislation in May 1994. This led to the White Paper on Water Supply and Sanitation Policy of 1994, the Water Law Review Process (1995), the promulgation of the Water Services Act (WSA) (Act No. 108 of 1997) and the National Water Act (NWA) (Act No.36 of 1998). The new-found democracy also influenced the shaping of the water clause (s 27(1) (b)), (which states that everyone has a right to have access to sufficient water) in the Constitution of the Republic of South Africa 1996 (Act No. 108 of 1996). According to Schreiner *et al.*, 2004, 'the new water policy and legislation sets an enabling framework for water use to contribute to poverty eradication

and it is based on three principles of equity, sustainability and efficiency and enables the redress of historical imbalances in access to water'. The following sections present an outline and analysis of the key processes, policies and legislation.

8.2.2. The Water Law Review Process (1995)

The Minister of Water Affairs and Forestry initiated a process to review all water related legislation in May 1994. Seetal and Quibell (2005), argue that the critical starting point in the Water Law Review Process was political leadership and the demonstration of a political will to effect change in water resources management and water services provision. Improving access to water for domestic uses by the millions of South Africans was a priority for the democratic government due to political, social and democratic reform in South Africa, international declarations and the prominence given to fundamental human rights and environment related matter during the second half of the 20th century. The constitution of S.A provided the foundation for the policy and legislative framework because the previous water legislation was inadequate (Thompson, 2006).

Seetal and Quibell (2005) argue that the effectiveness of the Water Law Review Process and the success of future water management depended on three critical factors:

1. The development of policy and legislation needed to be an open and consultative process
2. Lessons from international, regional and local experiences had to be taken into consideration to avoid repeating earlier mistakes
3. The integration of the water sector and other socio-political and socioeconomic development in the country

The Water Law Review Process started in March 1995, with the publication of a booklet titled *You and Your Water Rights - A Call for Public Response*, which was intended to stimulate public interest and debate on the subject and to solicit comments (Seetal and Quibell, 2005:156).

The public comments were then incorporated into a set of principles developed by a Water Law Review Panel. Public consultation sessions were held and principles to guide the drafting of the new water law were finalised and published as the *Fundamental Principles and Objectives for a New Water Law for South Africa*, which was approved by government's cabinet in November 1996 (Seetal and Quibell, 2005:156, Thompson, 2006). The *Fundamental Principles and Objectives for a New Water Law for South Africa* defines 28 principles within the categories of legal aspects of water (principles 1-4), the water cycle (principles 5-6), water resources management priorities (principles 7-11), water resources management approaches (principles 12-21), water institutions (principles 22-24), and water services (principles 25-28). The principles and objectives led to the publishing of the White Paper on National Water Policy (NWP) outlining the direction for the development of the water law and water management systems for the new South Africa. The NWA was drafted and enacted in 1998 based on these principles and objectives to give effect to the NWP. The WSA was drafted at the same time as the NWP and it was enacted in 1997.

8.2.3. The Constitution of the Republic of South Africa (1996)

The constitutional clauses relating to water give every person a fundamental right to an environment that is not harmful to his or her well being, and requires the environment to be protected for the benefit of the present and future generations, through reasonable legislative and other measures that secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development (Section 24 (a) and (b) (iii)) of the constitution. The South African constitution, section 25 (4) (a), commits the South African nation to land reform and to reforms that bring about equitable access to all South Africa's natural resources, including water resources. Section 25 (8) further states that the state must take legislative and other measures to achieve such reform in order to redress the results of past racial discrimination. Section 27 sub section 1 (one) states that everyone has the right to have access to sufficient food and water and that the state must make reasonable legislation to achieve realization of these rights. However noble these constitutional clauses, they faced some criticism for focusing redress (and reform) on past racial imbalances without giving much thought and

consideration for endemic and persistent gender discrimination in water access (Thompson, 2006:138. cited in Masangu, 2008:27). Schreiner et al (2004) were more positive about gender in the legal texts.

According to Thompson (2006), the constitution grants a right of access to *sufficient* water (i.e. quantity) and not a right to *adequate* water (i.e. quality). This right does not mean the provision of water in all households or for all undertakings, but at least access by all persons to long-term sustainable provision of a level of water supply, and basic minimum, potable water close to all households. Thompson (2006) argues that “the extent of state duties differs according to the economic resource available to different sectors of the population, those with sufficient economic means already have access to sufficient water as they could afford to pay water services providers to provide it to them, therefore, the different spheres of government should direct their attention to those without the necessary means and without access to water”. In order to ensure that this right is realized progressively, the state must implement reasonable legislative and other measures, and ensure that its water delivery programmes enable local governments to deliver potable water services within the necessary support from the provincial government.

8.2.4. The Water Services Act (No 108 of 1997)

The Water Services Act (WSA) was promulgated in 1997 before the National Water Act (NWA) was drafted, due to urgent need to tackle the backlog in rural drinking water supply inherited from the apartheid era, especially in the former homelands (van Koppen *et al.*, 2002). The Act recognises that water services should be undertaken in a manner consistent with the broader goals of water resources management, but as noted by Soussan *et al* (2002), there are areas of uncertainty in the overlap of the WSA and the NWA. The WSA establishes the management of water services through the structures of local government which do not coincide spatially with the hydrological divisions made for water resources management in the NWA, and this raises problems of uncertainties over responsibilities and limitations to capacities at all levels especially within local government. Nicol and Mtisi (2003) argue that these uncertainties suggest a need for

more flexible boundary demarcation and the capacity to change according to the problems and needs as they arise.

Van Koppen *et al* (2002) argue that the decision to promulgate the Water Services Act before the National Water Act may lead to an artificial separation of water used for domestic and productive purposes. In this separation there are presumptions that water resources could be managed by ignoring domestic uses of the same water source (van Koppen *et al.*, 2002). Van Koppen *et al* further argue that there are assumptions that local government, with support from the Department of Water Affairs (DWA), is solely responsible for meeting domestic water needs of the poor and that institutions such as Catchment Management Agencies (CMAs) and Water User Associations (WUAs) are concerned with “Water Resource Management” and can ignore domestic water needs of the poor (2002). This separation may be justified in areas that domestic water needs are well catered for, but would risk alienating all those South Africans whose domestic water needs remain unmet from mainstream water management.

The Act was also drafted before the local government transformation process was finalised and the Strategic Framework for Water Services was published, and Thompson (2006) argue that the Act should now be amended to reflect the outcome of this process and framework. Institutional reform in communal areas combined with the overall shift from central government to decentralized local government-based provision of services, results in what Nicol and Mtisi (2003) describe as a scramble for responsibilities and control by different institutional actors.

8.2.5. The Strategic Framework for Water Services (2003)

The White Paper on Water Supply and Sanitation published in 1994 recognised that all South Africans have the right to a healthy environment and that it is the intention of Government to create the enabling environment necessary to ensure that all South Africans have access to acceptable levels of water supply and sanitation. According to Thompson (2006), much has been achieved since then and the white paper played a key part in creating an enabling environment. The white paper was focused on the

establishment of a new national water services function and on the role of National Government in assuming a direct delivery function to provide basic water and sanitation services rapidly to people primarily living in rural areas. Since 1994, the context has changed significantly and the white paper was replaced by the Strategic Framework for Water Services of 2003. The Strategic Framework provides a comprehensive summary of policy with respect to water services sector in South Africa and a strategic framework for its implementation over the next 10 years. The framework sets out a comprehensive approach to the provision of water services to eliminate backlogs in basic water services and improving the levels of service over time. The framework focuses on institutional reform of water services provision.

The strategic framework for water services states that “water programmes should be designed to support sustainable livelihoods and local economic development”. According to the framework (2003) the provision of water supply services has significant potential to alleviate poverty through the creation of jobs, use of local resources, and provision of a long-term livelihood for many households.

The purpose of the strategic framework is to articulate a national vision for the water services sector⁴¹ and it stipulates the following core goals:

- All people have access to an appropriate, acceptable, safe and affordable basic supply.
- All people are educated in healthy living practices and the wise use of water.
- Water services are provided equitably, affordably, effectively, efficiently, and in a sustainable manner with gender sensitivity.
- All Water Services Authorities are accountable to their citizens, have adequate capacity to make wise choices and able to regulate services provision effectively.
- The price of water services reflects the fact that it is a social and economic good.
- Basic services would be subsidized.

⁴¹ Water services refer to water supply and sanitation services and include regional water schemes, local water schemes, on-site sanitation and the collection and treatment of wastewater. The SFWS also has productive uses, for example the notion of climbing the water ladder for multiple uses is worthwhile to mention here.

The Strategic Framework for Water Services (SFWS) of 2003 also states that “DWA water services assets will have to be transferred to water service authorities with the Department of Provincial and Local government regulating and overseeing the activities of local government”. This call for change is amplified in Sekororo between the local municipality and the local offices of the DWA as a result of duplicity of duties and bottlenecks in integrating the two institutions as presented in chapters 5 and 6.

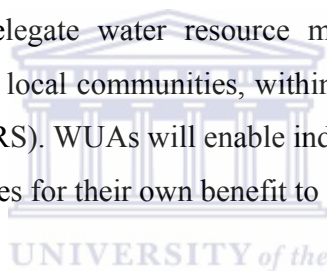
8.2.6. The National Water Act (No 36 of 1998)

The purpose of the NWA is to ensure that the nation’s water resources are protected, used, developed, conserved, managed, and controlled in ways which take into account the following factors amongst others: meeting basic human needs; equitable access to water; redressing the results of past racial and gender discrimination; Promoting the efficient, sustainable, and beneficial use of water in the public interest; facilitating social and economic development; providing for growing demand for water use. The National Water Act led to the abolishment of the former system of permanent riparian rights and its replacement with a system of water management authorities which would serve as the custodian of the nation’s water resources (van Koppen *et al.*, 2002; 2003).

The National Water Act (1998) emphasizes equity in access to water resources, benefits and services, particularly for those who have not benefited from the country’s water resources, such as women and the poor. Prasad *et al* (2006) note that the S.A water laws necessitate looking at equity in relation to “access to the desired quantity, quality, and reliability of water resources; access to safe and clean drinking water and sanitation services; and access to direct and indirect benefits or impacts, including from cooperation from others, from the use of water resources”. Even though the stated objective of the Act is to redress past inequities, van Koppen *et al* (2002; 2003) argue that the status quo of the apartheid era remains unaltered in two important ways: in terms of existing lawful water use and the composition of the civil service. Existing water use refers to situations whereby water users that were drawing water for productive uses and had legal rights (e.g. riparian rights, or permits) to do so two years before the new Act was promulgated, will retain this right. The Act thus accepts the inequities prevailing at that time.

Inhabitants of the ex-homelands generally do not have any documents to prove existing lawful water use, but they can refer to the notions of use and quantity embedded in what are typically verbal contracts or local water tenure arrangements. The composition of the civil service is relevant because there were no retrenchments in the government administrative service nation-wide.

The NWA recognises the need to establish suitable water management institutions to be able to achieve the purpose of the NWA. The Act defines water management institutions as Catchment Management Agency (CMA), a water user association (WUA), a body responsible for international water management or any person who fulfils the function of a water management institution in terms of the Act. The aim of the NWA is to establish a CMA in all the 19 Water Management Areas (WMA) of South Africa. The purpose of establishing a CMA is to delegate water resource management to the regional or catchment level and to involve local communities, within the framework of the National Water Resource Strategy (NWRS). WUAs will enable individual water users who wish to undertake water-related activities for their own benefit to form cooperative associations.

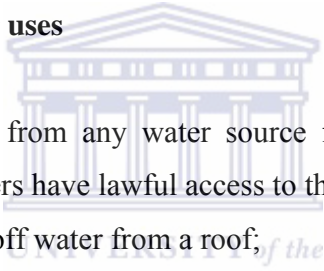


The establishment of CMAs requires the participation of stakeholders in the management of water resources at ground level. The governing bodies of these institutions should be representative in terms of including sections of the population that were previously unrepresented in governance forums, especially black people and women (van Koppen *et al.*, 2002 and 2003). Van Koppen *et al.* (2002) argue that even if composition of the governing board is equitable, the issue is how the CMA will deal with the fact that only a limited group of water users in the water management area will be reached in the process of establishing the CMA. According to van Koppen *et al.* (2002), to overcome the above issue of *representation*, the CMA should have a well designed process to institutionalize public participation according to the subsidiary principle, so as to ensure the historically marginalized are empowered, and should coordinate water management planning and implementation with government structures at local, district, provincial, and national levels. The approach to establishing water user associations is three-pronged: The transformation of existing irrigation boards to WUAs; the conversion of government

irrigation water schemes to WUAs; and the establishment of new WUAs (Schreiner *et al.*, 2004).

The four types of water authorisations, as we noted before in chapter 5 and worth repeating here, are Schedule One, General Authorisations, Existing Lawful Uses and Water Use Licences. Schedule One describes permissible uses of water that do not require a licence and do not have to be registered. Water use activities that fall under Schedule One include those that, due to the small quantities used, have a very small impact on the water resource and therefore pose minimal or no risk. The uses that are covered under Schedule One are indicated in Box 8.1.

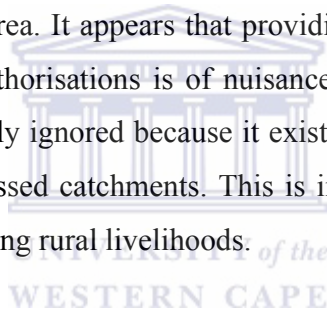
Box 8.1: Schedule One water uses

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1. Taking water directly from any water source for domestic use in households provided that water users have lawful access to that water;
 2. Storing and using run-off water from a roof;
 3. Small gardening that is not for commercial use;
 4. Watering animals for subsistence use;
 5. Using the water surface or surrounding land for recreational use; and
 6. Using water for emergencies, such as firefighting and drought relief.

Despite the identification of the list of water uses under Schedule One use it is significant that there has been no official mention of the quantities that are involved. The discourse around Schedule One water use is that people are not informed and that the water is not significant. The preoccupation is with large water use for which numerous studies, time and money is spent.

General Authorisations are permissions that allow slightly larger volumes of water use from less stressed sources, such as rivers and aquifers. Such authorisations allow people

to use water without a licence provided that the water use is within the conditions stipulated in the General Authorisation. For example, limits are placed on water use depending on the nature of use and the capacity of the resource to accommodate use without significant degradation. Examples of general authorizations include abstracting a limited amount of water from certain rivers and groundwater sources as well as storing a limited quantity of water in a dam. The authorisations are granted by the Minister and published in the Government Gazette. In view of the wide range of water use activities and the logistical implications of registering myriad of individual water users, general authorisations are used as strategies to cut down on unnecessary administrative efforts. General authorisations may also attach conditions relating to water management activities, such as monitoring and reporting, in accordance with Section 29 of the National Water Act. Significantly there is a reluctance to give a blanket generalization for example for a communal area. It appears that providing water to communities under Schedule one and General Authorisations is of nuisance value to policy implementors, something that cannot be wholly ignored because it exists in law but is not pursued with any conviction, at least in stressed catchments. This is ironical given the potential such water can contribute to improving rural livelihoods.



Water licences are mechanisms for regulating water use that exceeds the limits outlined in Schedule One and general authorizations, and apply to any new (post-1998) water use that is not covered by Schedule One or General Authorizations. Water licences give existing and new water users formal authorization to use water for productive and beneficial purposes, and specify the conditions under which the water can be used. Licences are issued by ‘responsible authorities’ namely, the Department of Water Affairs (DWA) or catchment management agencies (CMAs) as indicated earlier on. Currently, the licensing procedure requires new and potential water users to apply for a licence or to register their water use with the responsible authority namely, the Regional Office of DWA. This regulatory function is envisaged to devolve to CMAs when these become fully operational. The Olifants CMA under which quaternary B72A and B72C in Sekororo falls is not yet operationalised, except that mainly the Limpopo Regional Office of DWA is seen as proto-CMA.

8.2.7. The Municipal Structures Act (1998) and the Municipal Systems Act (2000)

Past policies left a legacy of gross inequities in municipal services. Before 1994, municipalities served the former white areas while rural areas were served by regional services councils and separate structures were responsible for service delivery to black people in the former homelands. The Municipal Structures Act (1998) states that “there was a need to develop a democratic and developmental local government in which municipalities could fulfill their constitutional obligations to ensure sustainable, effective and efficient municipal services, promote social and economic development, encourage a safe and healthy environment by working with communities in creating environments and human settlements in which all south Africans can lead uplifted and dignified lives”. This led to the enactment of the Municipal Structures Act (Act no 117) of 1998 and the Municipal Systems Act (Act no 32) of 2000. The Municipal Structures Act and the Municipal Systems Act define the structures and approaches to developmental local government. The purpose of the Municipal Structures Act, amongst others was to provide for the establishment of municipalities in accordance with requirements relating to categories and types of municipalities (Masangu, 2008). In tandem with the Water Services Act and the National Water Act, the Municipal Systems Act 32 of 2000 makes the preparation of an Integrated Development Plan (IDP) a legal requirement on the part of municipalities. Reform of water services delivery is thus directly related to the successful transformation of local government in South Africa. Integrated development planning by district and local municipalities is highly problematic and complex owing to high prevalence of poverty in these constituencies, rendering water service delivery one of the most prioritised needs.

8.3. Implementation Process, Experiences and Challenges to Date

Before the National Water Act of 1998, South Africa had a patchwork of plural legal systems: riparian rights, Government Water Control Areas, permits for e.g., forestry, and customary water rights in former homelands (Van Koppen, 2010). The new Act recognized all ‘existing lawful uses’ (as fiercely negotiated by the vested users, see also

De Lange, 2004) and introduced permits only for all new uses. Van Koppen (2010:16) highlighted that although some existing uses needed to be regulated as well, the assumption that one first needs to change a legal system into permits before one can regulate did exist in South Africa. Registration of existing uses, whether lawful or not, was made obligatory in 1999. This information fed into a data base primarily designed for information collection and billing purposes. In this data base, over 63,000 individual and organized water users (out of a population of 47 million) are registered. Revenue collection among the large-scale users is improving, also because the administration for invoicing partly draws from these registrations. However, the line between obligations such as registration and payment and a legal claim is thin. Initially, some officials and registered users assumed that registration and payment were the initial steps to convert their existing lawful use into the first-class entitlement of a permit. This invoked the Department of Water Affairs to be even more explicit about the disconnection between fulfilling regulatory obligations like registering and payment and any legal claims.

The National Water Resource Strategy started with an impressive participatory process from 2002-2004 with some provision for revision settled through donor-funded internal debate on Water for Growth and Development. The legal and policy provision for the establishment of CMAs brought with it a lot of promise to fill the institutional challenges of making a balance between vested users, but more and more DWA and also efforts to become more equitable. In the beginning, there was an active start, but soon pace slowed down with only a few CMAs functioning. There was apparent lack of powers for the newly establishing institutions. In most of the CMAs, or rather designated CMAs, the Department of Water Affairs (DWA) remains proto-CMA. By proto-CMA, the regional office becomes the stand-in CMA in place of the originally planned and yet to be implemented CMA. The chief director for Polokwane Regional Office put it succinctly “I am the proto-CMA for Olifants. That means I am the chairman, the board and the secretary”⁴². He reiterated that from 2007 debates about ‘institutional alignment’ with proposed 9 CMAs attached to the 9 Regional Offices have gained momentum. There is

⁴² Discussion with the Chief Director for DWA Regional Offices Limpopo, Monday 15th December 2008.

also a call for politico-administrative water management zones rather than purely hydrological catchments as planned originally.

The administrative proficiency of the different stakeholders in the water sector in South Africa grossly differs. Large-scale users, primarily commercial farmers, metropolises, industries, electricity and mines, are better informed about procedures and know the formal language of the application forms and how to fill-in or complete the forms. They are mobile and well connected to relevant officials and to their own broad network. They have bank accounts and are able to smoothly pay any fees. If needed, they can hire consultants and lawyers to carry out the job and hold government accountable, also on administrative procedures. Van Koppen (2010:13) observes that “In South Africa, for example, the tail is wagging the dog with many large-scale users submitting complaints to the Water Tribunal regarding permit applications. Informal small-scale users lack these attributes”.

South Africa is most explicit in its policy goal of redressing inequities from the past and allowing, under certain conditions, taking water from the ‘haves’ to allocate to the ‘have-nots’ to that end. The vested large-scale users endorsed the conversion of existing lawful uses into permit systems as the supposedly only way to achieve this goal. Costly pilot efforts of such area-specific ‘compulsory licensing’ projects since 2003 are stalled and not a single drop has been re-allocated for historical justice. Moreover, out of the 1304 permits for new water uses that were allocated between 1998 and 2008, only 2.5 percent were for Historically Disadvantaged Individuals.⁴³ All other licenses were for white-controlled enterprises. Only recently, the much more readily available regulatory options for the state, as custodian of all water resources, receive somewhat more attention. Straightforward options, that merely need political will and enforcement capacity, are to prioritize new water uses by HDIs and to reduce the assurance of supply of vested users in physically stressed basins.

⁴³ P. Dlamini and M. Msibi. Compulsory licensing. Draft report. (Pretoria: Water Research Commission South Africa 2009).

Against this background, governments lack the capacity and resources to process many permits. This administrative limitation affects especially the many small-scale users, who add most to these burdens, while the volume of these uses is typically seen as ‘insignificant’. So, not for their own fault, small-scale users have less access to the possibility to obtain entitlements. Exempting *de minimis* uses limits these administrative burdens for water uses that hardly impact on the overall water resources. As mentioned, the South African Water Act goes a step further and also provides for so-called ‘General Authorisations’.⁴⁴ These are blanket authorisations for water uses in a certain area or by certain users. The thresholds are far above the *de minimis* uses, which are called Schedule One uses in South Africa. General Authorisations further reduce the administrative burdens for the Department of Water Affairs. However, while this alleviates the logistic chores of government, the question is what exemptions mean for the water users affected? It would seem, as shall be argued in later sections, that exemptions for Schedule One uses have become the excuse for government not to invest in developing water infrastructure for the majority, what van Koppen calls ‘increasing the size of the pie’ rather than continuously trying to share a small pie amongst many stakeholders. People rightly see it as a second-class entitlement of little legal use when it really matters owing to its lack of priority within the reforms.

Changes in the way water rights are allocated may have negative impacts on those that were using water beneficially and in such situations, a person may claim compensation for any financial loss suffered in consequence via the Water Tribunal (NWA sections 22 (67) and 43-48). Van Koppen *et al* (2003) argues that “the inclusion of the above clause weakens the possibility of reallocating water, but there is a safeguard built into the Act that exempts payment of this compensation if the reallocation was for: “providing for the reserve, rectifying an over allocation of water use from the resource in question, or to rectify an unfair or disproportionate water use”. Compulsory licensing is in its early stages but Schreiner *et al.* (2004) believe that it is the most powerful tool in achieving

⁴⁴ Department of Water Affairs and Forestry, *Assignment to develop and test methodologies for determining resource specific General Authorizations under the National Water Act*, prepared by Ninham Shand (Pty) Ltd and Umvoto Africa and Synergistics Environmental Services for Director, Water Allocation, Department of Water Affairs and Forestry, South Africa, November 2006, WFSP/WRM/CON6002.

equity in access to water and in ensuring that water is used optimally in achieving both black empowerment and poverty eradication. Van Koppen *et al.*, 2003, argue that compulsory licensing will be highly effective and necessary to regulate a small number of high volume users, but it is inappropriate to know current water use by a majority of small-scale users or to provide any legal protection against efforts of high volume users to forcibly continue control over scarce resources.

Despite the enabling framework provided by legislation and policy, and the wide recognition of the need to redress past imbalances in access to water, and to democratise water management institutions, experience to date has shown the difficulties of ensuring full participation in these institutions (Schreiner *et al.*, 2004; Anderson, 2005; Masangu, 2008). Full participation by the historically disadvantaged is hindered by a lack of public awareness among those who do not have access to communication technologies and electricity (Schreiner *et al.*, 2004, Anderson, 2005). According to Schreiner *et al.*, (2004), the major challenge in terms of participation in many rural areas has been how to involve poor communities and in particular women. Many members of these communities feel disadvantaged as the process is new for them, and they may not have the background information that other representatives (e.g. commercial farmers, mining and industrial) have on water management. The meetings for the establishment of the various CMAs currently initiated are often not easily accessible (Anderson, 2005; Nicol and Mtisi, 2003). Effective participation by HDIs requires more than just getting the parties to the table and the mere presence of representatives of poor communities is not an indication of their involvement in the participatory or decision-making processes (Karar, 2003 cited in Faysse 2004; Schreiner *et al.*, 2004, Anderson, 2005). But how are such processes facilitated? Anderson (2005) argues that there is a need for communication strategies that will empower and engage all sectors due to the range of cultures involved in the process. Our fieldwork observations in Olifants catchment, especially regarding local government as there is no CMA as yet, will help highlight some of these challenges and processes.

Another challenge in the formation of the institutions is that of power imbalances. Dominance and power by those who controlled water in the apartheid era continues.

Commercial farmers and irrigation boards are in a potentially strong negotiating position to influence the direction of the CMA while the disadvantaged communities continue to suffer from significant power imbalances in knowledge and expertise (see van Koppen *et al.*, 2002–2003; Anderson, 2005; Masangu, 2008:36). Anderson (2005) argues that in order to make catchment management work and to truly empower the poor, the water sector in South Africa needs to build techniques to transform the most powerful actors to understand the needs of the poor and marginalized and that this issue is often overlooked amongst competing research agendas. Anderson (2005) observed that ‘an analysis of power dynamics within the water sectors would make a valuable contribution to South Africa’s water management discourse and would require a combined effort from DWA, research institutions and water management practitioners’. The following section will highlight some of the nuanced observations from the field in Sekororo on how the water reform is panning out.

8.4. Local Government and Water Service Delivery: “Policy is DWA...and Implementation is Municipality”

8.4.0. Issues, Observations and Experiences from Olifants Catchment

Pursuant to the Water Services Act, the water and sanitation functions are the responsibility of local government in South Africa. However local government structures lack resources, institutional capacity and the necessary skills to undertake appropriate planning. They often operate in the contexts of extreme poverty and marginalisation where development needs and expectations are the greatest. With the establishment of the new municipalities in 2000, many of the provisions with regard to water service institutions came into effect. The two municipalities in the study area, Mopani District municipality and the Maruleng local municipality began implementing the new water service provision mandate. Water needs are taken into account in the drafting of specific proposals for development projects within each municipality’s Integrated Development Plan (IDP). Municipalities secure financing for water resource development from the Municipal Infrastructure Grant Fund of the Department of Provincial and Local Government, and the Independent Development Trust among other sources.

The Mopani District Municipality embarked on a water treatment, reticulation and supply project for water provision to the greater Sekororo communal areas. The project dubbed Mametja-Sekororo Regional Water Scheme started six years ago but only gained momentum last year with the laying of reticulation pipes and the construction of the treatment works at the Oaks in Sekororo. The project is complex in infrastructure development and maintenance, requires high administrative skills, long-term planning and wide stakeholder participation. It remains to be seen how the project evolves from planning to implementation and operationalisation. However, based on our observation and tracking of the project thus far, there are many challenges that need to be sorted out regarding payment of services, stakeholder consultations and representations, and maintenance servicing and cost recovery plan. Local residents in Sekororo are hardly aware of the project apart from seeing the contractor at work with the reticulation line. Payment for services remains a central challenge in both district and local municipalities, especially for the rural residents, and is one of the major reasons for tensions with consumers. The emphasis on developmental governance encouraged the South African government to delegate control of water service delivery to local municipalities. This seems appropriate in spite of the many problems associated with a lack of municipal capacity and non-payment by consumers. The focus, on the part of local government (district and local municipality) in the Olifants catchment, as elsewhere in South Africa, is shifting from water infrastructure development and improvement to recovering payment for these services. The Mopani district municipality and the Maruleng local municipality are struggling to cope with water delivery due to low skills and institutional capacity.

Technical expertise for the bulk supplies is already limited and fully in hands of private firms, and there is no technical support, neither for domestic nor productive, for the small scale users who will not be able to invest themselves at further scale. Water service delivery that focuses primarily on physical planning at the broader scale tends to lack the necessary sense of local ownership by stakeholders, hence, chances are high that

infrastructure vandalism and neglect that occurred during the apartheid era and continued post-1994 might persist despite massive capital expenditures by municipalities.

8.4.1. “If Water Service Provider or Municipality cannot supply water – they must go”

At a water workshop held at the Water Research Commission on 24 June 2010, attended by senior DWA officers and representatives of communities the question came up where one participant asked, “*What is the responsibility of DWA?*” The response came from senior DWA representative “*To allocate water, but who should ensure that allocation is taken up? It is the role of other departments. In the past, we tried to work with the department of agriculture but maybe we did not try hard enough*”. This sort to reiterate the point that water supply in a community or to communities is the responsibility of local government and other line departments such as agriculture. However, a community representative retorted “*Its water, so it should be DWA, DWA is water*”. This prompted a response from the newly re-named department of Cooperative Governance and Traditional Affairs (COGTA) who pointed out that “*...we are aware of instances where communities went for more than four days without water. This can not be tolerated. Municipalities often give lame excuses. If water service providers or municipality cannot supply water they must go...they can no longer be tolerated*”.

This happens in a context where 60% of allocable water should be in black hands by 2024 as planned and envisaged by government (DWA, 2006; Van Koppen, 2007). Also mentioned already in Van Koppen (2007) and at the workshop stated above, there is a lot of pressure for municipalities to deliver services to frustrated residents of poor communities where expectations are very high. Where district and local municipalities fail to deliver water service, the COGTA representative further explained that the provincial government will take away sanitation, water, municipal health services and electricity. The COGTA is a player within the institutional set up in the water sector. The renaming of the department from department of provincial and local government to cooperative governance and traditional affairs emphasizes the aim to bring back

coherence into the governance system and get area-wide sector agreements. After questions and fears were raised that the provinces are going to be too powerful, the COGTA representative euphemistically responded “*It is centralisation for better decentralisation...it is not about making provinces more powerful but more interventionist and responsive*”. There were also clarifications if not more confusion about the IDPs and Provincial Growth and Development Strategies (PGDS) which are the basis for local government operations. One outcome that was very clear from the meeting was that there is no firm engagement between and among government departments that are suppose to cooperate for development and service delivery, where provinces did not have better (clear) engagement with district and local municipalities and vice versa, let alone engagement with other government departments and service providers. This is a vacuum that not only Sekororo experiences, but a creation of the learning curve given that the notion of local government is still relatively young in South Africa, basically since 2000, and such hiccups are bound to happen.

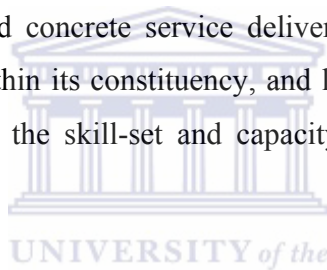
8.4.2. Who is the driver of what is needed and where?

There is acknowledgement that there is a rift between DWA and Maruleng municipality in the region generally characterised by mistrust, resentment and suspicion, where DWA members feel that the municipality water services department should be integrated into DWA and not the other way round. DWA is still the water services provider in the area. The DWA still has full responsibility for operation and maintenance of most essential water infrastructure: elevated tanks, jojo tanks, concrete reservoirs, reticulation, main pipeline and boreholes. This is despite the official narrative from the Maruleng municipality that DWA had already been integrated into the municipality water services section⁴⁵. According to the law the municipality is responsible for taking care of the reticulation and use of water, not DWA.

The municipality (district and local) is responsible for taking care of the reticulation and use of water, not DWA. DWA is only responsible for filling up the tanks and maintaining

⁴⁵ Interviews with Mr Maluleke DWA local office manager 4th December 2008; and Mr T.W. Moagi & Mr K.B. Bambisa at the DWA Oaks offices in Sekororo.

the equipment such as boreholes and storage reservoirs. This has often led to allegations and counter-allegations between DWA and the municipality. The DWA narrative claims the municipality is not planning properly and is inherently inefficient. The manager of DWA at the Oaks claimed as noted earlier elsewhere *“I’ve never seen a project put in place by municipality from A to Z which works and is sustainable. They invested in storage tanks and boreholes without testing the water or purchasing the pumps. Municipality is even failing to pay the electricity bill. They have a tank that they used only for funerals. ‘Why should I have to die to get water? Maybe I died because I was thirsty’”*. The counter-narrative is that the municipality claims that it wants changes and is keen to re-allocate water for multiple uses, and not only for domestic uses, yet the DWA seems less interested apparently because it wants water to remain in the same hands. There is a strong belief within the municipality that there is a big difference between political promises and concrete service delivery issues, and the province for water service delivery falls within its constituency, and legally so. The municipality on the other hand does not have the skill-set and capacity to rollout the water delivery system.



The on-going Sekororo-Mametja regional water supply scheme meant to ease water problems has already created some antagonism between the two arms of government. According to DWA, the infrastructure, planning, financial and capital costs for the project are sole responsibility of the municipality. DWA will only take over the operation and maintenance of the project after the construction and installation by the municipality. The water services technical manager at Maruleng municipality asked a poignant question, thus: *“If operation and maintenance of existing infrastructure is questionable and liable to neglect and vandalism, what guarantee is there that the Sekororo-Mametja water supply project (pipes and accessories) will be treated differently?”* A closer analysis reveals that the challenge in Sekororo is not lack of infrastructure but there is lack of capacity and coordination to maintain what is there, and the ability to synchronize institutional efforts by fragmented and competing sectors. It also becomes apparent that the new structures and institutions (DWA and municipality) are not necessarily new in terms of water management; rather they are more pronounced

as new institutions of power. In light of the above, and pursuant to hydraulic property rights creation, the question arises, who safeguards the property, DWA or municipality? It would seem that property rights in this context are a battleground for powerful and technical people to assert their authority in determining the outcome of communal infrastructure investments on behalf of the users. This in turn serves to highlight the institutional malady that exists within the water sector in South Africa from the user level to the intermediate level.

8.4.3. Service Delivery, Water Sector and Local Government:

Reverting to Semantics

Realising the growing pressure and frustrations by communities owing to the slow pace of service delivery, residents in some urban and peri-urban municipalities in South Africa took to the streets and demonstrated, often damaging property and infrastructure in the process. With regard to water, people stress the lack of money to improve their access and mainly think about individual options to improve their access when they can afford them (individual storage, private boreholes). They do not seem to believe in collective solutions and are quite hopeless about institutions or actors who are supposed to help them especially at the intermediate level: water committee, ward councillor, local and district municipality, owing to repeated frustrations with failed promises on service delivery. One reason could be that for years, the solutions implemented at the village and intermediate level by the previous government (under homelands) and by district and local municipalities, have failed to meet people's demand and expectations that were raised at the attainment of democracy in 1994. The demonstrations against service delivery failures did not only embarrass the government, but also pushed the government to act by firing and replacing incompetent and corrupt municipalities. That seemed more like treating symptoms rather than providing a cure; hence, at their recent meeting in Durban, delegates attending the ANC national general council felt that the use of the term "*service delivery*" should be stopped because it inculcated a sense of entitlement among people⁴⁶. Delegates raised concerns that the term should no longer be used because it encourages dependency. The term, delegates argued, makes people believe that they will

⁴⁶ News24, in an article by Bongani Mthembu, 24/09/2010.

get everything from government," said Bathabile Dlamini, African National Congress (ANC) national executive committee member. She elaborated thus *"South Africans were mobilised people before 1994. They were hard workers but that has changed. They are now demobilised because they think that government will do everything for them. They don't contribute anything. They destroy what they have when they demand something"*.

It is one thing acknowledging past mistakes as government departments but there is need to do a postmortem in order to learn from past mistakes. Indeed, 15 years into democracy and one decade after the NWA, small-scale productive water uses in South Africa occur in spite of government neglect. They also occur in response to government's blatant failures to develop water infrastructure, and is often associated with the previous government, deeply mistrusted by the people for not prioritising the HDIs. This is compounded by the seemingly lack of an own vision on smallholder agriculture and lack of a neutral body (not commercial developers) to engage in an infrastructure development agenda. There is increasingly a complete disappearance of any infrastructure development agenda for HDIs for productive uses except rainwater harvesting and RESIS as mentioned before. As if that is not enough, the infrastructure that was functioning largely collapsed in former homelands with complete withdrawal of any management/subsidy. Dealing with such issues is beyond the capacity of the municipalities (district and local), hence the growing interest and involvement of the provincial government in infrastructure development and service delivery. The COGTA department seems to be making headway in re-introducing the infrastructure development agenda for the HDIs.

8.4.4. "We are a playground...but even a playground is well-looked after than we are"

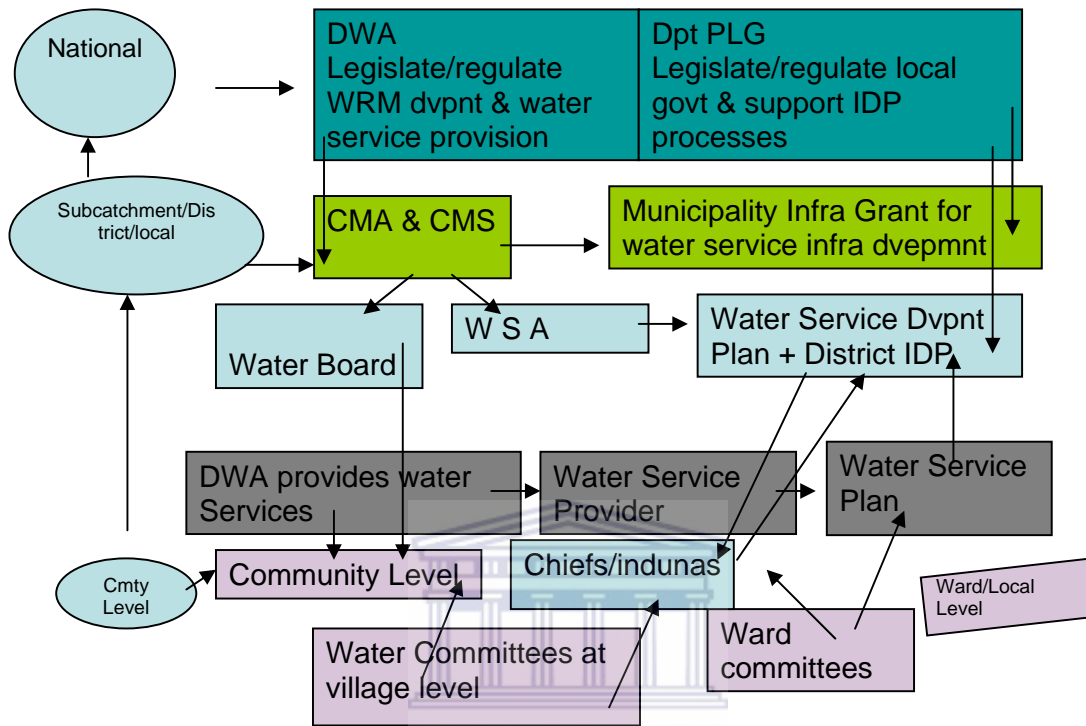
With all the departments that are supposed to deal with water issues seemingly abstaining from responsibility at the user level; it is the users who are left bare. *"We are a playground, but even then, a playground is well-looked after than we are"*⁴⁷. During apartheid, water services provided by the government of homelands were limited, when

⁴⁷ Community representative at the Water Governance Workshop held in Pretoria 24 June 2010.

and where they existed, they were only left to rudimentary networks of public standpipes. Most of the existing networks in the area were built during the 1980's, some improvements (weirs, reservoirs) and extensions were added after 1994 and beyond. During the transition period of 1995-2000 a number of policies were changed by the new government (National water Services Act of 1997, National Water Act of 1998), hence there was only a slight improvement in water services (only less than 12%) more households were connected to private taps in rural areas of Limpopo province. Although district and local municipalities argue that one of the main reasons for poor infrastructure development and maintenance is the non-payment for water services by communities (basically getting free water so the narrative goes), there is a counter-narrative by communities who argue that water is not for free: people pay for water either with their time, when they have to transport it or by buying storage equipment, paying to connect to a network or to drill their own borehole. These are some of the challenges they face as a result of poor management and maintenance of infrastructure by local water service providers.

There are various water committees at the local level in Sekororo, yet there is no direct and clear linkage with intermediate institutions such as municipalities, where linkages exist, they are often weak and do not account to the constituent of water users/stakeholders. This leaves a huge operational void in terms of both scaling up and out of the institutional structure. The institutional structure for water governance in South Africa might be best depicted as shown in figure 8.1:

Figure 8.1: Institutional Structure



Source: adopted and adapted from Benito et al (2010:658)

8.5. Power, Resources, Knowledge and Interests

One of the biggest challenges in the formation and implementation of the water institutions is that of power imbalances between and among the different stakeholders. Dominance and power by those who controlled water in the apartheid era continues. Commercial farmers and irrigation boards are in a potentially strong negotiating position to influence the direction of the CMA while the disadvantaged communities continue to suffer from significant power imbalances in knowledge and expertise (see van Koppen *et al.*, 2002 2003; Anderson, 2005). As we observed in Sekororo, the downstream furrow and pump irrigators seemed powerless to engage and/or confront white commercial farmers upstream to discuss the perennial water challenges on a shared river. An analysis of power dynamics within the water sectors helps with understanding South Africa's water management discourse. My observations reveal that although the Mopani district

municipality has embarked on infrastructure development for the Mametja-Sekororo water scheme, there is still a daunting challenge of negotiating with farmers who hold most of the water rights/licenses for the Blyde dam. To date, progress has been slow although negotiations are continuing. Insiders within the municipality hinted that there is firm resistance by the farmers to allow the municipality to draw water from the Blyde.

Within the DWA, from the head-office in Pretoria to regional (provincial) offices and local (district and local municipality) level, there seem to be a graduated understanding and application of the various policies and laws which makes implementation a discretionary choice of the officers on the ground. Whilst looking for information on the Olifants catchment and for quaternary B72A and B72C specifically, I observed that what the people at the head-office have are official stand-points, which I would call 'politically-correct' images and reflections of the department. At the regional and local offices, the discourse changes somehow to a more interactive and iterative one. Apart from the foregoing, there is also often conflicting and/or inconsistencies in the data from the head-office and from regional and local offices. During one of the discussions with a senior official from the department, he pointed out that "There is bookish information that you get in Pretoria at the DWA head-office...and there is real information that you get at the regional offices. We are the information"⁴⁸. He further explained that although most of the data and information might be at the head-office as well, information and data on practical application and implementation of the reform process resides with the regional and local offices. A senior officer at the head-office counter-posed that "... regional and local offices cannot do anything without authorisation and permission from the head-office, and that all the information and reports from the regional and local offices are shared with the head-office which oversees the process nationally, ...and that the real position and state of water affairs in South Africa can only come from the higher offices in Pretoria"⁴⁹. We also observed that there is growing uneasiness at local offices that the Proto-CMA is too powerful for its own good, where the chief-director has too

⁴⁸ Personal communication with senior manager for Limpopo Regional Office, Monday 15th December 2008

⁴⁹ Personal communication with a senior DWA official who wanted to remain anonymous, Thursday 18th December, 2008.

much and disproportionate huge powers for effective roll-out and implementation of water reform processes within Limpopo province. There were allegations that local officers are not allowed to make any decisions without first consulting the regional office. This, as local officers allege, only serves to slow the pace and timely response to urgent needs and requirements by the local people whom the officers are meant to serve. It would seem there is little delegation and devolution of power from the regional offices down to the local offices of DWA.

As highlighted earlier, there are power struggles and positioning at the regional and local offices as well, both within and between departments responsible for implementation of water service delivery. For example, the infrastructure planning, financial and capital costs for the Blyde River water reticulation (the Mametja-Sekororo project) to Sekororo are by Maruleng municipality. When all the construction and installation is completed, operation and maintenance becomes the responsibility of DWA⁵⁰. This has already created some antagonism at the local level with the two departments operating as exclusive entities despite the official undertaking and requirement that the local DWA be integrated into the municipality water services department. It would seem that DWA officers at the local level are uncomfortable with the sweeping changes reminiscent of the local government structures fearing that they would lose their clout and autonomy in discharging their duties. From the local municipality perspective, the integration of DWA into the municipality is seen as a progressive goal towards achieving service delivery, without emphasising the fact that the municipality would have scored huge points in the on-going tussle for power between the two departments. Although the municipal offices and the DWA offices at the Oaks in Sekororo are located within the same building, and far from claims of integration, there still seems to be a rift between the two. One of the key reasons is that the DWA officers strongly feel that the municipalities (district and local) are primarily driven by political innuendo and pressure such that they over-promise to the communities without being realistic about what can be achieved within given time frames. One DWA officer underscored this point, thus, “I

⁵⁰ Interviews with Mr T W Moagi and Mr K B Bambisa at the DWA Oaks offices, Thursday 4th December 2008

have worked for the department of water affairs for 14 years, and people in the department realise the difference between political promises and concrete service delivery issues...whereas the municipality is under pressure to promise things that are not achievable especially because councillors feel the pressure and/or threat of being voted out in the next elections, that is the real challenge”⁵¹. This demonstrates that local government structures and departments are embroiled in power fights in the ‘inner circles’ with little or no interest in taking any outside ‘collaboration’ for the greater good of the constituencies that they are supposed to serve.

On the other hand, the Maruleng municipality water services department officials strongly feel that the main challenges being experienced emanate from short-sightedness within the local DWA offices, in that they want to continue with only water delivery for domestic uses and not broaden to productive uses as well for people to improve their livelihoods. The argument I pose here is that an improvement in water quantity for households could make more households use water for multiple uses and hence improve the households’ livelihood and ability to pay for water services. Van Koppen (2010) also observed that allowing for small-scale productive uses at and around homesteads can bring income that can enhance the sustainability of infrastructure operation, maintenance and depreciation. As calculated by Renwick⁵² (cited in van Koppen, 2010), income from productive activities is generally sufficient to repay the investment costs for intermediate multiple use within half a year to three years, besides financing operational costs. Thus, the provision of water for domestic uses can be cross-subsidised. This financial sustainability is especially important for the poorest community members who need such services most.

⁵¹ Personal communication with DWA officers at the Oaks offices, Thursday 4th December, 2008.

⁵² Renwick, M. *Multiple Use Water Services for the Poor: Assessing the State of Knowledge*. Winrock International, Arlington, VA, USA (2007). Downloadable on internet: <http://www.winrockwater.org/docs/Final%20Report%20Multiple%20Use%20Water%20Services%20Final%20report%20feb%2008.pdf>

8.5.1. Hydrologically-based water governance and politico-administrative governance: where to CMAs

A (deliberate or forced) delay in rolling out CMAs full-scale due to administrative and capacity issues, are as much a result of challenges to the applicability of hydrological basin management versus politico-administrative management and has stagnated the reform process in South Africa. This according to DWA insiders, is a result of the very impractical conception of CMAs which threaten to reflect the past (continuing the inequitable access to water) upon roll-out rather than the anticipated future of stakeholder participation, representation and consultations. Discussing with and interviewing water managers, we observed that the delay also symbolises the realities between the need for change in the water sector by some constituents (government and its tripartite alliance partners) and the struggle for continuity by those with vested interests (big business, mining industry and agriculture). This apparent stalemate, among other reasons, led to delays in the set up of these water management institutions (see Karar, 2003 cited in Faysse 2004). By 2003, no CMA had been enacted, and there was only one small holder WUA and around 20 WUAs which came from former irrigation boards and one large-scale non-agricultural WUA (Karar, 2003 cited in Faysse 2004). The first CMA, Inkomati, was established in 2004 and became functional in the 2006/2007 financial year (DWAF, 2007b). Although there was a drive for CMA establishment in some water management areas, the negotiated change is not that clear-cut.

During the 2005/2006 financial year, nine WUAs were established, six of which were new associations and three were transformed irrigation boards (DWAF, 2007b; Masangu, 2008: 36). Three of the newly formed WUAs are in Limpopo province and are made up of resource poor (read black) farmers only. The chief director at the Limpopo regional office indicated that some of the earliest water user associations (WUAs) were normally formed by people who want to protect their own interests and stake in water and safeguard against efforts aimed at equitable sharing and redress⁵³. Amidst these challenges, the Olifants CMA is yet to take off the ground. This is compounded by growing debates and calls for institutional alignment (from 2007 onwards) with proposed

⁵³ Interview with Mr Allison Matukane at the Limpopo Regional Offices, 19th July 2006.

9 CMAs attached to the 9 Regional Offices across the country. Hence, in practice, DWA remains proto-CMA almost everywhere in South Africa. There are also no CMA strategies, but in meantime DWAF's own Internal Strategic Perspectives serve as proto-strategies. It remains to be seen how the process of institutional alignment will pan out but at the moment, one is inclined to infer that the rolling-out of CMAs as typical hydrological/catchment basins might not be realised unless drastic action is taken by government and other stakeholders.

Another observation we made during fieldwork is that there is a growing uneasiness with the use of consultants by the DWA. Insiders within DWA and some of the consultants hinted that the department on its own does not have capacity to perform its functions. As the argument goes, the department is equally not competent to supervise the work done by the consultants. The result has been a perpetuation if not collusion by the consultants, not out of bad intentions, to maximise on financial gains from work done for the department. As one consultant who formerly worked for DWA for 17 years remarked during an interview *"...they did not want to pay us a little more for our skills when we were with the department, now they pay a lot more for their ignorance. A week hardly passes without senior members from the department calling me for advice and consultations. What is prevailing at DWA is a system where people are promoted to senior positions without the necessary requisite skills and competencies"*. The consultant further argued that in most instances, the consultants have to collude in order to help shape the agenda of the department especially given that their recommendations are usually taken as 'gospel truth'. It is this seemingly uncontrollable influence by consultants and the budgets used to cover their costs that make some of the DWA insiders wonder if the agenda of redressing past imbalances will be met, given that most of the consultants are former employees of the department with a large skew of dominance by white male consultants, whom they allege did not largely favour challenging the status quo. However, this does not necessarily mean that one will necessarily carry out assignments to the detriment of addressing past racial imbalances. When I posed these issues to senior DWA officials in order to get clarity, I was left convinced that the issue of consultants dominating the shaping of the agenda and quality

of work by the department is a norm rather than an exception. This does not mean that consultants do not deserve fair value for their competencies, rather, the issue borders on sustainability and implications on budgetary allocations. How does the DWA justify the continuing existence of poor water (re)allocation to the HDIs given the huge budgets spent on consultants? A DWA insider argued that the issue of use of consultants is not only within DWA but endemic within and across different government departments in South Africa. There were also allegations bordering on corruption with regards to the awarding of contracts to consultants within the department⁵⁴, an avenue that I was cautioned not to pursue for my personal security and also for purposes of protecting some of the insiders that cooperated with me during interviews and discussions.

8.5.3. Licenses: administrative discrimination and dispossession

Pertaining to the implementation experiences with regard to general authorisations and licenses, we observed that there is a real big rift between the majority small-scale users and large scale users in terms of both knowledge and capacity to comprehend with the process. Large-scale users are better informed about procedures and know the formal language of the forms and how to fill them as reported earlier. They are mobile and well connected to relevant officials. They have bank accounts and are able to smoothly pay any fees. If needed, they can hire consultants and lawyers to carry out the job and hold government accountable, also on administrative procedures. Van Koppen (forthcoming, 2010) sums it well, thus "...In South Africa, for example, the tail is wagging the dog with many large-scale users submitting complaints to the Water Tribunal regarding permit applications. Informal small-scale users lack these attributes". The key observation here, as indicated earlier, is that general authorisations and permit systems although well-intended, have become instruments and elements of administrative discrimination against the majority at the expense of the few powerful, experienced and knowledgeable stakeholders.

⁵⁴ Some of the alleged corruption was widely reported. For example see: <http://mg.co.za/article/2010-07-16-water-affairs-leaking-after-probe>

The South African Water Act provides for so-called ‘General Authorisations’.⁵⁵ These are blanket authorisations for water uses in a certain area or by certain users. The thresholds are far above the *de minimis* uses, which are called Schedule One uses in South Africa. General Authorisations, as indicated earlier, further reduce the administrative burdens for the DWA. However, while this alleviates the logistic chores of government, the question is what exemptions mean for the water users affected. It is apparent that the government lacks the capacity and resources to process many permits. This administrative limitation affects especially the many small-scale users, who add most to these burdens, while the volume of these uses is typically seen as ‘insignificant’. So, not for their own fault, small-scale users have less access to the possibility to obtain entitlements. Exempting *de minimis* uses limits these administrative burdens for water uses that hardly impact on the overall water resources. Van Koppen⁵⁶ contends that the advantage of exemptions from users’ perspective is that it removes the obligation to apply for a permit and the disproportionate transaction costs, either to prove the legitimacy of existing uses or to take up new uses. If the thresholds are sufficiently high to capture most rural customary water uses, General Authorisations could bypass the thorny issue on how to convert customary rights into individual permits. To reiterate the argument presented earlier, the main question raised, for example in debates on Schedule One and especially General Authorisations in South Africa, concerns the legal status of these authorisations. Consequently it is feared that exemptions relegate the majority of small-scale users, not for their own fault, to a second class entitlement.

Other regulatory goals that invariably emerge in interviews with water managers, concern registration of water use to better know the resource to be managed; water allocation in the case of water scarcity; and, to a lesser extent, pollution prevention. It is claimed that such regulation in a common interest is also in the interest of the poor, who may be most

⁵⁵ Department of Water Affairs and Forestry, *Assignment to develop and test methodologies for determining resource specific General Authorizations under the National Water Act*, prepared by Ninham Shand (Pty) Ltd and Umvoto Africa and Synergistics Environmental Services for Director, Water Allocation, Department of Water Affairs and Forestry, South Africa, November 2006, WFSP/WRM/CON6002.

⁵⁶ In discussions about the experiences and challenges in rolling-out the water reform processes in South Africa, in her forthcoming publication “Water Allocation, Customary Practice and the Right to Water: Rethinking the Regulatory Model”.

affected by e.g., pollution. As a starting point, enforcing a nation-wide entitlement system to regulate everybody for any water use is a very drastic measure especially in Southern Africa where there was neither any thorough prior analysis of problems nor a menu of regulatory options, out of which to choose the most effective one for that problem. Similarly, there was -and still is- no quantitative estimate, neither of the numbers of water users to regulate or to be exempted for regulation, nor of the volume of their water uses. Early implementation experiences reflect the limited success and even the creation of new obstacles of enforced permit systems as regulatory tools.

Significantly, for implementing the formal policy goal to re-allocate water from the haves to the have-nots, the myth surfaced that one needs to change a legal system before one can regulate. For emphasis and as reported earlier, South Africa is most explicit in its policy goal of redressing inequities from the past and allowing, under certain conditions, taking water from the 'haves' to allocate to the 'have-nots' to that end. The vested large-scale users, we noted earlier, endorsed the conversion of existing lawful uses into permit systems as the supposedly only way to achieve this goal. Worth repeating here is that costly pilot efforts of such area-specific 'compulsory licensing' projects since 2003 are stalled and not a single drop has been re-allocated for historical justice. Moreover, out of the 1304 permits for new water uses that were allocated between 1998 and 2008, only 2.5 percent were for Historically Disadvantaged Individuals.⁵⁷ All other licenses were for white-controlled enterprises. Only recently, the much more readily available regulatory options for the state, as custodian of all water resources, receive somewhat more attention. Straightforward options, that merely need political will and enforcement capacity, are to prioritize new water uses by HDIs and to reduce the assurance of supply of vested users in physically stressed basins.

8.6. Conclusions

This chapter explored how and to what extend existing policies, institutions and legislation that govern and regulate access to and control over resources influence (and

⁵⁷ P. Dlamini and M. Msibi. Compulsory licensing. Draft report. (Pretoria: Water Research Commission South Africa 2009).

are influenced by) hydraulic property creation by providing a critical analyses, outline and synopses of the policy, legal, and institutional processes and the environment under which they are evolving. It also demonstrated some of the emerging issues and observations from experiences in implementing the policies and legislation thus far. Key broad statements of conclusion that can be drawn from the chapter include:

- Government still fails to use their powers as owner of the nation's water resources any better yet, more appropriate use of that power remains possible;
- The prioritization of water uses under the National Water Act needs to be reviewed to give priority recognition to and protection of access to water for rural livelihoods;
- Effective institutional co-ordination between the Departments of Water Affairs, national and provincial departments of Agriculture, Land Affairs and Rural Development and local government is required and critical in developing a specific and co-ordinated approach to ensuring water to poor rural communities within a multiple use approach;
- There is limited vision and technical expertise on the sort of infrastructure that would serve the purpose of providing water to rural communities
- Despite the incursion and onslaught of new policies and legislation, a key feature of customary systems (used by the majority of *de minimis* users is its holistic approach to water development and management and the use of multiple sources for multiple domestic and productive uses.

CHAPTER NINE: Reflections, Analysis and Implications of Water Reform Policies in South Africa and Zimbabwe

9.1. Introduction

This chapter is designed to provide necessary analytical insights and highlight the major discourses and narratives that shape and define the water reform in Zimbabwe and South Africa based on data presented in chapters 7 and 8. It provides a conceptual analysis of how property rights are created and transformed through time and how they shape (and are shaped by) policy, legislative and institutional processes for governing water resources. In this section I go beyond hydraulic property relations to look at some of the wider connections and interrelations between (and among) global discourses on broader issues of water governance and local realities as governments grapple with issues of reforming the water sector from national to local levels. I demonstrate how these discourses are negotiated, contested, and conceptualised by the stakeholders at different levels to broaden our understanding of how policies are framed, operationalised and the processes involved.

The broader conceptual analysis discussed here is set in the body of cultural and political ecological research that has coalesced around a set of ideas drawn from discourse theory, critical histories of science, hydraulic property creation and the sociology of development. The chapter considers how African water governance issues are framed and the practical implications of received ideas on policy, legislation and institutional arrangements. This is done by examining the structural, institutional and scientific origins of various narratives that shape and inform water governance discourse. From the early days of conquest, colonisation and apartheid, through to post-apartheid and post-colony, the persistence of received ideas on the African environment can in part be explained by their practical effect in serving the interests of individuals and institutions making up the development apparatus. In contrasting the water governance narratives expressed in international (integrated) water resources management documents (concepts, reports and

papers) with those of regional and intermediate level institutions, and those of water-user representatives at various scale (from village to district to national), it would be misleading to suggest that a homogeneous view prevails on either side.

9.2. Reflections on Water Reform in Zimbabwe and South Africa

Since (current) water reform largely originates in international discourses and policies including the Dublin Principles, Agenda 21, inter alia, we will address how these international policy changes are being understood and adopted for South Africa and Zimbabwe national water policies. During the 1990s and early 2000s, policy reforms put much emphasis on integrated water resources management (IWRM). The premise appeared to have been that if we can get the institutions (laws, regulations, organisations) right, the water will easily flow to where it is needed. Consequently, the two countries overhauled their water law and related regulations, and formal water titles were introduced, in the form of registered water permits or water rights, as well as water levies and fees. The expectation was that formalising water use and introducing fees would stimulate more rational water use and development.

The results of these reforms have, however, been limited in South Africa and Zimbabwe, and there is a growing realisation that without physical hydraulic infrastructure people in semi-arid environments will not be able to enjoy access to sufficient productive water (van der Zaag et al, 2010:138; see also Grey and Sadoff, 2007; World Bank, 2007). The emphasis to move toward demand management, which involves working within the existing limitations of the found resource, rather than augmenting supply, and toward consideration of water resources as part of a wider ecosystem, through the promotion of integrated water resources management (IWRM) reflects global thinking (e.g. the Dublin Principles; Agenda 21) as well as local realities (Swatuk, 2000: 9). Yet, while recognising that access to both potable water for essential consumption and commercial water for production have favoured a minority throughout the region, the new water architecture claim that replicating this form of provision at national level is neither economically feasible nor ecologically sustainable (Swatuk, 2000; Derman and Ferguson, 2001). Swatuk (2000:217) further highlights that this position rehearses the global debate

involving over- consumption in the North versus over-population in the South, and poses two poignant questions thus: Now that a privileged minority have access to piped water, can a government deny the same to its marginalized majority? If so, on what basis is this decision being made?

Clearly there are contradictory forces at work. For example, the new water architecture hopes to work toward a fairer and more sustainable allocation of resources. Yet, if the Catchment Councils and Management Agencies in particular and the water sector in general are to be self-financing, this means that each has a vested interest in the continuing and probably expanding sale of water for commercial use (Swatuk, 2000; Walker, 2006; Schreiner et al, 2010). This therefore means that catchment management institutions (Agencies and Councils) are likely to favour those that can pay for water, i.e. those who already know how to exploit the resource. Yet, there is also claim that integrated water resources management requires working within the limits of the specific catchment. So, 'creating' new water requires not augmenting supply but in restraining demand. Besides, given that the major users in the two countries have historically had their water heavily subsidised, if paying for it at all, it remains to be seen how the state, in both Zimbabwe and South Africa, where subsidies for small-scale water users have been withdrawn or do not exist, will meet the goals of fairer and sustainable allocation. It also raises questions about new systems of delivery for those historically disadvantaged by the colonial and apartheid system. Under these circumstances, one wonders if new systems are built, who will pay the full cost – and yet the Councils, as we have noticed from evidence in Mzingwane, increasingly nudge towards encroachment on primary water uses for levies.

Bureaucratic delays in approving legislation, dealing with applications, and sanctioning local plans can also be a threat to the water reform process. For South Africa and Zimbabwe, the new Water Acts took a long time to be finalized and passed probably because consultations with various stakeholders tend to be time-consuming. After they were passed, one would have expected a quick implementation of the reforms but that was not to be. A string of statutory instruments designed to operationalize the Water Acts

took long in coming such that two years after the Acts were passed, very little had changed in the water sector. However, Zimbabwe managed to fast-track the operationalisation of CCs and SCCs nationwide, yet South Africa is still grappling with the issue of operationalising CMAs. These delays tend to reflect badly on the government because it gives the impression that the government itself does not have confidence in its new policies despite having legislation in place (Chikozho, 2003: 12; Walker, 2006).

Creation of new institutional structures at the catchment level (CMAs, CCs and SCCs) also has the problem of not recognizing the role that existing institutions can play in resource management. In most cases, both traditional and modern local government units are already in existence when the reforms are initiated. To link the new structures to the existing structures is not easy. Some members of the old structures might even feel that their territory has been invaded and friction ensues. These institutions need time to adjust to their new roles, they also need time to adjust to the need to bury their differences with other different stakeholders who are part of the new institutions and cooperate with them. This cannot be a smooth process because the new institutions are not familiar with the new roles. It is also impossible to wish away the mistrust that exists between and among groups that were originally divided by history (Swatuk, 2000; Chikozho, 2003). Unfortunately, in the execution of their duties, the new institutions are expected to interface effectively with the institutions that historically held ownership, management rights, and benefits from the natural resource. As Oakley et al (1991:4) states, centuries of domination and subservience will not disappear because we have "discovered" the concept of participation. Under these circumstances, the fruits of decentralizing management responsibilities can only be realized (if at all) in the long term. In any case, as Ostrom et al (1999:281) points out, having larger numbers of participants in common property resource management increases the difficulty of organizing, agreeing on rules, and enforcing the rules.

Our analysis seems to point towards a contradiction between the new water laws and dominant policy agendas of the water reform institutions (as reflected in chapters 7 and 8) on the one hand and the rural realities of informal water users on the other. The

challenge of most rural people in Southern Africa in general, and Zimbabwe and South Africa in particular is to encourage and provide support for investments in water resources development for multiple uses so as to enlarge the pie of available water resources for all, rather than sharing the limited pie that has been developed to date. This seems at odds with the priorities and dominant discourses of governments and international water development and investment institutions.

The water reform in both countries do include a focus on women as water users and highlight the need to include women in water management decision making and practice. However, I contend they do not adequately address the differentiation of women water users, particularly regarding women as productive farmers. Nor do they address issues of power within households and communities that shape men and women's participation in both informal and formal water management institutions, as well as their access to water resources.

9.3. Infrastructure Development and Water Reform

While a great deal of state investment has gone, since 1994, into the provision of safe drinking water, access to water for productive purposes by the rural poor has received less attention, and little has changed in this regard over the past fifteen years. As a result, access to water for productive purposes mirrors the ongoing economic inequity in the country. Innovative work done by Cullis and van Koppen (2008) in applying Gini coefficient methodology to access to water shows a high Gini coefficient for access to water across all provinces. Access to the benefits of water use is similarly skewed (see also Schreiner et al, 2010). There is a need for the infrastructure to enable access to water, whether it is infrastructure for storage, pumping from boreholes, or transmission and distribution, and whether it is large infrastructure, small infrastructure, or somewhere in between (ibid). Often this is lacking, although there are some subsidies available for such infrastructure from the Department of Water Affairs and the Department of Agriculture.

One reason for the lack of a rural infrastructure development agenda is a remarkable discontinuity in the historical memory of the importance of state investments to catalyze infrastructure construction and maintenance (Schreiner et al, 2010: 18). One of the first tasks that the white governments took up in the 19th century was the stimulation of irrigation by white farmers. Huge subsidies went into public and private infrastructure, water users' organization, research, and related input and market provision. Broader political- economic considerations such as solving the poor-white problem, territorial encroachment, long-term national food security, political gain, and export for foreign exchange justified this state expenditure. Yet, the discourse altered profoundly after 1994 with requirements such as 'economic viability' and full cost-recovery suddenly in favour

Another reason is the persistent reference in water planning to 'the' agricultural sector, 'the' forestry sector, and, indeed, 'the' national economy. The extreme dualism in the agricultural sector and inequities in general, are disguised by the use of such terms (ibid). As a result, water as a force in shaping agrarian reform is poorly conceptualized. For large- scale farmers, this discourse helps avoid future competition for water and markets. Progress in conceptualizing and implementing agrarian reform will be critical to changing approaches in the water sector. Unlike the pre-1994 government in which the departments of agriculture, forestry, and water collaborated strongly to promote national irrigation goals, such coordination is weak in the government today. Moreover, since the 1970s the Department of Water Affairs has shifted its attention to infrastructure for the 'urban and industrial economy', especially in Gauteng, the water-scarce economic hub (Van Koppen, 2008) and ever-larger inter-basin transfers. There is, thus, no institutional champion to drive a new infrastructure development agenda for the ex-homelands, where, moreover, local government is still very young (Schreiner et al, 2010).

There also seems to be limited vision and technical expertise on the sort of infrastructure that would serve the purpose of providing water to rural communities. The wealth of small- scale technologies promoted in other countries, such as mechanized groundwater or river lifting pumps, in-situ water harvesting techniques, various types of reservoirs, the use of wetlands, and point-of-use treatment for safe drinking water, are poorly known, let

alone promoted, in South Africa (Schreiner et al, 2010:19). In Zimbabwe, there seem to be more focus by the Rural District Council and NGOs on such technologies (Swatuk, 2000).

Finally, Schreiner et al (2010) argue that current approaches have reinforced the century-old neglect of poor water users' own initiatives. Yet, informal water initiatives abound, for domestic and productive uses. In Sekororo, the NGO-supported schemes or government domestic supplies, which are often used for small-scale productive use, are not reliable. The formal irrigation schemes have collapsed and are only used where private players or NGOs have informally entered into parts of the schemes. And yet 85 percent of the households use water for irrigation: 69 percent irrigate areas less than 0.002 ha, but 5, 4, 6 and 1 percent cultivate respectively more than 0,05; 0,2; 0,4 and 1 ha (Manzungu et al 2010; Schreiner et al, 2010:19; see also chapters 7 and 8). In most cases, these are private initiatives which function well and which would be a sound basis to further develop and promote appropriate technologies. The same applies for the vibrant and dynamic private initiatives in Mzingwane, Zimbabwe.

9.4 Conclusions

While there is clear evidence of the impact that access to water can have in improving livelihoods in rural areas, current approaches under the water reform in South Africa and Zimbabwe have failed to support an agenda that would realize such benefits. In order to realize these benefits, three factors must be addressed:

- policy and legislative reform: the prioritization of water uses under the National Water Act needs to be reviewed to give priority recognition to and protection of access to water for rural livelihoods;
- a programme providing and enabling the development of appropriate water infrastructure to support rural livelihoods is also urgently required;
- effective institutional co-ordination between water reform institutions and government departments (e.g. Water; Land Affairs; Rural Development) and local government at national, provincial and local level is critical in developing a specific

and co-ordinated approach to ensuring water to poor rural communities within a multiple use approach.



CHAPTER TEN: Discussion and Conclusions

10.1. Introduction

This chapter synthesises and reviews the findings of this study in a thematic manner that allows for reflection on the key issues relating to research objectives and hypotheses. The thesis examined whether IWRM-inspired water reforms respond to- and address the diverse realities and needs of women and men in informal (and formal) rural economies. Some central themes run throughout the findings of the study and these are linked to the study objectives presented in Chapter One. These themes include: the mismatch between water reform plural customary arrangements; socio-economic status, history and patterns of access to resources; communal area stakeholder participation and representation in catchment management institutions; investment strategies and responses in hydraulic property rights creation; and emergence, resilience or pervasiveness of traditional authorities in natural resources management. The chapter also offers some methodological and theoretical reflections adopted for the study, and presents conclusions and recommendations drawn from the results. The first section of the chapter (10.2) revisits the objectives that guided this study, and summarises, review and discuss the major findings related to each objective. The second section (10.3) explores the conclusions, policy insights and implications drawn from the findings in this study. The last section presents policy recommendations and potential areas for further research.

10.2. Water Reforms and Property Rights Creation: Governance Discourses and the Plight of Small-scale Water Users

10.2.1. Mismatch between water reform policies and legislation with realities of plural customary arrangements

Unfortunately in the region there tends to be outright antagonism or a begrudging acceptance of the reality of local water management arrangements as practiced by those in informal economies in favour of externally-driven water reforms. Such reforms are thought in terms of stakeholder participation, democratisation of resources, and improved

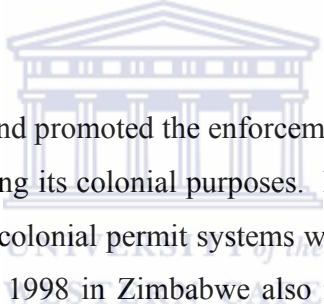
governance. Experience on the ground, however, paint a different picture –there is no root and branch of the reforms to institutionalise local management as claimed. It would appear that the efforts amount to little more than local incorporation into state-defined agenda. The state has remained largely oblivious if not antagonistic to the reality of local management of the resource in which traditional legal frameworks play an important role. Modernisation drives have tended to scoff at the concept of legal pluralism choosing rather to preach the virtues of statute law although few converts seem to be won over by the new message. There is a distinction between what is written in initial texts and local realities. However, as local concerns, discourses and practices are making their mark on international laws and policies and vice versa, laws start recognising local realities. Water laws seem to have taken long to recognise and incorporate local realities. This trend can be observed in relation to international law’s increased recognition of women’s and indigenous peoples’ uses of water and land. The concept of “mobile law” and “globalization” draws the attention to the interactive character of international law and policy making concerning the right to livelihood, water and land. Focusing on interaction and interplay this paradigm moves beyond the simplistic notion of international human rights and African customary laws as distinct, separate and opposing norms and values.

At first glance it would appear that the notion of primary water in Zimbabwe legislation would be linked to the indigenous idea that no one should be denied access to water. However, this seems not to be the case. Primary water, in the sense of the Water Act is, as the integrated water management system in Gwanda where land and water for livelihood cutting across the commercial-domestic divide illustrates, not a category among African peoples in Zimbabwe (see also Hellum, 2004). It was an introduced concept stemming from a residual, non-reflective category in the earliest imposed Southern African water laws. Hellum (2004) argues that in discussions with drafters of Zimbabwe's new water law, they stated they assumed the concept came from Roman Dutch law, remained there unchanged and was then incorporated into the new Water Act without further reflection. There was no explicit concern with customary law and customary water rights unlike other areas of colonial regulation such as land, marriage, inheritance and even political leadership.

Van Koppen (2010) argues that unlike the land frontiers, the water frontiers have not been reached as yet in most parts of Sub-Saharan Africa. Only 3.5 percent of water resources have been developed due to the lack of financial, technical and institutional resources to construct the storage and infrastructure to make more water available for human use year-round. Our findings resonate with van Koppen's argument that the issue is not one of regulating water, but developing it. This was the option followed by all middle- and high-income countries, who increased the pie of water available for all, including the poor, through infrastructure development. Experiences, interviews and discussions with water managers in Zimbabwe and South Africa point towards an IWRM-inspired agenda in operationalising the water reforms in both countries. What has been missing from the start of the reforms, and in the agenda of the key institutions spearheading the reforms, is the infrastructure agenda for developing water resources rather than merely shifting emphasis to regulatory measures such as permits and licences. Water scarcity is often framed and used to divert attention away from developing water infrastructure by emphasising the issues of sharing what is available. The pre-occupation of catchment councils and management agencies with second generation issues such as regulatory aspects presupposes the availability of water used by people to be shared. By ignoring first generation issues of infrastructure development, oblivious by its omission from catchment forum agendas in Zimbabwe and South Africa, the water reform process ostensibly misses an opportunity for discussing the development of water infrastructure. Yet by portraying water scarcity as an inevitably limited pie to be regulated via 'markets' of individual permits, attention is drawn away from this option. Only if all physically available water resources have been committed and basins are closing, poor people's better access to water may require a distributive water reform, as for land (see van Koppen et al, 2010).

Yet, permit systems in customary rural areas start all over again what has failed for land: trying to replace customary water rights based on the notion of communal ownership, into administration-based individual exclusive claims. Moreover, water titling is much more complicated than land titling. Water is a fugitive, highly variable resource, which is very costly to measure. This renders the mere administration, let alone the update of

permit systems, an even more insurmountable logistic burden (van Koppen, 2010). Further, even if permits were well administered, they are of little use in water entitlement conflicts. Scarcity situations are seasonal, variable and unpredictable. The estimated average annual water volumes allocated, as stipulated in most permits, are of little value for arbitration in ever-changing contexts. Instead, prioritization and conflict resolution mechanisms are needed, which are at the heart of any of the plural water rights regimes, especially (but not exclusively) stemming from investments in hydraulic property creation. This offers realistic, practical and enforceable claims by the majority of water users in the communal areas. There is ignorance or reluctance to embrace multiple legal frameworks that exists on black Africa with the state caught up in a web of contradictions where on one hand the state has on its statute books Western-inspired laws, while on the other hand, there is a desire and the reality of living out the African customary experience.



The IWRM discourse revived and promoted the enforcement of permit systems with even greater force, without questioning its colonial purposes. In line with global discourse on legal reforms of the 1990s, the colonial permit systems were revived in South Africa and Zimbabwe. The Water Act of 1998 in Zimbabwe also made some changes only to its colonial permit systems that had continued after independence. Permits became temporary instead of providing perpetuity rights that the colonisers had previously set. Fees were also tied to permits in order to finance the newly established Catchment Councils. Again, this enforcement of permit systems in remote communal rural areas superseded customary water rights. If governments and others seek to realise a human right to water and sanitation, food and livelihood and to improve the wellbeing of the large majority of rural constituencies, they need to expose the deep-rooted colonial legacy of imposing single water laws in plural legal contexts and ensure full recognition of the informal and customary water arrangements that provide vital livelihoods to the poor, also outside the ambit of the state. However, permit systems have often already been promulgated, so the practical question remains whether such recognition of legal pluralism can still somehow occur within the framework of permit systems without relegating such arrangements to second class status.

There are questions of how far bureaucratic institutions based on individual rights and the principles of modernity undermine social trust, relationships based on the ethics of care and mutual interdependence. While these bureaucratic arrangements are not necessarily inclusive, fair and emancipatory, socially embedded institutions may reproduce social divisions or gloss over inequality. We agree with Cleaver (1993; 2000; 2004) that in recognizing the plurality of institutional arrangements and avoiding the sterile dichotomies of traditional and modern, formal and informal, economic and social, and local and global, we should beware of normatively attributing value to particular types of arrangement. Despite this caution, Cleaver asserts that "...plurality also creates opportunity, processes of bricolage, of borrowing, of institutional improvisation which may create space for negotiation, contestation, and for different voices to be heard". The argument follows that rather than seeing plural and ad hoc institutional arrangements as dysfunctional (as does much development policy (Berry, 1994), we could see their very plasticity as providing scope for shaping social distribution and relationships in more equal and emancipatory direction (Cleaver, 2004). The informality of institutions and property rights seems to facilitate flexibility to allow for resource sharing primarily access to water. For example, in Zimbabwe, water points (dams, wells, boreholes) are constructed by either government or donor agencies and used by people in specific villages who are not, officially, the intended beneficiaries. There is a general norm of sharing water in Gwanda, Zimbabwe. However, our observations in Sekororo points to the contrary, where people seemed only to access water from public infrastructure in their villages of residence, without sharing with others from other villages.

10.2.2. Socio-economic status, history and patterns of access to resources

Some families in Gwanda who were visibly better off appeared to have regular sources of income, which often included remittances from household members working in cities and the diaspora. While some families claimed that the diaspora was their major source of income, the majority of households relied on subsistence farming and vending in Gwanda, Zimbabwe. In Sekororo, South Africa, sources of income mainly included social grants, pension grants, child support grants, some remittances, and subsistence

farming. From field research, we can note that households facing severe water shortages were poorer than households not facing such shortages. They face water shortages owing to their general poor socio-economic standing in society which renders them more vulnerable and less able to invest in own private water sources. As observed in both Gwanda and Sekororo, households with private water sources engaged more in multiple water use than those without private water sources. However, even poor and vulnerable households managed to carve out strategies to access water from both communal and private sources. The most common strategies include labour exchange and investments in social capital such as membership and associateship in local institutions like burial societies, churches and project support groups. It is necessary to recognise that the benefits of infrastructure investment in water provision cannot be measured in narrow economic terms alone. Where beneficiaries cannot afford to pay full cost of services provided to them, social incentive-compatible subsidy schemes have been designed and implemented by non-governmental organisations with the support of local communities.

Our findings resonate with Cleaver's observations that despite the possibility that new bureaucratic institutions could be emancipatory in including people previously excluded, in Gwanda and Sekororo, the poorest people rarely participate in such fora due to time, labour and financial constraints, lack of political clout and also by virtue of the amounts of water that they use, primary water in Zimbabwe, and Schedule One use in South Africa. We observed that most poor people in both Sekororo and Gwanda relied heavily on NGO supported and initiated projects, without which, they hardly afford such investments. Schedule One describes permissible uses of water that do not require a licence and do not have to be registered. Water use activities that fall under Schedule One include those that, due to the small quantities used, have a very small impact on the water resource and therefore pose minimal or no risk (details presented in chapter 8). Moreover, we also observed that the poorest individuals and households are characterised by limited networks and often spend most of their time on immediate livelihood issues thereby impeding their ability to processes of bricolage (see Cleaver, 1993; 2004) through daily social interaction. Under these circumstances, recognition of differences in socio-economic power amongst resource users necessitates a focus on the daily

interaction and beliefs (largely framed on wealth, power, resources and income) upon which such inequalities are based, if we are to avoid reproducing these in new bureaucratic institutions.

The provision of water for small productive activities, such as home gardens, fruit trees and small off-season vegetable plots, helps in addressing many household livelihood challenges in particular of female-headed households in multilocal livelihood systems. Agricultural water interventions should no longer be based on the assumption of specialised or increasingly specialising irrigation farm units managed by full-time professional farmers, but be prepared to assist in overcoming bottle-necks in manifold context-specific ways (FAO, 2008). Building on existing local knowledge and avoiding the introduction of unnecessarily sophisticated farm management systems contribute to a better uptake of technologies and takes into account the part-time nature of many farm activities. Such interventions and investments should be considered in complement, and not in opposition, to the more conventional medium- and large-scale investments in surface water storage and irrigation. Great attention has to be paid to the form in which access to water is increased, there is no "one size fits all" strategy that can be recommended and each livelihood condition must be considered individually and in its historical and cultural context. Hence, although poverty might be a limiting factor for some households in terms of decision-making, they are still, in their own way, able to carve out strategies for accessing multiple sources of water. Some of the strategies include participation and membership in reciprocal relations such as providing labour in exchange for access to private water sources, membership and/or association with religious groups such as churches in exchange for multiple benefits from the network and work-parties.

10.2.3. Communal Area Stakeholder Participation and Representation in Catchment Management Institutions

While one of the goals for water reform in Zimbabwe is to institute more coordinated planning across sectors by having representatives of sector-based agencies sit on

Catchment Councils, field research to date suggest that the net effect of the reliance on the new administrative institutions maybe to reduce participation and representation by small-scale and communal area water users compared to what was intended (see also Derman et al, 2002; 2005). Where and when they are represented and participate, their voices are often muted or marginalised in formal deliberations. Field research (see Chapter 7) indicates for example that there is relatively little participation from representatives of communal areas (Agritex, RDCs, councillors and traditional leaders) in catchment councils, in part because the scale of financial costs makes it difficult for these representatives to attend meetings.

Local government reforms are underway in Zimbabwe but coordination between these institutional changes and those in the water sector is not well-established. My observations and findings indicate that little communication or coordination takes place between the Rural District Councils and the catchment councils despite the fact that the former water infrastructure utility, the District Development Fund (DDF) has now been incorporated into the RDCs; and continues to be a major source or distributor of development funds for small-scale dam construction, boreholes and other water and sanitation projects. The results, in many instances, are that the water development needs of resettlement and communal area farmers (and dwellers) are marginalised by catchment councils as demonstrated by the issues discussed and debated at the (CC and SCC) forums which primarily focus on promoting large-scale commercial water use. Therefore, with regards to decentralisation/devolvement attempts through CCs and SCCs, although offering the opportunity for people to manage the resources, the necessary rights, control and power have been denied them, so these institutions have not been effective and useful for the majority of communal area resource users.

Despite the enabling framework provided by legislation and policy, and the wide recognition of the need to redress past imbalances in access to water, and to democratise water management institutions, experience to date has shown the difficulties of ensuring full participation in these institutions in South Africa (see chapter 8, also see Schreiner *et al.*, 2004; Anderson, 2005). Full participation by the historically disadvantaged is

hindered by a lack of public awareness among those who do not have access to communication technologies and electricity (Schreiner *et al.*, 2004, Anderson, 2005). According to Schreiner *et al.*, (2004), the major challenge in terms of participation most rural areas has been the lack of involvement by poor communities, particularly women. Many members of these communities feel disadvantaged as the process is new for them, and they may not have the background information and knowledge that other representatives (e.g. large-scale farmers, mining and industrial) have on water management. The meetings for establishment of CMAs are often not easily accessible (Anderson, 2005; Nicol & Mtisi, 2003). Effective participation by HDIs requires more than just getting the parties to the table and the mere presence of representatives of poor communities is not an indication of their involvement in the participatory or decision-making processes (Karar, 2003 cited in Faysse 2004; Schreiner *et al.*, 2004, Anderson, 2005). Anderson (2005) argues that there is a need for communication strategies that will empower and engage all sectors due to the range of cultures involved in the process. More important, the water managers need to be cognizant of the fact that for the reforms to be effective, efficient and sustainable, the needs and challenges of small-scale (often informal) users have to be part of the core-agenda. The needs of small-scale users include but are not limited to the provision of support systems such as subsidies to both private and communal initiatives in developing water infrastructure for multiple uses, and the use of inclusive forums for managing resources.

Financing arrangements for the new institutions seem to be stuck in a quagmire. Catchment and sub-catchment councils raised huge hopes with external funding at their inauguration but the excitement soon fizzled when external support ended in Zimbabwe; and state support withdrawal in South Africa. Dube and Swatuk (2002) and Manzungu (2002) highlight the dangers of such donor dependency, among other things, questions of sustainability and issues of autonomy in charting the way forward. Dube and Swatuk (2002) questioned the commitment of donors to the reforms arguing that funding was frozen due to power political issues at the national level, but the withdrawal of such funding had profound effect on still-teething local and intermediate level institutional structures less able to foot the financial costs of the reforms. Van Koppen (2003:1052)

suggests that attaching rights to water to fees for that water encourages non-participation. She found farmers' questions, thus, "...why should rural people pay for a resource they have long used for free if there is no evident benefit to them?" (ibid). We noted earlier (in chapter 7) how contentious the issue of a livestock levy panned out in Mzingwane catchment, where stakeholders from communal areas question the essence of levying them for water upon which the catchment and sub-catchment councils has hardly developed and/or provided. It would seem the pressure to raise money tended to violate primary water provisions in this regard. Evidence from studies by Mukheli et al (2002) suggests that where historical class and race differences continue to determine resource access, any attempt to impose user-pay fees on poorer people will elicit a confrontational and political response.

The reforms in Zimbabwe did not only cause chaos for the agriculture industry and the predominantly white commercial farmers, it threw the entire water reform process into disarray, hence raising questions regarding the wisdom of treating land and water as separate resource use issues (see also Derman et al, 2001; Swatuk, 2005). This raises issues on how catchment councils sought to operationalise the water reform being cognizant of the parallel process of land reform. The shrinking revenue base, through collection of levies from permit holders seemed to have forced the Mzingwane catchment council to consider imposing levies on all livestock owners in the catchment. This encroachment, largely attributed to shrinking revenue, was a direct result of the chaotic land reforms. Operationalising the water reform process in Zimbabwe cannot be entirely separated from land reforms for analytical purposes.

My observations on operationalising the water reform process in Zimbabwe and South Africa (see chapters 7 and 8) demonstrate how prioritizing the user pay principle (in legal texts and by catchment councils) through administrative policies such as permits and licensing may have ambiguous (if not undesirable) outcomes for the rural small-scale water users. Prioritising the user pay principle may indeed raise levels of appreciation for the importance of natural resources, and where values are delivered at producer levels, can constitute a powerful incentive for local collective entrepreneurship and innovation

especially from communal resource users (also see Murphree, 2004). But it can also open the door wider for elite appropriation of benefit and drive socio-economic differentiation, in both national and local contexts, far from the intended goals of equitable access and use of the resources.

The second challenge in the formation and operationalisation of catchment management institutions is that of power imbalances. While attempting to bridge inequalities between commercial white and black water users the reform, through resource management institutions such as catchment and sub-catchment councils in Zimbabwe, gives little thought to the situation in communal areas and resettlement schemes where poor women and men often lack resources to capture water for improved productive water uses through cropping, livestock and water dependent small scale activities such as gardens. Dominance and power by those who controlled water in the apartheid era continues in South Africa despite multiple initiatives and intentions to the contrary. To underscore what was reported earlier for emphasis, commercial farmers and irrigation boards are in a potentially strong negotiating position to influence the direction of the CMA while the disadvantaged communities continue to suffer from significant power imbalances in knowledge and expertise (see van Koppen *et al.*, 2002 & 2003; Anderson, 2005). Anderson (2005) argues that “to make catchment management work and to truly empower the poor, the water sector in South Africa needs to build techniques to transform the most powerful actors to understand the needs of the poor and marginalized and that this issue is often overlooked amongst competing agendas”. Anderson (2005) further argues that ‘an analysis of power dynamics within the water sectors would make a valuable contribution to South Africa’s water management discourse and would require a combined effort from DWA, research institutions and water management practitioners, and most importantly political will from those with authority, resources and power.

It was hoped that the broadening of stakeholder representation beyond white commercial farmers and including black communal area farmers, members of Rural District Councils and indigenous commercial farmers, would lead to more efficient and locally appropriate priorities. The CASS team’s surveys (2000-2002) and my observations have indicated that key stakeholders, such as headmen or indunas and local entrepreneurial champions,

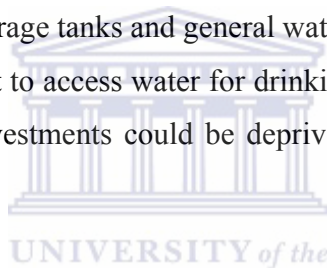
identified at the village level are not represented on Councils. Observations at Catchment Council meetings indicate that the few women present are usually either administrative technocrats or secretaries, and not necessarily productive water users, except for the female chief in Mzingwane. Neither in the new water laws nor in the Statutory Instruments implementing the catchment management institutions in Zimbabwe has any mention been made of how to incorporate women more fully as stakeholders in water management and development (Hellum 2001). This is despite women's heavy involvement in agricultural production and household water provisioning featuring significantly in the Dublin principles. South Africa has a designated quota on water user associations and monitors catchment management agencies. However, since the Olifants CMA has not been operationalised we can only speculate on whether such quotas are enforced, and indeed monitored, had it been operationalised.

10.2.4. Investment strategies and responses in hprc: Reflections from Sekororo and Gwanda

The drivers of water investments at the local level in Sekororo and Gwanda communal areas seem largely to be people retrenched and/or retiring from their jobs and engaging in small-scale farming as demonstrated in chapters 4 and 5 where we noticed the value of contributions made by pensions, social grants; and remittances from towns and the diaspora; as well as investments from personal savings and through labour contributions. Historical and recent expansions in private water infrastructure in Gwanda seem to be linked to increased investments in water, livestock and housing by those working in towns and across the boarder in South Africa and Botswana. In Ward 17, Gwanda district in Matebeleland South where families have been systematically migrating for generations, diasporans appear to manage well and remit reasonable amounts to their families. While more comprehensive and exhaustive studies need to be done, my work would suggest that income differences within Zimbabwe's rural areas are being maintained and exacerbated by the remittances from Zimbabweans in the diaspora. The diaspora are defining and determining new property systems as much as those who are

present although it might be at a small-scale and for multiple productive and domestic uses.

On the other hand in South Africa, Sekororo, the trigger of investments in water is largely attributed to three main factors, the dysfunctional and vandalized communal water infrastructure, dysfunctional formal water management institutions, and entrepreneurship initiatives by individuals and households, with or without external intervention, and again mainly diaspora. It is a context where water users blame local government (district and local municipality) for poor service delivery, in turn; the departments blame water users for vandalizing infrastructure and for being less-organised and lacking cooperation. The diaspora and richer households also play a big part in small-scale water investments in South Africa especially investments in electrified boreholes and pumps, irrigation furrows, rooftop-harvesting storage tanks and general water storage tanks. The study also found that everyone had a right to access water for drinking, in principle, and that no one who had invested in water investments could be deprived of it (see also Bolding et al 2010).



Within communal or ‘project rights’ in Zimbabwe, any member who did not participate in construction and maintenance could be denied water from the infrastructure apart from water for drinking which is considered too essential for life, and cannot be denied anyone (see also Derman et al, 2005; 2007). Some infringements on long-term beneficiaries occurred in Gwanda, Zimbabwe largely as a result of interventions by war veterans, and the perceived bias by NGOs, where communities reshaped and re-constituted membership in some communal water arrangements, what I have called ‘project rights’ (see also Meinzen-Dick, 2004) largely owing to the local understanding of such access issues.

In general, despite the growing investment in water and new forms of irrigated cropping in the Gwanda study area, the principles of allocation of garden land and water reflected demand for broader household needs and capacities by local people to use multiple water sources for multiple uses. No distinction was made by water users between domestic and

productive land and water use where the aim was to ensure the basic needs of the family. Neither the site of more commercialized agriculture and growing investment in water nor the existing (political and economic) crisis had led to the total enclosure of resources. It appears that in this area, customary norms and institutions have been able to respond to multiple needs while maintaining a focus on ensuring resources for livelihood in a broad and holistic sense. However, I noticed increasing reciprocal strategies to share water from private sources which included some form of water vending, labour exchange and the use of social networks such as kin and church membership. I sense a pattern of increasing inequality as villagers who are in command of social and economic resources are accessing two or more private water sources and gardens for themselves. Important resources in this respect are labor, access to seeds and fertilizer and equipment for transport of water from available sources in other villages in the event of drought. While I have noted the strength of local management systems, I may also see that the local water management systems may be adversely affected by the general breakdown of law and order that has taken place at all levels of law and society in Zimbabwe as a result of the economic and political crisis. Examples of war veterans acting with impunity in stifling and/or changing the goals of targeted infrastructure development by NGOs for vulnerable groups, such as women, widows and orphans in Gwanda, where the local institutional structures seemed powerless to intervene (as elsewhere in Zimbabwe), provide a chilling reminder.

New innovative forms of commercial cropping emerging within the common property regimes in the communal lands, such as women's gardens in Gwanda, Mzingwane, represent a challenge with regard to draw a dividing line between commercial and primary water uses embedded in the laws and policies. These uses render problematic the deep historical imposed division between commercial and primary water. In its discussion of the user pay principle, the draft Water Management Strategy for the Government of Zimbabwe emphasises that the user pay principle, in order to be socially and morally acceptable, requires subsidies to vulnerable groups (Robinson; 1998, 37; Hellum, 2004). Perhaps the Mazowe Catchment Council's debate as to what constitutes commercial water illustrates the issues that the increasingly market driven water

discourse is giving rise to (see Derman and Hellum, 2003; 2005). When drawing a dividing line between commercial and primary water use they relied upon a technological answer. If the water is moved by hand, it is according to this view, not commercial. If it is moved by some of form of machine, it will be considered commercial (see Hellum, 2004). It is such challenges in interpreting and implementing the reforms that helps bringing clarifications and understanding to the myriad examples such as the proposed livestock levy in Mzingwane which stakeholder representatives from communal areas vehemently resisted (for now) on grounds of fairness. The stakeholders reiterated that livestock watering is not subject to permit regulation as long as the animals are not penned and/or in enclosure and they have to take the animals for watering. This coincides well with the provisions of primary water uses under the water act, although the stakeholder representatives of communal areas did not use concepts such as primary water, which the ZINWA and CC managers used often.

If there is to be a significant change in access to water, then representation patterns will have to be altered in terms of gender and class, not just race. Equally important is to rectify the mismatch between the law and policy framework that the water reform has put in place over the plural, gendered and social realities and legalities on the ground. While the notion of primary water certainly speaks to respecting basic needs, as second class entitlement, the division between commercial and primary water does not sit well with the way of sharing, both with regard to safe drinking water and dry season gardens with available water sources that we observed in Mzingwane. To deny someone drinking-water and to a certain extent land with available water for vegetable gardens necessary for livelihood was associated with different kinds of sanctions for those denying others such access. Secondly, there is a gap between the seemingly class and gender neutral user pay principle based on a division between commercial and primary water uses and the gendered and social reality where poor women and men fend for their families by growing vegetables both for consumption and sale. By overlooking social and gender differentiation in relation to allocation and uses of water the seemingly neutral water laws and policies are likely to be to the effect that existing social and gender inequities are reinforced (see Hellum, 2004). Both local practices and international human rights,

particularly the growing discourse of a human right to water, call into question the division between primary and commercial water embedded in international and national water policies such as Zimbabwe's.

Drawing a boundary between water as an economic and social good the human right to water protects the poor, women, children and families by setting standards that are binding for international, national and local policy, law and decision makers. To make these rights real through investments in infrastructure, tensions and gaps between international, national and local laws will have to be reconciled. The Zimbabwean case points to the continued importance of a centralized and elite ruled nation-state putting race before gender and other social inequalities. While vesting all land and water in the President, neither the Constitution nor the Water Act recognises a right to water for communities and individuals. In South Africa where the right to water is embedded in the Constitution and the legislation of the country, poor water users (often those in urban and peri-urban areas) are challenging the legality of policies and practices through the national court system, an example is that of the Phiri residents in Soweto who mounted a legal campaign against Johannesburg water policy and the use of pre-paid water meters (see Muller, 2009⁵⁸). Although the Zimbabwean case exemplifies a centralized and elitist state at the broader level, I was surprised that when it comes to institutions directly engaged and mandated with water reforms (the CCs and SCCs), the institutions in Zimbabwe were more transparent and responsive to stakeholders and outsiders. For example, researchers and other interested parties (citizens and non-citizens) are allowed to attend catchment and sub-catchment council meetings without problems.

Yet in South Africa, where the right to water is embedded in the constitution and is touted as a democratic model, outsiders are (often) not allowed to attend local and district municipality meetings, let alone meetings at the national Department of Water Affairs (DWA). The best municipalities and the DWA offer are reports and records (edited versions) of the deliberations and/or interviews. The researcher was not allowed to attend

⁵⁸ <http://www.mg.co.za/article/2009-07-21-a-phiric-victory-for-the-poor>

official DWA and Maruleng local municipality meetings despite numerous requests to do so. The excuse given that such meetings were internal matters and only privy to employees of the departments, although justifiable and understandable, did not provide the same scope as in Mzingwane, Zimbabwe. Apart from interviews, the few first hand opportunities the researcher got to observe deliberations by DWA officials were during public discussions and debates at workshops and conferences. It should be noted though that the DWA, like other government departments in South Africa, makes available official documents on their website which renders access easy regardless of location. However, it was difficult for the researcher to experience first hand unedited debates and discussions within the department, like was done with ZINWA and the Mzingwane catchment council in Zimbabwe.

10.2.5. Emergence, Resilience or Pervasiveness of Traditional Authorities in Natural Resources Management

Although there have been deliberate efforts in both countries to override and/or neutralize the role of traditional leaders immediately after independence in 1980 (Zimbabwe) and post-1994 (South Africa), they (traditional authorities) seem to adapt and metamorphosize into multiple purpose institutions that are responsive to people's needs, or simply continue what they have been doing. From the findings in Sekororo, we noted how the chief and his indunas are considered by water users as the best institution in mediating access to water as well as enforcing sanctions on transgressors in both communal and private water sources, despite some reluctance by local municipality and DWA to engage with them on water issues in favour of elected councillors. In Zimbabwe on the other hand, we also noticed the recognition of traditional authorities (chiefs) in catchment and sub-catchment councils where they are members by virtue of their position as representatives of the people, although they are less instrumental in community water management owing to power struggles with war veterans.

Ntsebeza's (2005:14) work in Xhalanga, South Africa, highlighted that "...the survival of traditional authorities can be linked directly to their control of the land allocation process at the local village and Tribal Authority levels, rather than popular support". The passing of the Traditional Leadership and Governance Framework Act (2003) which acts as a

foundation for the establishment of Traditional Councils empowered to administer and allocate land in rural areas lead to skepticism on compromising democracy. Ntsebeza (2005:15) argues that "...upholding a Constitution that enshrines democratic principles in the Bill of Rights, whilst acknowledging a political and developmental role, or roles, for unelected and unaccountable traditional authorities...is inconsistent and contradictory". Notwithstanding the noble and critical observations by Ntsebeza, our findings from Sekororo seem to point towards a responsive traditional leadership. This might partly be because of accessibility of the indunas and chiefs, and also that traditional authorities, unlike elected councillors and municipal officials, do not operate as single purpose institutions, and perceive water with its multiple uses. Elected officials such as councillors and municipal officials were less responsive to people's challenges such as reports of illegal connections to the reticulation line, which is their mandate. Yet when such issues are reported to traditional authorities, they seemed to be robust and quick in mediating and exercising their powers. One remark made by an NGO leader in Sekororo underscores the dynamics between elected and hereditary leaders "...that elected officials such as councillors are more interested in maximizing benefits during their tenure and often forget the electorate, by the time they want to be re-elected, people do not vote them in again, and whatever promises and commitments they promised, disappear with them...yet traditional authorities are ever present and have to face the community, so are obliged to be responsive to undo the elected officials. Moreover, elected officials can be fired for reasons of accountability, but the induna and chief can not be fired". However, I content that the traditional authorities still maintain a powerful position in the community owing to their ability to manoeuvre into relevance by maximizing on their control over land and their role as multi-purpose institution, and grabbing opportunities from the failure of elected leaders, as well as some benevolence from the state.

In terms of development of post-independence rural institutions in Zimbabwe, the Prime Minister's directive of 1982 introduced elected leadership through village development committees (VIDCOs) and ward development committees (WADCOS) into the rural institution landscape where communities historically recognized traditional leadership structures (Nemarundwe, 2003; Mukamuri et al, 2004). The idea was to initiate a bottom-

up approach to local governance and development strategies. The new development, however, down-played the role of traditional leadership and has resulted in confusion over management and allocation of communal resources. Realisation of the resource allocation impasse between newly created institutions and traditional leaders led the government to enact the Traditional Leaders Act (TLA) of 1998. The TLA tried to harmonize functions between traditional leaders and elected leaders, but with more power being vested in the traditional leadership structures. Of particular importance, in this context, is the re-instituted traditional leaders' power to allocate land, the basis for natural resource access. Traditional leaders also have powers to resolve natural resource and social conflicts. Elected leaders have been relegated to the function of facilitating development plans for their areas for submission to the Rural District Council (RDC). From our findings in Zimbabwe, we observed that traditional leadership and kin networks are a major component in safeguarding and enforcing rule compliance within the water sector in communal areas (see also Sithole, 1999; Derman et al, 2000, 2005). However, the level of involvement and the degree of participation by both the traditional/customary authorities and the state varied from one village to another, as well as from one water source to another depending on whether it is privately owned, communally owned or 'project' owned, often manifested in reciprocal relations.

From the foregoing, it is a false dichotomy (after Cleaver, 2004) to pose a realm of 'traditional' informal, culturally and socially embedded institutions against a 'modern' domain of rationally designed committees and formal structures, and to suggest that one is likely to be better than the other at resolving conflicts or managing natural resource use. Cleaver (2004: 17) offers a poignant analysis where she argues that "Local resource management arrangements are a complex blend of formal and informal, traditional and modern". This coincides well with our findings where there are multiple institutions involved in managing resources ranging from traditional leaders, elected leaders, and in some instances, 'project-leaders' and private interventions by war veterans. It is within this complex hybrid and multiple institutions where power contestations and negotiations take centre stage. Hence, we agree with Cleaver (ibid) that the evolution of collective decision-making institutions may not be the process of conscious selection of

mechanisms fit for the collective action task (as in Ostrom's model in formalising irrigation systems so needs being rational) but rather a messier process of piecing together shaped by individuals acting within the bounds of circumstantial constraint.

The argument continues with the suggestion from the systems analysis discourse that water governance cannot be properly understood in terms of fixed, predictable states; it is better perceived of as resilience in a complex, evolving biophysical-cum-social system comprised of structures which interact across scales of place and time and which move through adaptive cycles of growth, accumulation, restructuring and renewal (see Murphree, 2004). Resilience is characterized by the capacity of the system (and its sub-systems) to absorb disturbance and evolve in response to change. In this formulation social institutions, being anthropogenic and responsive to purposive interventions for human well being, are critically central. This being so there is a strong case for institutional development, in the evolutionary mode, to be given priority in the objectives of communal approaches such as water resources management. The role of local level institutional arrangements, especially focusing at the lowest level of proprietorship as a starting point cannot be overemphasized. This includes conferring them with authority as proprietors and delegating authority to them for managing the resource rather than simply decentralizing responsibilities without delegating or ceding decision-making powers to them.

10.2.6. Theoretical reflections: Hydraulic Property Rights Creation

Using empirical knowledge about people's local experiences, problems and practices is employed in this study in a continuous dialogue with the constantly evolving hydraulic property rights principles encompassing the right to water conveyed, and to a smaller or lesser extent related to that, the right to livelihood, the right to food and the right to health. By taking the social and economic human rights principles relevant to people's access to water down to the living laws and realities of female land and water users and the national water laws and policies in South Africa and Zimbabwe, the aim of this thesis is to contribute to a contextual and situation sensitive property rights creation approach as living experience by people who access, use and manage the resource for their

livelihoods, far from the paper-based rights approach (permits and licenses) upon which the water reforms in South Africa and Zimbabwe are based, yet tangibly empowering the administrative proficient.

Analysing the findings presented in this thesis allows the revisiting of the hydraulic property rights creation concept through reflection (Coward, 1986a & b; see also van der Zaag, Bolding, Uiterweer and van Koppen, 2010; Manzungu, Sithole, Tapela and van Koppen, 2010), on the dynamics it presupposes and engenders. It is clear that hydraulic infrastructure in semi-arid environments is a key resource and often a pre-condition for livelihood security and socio-economic development. Our findings coincide with observations by van der Zaag et al (ibid) that hydraulic infrastructure ties different people together, simply because infrastructure crosses compounds, community and village boundaries depending on the siting. The investment needed to develop communal water infrastructure (canals, wells, small-reservoirs, boreholes etc) often transcend the capacity of the individual household or farmer, leading to multi-ownership arrangements. As a result, complex productive practices, social interactions and economic transactions emerge around hydraulic infrastructure. When and if these interactions endure over time and lead to patterned behaviour, they become institutions (see also van der Zaag et al, 2010). This is in agreement with van der Zaag et al (ibid) and Oakerson (1992), for whom the interplay between the bio-physical and institutional resources, as well as the resulting patterns of interaction, form part of, and in fact constitute, a resource management institution.

The findings from the study shed some light on the dynamics that tend to emerge around water infrastructure. The findings first confirm that there is a mutual interaction between material and symbolic resources. It follows in this argument that if a person decides to invest in hydraulic infrastructure such as irrigation, boreholes or canals and or conduct maintenance, his or her claim to that resource changes because of the water infrastructure use value (van der Zaag et al, 2010: 151), and with it the social relations with other people. However, as van der Zaag et al (ibid:152; see also Manzungu et al, 2010) observed this also works the other way round where the water management practice is

constituted by the material and symbolic resources that are recursively linked. The findings show that increased investments in land and water infrastructure leads not only to more intimate social relations but that such relations also became more asymmetrical and reciprocal. These social relationships also have a moral dimension (Van der Zaag et al, 2010), having to do with social recognition, respect, and basic norms of equity, of sharing private water sources under a general norm that no one is denied water for drinking.

These findings also confirm what Van der Zaag and others (2010) observed, that water management involves the combination of material and social resources that extend beyond the immediate and local reality. Van der Zaag et al (2010:152; see also Van der Zaag et al, 2001; Wester, 2008) succinctly observed that “The interplay between the water-land networks and social networks gives rise to water-networks” or hydro-social networks that tie the local to larger geographical and institutional levels in complex ways”. The important analytical observation to make here is that outside parties can influence local dynamics, for example through decreeing new laws and regulations or through investing in local water infrastructure development, yet local level responses or initiatives may influence these outside parties and may create interesting resonations, in an often iterative but spontaneous manner (see also Van der Zaag et al, 2010). However, it should be borne in mind that hydraulic property creation always enlarge local control over water; yet, it seems to thrive in a context of asymmetry and power differentials. Where state subsidies and support were withdrawn in both South Africa and Zimbabwe, the result was that people abandoned the schemes and reverted to own initiatives. Hence, the resultant local resource management arrangements are a complex blend of formal and informal, traditional and modern, where the evolution of collective decision-making institutions may not be the process of conscious selection of mechanisms fit for the collective action task (as in Ostrom’s model of crafting institutions) but rather a messier process (see also Cleaver, 1993; 2004) of piecing together shaped by individuals acting within the bounds of circumstantial constraint.

10.3.0. Conclusions, Policy Insights and Implications: South Africa and Zimbabwe

An important conclusion for both South Africa and Zimbabwe, regarding to how and to what extent existing policies and legislation that govern and regulate access to and control over resources influence (and are influenced by) hydraulic property creation is that a regulatory system that reaches, at best, a tiny minority of citizens (large-scale commercial water users) for decades to come, can in no way claim that such regulation is tied to the only valid legal entitlements in the country. This underscores the urgent need to disconnect regulatory tools from entitlement systems, conceptually and practically, and to recognize customary arrangements in their own right. To this end, customary entitlements should only be transformed when a better alternative is needed and feasible. It is clear that hydraulic infrastructure in informal water sectors and in semi-arid environments, is a key resource and a pre-condition for livelihood security and socio-economic development. Furthermore, the evidence from our research suggests that using permit systems for regulation in middle- and low-income countries with a majority of rural small-scale individual water takers and undeveloped water resources, is not only cumbersome, but problematic and challenging. Administrative regulatory measures such as registration, payment and pollution prevention can work if they are well targeted to a minority of formal large-scale users. Our observations and analysis indicate that if governments and others seek to realise a human right to water and sanitation, food and livelihood and to improve the wellbeing of the large majority of rural constituencies, they need to expose the deep-rooted colonial legacy of imposing single water laws in plural legal contexts and ensure full recognition of the informal and customary water arrangements, and hydraulic property rights that provide vital livelihoods to the poor, also outside the ambit of the state. Customary rights are also pivotal in finding solutions for the paper assault to poor people's existing water entitlements, which are typically governed by customary arrangements, under ongoing water reform. Imposing one single regime, permits, ignores the reality of plural systems.

Another overall conclusion that can be drawn between Sekororo and Gwanda as cross-cutting is that the state has largely neglected the first generation issues of infrastructure

development for small-scale water users and uses in poor rural communities. From the evidence presented in Chapters 4 and 5, I glean out a cross-cutting thread of the dynamic investments through individual initiatives and efforts, as well as support from NGOs. What was missing was the active role of the state in facilitating and financing infrastructure development in poor rural communities of Gwanda and Sekororo. I conclude that in both South Africa and Zimbabwe, the state has abdicated its responsibility to provide support for new water development, hence, people tended to rely on NGO support and own initiatives. Although commendable, the individual initiatives and NGO support is not enough and we strongly suggest the state should do more in terms of financing and facilitating infrastructure development in these constituencies to augment the efforts of local people and NGOs.

By focusing on second generation issues such as managing water, the state in both Zimbabwe and South Africa, withdrew subsidies and support systems for water investments leading to hydraulic property extinction, where water users fail to enforce their water rights. In Sekororo, South Africa, the withdrawal of state support led to people not claiming their rights and abandon some of the irrigation schemes opting instead to farm on the mountains. In Zimbabwe, the withdrawal and/or end of state support for the rural water supply and sanitation programme yielded similar results, where people resorted to self-initiatives and support from NGOs.

The institution of traditional authorities seemed to be resilient through manipulation by both colonial and post-colonial government in Zimbabwe, and apartheid and post-1994 democratic government in South Africa; and has metamorphosized to become an entrenched organ of holistic resource control especially land, through their ability to manoeuvre and manipulate the weaknesses of elected leaders, often with the benevolence of the state. Their entrenchment in control over land and other resources led to competition with elected local government representatives, especially councillors. This, as noted, created a battleground where competing interests manifested in intense powerplay tussling to gain support among resource users as legitimate enforcers and arbiters in South Africa. In Zimbabwe, the authority and power of the traditional

authorities also seem to rely heavily on the benevolence of politicians, and is increasingly being eroded by the emergence of war veterans. Generally, it would seem that the traditional authorities in both Gwanda and Sekororo have endured and prevailed in the continuing struggle for control over resources.

The sectoral divides that characterize both the professional water sector and the global proponents of water reform, are alien to communities. It was noted that when communities themselves construct infrastructure or adopt infrastructure, they do so for multiple uses, including drinking, cooking, sanitation, hygiene, but also livestock, gardening, irrigation of crops and trees, brick-making and crafts, small-scale enterprise, and cultural functions. In Zimbabwe for example, people did not distinguish between primary and commercial water uses, just like in South Africa where people's experiences did not distinguish between domestic and productive water uses. There seemed to be more priority for domestic uses in both Gwanda and Sekororo. A feature of customary practices, notwithstanding the inherent criticism for excluding women and regarding them as minors, that appeared to be very fruitful for realising gender equity in hprc is the holistic and integrated nature of customary practices and governance which realises and recognises the multiple uses of water for livelihoods, notwithstanding various efforts from NGOs and the state to impose alien concepts. The MUS approach to water services builds upon these informal holistic practices.

10.3.1. Conclusions and Recommendations: Sekororo, South Africa

While there is clear evidence of the impact that access to water can have in improving livelihoods in rural areas as demonstrated by the dynamic private initiatives in the four villages of Sekororo, current approaches under the water reform in South Africa have failed to support an agenda that would realize such benefits. In order to realize these benefits, the following factors must be addressed:

- Policy and legislative reform - the prioritization of water uses under the National Water Act needs to be reviewed to give priority recognition to and protection of access to water for rural livelihoods;

- Given that there is a remarkable discontinuity in the historical memory of the importance of state investments to catalyze infrastructure construction and maintenance, a champion department or other structure must be given the mandate to drive a programme of providing and enabling the development of appropriate water infrastructure to support rural livelihoods;
- There seems to be a complete bureaucratic blockage in South Africa where there is seemingly political failure and political indifference on the part of government and its structures especially towards the rural poor. Effective institutional co-ordination between water reform institutions and government departments (e.g. Water Affairs; Land Affairs; Rural Development) and local government at national, provincial and local level is critical in developing a specific and co-ordinated approach to ensuring water access to informal poor rural communities within a multiple use approach;
- A conscious attempt must be made by practitioners in this field, including government officials, to understand and promote the wide range of appropriate technologies available in this field. In this regard, partnerships with other developing countries that have much greater experience in this regard than South Africa could assist immensely;
- When water is physically available (both surface and ground water) people invest in accessing it for multiple uses, where those who invest in private water infrastructure hold stronger and overarching rights to both the infrastructure and water conveyed.

10.3.2. Conclusions and Recommendations: Gwanda, Zimbabwe

While there is clear evidence of the impact that access to water can have in improving livelihoods in rural areas as demonstrated by the dynamic NGO-supported and private initiatives in the four villages of Gwanda, current approaches under the water reform in Zimbabwe have failed to support an agenda that would realize such benefits. In order to realize these benefits, the following are key concluding statements:

- Zimbabwe's water reforms, in their current form, ignore the first generation hydraulic mission such as the development of adequate water infrastructure to harness water resources for social and economic development for rural small-scale users. Without

access to water/infrastructure, there is nothing to manage for rural small-scale users. A programme providing and enabling the development of appropriate water infrastructure to support rural livelihoods is urgently required;

- By imposing a new layer through the introduction of resource management institutions on the hydraulic landscape, such as catchment and sub-catchment councils, the state intended to redress and address the inequitable access to water. Regardless of the good intentions, the new water resource management institutions became popular for rent-seeking without service improvement to water users. This has seen the Mzingwane catchment council seeking to impose levies on direct water access for livestock and other uses without service improvement;
- Dichotomization into formal and informal rights, often used to differentiate between official and non-official allocation and access to natural resources, is not always analytically helpful owing to normative sharing arrangements and practices. These practices in Mzingwane, Zimbabwe point toward the existence of a set of interrelated norms of sharing of land and water that are essential for livelihood. Clean drinking water and access to land with available water are shared between and within village households;
- Although the current multi-level and multi-layered political crises in Zimbabwe pose challenges to the use of concepts and notions such as human rights generally, in terms of the catchment management institutions reform, Zimbabwe seems a lot more transparent and progressive in terms of implementation and usefulness of its water governance structures, the catchment, sub-catchment councils, and there seems to be growing recognition of third tier water user units, committees and associations;
- The idea of a priority right to primary water for basic human needs, including domestic, animal and house-building functions, is unique in the region. It has meant that such water in principle has been protected from the growing demand for ‘user pay’ which, according to the Water Act, is restricted to commercial water. However, given the growing scarcity of resources we can easily envision the Catchment councils and the Zimbabwe National Water Authority, under pressure to be self-financing in the context of a national economic crisis, attempting to obtain revenues by re-defining these small garden and livestock uses as commercial ventures;

- On the surface Catchment and sub-catchment councils appear to be downwardly accountable as they are elected by stakeholders. However, who the stakeholders represent and the criteria for such representation is poorly defined especially for the small-scale communal water users. The most active, powerful and best organised stakeholder groups, the large-scale commercial farmers, miners and urban and rural authorities have largely defined the agenda and deliberative processes for the new institutions, as much as the agenda is also determined by the water reform laws and policies;
- interventions aimed at optimising and reallocating water use, assuming shared interests, attempting to monopolise water allocation decision in a single forum, and pursuing comprehensive, anticipatory planning such as ambitious river basin planning like IWRM inspired catchment councils may fit poorly with the dynamics of community collective action based on normative plural arrangements. So they may be prone to being ignored, resisted and rejected by the majority of smallholder water users. Modest institutional modifications that fit the dynamics of community collective action and help secure rights and resolve pertinent issues may meet with greater success apart from being sustainable;
- When water is physically available (both surface and ground water) people invest in accessing it for multiple uses, where those who invest in private water infrastructure hold stronger and overarching rights to both the infrastructure and water conveyed.

10.4. Areas for Further Research

- It requires further research to understand and unpack why water access from public water infrastructure is only accessible by residents of the village, and not shared with other villagers, in Sekororo.
- The recent developments to increase the role of local government in catchment council management in Zimbabwe warrant more attention as it might change or reshape the on-going dynamics.
- The issue of catchment-based boundaries and planning versus administrative management zones that seem to be considered in South Africa needs to be studied,

more as a way of incorporating the merits from the two systems, rather than either of the systems.

- The use or reliance on consultants is endemic in South Africa. Further studies are necessary not only to find viable options to facilitate building capacity within government departments but also to retain skilled personnel. The extent, influence and impact of hiring of consultants by the DWA in South Africa might be exaggerated; hence, further research in this area is imperative.



REFERENCES

- Adams, W.M. and Hulme, D. 1999 Conservation and community: Hanging narratives, policies and practices in African conservation. (Unpublished Paper).
- Abrams, P. 1982 Historical Sociology, Shepton Mallet: Open Books.
- Agar, M. 1980 Getting better quality stuff: Methodological competition in an interdisciplinary niche. *Urban Life* 9:34-50.
- Agarwal, B. 1994 *A Field of One's Own: Gender and Land Rights in South Asia*, Cambridge: Cambridge University Press.
- Allan, T 2003 IWRM/IWRAM: A new sanctioned discourse SOAS water issues study group Occasional Paper 50, School of Oriental and African Studies, University of London, London.
- Anderson, A.J. 2005. Engaging disadvantaged communities: lessons from the Inkomati Catchment Management Agency establishment process in African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa (Eds. B. van Koppen, J.A. Butterworth and I.J. Juma). Proceedings of a workshop held in Johannesburg, South Africa, 26-28 January 2005. IWMI, Pretoria. (Conference paper).
- Appadurai, A. 1996 *Modernity at Large: Cultural Dimensions of Globalization*, Minneapolis: University of Minnesota Press.
- Balfour, A., Wilson, I., de Jager, J., Still, D.A., Louw, S. 2005 Development of Models to Facilitate the Provision of Free Basic Water in Rural Areas. Report No 1379/01/05 to the Water Commission. Retrieved April 21, 2009, from <http://www.wrc.org.za/downloads/report%20lists/web%20rpts/devco/1379-1-05%20Developing%20Communities.pdf>
- Bantu, J. 1970 *Agricultural Development in the Bantu Homelands* (Afrikaans).
- Bantu, April 1964 *Irrigation in Venda Land* (Afrikaans).
- Beinart, W. 1994 *Twentieth Century South Africa*. Cape Town and Oxford: Oxford University Press.
- Benda-Beckmann, Keebet von, Mirjam de Bruijn, Han van Dijk, Gerti Hesselling, Barbara van Koppen and Lyda Res. 1997 *Rights of Women to the Natural Resources Land and Water*, Women and Development Working Paper No.2. The Hague: Netherlands Development Assistance.

- Benjaminsen, T. A. and C. Lund 2001 Formalisation and Informalisation of Land and Water Rights in Africa: An Introduction. Paper presented at 'Custom and Conflict in Land and Water Management in Africa' 6-7 September, 2001, Copenhagen.
- Benjaminsen, T.A. and Lund, C. (eds). 2003. Securing land rights in Africa. London: Frank Cass.
- Berelson, B. 1952. Content analysis in communication research. Glencoe, IL: Free Press
- Bernard, H. R. 1994. Research Methods in Anthropology: Qualitative and Quantitative Approaches. 2nd ed. Walnut Creek, CA: AltaMira.
- Berry, S. 1993 No Condition is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa. Madison: University of Wisconsin Press.
- Berry, S. 2002 'Debating the land question in Africa', *Comparative Studies in Society and History*, 44, 4:638-68.
- Blaikie, P. 1992 Common Property Resource Management in Sub-Saharan Africa: Some Methodological Issues. School of Development Studies, University of East Anglia.
- Boal, A. 1985 Theatre of the Oppressed. New York: Theatre Communication Group.
- Boelens, R. and Davila, G. (eds.) 1998 Searching for Equity: Conceptions of Justice and Equity in Peasant Irrigation. Van Gorcum, Assen, The Netherlands.
- Bolding, A, Uiterweer, N.C.P, and Schippers, J. 2010 The fluid nature of hydraulic property: a case study of Mukudu, Maira and Penha Longa irrigation furrows in the upper Revue river, Manica District. In Van der Zaag (eds.) 2010 What role of law in promoting and protecting the productive uses of water by smallholder farmers in Mozambique? UNESCO-IHE Institute for Water Education, and Water Resources Section, Delft University of Technology.
- Bourdieu, P. 1977 Outlines of a Theory of Practice. Cambridge: Cambridge University Press.
- Bradley, P.N. 1991 Woodfuel, Women and Woodlots. Volume 1: The Foundation of a Woodfuel Development Strategy for East Africa. London: Macmillan.
- Bromley, D. W. and Cernea, M. 1989 The Management of Common Property Natural Resources: Some Conceptual and Operational Fallacies. Washington D.C: World Bank

- Bruce, J.W. and Fortmann, L. 1989 'Agro-forestry, tenure and incentives', in Raintree, J.B. (ed.), *Land, Trees and Tenure*. Madison and Nairobi: Land Tenure Centre and International Council for Research in Agroforestry.
- Bruns, B. 2007 'Community Priorities for Water Rights: Some Conjectures on Assumptions, Principles and Programmes' in Van Koppen, B., Giordano, M. and Butterworth, J. (eds.) *Community-based Water Law and Water Resource Management Reform in Developing Countries*. London: CABI.
- Biswas, A.K. 2004. *Integrated water resources management: a reassessment*. *Water International* 29(2).. 248-256.
- Carr, W. 1986 'Theories of Theory and Practice', *Journal of Philosophy of Education* Vol. 20, Issue 2:177-186.
- Chambers, R. (1997) *Whose Reality Counts? Putting the first last*, Intermediate Technology Publications, London.
- Chaumba, J., Scoones, I., and Wolmer, W. 2003 *Wildlife management and land reform in Southeastern Zimbabwe: a compatible pairing or a contradiction in terms? Sustainable Livelihoods in Southern Africa Research Paper 1*, Institute of Development Studies, Brighton.
- Cheater, A.P. 1986 *The Politics of Factory Organisation*. Gweru: Mambo Press.
- Chikozho, C 2002 *Restructuring the Commons: Water reforms in Southern Africa in the context of global water resources management paradigm shifts*. CASS Occasional Paper Series.
- Cleaver F 2004 'The social embeddedness of agency and decision-making' in S.Hickey and G. Mohan (eds) *Participation: From Tyranny to transformation? Exploring New Approaches to Participation in Development*, pp 269-277, Zed Books, London
- Cleaver, F. 1994 "Gendered priorities for water resource management in Nkayi District, Zimbabwe," in *Gender and Environment in Africa. Perspectives on the Politics of Environmental Sustainability*. Centre of African Studies, University of Edinburgh.
- Cleaver, F. and Franks .T. 2003 *How institutions elude design: river basin management and sustainable livelihoods*. Alternative Water Forum, University of Bradford.

- Comprehensive Assessment of Water Management in Agriculture. 2007. Water for food, water for life: A comprehensive assessment of water management in agriculture. London: Earthscan, and Colombo: International Water Management Institute.
- Constitution of the Republic of South Africa, Act No. 108 of 1996.
- Cornwall, A., Guijit, I. and Welbourn, A. 1994 Acknowledging process: Challenges for agricultural research and extension methodology', in Scoones, I and Thompson, J (eds.), *Beyond Farmer First: Rural People's Knowledge, Agricultural Research and Extension Practice*. Intermediate Technology Publication, pp 98-117.
- Cousins, B. 1991. Livestock production and grazing rights in communal lands and resettlement schemes in Zimbabwe. CASS Occasional Paper Series, University of Zimbabwe, Harare.
- Cousins, B. 1993 Inappropriate technology, key resources and unstable institutions: a case of Mutakwa grazing scheme. London: Overseas Development Institute.
- Coward, E.W., 1986. 'State and locality in Asian irrigation development: the property factor', in: Noble, K.C., and Sampath, R.K. (eds.), *Irrigation management in developing countries: current issues and approaches*. Proceedings of a seminar series sponsored by the International School for Agricultural and Resource Development. *Studies in Water Policy and Management*, No.8. Westview Press, Boulder and London; pp 491-508.
- Coward, E.W. 1985 Technical and Social change in currently irrigated regions: rules, roles and rehabilitation, in Cernea M.M. (ed) *Putting People First: Sociological Variables in Rural Development*, Oxford: Oxford University Press.
- Coward, E. W. 1990 Property Rights and Network Order: the case of irrigation works in the Western Himalayas, *Human Organisation*, Vol.49 No. 1:78-88.
- Croll, E. and Parkin, D 1992 (eds) *Bush Base, Forest Farm: Culture, Environment and Development*. London: Routledge.
- Dasgupta, P. 1993. *An Inquiry into well-being and destitution*. Oxford: Clarendon Press.
- Davenport, T.R.H. and Saunders, C. 2000. *South Africa: A Modern History*. Houndmills and New York: Macmillan Press and St Martin's Press.
- Davies, S., Leach, M. and David, R. 1991 *Food Security and The Environment: Conflict or Complementarity?* Institute of Development Studies, University of Sussex.

- Denzin, N. K. Lincoln, Y.S. (eds) 2000 Introduction: The Discipline and Practice of Qualitative Research. In N. K. Denzin and Y.S. Lincoln (eds) Handbook of Qualitative Research. Second Edition, Thousand Oaks, London, p1-28.
- Department for International Development (DFID) 2000 “Addressing the Water Crisis: Healthier and More Productive Lives for Poor People.” Strategies for Achieving the International Development Targets Paper Series. London: DFID.
- Derman, Bill, Anne Ferguson, and Francis Gonese 2000 “Decentralization, Devolution, and Development: Reflections on the Water Reform Process in Zimbabwe.” Madison, WI: BASIS CRSP. <http://www.ies.wisc.edu/lrc/live/bassaf0008a.pdf>
- Derman, B. and Hellum, A. 2003. Neither tragedy nor enclosure: are there inherent human rights in water management in Zimbabwe’s communal lands? In: Benjaminsen, T. and Lund, C. (eds) Securing Land Rights in Africa. Frank Cass, London, pp 31-50.
- Derman, B. et al 2005 Intersections of human rights and customs: a livelihood perspective on water laws. International workshop on ‘African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa’, 26-28 January 2005, Johannesburg, South Africa.
- Derman, W., Hellum, A., Manzungu, E., Sithole, P., and Machiridza, R. 2007. Intersections of law, human rights and water management in Zimbabwe. In: Van Koppen, B., Giordano, M. and Butterworth, J. (eds.) Community-based Water Law and Water Resource Management Reform in Developing Countries. London: CABI. pp248- 269.
- Dey, I. 1993. Qualitative data analysis: A user-friendly guide for social scientists. London: Routledge Kegan Paul.
- Douglas, J.D. 1985 Creative Interviewing. London: Sage.
- Dube, D., Swatuk, L.A., 2002 Stakeholder participation in the new water management approach: a case study of the Save catchment, Zimbabwe. Physics and Chemistry of the Earth 27, 867-874.
- Environmental Management Act. 2002. Environmental Management Act (Chapter 20:27). Government of Zimbabwe Printers, Harare.

- Faysse, N. 2004 Challenges for fruitful participation of smallholders in large-scale water resource management organizations: Selected case studies in South Africa. *Agrekon*, Vol 43, No 1 (March 2004).
- FAO 1995 Reforming Water Resources Policy - A guide to methods, processes and practices, Rome, FAO Irrigation and drainage paper 52
- Ferguson, J. 1990 *The Anti-politics Machine: Development, Depoliticization and Bureaucratic Power in Lesotho*, Cambridge: Cambridge University Press.
- Flick, U. 1998 *An Introduction to Qualitative Research*. London: Sage.
- Fortmann, L. 1995 Talking claims: Discursive strategies in contesting property. *World Development*, 23: 1053-1063.
- Foucault, M. 1980 *Power/Knowledge: Selected Interviews and Other Writings 1972-1977*, edited and translated by C. Gordon, Brighton: Harvester.
- Giddens, A. 1984 *The Constitution of Society: Outline of a Theory of Structuration*, Oxford: Polity Press.
- Gleick, P. 1999 'The Human Right to Water', *Water Policy Journal* 1(5):487-503.
- Goebel, A. 1998 Process, perception and power: Notes from "Participatory research in a Zimbabwean Resettlement Area", *Development and Change*, 29:276-305.
- Geldenhuys, D. 1984. *The Diplomacy of Isolation: South African Foreign Policy Making*. Johannesburg: Macmillan.
- Gumbo, B. et al 2004 Training needs for water demand management. *Physics and Chemistry of the Earth* 29, 1365-1373.
- Guyer, J and Peters, P. 1987 Conceptualising the Household: Issues in theory and policy in Africa. *Development and Change*, Vol. 18 No. 2.
- Grey, D., and Sadoff, C., 2007 Sink or Swim? Water security for growth and development. *Water Policy* 9: 545-571.
- GWP (Global Water Partnership). 2000 Integrated water resources management. TAC Background Paper No.4. Stockholm: Global Water Partnership.
- GWP (2006) *Setting the Stage for Change: Second Informal Survey by the GWP Network Giving the Status of the 2005 WSSD Target on National Integrated Water Resources Management and Water Efficiency Plans*. Global Water Partnership, February 2006.

- Haefele, E.T. and Knesse, A.T. 1973 Residuals management, metropolitan governance, and the optimal jurisdiction. In Haefele, E.T. (ed.) Representative Government and Environmental Management. Johns Hopkins University Press: Baltimore, Maryland.
- Haraway, D. 1989 The Science question in feminism and the privilege of partial perspective. *Feminist Studies*, Vol. 14 No. 3: 575-97.
- Harding, S, G. 1987 (ed) *Feminism and Methodology: Social Science Issues*, Milton Keynes: Oxford University Press.
- Haswell, M. and Hunt, D. 1991 *Rural Households in Emerging Societies: Technology and Change in Sub-Saharan Africa*. Oxford: Berg.
- Hattingh, P.S. 1972. Water Supply in Bantu Homelands, *Journal of Racial Relations*, 23(2).
- Hellum, Anne 2001 "Towards a Human Rights Based Development Approach: The Case of Women in the Water Reform Process in Zimbabwe." *Law, Social Justice and Global Development Journal (LGD)* 2001(1).
http://www2.warwick.ac.uk/fac/soc/law/elj/lgd/2001_1/hellum/
- Hellum, A. 2005. Family gardens, livelihood and the right to water: Exploring the gendered intersection of domestic and productive land and water uses in local, national and international law in A. Hellum, G. Steward, S. Ali and A. Tsanga (editors) *Human Rights: Interfacing Women's Realities and Plural Legalities*. Harare: Weaver Press.
- Hellum, A., and Derman, B. 2004b. Land Reform and Human Rights in Contemporary Zimbabwe: Balancing Individual and Social Justice through an Integrated Human Rights Framework. *World Development* 32(10) pp. 1785-1805.
- Holleman, J.F. 1969 *Chief, Council and Commissioner: some problems of governance in Rhodesia*. Assen: Royal Van Gorcum Ltd.
- Houghton, D.H. 1956. *The Tomlinson Report: A Summary of the Findings and Recommendations in the Tomlinson Commission Report*. Johannesburg: South African Institute of Race Relations.
- Juul, K. and C, Lund (eds) 2002 *Negotiating Property in Africa*. Portsmouth, NH: Heinemann.

- Kamara, A.B., van Koppen, B. and Magingxa, L. (2002), "Economic Viability of Small-scale Irrigation Systems in the Context of State Withdrawal: The Arabie Scheme in the Northern Province", *Physics and Chemistry of the Earth* 27: 815–823.
- Kanyoka, P. 2008 Water demand for Multiple Uses at household level in the Rural Areas of the Olifants river basin, South Africa: the case of Ga-Sekororo. University of Pretoria, South Africa. MSc Thesis.
- Karar, E. (2009), "South Africa's Reformed Water Law and its Challenging Implementation", Mimeo.
- Karar, E. 2008...????? see Masangu
- Keohane, R. and Ostrom, E., 1995 (eds.) *Local Commons and Global Interdependence*. Sage, London.
- Kosko, B. 1994 *Fuzzy Thinking: the New Science of Fuzzy Logic*. New York: Hyperion.
- Kujinga, K., 2002 Decentralising water management: an analysis of stakeholder participation in the management of water in Odzi sub-catchment area, Save Catchment. *Physics and Chemistry of the Earth* 27, 897-906.
- Latham, R., 2002 Manyame Catchment Council: a review of the reform of the water sector in Zimbabwe. *Physics and Chemistry of the Earth* 27, 907-918.
- Lautze, J. and Giordano, M. 2005. Transboundary water law in Africa: development, nature and geography. *Natural Resources Journal*, 45 1053-1087.
- Leach, M. 1994 *Rainforest Relations: Gender and Resource Use among the Mende of Gola, Sierra Leon*. Edinburgh, Edinburgh University Press.
- Li, T.M. 1996 'Images of community: discourse and strategy in property relations', in *Development and Change*. Vol. 27 No. 3: 501-527.
- Little, P. D. and Brokensha, D. W. 1986 Local Institutions, tenure and resource management in East Africa. In R. D. Grove and D. Anderson, *Conservation in Africa: People, Policies and Practices*. Cambridge University Press, pp193-207.
- Locke, C., Okali, C., and Mimms, J. 1998 *Analysing changing gender relations for monitoring and evaluation in the renewable natural resources sector*. ODC, East Anglia.
- Long, N. and Long, A. 1992 (eds.) *The Battlefields of Knowledge: The Interlocking of Theory and Practice in Social Research and Development*. Routledge, London.

- Lund, C. 2002 Negotiating Property Institutions: On the Symbiosis of Property and Authority in Africa. In K. Juul and C, Lund (eds) Negotiating Property in Africa, pp 11-44. Portsmouth, NH: Heinemann
- Benjaminsen, T.A. and Lund, C. (eds). 2003. Securing land rights in Africa. London: Frank Cass.
- Magombeyi M. S. and Taigbenu, A. E. 2008 Crop yield risk analysis and mitigation of smallholder farmers at quaternary catchment level: case study of B72A in Olifants River Basin, South Africa. *Physics and Chemistry of the Earth*, 33. 744 - 756
- Mamdani, M., 1996 Citizen and subject; contemporary and the legacy of late colonialism. Princeton University Press, Princeton NJ.
- Mandondo, A. 1997 Institutional Framework for Community Natural Resource Management in Zimbabwe. Phase 1 Report of the SADC Natural Resources Management Project (CBNRM) Research, Institute for Environmental Studies, University of Zimbabwe, Harare.
- Manzungu, 2004. Water for all: improving water resource governance in southern Africa. Gatekeeper series no. 113. London: International Institute for Environment and Development.
- Manzungu, E., Sithole, P., Tapela, B., and van Koppen, B. 2010 Phases and interfaces: national and local water investments in Sekororo Communal lands, Limpopo basin, South Africa. *Economics, Management and Financial Markets*, Vol.4, No. 4.
- Manzungu, E., and Machiridza, R. 2009. Economic-legal ideology and water management in Zimbabwe: implications for smallholder agriculture. *Economics, Management and Financial Markets*, 4 (1). 66-102.
- Manzungu, E., 2002 More than a headcount: towards strategic stakeholder representation in catchment management in South Africa and Zimbabwe. *Physics and Chemistry of the Earth* 27, 927-972.
- Manzungu, E. and Kujinga, K. 2002 The Theory and Practice of Governance of Water Resources in Zimbabwe. *Zambezia* XXIX (ii).
- Mapedza, E., Morardet, S., Cheron, C. and Magombeyi, E. 2008 Socio-economic conditions and agricultural water management practices of smallholders in Quaternary

- B72A, Olifants River Basin, South Africa. Unpublished paper for the Challenge Program on Water and Food Project PN17. WaterNet, Harare.
- Marcus, G.E., 1995 'Ethnography in/of the world system: the emergence of multi-sited ethnography', *Annual Review of Anthropology* 24, 95-117.
- Maruleng Municipality, 2005 Maruleng Municipality IDP Review 2005/2006. Maruleng Municipality, Hoedspruit, South Africa.
- Matondi, P. B. 2001. *The Struggle for Access to Land and Water Resources in Zimbabwe: The Case of Shamva District*. Ph.D. Thesis, Swedish University of Agricultural Sciences. Uppsala
- Mayson,... 2004 ...joint ventures in SA see Manzungu et al 2010
- McCay, B.J. and Acheson, J.M. (eds.). 1987. *The Question of the commons: The culture and ecology of community resources*. The University of Arizona Press, Tuscon.
- McLellan. E., Macqueen. K. M., and Neidig. J. L. 2003 *Beyond the Qualitative Interview: Data Preparation and Trascription*. in *Field Methods*, 2003 Volume 15. No. 1.
- Mehta, Lyla 2003 "Problems of Publicness and Access Rights: Perspectives from the Water Domain." In *Providing Global Public Goods: Managing Globalization*, edited by I. Kaul, P. Conceição, K. Le Goulven, and R. Mendoza, pp. 556-575. Oxford, UK: Oxford University Press.
- Mehta, L., Leach, M., Newell, P., Scoones, I., et al 1999 *Exploring Understanding of Institutions and Uncertainty: New Directions in Natural Resources Management*. Institute of Development Studies (IDS) Discussion Paper 372. IDS: University of Sussex. Brighton.
- Mehta, L. 2000 "Water for the Twenty-First Century: Challenges and Misconceptions." IDS Working Paper 111. IDS, Brighton
- Meinzen-Dick, R., Bruns, B., 2000 *Negotiating Water Rights*. Sage, New Delhi.
- Meinzen-Dick, R. et al 1997 *Gender Property Rights and Natural Resources*. *World Development*, Vol.25, No. 8,pp 1303-1315.
- Meinzen-Dick, Ruth, and Monica. Di Gregorio (eds). 2004. *Collective action and property rights for sustainable development*. 2020 Focus 11. International Food Policy Research Institute, Washington, DC. <http://www.ifpri.org/2020/focus/focus11.htm>

- Merrey, D. J 2008 Is normative integrated water resources management implementable? Charting a practical course with lessons from Southern Africa. *Physics and Chemistry of the Earth*, 33. 899 -905
- Merrey, D.J. 2008. Is normative integrated water resources management implementable: Charting a practical course of action with lessons from southern Africa; *Physics and Chemistry of the Earth*. 33. 899-905.
- Merrey, D.J. 2009. African models for transnational river basin organizations in Africa: an explored dimension. *Water Alternatives* 2(2). 1-22.
- Merrey, D.J. and Van Koppen, B. 2007 Balancing equity, productivity and sustainability in water-scarce river basin: The case of the Olifants river basin in South Africa. IWMI, Colombo: Comprehensive Assessment of Water Management in Agriculture. Draft.
- Meublat, G. and Lourd, P. 2001 Les agences de bassin : Un modele francais de decentralisation pour les pays emergents ? La renovation des institutions de l'eau en Indonesie, au Bresil et au Mexique. *Revue Tiers Monde* 42 (166) : 375-401
- Mikkelsen, B. 1995 *Methods for development work and research*, Sage Publications: New Delhi/London.
- Miller, F. and Hirsch, P 2003 *Civil Society and Internationalized River Basin Management*. Australian Mekong Resource Centre University of Sydney. WORKING PAPER SERIES
- Working Paper No. 7. <http://sydney.edu.au/mekong/documents/wp7.pdf>
- Mohamed-Katerere, J., and Van Der Zaag, P. (2003). Untying the "Knot of Silence"; making water policy and law responsive to local normative systems. In: F.A. Hassan, M. Reuss, J. Trottier, C. Bernhardt, A.T. Wolf, J. Mohamed-Katerere and P. van der Zaag (eds.), *History and Future of Shared Water Resources*. IHP Technical Documents in Hydrology - PCCP series No. 6. UNESCO, Paris.
- Molden, D. (ed) 2007 “Comprehensive Assessment of Water Management in Agriculture. 2007. *Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture*. London: Earthscan, and Colombo: International Water Management Institute.”
- Molle, F., 2008 Nirvana concepts, narratives and policy model: Insight from the water sector. *Water Alternatives* 1(1):131-156.

- Molle, F., Renwick, M. 2005 The Politics and economics of water resource development: The case of the Walawe river basin, Sri Lanka. IWMI Research Report No 87. Colombo:IWMI.
- Mollinga, P.P. and Bolding, A. 2004 Research for strategic action. In Mollinga, P.P. and Bolding, A. (Eds), The politics of irrigation reform. Contested policy formulation and implementation in Asia, Africa and Latin America, pp. 291-318. Aldershot, UK: Ashgate.
- Moore,D.S. 1996 Clear waters and muddied histories: Competing claims to the Kaerezi River in Zimbabwe's Eastern Highlands. Manuscript presented at the Environmental History Workshop, University of Natal, Pietermaritzburg, South Africa, 8-10 July 1998.
- Mosse, D. 1997 'The symbolic making of a common property resource: history, ecology, and locality in a tank-irrigated landscape in South India', *Development and Change* 28 (3).
- Mukamuri B, B. et al 2006 Access To Natural Resources For Sustainable Livelihoods: Lessons Learned From Three Case Studies In Southern Zimbabwe. IDRC: Canada.
- Mukamuri, B.B. 1995 Local environmental conservation strategies: Karanga religion, politics and environmental control. *Environment and History*, 1:1-14.
- Mukheli, A. et al. 2002. "Is the Pungwe Water Supply Project a Solution to Water Accessibility and Sanitation Problems of Households of Sakubva, Zimbabwe?" *Physics and Chemistry of the Earth, Volume 27*. Elsevier Science Ltd. Amsterdam.
- Murombedzi, J.C. 1990 The need for appropriate local level common property resource management institutions in communal tenure regimes, CASS Occasional Paper Series, University of Zimbabwe.
- Murombedzi, J.C. 1994. The dynamics of conflict in Environmental Management Policy in the context of CAMPFIRE. PhD Thesis, CASS, University of Zimbabwe, Harare.
- Murphree, M. W. 1991 Communities as Institutions for Resource Management Institutions. Centre for Applied Social Sciences, University of Zimbabwe. Harare.
- Murphree, M. W. 1993 Communities as Resource Management Institutions. IIED Gatekeeper Series No. 36. IIED. London.

- Murphree, M. W. 2004 Communal approaches to natural resource management in Africa: From whence and to where? Keynote address, THE 2004 BRESLAUER GRADUATE STUDENT SYMPOSIUM.
- Nemarundwe, N. 2003 Negotiating Resource Access: Institutional arrangements for woodlands and water use in Southern Zimbabwe. Ph.D. Thesis, Department of Rural Development Studies, Swedish University of Agricultural Sciences. Uppsala
- Newson, M. 1992. Land, water and development: sustainable management of river basin systems. London and New York. Rotledge.
- Nicol, A and Mtisi, S. 2003 'The politics of water: a Southern African example', Sustainable Livelihoods in Southern Africa Research Paper 20, Institute of Development Studies, Brighton.
- North, D. 1990 Institutions, institutional change and economic performance, Cambridge University Press
- Ntsebeza, L. 1999a Land Tenure Reform in South Africa: an example from the Eastern Cape Province, Issue paper no. 82, International Institute for Environment and Development, June 1999.
- Ntsebeza, L. 1999b Land tenure reform, traditional authorities and rural local government in post-apartheid South Africa. Case Studies from the Eastern Cape, Research Report No. 3, Programme for Land and Agrarian Studies, School of Government, University of the Western Cape, Bellville, South Africa.
- Ntsebeza, L. 2006 Democracy Compromised. Chiefs and the Politics of Land in South Africa. HSRC Press.
- Nuitjen, M. 1992 'Local organization as organizing practices: rethinking rural institutions', in Long, N. and Long, A. 1992 (eds.) The Battlefields of Knowledge: The Interlocking of Theory and Practice in Social Research and Development. Routledge, London.
- Oakley P et. al. (1991) Projects with People: The practice of participation in rural development, Geneva, ILO
- Oakerson, R. J. 1992. "Analyzing the Commons: A Framework." In Making the Commons Work: Theory, Practice, and Policy, ed. Daniel W. Bromley. San Francisco, CA: Institute for Contemporary Studies.

- Ostrom, E., Schroeder, L. and Wynne, S. 1993 Institutional incentives and sustainable development: Infrastructure policies in perspective. Boulder, Co: Westview Press.
- Ostrom, E. 1990 Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge University Press, Cambridge.
- Parry, J., Block, M., 1989 (eds.) Money and the Morality of Exchange. Cambridge, Cambridge University Press.
- Pollard, S. 2001 Operationalising the new Water Act: Contributions from the Save Sand Project - An integrated catchment management initiative. Paper presented at the WATERNET/WARFSA symposium, Integrated water resources management: Theory, Practice and Cases. Capetown, 30-31 October 2001.
- Peters, P. E. 2002 The Limits of Knowledge: Securing Rural Livelihoods in a Situation of Resource Scarcity. In Barrett, C.B, Place, F., and Abound, A.A. (eds.) Natural Resources Management in African Agriculture. Understanding and Improving Current Practices. pp. 35-50.
- Ranger, T. 1989 Whose Heritage? The Case of the Matobo National Park. Journal of Southern African Studies, Vol.15. No.2:217-249.
- Ranger, T. 1985 Peasant Consciousness and Guerilla War in Zimbabwe. London: James Currey
- Ranger, T. 1985 The Invention of Tribalism in Zimbabwe. Gweru: Mambo Press.
- Rappaport, J. 1995 Empowerment meets narrative: listening to stories and creating settings. American Journal of Community Psychology, 23:795-808.
- Republic of South Africa (RSA) (1997), "Water Services Act 108 of 1997", Cape Town, South Africa.
- Republic of South Africa (RSA) (1998), "National Water Act 36 of 1998", Cape Town, South Africa.
- Republic of South Africa (RSA). 1970a. Report of the Commission of Inquiry into Water Matters. Pretoria: Government Printers. Doc. No. R.P. 34/1970.
- RSA, South Africa Census, 2001.
- Richards, M. 1997 Common property resource institutions and forest management in Latin America, Development and Change, 28: 95-116. UK: Blackwell Publishers.
- Robinson P. (1998) Targeted Water Price Subsidies, Harare, ZIMCONSULT

- Roe, E. 1995 Except Africa: Postscript to a Special Section on Development Narratives. *World Development* 23 (6):1065-1069.
- Rogers, P., Hall, J.P., 2003 Effective water governance. TEC Background Papers No. 7. Global Water Partnership, Stockholm.
- Ross, R. 1999. *A Concise History of South Africa*. Cambridge: Cambridge University Press.
- Rural District Councils (RDC) Act [Chapter 29:15] 1988. Harare: Government Printers.
- Ryan, G.W., and H. Russell Bernard 2003 Techniques to Identify Themes. in *Field Methods*, 2003 Volume 15. No. 1
- SADC (Southern African Development Community), 2005. *Regional Strategic Action Plan on Integrated Water Resources Management: annotated strategic plan: 2005-2010*. Gaborone, Botswana.
- Savenije, H.H.G., 2001. "Equifinality, a blessing in disguise?", HP Today Invited commentary, *Hydrological Processes*, 15, pp. 2835-2838.
- Savenije, H. 2002 Why water is not an ordinary economic good – or why the girl is special. *Physics and Chemistry of the Earth* 27, 741-744.
- Schreiner, B. and van Koppen, B. 2003. Policy and Law for Addressing Poverty, Race and Gender in the Water Sector: The Case of South Africa. *Water Policy* 5: 489-501.
- Schreiner, B.; Mohapi, N.; van Koppen, B. 2004. Washing away poverty: Water, democracy and gendered poverty eradication in South Africa. *Natural Resources Forum*, 28 (3): 171-178.
- Scott, J. 1985 Theoretical Framework and Research Design, in F. Stokman et al., editors, *Networks of Corporate Power*, Cambridge, Polity Press.
- Seetal, A.R., and Quibell, G. 2005. Water rights reform in South Africa in *Water Rights Reform: Lessons for Institutional Design* (Eds: B.R. Bruns, Ringler, C and Meinzen-Dick, R). International Food Policy Research Institute (IFPRI). Washington D.C.
- Shah, T. Makin, I. and Sakthivadivel. 2005. Limits to leapfrogging: issues in transposing successful river basin management institutions in the developing world.
- Shapiro, G., and J. Markoff. 1997. A matter of definition. In *Text analysis for the social sciences: Methods for drawing statistical inferences from texts and scripts*, edited by C. Roberts 9 – 34. Mahwah, NJ:Lawrence Erlbaum.

- Schreiner, B. et al, 2010 Water for agrarian reform and rural poverty eradication: Where is the leak? Conference paper presented at 'Overcoming inequality and structural poverty in South Africa: Towards inclusive growth and development', Johannesburg, 20-22 September, 2010.
- Schreiner, B. and van Koppen, B. (2002), "Catchment Management Agencies for Poverty Eradication in South Africa", *Physics and Chemistry of the Earth* 27: 941–948.
- Sithole, P. and Van Koppen, B. 2008 Understanding Hydraulic Property Rights Creation, Re-Creation And De-Creation: A Case Study of Lorraine and Fumukwe Villages, Limpopo Basin. In Humphreys, E. et al (eds) 2008 *Fighting Poverty Through Sustainable Water Use: Volume 111*, pp 174 - 176. The CGIAR Challenge Program on Water and Food, Colombo. 183 pp.
- Sithole B. 1999. Use and access to dambos in communal lands in Zimbabwe: Institutional considerations. D.Phil. Thesis. Centre for Applied Social Sciences, University of Zimbabwe, Harare.
- Svendsen, M. (ed.) 2005. *Irrigation and river basin management: Options for governance and institutions*. CABI Publishing:Oxon and Cambridge, and Colombo: International Water Management Institute.
- Svendsen, M., Wester, P., and Molle, F. 2005 *Managing river basins: an institutional perspective*. In: Svendsen, M. (ed.) *Irrigation and river basin management: Options for governance and institutions*. CABI Publishing:Oxon and Cambridge, and Colombo: International Water Management Institute.
- Swatuk, L.A., 2010 *The State and Water Resources Development through the Lens of History: A South African Case Study*. *Water Alternatives* 3 (3):521-536.
- Swatuk, L.A. (2008), "A Political Economy of Water in Southern Africa", *Water Alternatives* 1(1): 24–47. www.water-alternatives.org.
- Swatuk, L.A., 2005 Political challenges to implementing IWRM in Southern Africa. *Physics and Chemistry of the Earth* 30, 872-880.
- Swatuk, Larry A., 2000, "Power and Water: The Coming Order in Southern Africa", in Bjorn Hettne, Andras Inotai and Osvaldo Sunkel, eds., *The New Regionalism and the Future of Security and Development*, (London: Macmillan): pp. 210-47.

- Tapela, B., 2002 The challenge of integration in the implementation of Zimbabwe's new water policy: case study of the catchment level institutions surrounding the Pungwe-Mutare water supply project. *Physics and Chemistry of the Earth* 27, 993-1004.
- The Mvula Trust, 1999 Rethinking Community-Based O&M in South Africa: Lessons from the Field. Mvula Trust. Johannesburg.
- Traditional Leaders' Act. 1998. Traditional Leaders' Act (Chapter 29:17). Government of Zimbabwe Printers. Harare.
- UNDP (United Nations Development Programme), 2006. Human development report: beyond water scarcity: power, poverty and the global water crisis. New York. UNDP.
- UNICEF and The Government of Zimbabwe, 2000 Gwanda District Integrated Rural Water Supply and Sanitation Project 1995-2000. Final Evaluation Report. Prepared by PlanAfric, Bulawayo.
- Van der Zaag, P, Bolding, A, Uiterweer, N.P.C. 2010 Synthesis of the Mozambique Studies - what role of law in promoting and protecting the productive uses of water by smallholder farmers. In Van der Zaag (eds.) 2010 What role of law in promoting and protecting the productive uses of water by smallholder farmers in Mozambique? UNESCO-IHE Institute for Water Education, and Water Resources Section, Delft University of Technology.
- Van der Zaag, P., 2005. Integrated Water Resources Management: Relevant concept or irrelevant buzzword? A capacity building and research agenda for Southern Africa. *Physics and Chemistry of the Earth* 30, 867-871.
- Van Koppen, B. 2003. Water reform in sub-Saharan Africa: what is the difference: *Physics and Chemistry of the Earth*, 28. 1047-1053.
- Van Koppen, B., Moriarty, P., and Boelee, E. 2006 Multiple-Use Water Services to Advance the Millennium Development Goals. Research Report 98. International Water Management Institute. Colombo.
- Van Koppen, B., Giordano, M. and Butterworth. (eds.) 2007. Community-based water law and water resource management reform in developing countries. CABI. Oxfordshire and Cambridge.
- Van Koppen, B. (2008), "Redressing Inequities of the Past from a Historical Perspective: The Case of Olifants Basin, South Africa", *Water SA* 34(4), 432-438.

- Van Koppen, B. and Van der Zaag, P. 2010 Introduction - Water rights in Informal Economies in Mozambique. In Van der Zaag (eds.) 2010 What role of law in promoting and protecting the productive uses of water by smallholder farmers in Mozambique? UNESCO-IHE Institute for Water Education, and Water Resources Section, Delft University of Technology.
- Van Koppen, B. 2010 Water Allocation, Customary Practice and the Right to Water: Rethinking the Regulatory Model. in *The Right to Water: Theory, Practice and Prospects*. Cambridge University Press.
- Wade, R. 1988 *Village Republics*. Cambridge University Press, Cambridge.
- Walker, M. M. 2006 *Women, Water Policy, and Reform: Global Discourses and Local Realities in Zimbabwe*. Working Paper No. 287. Michigan State University.
- Water Act 1976. Water Act (Chapter 20:22) Government of Rhodesia Printers, Harare.
- Water Act. 1998. Water Act (Chapter 20:24). Government of Zimbabwe Printers. Harare.
- Weinrich 1971 ...
- Whitehead, A., 1984 'I'm hungry Mum: the politics of domestic budgeting', in K. Young et al. (eds.) *Marriage and the Markets*. CSE Books, London.
- World Bank, 2007. *AFTWR, Africa Region*. World Bank, Washington DC.
- WSDP, ... 2003 see Bohlabela district
- Yin, R. K. 1994 *Case study research. Design and Methods*. Sage Publications, London.
- Zachrisson, P. 2004 *Hunting for Development: People, Land and Wildlife in Southern Zimbabwe*. Goteborg University. Department of Social Anthropology.
- Zimbabwe Census 2002

National Archives of Zimbabwe, Harare: Files Accessed

- LS100/3E/50: Resettlement of Natives Gwanda 1950-51
- NB 3/2/1-2, NB 3/4/1-2, NB6/1/1-4, 8-12, N9/4/25: NC Gwanda Yearly Reports 1897-1923
- NBD1/1, NBD1/2: Corr. Gwanda District and Gwanda Reserve
- N8/1: Chiefs and Headmen
- N9/1/1-26: NC Gwanda Yearly Reports
- N9/5/1-8: NC Gwanda Misc., Patrol Report
- S138/22: Native District Development 1924-1935

S138/41: Native Complaints and Problems 1926-1934
S138/150: Native Emancipation 1924-1932
S138/178: AmaBirwa Tribal Moves 1924
S138/197, 378: Land Commission 1925
S138/204: Revision of Boundaries 1924-27
S160/9/Tuli/51: Stock Tuli Breed 1950-1956
S160/100/3E/50: Resettlement of Natives Gwanda 1950-1951
S160/DG/103/1/50: Land Development Officer Monthly Reports 1945-1951
S235/501-518: District Annual Reports 1923-1946
S235/501-546: NCs Annual and Monthly Reports 1923-1938
S482/386/39: Wildlife Conservation 1927-1938
S1542/C16: Complaints by Africans 1933-1939
S1563: NC Gwanda Annual Reports 1938-1948
S1618: CNC and NC Quarterly Reports 1927-1953
S2076;S2403/2681: NC Gwanda Yearly Reports 1920-1952
S2244/325/44: Gwanda Rural Council Corr.
S2588/1974/1,2,3: Corr. Land Gwanda
S2833/4: Tuli Division and Gwanda Reserve
S2833-2836: NC Papers 1917-1955
S2929/6/5: Gwanda Delineation Report
S3271: Chieftainships and Headmanships 1948-1951
District Administrator's Office, Gwanda
File: PER 5 and CHK/14/95 Chiefs and Headmen

APPENDICE 1: THE QUESTIONNAIRE USED IN THE STUDY

Household-level uses and property rights creation Questionnaire

I, Pinimidzai Sithole, a PhD student with the Institute for Poverty, Land and Agrarian Studies (PLAAS), University of the Western Cape, am carrying out a survey in Gwanda, Zimbabwe and Sekororo, South Africa, Limpopo Basin. The survey is funded by the Challenge Programme for Water and Food (CPWF) and the International Water Management Institute (IWMI). The survey seeks to solicit your insights and advice about the existing water rights in informal economies, and the potential impacts such water rights have on your household, village and community. In order to do so, we will be asking you questions about water use, access, rights, technologies, management, and investment. However, we need to understand how water rights in informal economies affect different households: very poor, poor, and non-poor; households headed by men and households headed by women; households that are close to water sources/points, households that are farther away; etc. We would therefore request that you give us open and clear answers to the various questions, recognizing that your answers, and the answers to these questions from other households we interview, will be fundamental to our understanding of water rights in informal economies in South Africa, Limpopo Basin. Please note that your answers are confidential.

Household survey and overview

<p>Enumerator Self Check (field), print name:</p> <p>Questionnaire Number:</p> <p>Date Questionnaire Entered Print Name</p> <p>Date Questionnaire Validated..... Print Name</p> <p>Supervisor Comments:</p> <p>Data Entry Supervisor Comments:</p>
<p>Village Name: Village Code:</p> <p>Interviewer Name: Interviewer Code:</p> <p>Date: (Day, then month as single 4 digit code)</p> <p>Household GPS reading S..... E</p>

Enumerator: *For the interview, interview the household head, her/his spouse, or other senior household decision-maker. For factual questions, the respondent can call upon other members of the household for help in answering. However, for opinion data, no other household member can respond.*

A. General

Gender of Respondent (household member interviewed):

[Explain what is meant by household]

1. Who is the head of the household you 'belong to'?
 _____ - 1 male [male head/other senior male decision-maker present at least 6 months over the past 12 months]
 _____ - 2 female de jure [female mentioned as head]
 _____ - 3 female de facto [male stated as head, but absent more than 6 months over the past 12 months and has not returned on a weekly or biweekly basis for the bulk of the past year, and no alternative male head mentioned]

2. We would like to understand better the structure of your household. How many people currently 'belong to' this household, whether living here most of the year or living elsewhere most of the year? [Enum: Reference period is the past 12 months]
 a) Total number of people 'belonging to' the household _____
 b) Number living here _____
 c) Number living elsewhere _____

(The following table only applies to those 'living here'. Exclude those indicated as living elsewhere)

Interviewee	Relate to HH head	Gender	Age	Highest Education Attended	Occupation	Location most of the Year	Sources of Income (can be more than one)
	1 - Head						1. Formal emp. 2. Informal emp. 3. Subsistence agric. 4. Cash crop farming 5. Retired/Pension 6. Self-employed 7. Social/gvt grant 8. Own enterprise (specify) 9. Other (specify)
Total Annual Incomes							

5. Do you store water? Yes No
 If yes,

a. What type of containers do you use to store water?	b. How many of them do you have?	c. How many of them do you use?	d. How often do you fill them up?	e. How long does this water last?
Small containers (20-25)				
Big containers (200-250)				
Jojo tanks (specify volume)				
Brick and concrete tank (specify volume)				
Rain Water Harvesting tank (specify volume)???????				

Other (specify volume)				
------------------------	--	--	--	--

6. Please provide the following information regarding your farming and livestock ownership?

Crop	Crop1	2	3	4	5	6	Total
Dryland							
Area planted							
Total yield							
Total income							R
Irrigation							
Crop							R
Area planted							R
Total yield							
Total income							R
Livestock							
Owned (list all)							Total
Sold							R
Total income							R

7. What are the main sources of lighting in your household? [Rank in terms of proportion of contribution e.g. percentage]

- ___ 1 electricity
- ___ 2 paraffin
- ___ 3 gas
- ___ 4 candles
- ___ 5 firewood
- ___ 6 generator
- ___ 7 solar
- ___ 8 other

8. What are the main sources of energy for cooking in your household? [Rank in terms of proportion of contribution e.g. percentage]

- ___ 1 electricity
- ___ 2 paraffin
- ___ 3 gas
- ___ 4 candles
- ___ 5 firewood

- _____ 6 generator
- _____ 7 solar
- _____ 8 other

B. Access to Supply (Water and Technologies)

1. Overview matrix for household water use: Please fill in the matrix?

Uses	Sources of water (from 3.3.1 or private technology (specify))	Water conveyance Male/female Costs labor/cash	Quantity (No of 20l buckets or 200l drum per day/week , specify)	When use 1=all year round 2= dry season 3=wet season 4=other (specify)	Priority 1=very high 2=high 3=low 4=very low	Enough ² quantity 1=Yes 2=No 3=Sometimes	Enough ³ quality relative to use 1= Yes 2=No 3=Sometimes
Drinking							
Cooking							
Bathing							
Washing clothes							
Toilet flushing							
Cattle							
Sheep/goat							
Trees							
Home garden							
Field irrigation							
Rainfed							
Fishing							
Brick making							
Food processing sale							
Other enterprise (specify)							
Ceremonial							

2. Seasonality matrix: Please complete matrix by asking a, b, and c.

a. What are the three most important water points/sources that you use/access in the dry season?	b. What are the three most important water points that you use/access in the wet season?	c. Who is the custodian of the water point (s)?

5. Custodianship/Ownership key:

- 1. Household
- 2. NGO (specify)
- 3. Government (specify)
- 4. Municipality
- 5. DWAF
- 6. Chief/Induna
- 7. Other (specify).....

3. Are there clear and understood rules regarding access to and use of your water points?

.....1 yes2 no3 do not know

5. a) (If yes to 3) who is the agency or authority responsible for setting the rules?

-1 not certain
-2 Water (Point) Committee
-3 Tribal/traditional authority
-4 DWAF
-5 Municipality
-6 Owner
-7 NGO
-8 Gvt
-9 Other.....

b) (If yes to 3) what are the rules?.....

c) Are the rules enforced?1 yes2 no3 don't know

d) If yes, who enforces which rules?.....

e) Are those who breach/break the rules punished? If yes, specify what fines, penalties?....

C: Communal Infrastructure Hydraulic Property Rights Creation

1. For the communal infrastructure identified/indicated (choose all cases), how was it done? What was your involvement?

a. Planning/ local approval1 yes2 no

If yes, how were you involved?.....

Who (else) was involved?

b. Site selection1 yes2 no

If yes, how were you involved?

Who (else) was involved?

c. **Financing/Capital costs**1 yes2 no

If yes, how were you involved?

Who (else) was involved?

d. **Construction**1 yes2 no

If yes, how were you involved?.....

Who (else) was involved?.....

What were the costs?1 cash2 labour3 equipment
.....4 other

e. **Operation**1 yes2 no

If yes, how were you involved?.....

What were the costs?1 cash2 labour3 equipment
.....4 other

Who (else) was involved?.....

f. **Maintenance**1 yes2 no

If yes, how were you involved?.....

What were the costs?1 cash2 labour3 equipment
.....4 other

Who (else) was involved?.....

Over the past years, has your main water point had a breakdown or stopped yielding water?

___ - 1 yes ___ - 2 no ___ - 3 do not know

a.) [If yes] What was the reason for the absence of water? [Tick up to 3 responses]

___ - 1 lack of diesel/petrol

___ - 2 water point went dry

___ - 3 system broke (underground)

___ - 4 system damaged (above-ground)

___ - 5 other _____

b.) Was it repaired?1 yes2 no

c.) If yes, who repaired it, and at what cost?.....

d.) How long did it take before it was repaired?.....

g. **Rule Setting**1 yes2 no

If yes, how were you involved?.....

How does one become a member?.....

Was anyone excluded from membership for some, or all uses?.....

Who (else) was involved?.....

What are the rules?.....

h. Rule Enforcement1 yes2 no

If yes, how were you involved?.....

How are the rules enforced?.....

i. What is your opinion on performance of management committee? (specify).....

D: Case studies hydraulic property rights creation for individual private infrastructure (using all cases from the Community....)

Planning Phase

1. How did you have the idea to invest in your private infrastructure?.....

2. Did you discuss this with other household members?1 yes2 no

a. If yes, who did you discuss with?.....

b. If no, why not?.....

3. Were they involved in the decision-making?1 yes2 no

a. If yes, how were they involved?.....

4. Did you have to ask permission to anyone to construct/install the technology and start abstracting/storing water?1 yes2 no

a. If yes, where or to whom did you ask permission?.....

5. Is the water resource seen as a 'community property' – who is in/out?

.....1 yes2 no

6. Was there any competition with many people wanting to put their technologies?

.....1 yes2 no

a. If yes, how was this solved?.....

7. Did people abandon earlier investments because of too much competition?

.....1 yes2 no

- a. If yes, who?.....
- b. If yes, what were the reasons?.....
8. How was the technology selected?.....
9. Were there various options?1 yes2 no
- a. If yes, what were the options?.....
10. Which particular technology was opted for?.....
- a. Why was this technology opted for?.....
11. How do investors get the technical information to undertake these development activities?.....
- (In each case give details e.g. size of pump and how easy it is to acquire diesel or petrol).....
12. How did site and lay-out selection take place?.....
- a. who was involved (specify women, men, boys, girls)?
- b. how were they involved?.....
13. How was site selection related to land rights?
- a. whose land was the site selected?.....
- b. what rights do you have over land?.....
- c. was anyone displaced or inconvenienced by the project?.....
14. Is the construction of infrastructure reserved to only landowners?
-1 yes2 no
- a. If no, can a tenant invest in infrastructure?1 yes2 no
- b. If yes, what are the conditions for such investment?.....
15. What do women and leasers without primary titles to a plot do to obtain access to land?.....
- a. Does that discourage them to invest in infrastructure?1 yes2 no
- b. If yes, how does that discourage them?.....
- c. Do they have to pay for water and land (specify)?1 yes2 no
- d. What form of payment (cash, labour, other)?.....
- e. Are there cases where they were put off the land again?.....
- f. Do private owners sell or share their water?.....
16. Are investors aware of the requirement for registration or application for Licence?
-1 yes2 no
- a. Were they obliged to do so? Yes No

- b. If yes, did they do it (register or apply)?.....
17. Would they be willing to pay for water use to government?1 yes.....2 no
18. Have there been public hearings on this issue here?

Construction phase

19. Who participated in the purchase and installation/construction of the technology, in cash or kind?
20. Is the fact that somebody factually made the investments in the construction related to the entitlements to the water conveyed?1 yes.....2 no
- a. If yes, how?
21. Is this right hereditary?1 yes2 no
- a. If yes, to who?1 sons2 daughters3 both4 other
22. Can people who did not invest in the capital and operational costs still have access to the water conveyed by the technology?1 yes2 no
- a. If yes, who can access (gender, kinship, community)?.....
- b. What type of right?
- c. On what basis is such access arranged?.....
23. Did female household members participate equally in the construction/installation?1 yes2 no
- a. If not, why not?
- b. If no, does this affect women’s future entitlements to the water conveyed?1 yes2 no
- c. If not, why not?
- d. If yes, is there a way to still strengthen women’s entitlements?1 yes.....2 no
- e. If yes, how can women’s entitlements be strengthened?.....
- f. Is any cash income derived from water supply? Yes No
- g. If yes to above,
- a. What is the income derived from sales of water used for?
- b. Is income from water access used to invest in assets (social, financial, physical, natural, human)?.....
- c. If so, what form does this investment take?.....

Costs – benefits

24: Enterprise Budget (for Water dependent enterprise)

Item/Activity	Crops (field)		Crops (garden)		Car Wash	Brick-making	Livestock
	Wet season	Dry season	Wet season	Dry season			
Water Use in Litres							
Labour/man days (specify gender)							
Fertilizer					-	-	-
Water pump							
Other inputs							
Output produced							
Output sold							
Output consumed							
Price sold							

Water unit in litres, number of 25 litre containers/ or drums, or volume pumped

25: Farm Budget (For farming enterprise identified)

Item/Crop	Maize		Tomatoes		Cabbage		Beans		Sweet potatoes	
	Wet season	Dry season	Wet season	Dry season	Wet season	Dry season	Wet season	Dry season	Wet season	Dry season
Water Use in Litres										
Labour/man days (specify gender)										
Fertilizer										
Energy cost										
Ploughing										
Land rental										
Chemicals										
Output produced										
Output sold										
Output consumed										
Price sold										

List all the most important crops a. Irrigated..... b. Rainfed.....

.....

26. How do you market your products? Explain in detail.....

27. Do you experience problems in marketing?1 yes2 no

- a. If yes, what are the problems?.....
28. Who decides about the use of the harvest (gender)?
1 man2 woman3 both man& woman4 other
29. Who decides about the money gained (gender)?
1 man2 woman3 both man& woman4 other
 a. If other, specify.....
30. Which support was provided?1 information2 technical training
3 institution-building4 credits.....5 financial6 other
31. Was the support provided satisfactory?1 yes2 no3 somewhat?
- a. Could support be improved?1 yes2 no
- b. If yes, how?.....
- c. If no, why not?.....

Other water management issues

32. How do you prioritize water use under scarcity? Explain.....
33. Do you discuss this with family members and are they involved in the prioritization?
1 yes2 no
 a. If yes, who is involved?1 man2 woman
3 both woman & man4 girls5 boys6 Other
 b. Is there sometimes disagreement?.....
 c. If so, which by whom?.....
34. Do you experience water pollution issues?1 yes2 no3 don't know
 a. If yes, what pollution issues?.....
 b. If yes, how can such pollution issues be solved?.....
35. Which social arrangements, or physical fencing exist? Explain.....
36. Where do people get information about water (NGOs or Govt)?
37. What institutions assist with water issues (any water point committees)?
38. Are there any problems with getting information or assistance from institutions?
39. What factors negatively affect water supply? (drought, damage from livestock, other users etc).

APPENDICE 2: CHECKLIST AND MATRIX USED FOR IN-DEPTH INTERVIEWS AND FOCUS GROUP DISCUSSIONS

Labeling for Focus Group Transcripts:

Site:

Number Participants:

Focus Group Sample: (e.g., men or women, young or old)

Focus Group Interview No.

Date of Interview:

Facilitator ID:

Recorder ID:

Who is involved: (e.g. women, men, irrigators/non-irrigators, migrants/long-term residents, upstream/downstream, etc?).....

Over what issues (document all the issues highlighted).....

With what resources: (e.g. i. resources available plus skills; ii, wealth status and literacy; iii, relationship between participation and economic status).....

With what impact: (e.g. impact of involvement on policies, decisions made or deferred; contestations and conflict resolutions).....

With what personal goals and at what anticipated costs.....

