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kristi.denby@student.umb.no

Noragric  
Department of International Environment and Development Studies  
P.O. Box 5003  
N-1432 Ås  
Norway  
Tel.: +47 64 96 52 00  
Fax: +47 64 96 52 01  
Internet: <http://www.umb.no/noragric>

**Declaration**

I, (name), declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature.....

Date.....

Tala

*Water is as precious to life, as you are to me.  
You are my inspiration.*

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## **Abstract**

This paper explores how the degree of integration and cooperation among water and agricultural institutions affects local level water access for small-scale and emerging farmers in South Africa. The South African post-apartheid National Water Act (NWA) adopted the principles of Integrated Water Resources Management (IWRM) with a focus on equity, efficiency and sustainability. This research explores themes related to governance and integration; and water rights and access. The paper utilizes the Inkomati Water Management Area as a case study to examine how the processes and dynamics of institutional integration and co-operation affect ‘on-the-ground’ water access. The paper examines the parallel processes of water and land reforms from the basin level to the local level. In addition, the paper highlights the many challenges and obstacles communal and land reform farmers face in accessing water. Methods included a review of relevant policy documents and literature, semi-structured interviews with key managers and employees of both water and agricultural institutions, attendance at important meetings and forums, and participatory observation at the basin and local level. The research showcases the flaws in institutional integration, and the major challenges related to issue based communication, non-alignment of mandates, top down silos, and the low incentives to collaborate. The lack of institutional legitimacy and integration has contributed to challenges in local level water access, confusion among farmers about the relevant mandates of different institutions, and flawed participation. In examining the challenges in the integration, I argue governments and the people must specifically outline and define what coordination, cooperation and integration means for that specific context. Furthermore, perceptions of what actually fulfils integration are consistent with that of the subjective nature of IWRM, so funds and incentives must be put in place to avoid silos, and promote and enforce integration to improve local level water access.

Key words: Integration, water access, IWRM, governance, silos, participation, legal plural legalism, water rights.

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## List of Abbreviations

CASP	Comprehensive Agricultural Support Programme
CMA	Catchment Management Area
CMS	Catchment Management Strategy
DARDLA	Department of Agriculture, Rural Development and Land Administration
DRDLR	Department of Rural Development and Land Reform
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
ELU	Existing Lawful Use
GA	General Authorisation
Ha	Hectare
HDI	Historically Disadvantaged Individual
IB	Irrigation Board
ICMA	Inkomati Catchment Management Agency
IWMA	Inkomati Water Management Area
IWMI	International Water Management Institute
IWRM	Integrated Water Resource Management
MCCAW	Mpumalanga Coordinating Committee for Agricultural Water
NWA	National Water Act
NWRS	National Water Resource Strategy
PTO	Permission to Occupy
RADP	Recapitalization and Development Programme
SSIS	Small Scale Irrigation Scheme
WAR	Water Allocation Reform
WARMS	Water Use Authorisation Registration Management System

WMA Water Management Area

WUA Water User Association

## 1. Introduction

*“Water is life’s mater and matrix, mother and medium. There is no life without water”*

*-Albert Szent-Gyorgyi*

Water is a human right and essential for life. Water is also a dynamic and interconnected resource that varies across time and space; and is ingrained in the wider environment, social interactions, the economy, development, culture, and religion. Governing water resources equitably and effectively is a central challenge to achieving more equal access and beneficial use of water. It is estimated that approximately 50% of the world’s population will be faced with water scarcity and supply issues by 2025 (DWA 2008). The attention on water scarcity is largely on the physical aspects, however water scarcity is multi-dimensional, and affects some groups of people more than others, in particular the impoverished and powerless (Mehta 2000, 2005). Many scholars argue that a rudimentary shift in focus must occur from the narrative of physical water scarcity to that of rights, access, entitlements, resource allocation and governance (Sen 1999, Mehta 2005, 2010). The importance of equitable governance and securing water rights for the rural poor cannot be denied because a large part of their productivity and existence depend directly on water (Bruns & Meinzen-Dick 2005, Van Koppen 2003, Schreiner et al. 2010). Moreover, ‘the water crisis is mainly a crisis of governance’ (GWP, 2000); and “a crisis of the failure of our institutions to manage our resources for the well-being of humans and ecosystems” (Gupta 2011, pg. 5).

Globally, water scarcity has prompted a widespread and comprehensive reform of water rights and water legislation in favour of the dominant and highly influential, Integrated Water Resource Management (IWRM) (Movik 2009, Brown 2011). IWRM diverges from the dysfunctions of sectoral water management to a more integrated approach with focus on the equitable, sustainable and efficient management of water (Biswas 2004, GWP 2000, Molle 2008). IWRM encompasses aspects of good governance and sustainable development linked to participation, coordination, devolution of power and decentralisation of decision making to the lowest level (Funke & Jacobs 2010). A key paradox emerges in this multi-actor, multi-level governance

arrangement that is linked to the inherent tension between the holistic and integrated approach to water management and decentralisation and participatory aspects of IWRM. Due to the nature of the governance arrangements “boundary work and managing interface problems are needed to improve governance capacities” (Teisman and Hermans 2011). Due to these tensions, IWRM strives to integrate the management of land, water and related resources, alongside the economic, environmental and equity related aspects. Furthermore, the complex institutional landscape with many actors having multiple demands on water resources, implies a need for integration. The literature suggests that differing interpretations of what actual integration encompasses has plagued the successful implementation of IWRM in many contexts (Cardwell et al. 2006, Funke & Jacobs 2010).

During the last two decades of water reforms, IWRM has been translated to many contexts around the world with varying degrees of success. Furthermore, it is argued that developing countries without strong institutions and financial backing are often plagued with complexities, and lack the capacity required for IWRM to function at the river basin level (Wester et al. 2003). The concept of IWRM has been critiqued for being too broad, vague and difficult to translate into developing world contexts (Biswas, 2004). In the African context, IWRM has been translated with various complexities and challenges related to integration, representation, complex river basins, power imbalances and plural legal systems (Van Koppen 2000, Woodhouse 2008, Brown 2011, Funke & Jacobs 2010).

South Africa has been in a state of major change since the end of Apartheid, with substantial new policy and legislation reflecting the principles of IWRM with a strong emphasis on redressing the past inequalities in water access (Perret 2002, Backeberg, 2005). The water sector is characterised by scarce water supplies with increasing water demand, extensive infrastructure development and intensive competition among water uses and users” (Backeberg 2005 pg. 108) Furthermore, water availability and access are vital to alleviating the staggering rural poverty levels. Globally, the South African National Water Act (NWA) of 1998 is recognised as one of the most progressive water policies in the world. The NWA aims to decentralise and integrate

water management, create new local and regional institutions with equal representation, register and license water use and finally to facilitate the emergence of a water rights market (Perret, 2002). Written eloquently in the White Paper on a National Water Policy for South Africa (1997) is that;

*“Of all natural resources, water permeates perhaps most deeply into all aspects of our life. It is as essential as the air we breathe for our survival; its presence determines the nature of the natural environment in which we live; the majority of our economic activities depend on it. The achievement of South Africa’s development vision will thus only be possible if water resources are managed in a way which is sensitive to and supportive of the many demands we place on them.” (Cited in DWA 2012a).*

Economic and political factors prompted the water reforms in South Africa; however ethical factors such as poverty, equity and fairness play a major role in their practical implementation (Bakeberg, 2005). The 2006 Water Allocation Reform (WAR) is the key policy aimed at reallocating water from the ‘haves’ to the ‘have-nots’ while still maintaining ‘beneficial and efficient’ use of water. In reality the reallocation of water is inherently linked to the transfer of land, and the claims on land by Historically Disadvantaged Individuals<sup>1</sup> (HDI) can be seen as water claims (Liebrand 2007). Regardless of the obviously connection between water and land, the corresponding land reform in South Africa has followed a largely separate path from water reform, which further accentuates the necessity of integrated approaches (Funke & Jacobs 2010, Woodhouse 2012). The interconnectedness of both water and land is crucial to redressing inequalities in the South African context, however “both resources are still largely managed as isolated policy issues and only limited research focuses on the numerous links between them” (Funke & Jacobs, 2010 pg. 82, see also Movik, 2012, Woodhouse 2012). Major difficulties have arisen in integrating and coordinating land and water institutions because of funding silos and poor reform planning.

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<sup>1</sup> Also referred to as Previously Disadvantaged Individuals. Would prefer not to use this classification however it proved difficult to find another concise word to describe this group of people. See Section 7.1 for an in-depth explanation

The slow progress of both land and water reform is evidenced by large discrepancies in income distributions and access to resources, which are still strongly correlated with race, location and gender in South Africa (May 2000, Lahiff 2007). While the NWA and WAR reforms are progressive on paper, implementation has been slow and the expected outcomes of water reallocation have not been achieved. As a result of the slow progress and the difficulties in balancing the tenants of IWRM, little has changed for the rural poor and “access to water for productive purposes mirrors the ongoing economic inequity in [South Africa]” (Schreiner et al. 2010 pg. 7). Key themes in this research are linked to IWRM influenced institutional integration challenges with a focus on agriculture, land reform and water. The second theme focuses on HDI water access for productive purposes and the linkages with integration.

The research will be included in a larger comparative project of IWRM in Africa: ‘Flows and Practices: The Politics of Integrated Water Resources Management (IWRM) in Africa’. The project investigates the formulation of IWRM policies, then traces the flows and translations in water management narratives and practices from a global to local level. Given the trend of IWRM influenced water reforms around the world, it is critical to examine how various interpretations, challenges and outcomes of these water reforms are reflected at the local level. Cross-comparative river basin case studies will be completed in Tanzania, Zimbabwe, Mozambique, and South Africa. These local level case studies are tied to regional, national and global research on IWRM policies, reforms, implementation and translations. My research will tie into regional, national and global level research related to the translation of IWRM in the South African context completed by Synne Movik of the Norwegian University of Life Sciences, and Barbara van Koppen of The International Water Management Institute (IWMI). The ‘Flows and Practices’ project is funded by the Norwegian Research Council with a completion date of 2015. The project includes leading water researchers and masters students from throughout Europe and Africa.

## ***1.1 Motivation***

Given water's key roles in poverty reduction and wellbeing, my research will contribute to an understanding of how local realities often don't reflect the national and global water management paradigms and policies, especially as "water resources use and management are increasingly embedded in wider ranging processes, including regional or global ones" (Molle et al., 2008, pg. 4). Furthermore, UNESCO (2011) stated the need for research related to alignment and synchronicity (linked to integration and cooperative governance) of multi-level governance arrangements (Gupta 2011, Teisman and Hermans 2011). As such, the aim is to provide empirical local level case studies regarding the impacts of IWRM influenced reform in South Africa on regional level institutional integration and how these arrangements affect water access.

Of critical importance to my research is to ensure the voice and realities of the marginalised are heard. Understanding and documenting rural challenges in accessing water is necessary to alter governance arrangements surrounding water. South Africa immediately resonated as an interesting and dynamic place to research because of the historic injustices and resource inequalities linked to Apartheid; and the disparities between a seemingly progressive water policy and the actual realities on the ground. The Inkomati basin was selected to study the rolling out of IWRM in terms of integration and water access because it was the first Catchment Management Agency (CMA) to be established in South Africa, and the catchment is characterised by a high demand for agricultural water, historic racial inequalities in access to resources, plural legal systems, water scarcity, and conflicting interests among various water users. The research questions are outlined below, followed the research objectives, and finally a detailed overview of the thesis structure.

## ***1.2 Research Questions***

1. What are the impacts of the IWRM influenced processes on integration at the regional level?
2. What are the dynamics around institutional arrangements at the regional level and what has this meant for the different sugarcane farmer groups access to water?

### ***1.3 Objectives***

My research focuses how IWRM governance arrangements affect integration at a regional level in the Inkomati Basin. Second, to unpack the dynamics of integration amongst institutions related to agriculture, land reform and water; and the effect on water access amongst various sugarcane farmer groups. Furthermore, to examine the factors that shape water access (for productive purposes) on the ground with a focus on communal and land reform sugarcane farmers. Finally, to discover the challenges associated with communal and land reform sugarcane farmers obtaining paper water and the actual wet water on the ground. The formal routes being a paper license from DWA, also referred to in the research as ‘paper water’, and channels of access outside the ‘formal’ routes are referred to as ‘wet water’.

### ***1.4 Structure of the Thesis***

Section 2 outlines the theoretical and conceptual framework, with Section 2.1 covering governance and integration, and Section 2.2 covering water rights and access. Section 3 contains the methodology including Sections on the research approach, design; analysis and coding; reflexivity; and challenges and ethical considerations. Section 4 outlines the beautiful study area of Mpumalanga, more specifically the Inkomati Water Management Area and Nkomazi. Section 5 will cover the complex history and background of South Africa. Focus is placed on the legacy of inequality and racial division, followed by a water sector overview and information regarding the National Water Act (NWA) and Water Allocation Reform (WAR). Followed by Land reform, the agricultural sector with a focus on sugarcane. In Section 6, I will present an Institutional Map. Section 7 outlines the various sugarcane farmer categories, then in Section 8 I will present three interesting case studies to highlight challenges in integration. Section 9 is a detailed discussion of the findings linked to theory and other research. Finally, Chapter 10 contains concluding thoughts and main findings.



## **2. Theoretical and Conceptual Framework**

This chapter outlines the theory and concepts that my research is based on and I will explain how these theories tie into my research questions and discussion. The first section discusses broader themes of governance, institutions, IWRM, integration, accountability and participation. The second section focuses on water rights, access and legal pluralism. The literature presented will be used to develop my argument and will provide a framework of analysis and discussion.

### ***2.1 Governance and Integration***

*“The water crises of the 21st century is in many ways a crisis of governance; a crisis of the failure of our institutions to manage our resources for the well-being of humans and ecosystems” (Gupta 2011, pg. 5 UNESCO report).*

As water become scarcer and more variable in many countries around the world, greater attention will be placed on water rights, access and governance. Many policy makers and scholars agree that the majority of water problems in the world can be explained beyond the traditional scare water supply, but rather by poor governance of water (World Water Assessment Programme 2006, cited by Molle et al 2008, GWP 2000). Various narratives exist surrounding water scarcity, which in turn greatly shapes how water is managed, and allocated to the most marginalised. Water scarcity, as constructed by policy makers and global forums, “is often presented in absolute terms, obscuring the complex nature of scarcity and its linkages with ecological, socio-political, temporal, and anthropogenic dimensions” (Mheta 2000, pg. 4). Factors such as climate change, rainfall, seasons, temperature, geography etc. all contribute to water scarcity, but of importance to the research is the distribution of water or rather than the qualitative aspects of water scarcity. “Scarcity is not felt universally by all,” (ibid), where poor people are often deprived of the benefits of accessing water due to various technical, political, financial, social or governance challenges. The transition from infrastructural development of abundant water resources to a scenario of water scarcity has played as a key role in the development and translation of Integrated Water Resource Management (IWRM) around the world.

## ***Governance***

First, good governance is recognised as an important aspect in reducing poverty and achieving sustainable development. From the literature a combination of accountability, participation (decentralisation), transparency, equity, the rule of law, collaboration, efficiency and predictability all contribute to good governance. Rhodes (1996 cited by Jonker et al 2010) defines good governance as “having a transparent and accountable public service, independent judiciary and other oversight organisations.” Punyaratabandhu (2004) states that the definition of good governance is subjective, has been altered over time and has been strongly influenced by western values and standards. Crucial to the research is the notion of cooperative governance, which according to Jonker et al. (2010 pg. 10)

*“Entails government delivering public services using an association of organisations from the public and voluntary sectors. In the South African constitution this describes the relationship amongst a number of government departments delivering part of the same service with no transfer of money between the cooperating partners.” Institutions and various government departments in South Africa have a constitutional mandate to collaborate and work together to achieve the goals of the government” (ibid).*

The principles of good governance and cooperative governance are used to conceptualise the degree of institutional integration throughout the thesis. Before I discuss the water governance literature I must first introduce theories of governance. From the governance literature, Vatn and Vedeld (2010) describe governance structures as containing at least three types of actors: private actors, public and the civil society. Rhodes (1996, pg. 660) defines governance as ‘governing without government’ where governance refers to ‘self-organising, inter-organisational networks’ that are alternatives to hierarchical forms of control or what Jonker et al. (2010) refer to as bureaucratic governance. Rhodes (1996) describes governance as a socio-cybernetic system where decisions are based on a complex web of interdependent stakeholders with shared goals both from government and civil society. Stoker (1998) makes the point that the outcomes of government and governance are the same, but it is the processes that are different.

Vatn and Vedeld (2010) make an important point that governance structures are devised based on many different institutions and how the structure is designed and maintained greatly depends on how conflicts are resolved between the institutions and the degree of coordination or integration between the various actors. Today governance consists of multiple actors, a multi-level management structure and an urgent need to integrate. Internationally, a gradual shift has occurred from a centralised, hierarchical, state run water management towards a multi-level, decentralised water governance system in which civil society participates in decision making, and a shift towards private public partnerships (Gupta, 2011). The Global Water Partnership (GWP) defines water governance as “the range of political, social, economic and administrative systems that are in place to develop and manage resources, and the delivery of water services at different levels” (Roger and Hall 2002). Jonker et al. (2010) view this conceptualisation of water governance as problematic because formulating an arrangement does not describe how actors are arranged, and how the structures in which the actors are arranged coordinate action. Jonker et al. (2010 pg. 14) argue that the South African constitution refers to spheres of the government rather than a hierarchy; however “an identifiable hierarchy exists” within the water governance system where at a macro level DWA is still controlling the final outcomes at the basin and local level. This has implications on the implementation of IWRM, the integration of institutions and the emergence of multi-level or decentralised water management institutions, which are rooted in theoretical considerations surrounding institutional change that will be discussed in more detail below.

Water governance is about “the forms and processes by and through which one arrives at settled social rules”, and water management is about “the forms and processes by and through which one applies settled social rules” (Jonker et al. 2010 pg. 5). Water governance is more than addressing water related issues in the technical sense, is it about people and processes (Teisman and Hermans 2011). In terms of both water governance and management, “South Africa’s water reform is expected to deliver not only changes in process (holistic, decentralised, participatory and economically costed), but also a change in social outcomes (redistribution of water

allocation)” (Woodhouse 2012 pg. 853). It is important for the research to look at both the process and the outcomes because a change in policy and consequently the process does not necessarily mean the policy (IWRM and NWA) will produce the expected outcomes. Governance and management should be complementary, so both the process and the expected outcomes should be coordinated and integrated. Governance is about institutions, governance is about the process, institutions are one of the many outcomes of the process (see Ostrom 2005). In the next section I will outline some of the institution literature used for the research.

### ***Institutions***

Institutions cannot be defined in one way, rather institutions can be defined according to many theoretical backgrounds. Mheta et al. (1999, pg. 5) understand institutions “as both enabling (in providing ways through which people negotiate their way through the world) and constraining (in providing the rules for action.” Institutions are comprised of both informal and formal norms, principles, conventions and rules of society. In addition, institutions influence and shape human action, and conversely are influenced by humans. In economics institutions are usually referred to as humanly devised rules, regulations or conventions that shape and constraint human interactions and behaviour (North, 1990, Lowndes, 2002). North (1995, pg. 25) also makes an important point that ‘while the formal rules can be changed overnight, the informal norms change only gradually.’ For an institution to function, it depends on the individuals who use it (Perret 2002). Institutions combined with the people who use them are called organizations (i.e Catchment Management Agency (CMA), Water User Association (WUA), farmers). To clarify when I refer to the institutions through out the research, I am referring to the overarching governmental departments, organizations, associations, NGOs, sugarcane milling company linked to formal water management, agriculture (focus on sugarcane) and land reform. The overarching institutions of interest for the purpose of the research are outlined in Section 6.

For an institution to function, it depends on the individuals who use it (Perret 2002) or their ability to use and participate in governance structures. The literature suggests that there is evidence “that the poor and oppressed are less able to utilise a variety of institutional channels

and therefore suffer double marginalization; remaining vulnerable and resource poor (Odgaard 2002, Benjaminsen and Lund 2002 cited by Cleaver et al 2005 pg. 14). When forming new institutional channels it is important that the marginalised and poor can effectively participate, and thus positively impact their realities and water access. Often undervalued are the social networks and informal laws people utilise in managing and accessing water resources.

Merrey and Cook (2012) notes that complex institutional challenges cannot be remedied with a simplistic blue print solution, furthermore people ability to access water are ultimately a function of the effectiveness of policies and institutions (Merrey et al., 2007; Mollinga et al., 2007, cited by Merrey & Cook 2012). Cleaver (2002) moves away from the dichotomous categorisation of institutions to a more dynamic, processual approach termed ‘institutional bricolage’. Institutional bricolage is defined by Cleaver (2001, pg.1) as “a process by which people consciously and unconsciously draw on existing social and cultural arrangements to shape institutions in response to changing situations. The resulting institutions are a mix of ‘modern’ and ‘traditional’, ‘formal’ and ‘informal’ (ibid). In thinking about formal and informal institutions and channels of access; formal institutions are guided by state policy and law, whereas the informal ones are seen as outside the formal law or different from that of the colonial or post-colonial state (Benjaminsen and Lund 2002). Questions arising related to the research are what extent people are gaining access to water outside of the more ‘formal’ routes? Also to what degree do farmers use a mix of formal and informal channels to access water? This could be obtained through a mix of the paper water through formal channels and negotiated agreements through informal networks to gain access to the wet water. In addressing issues and discrepancies in obtaining a water right and actually accessing water, the theory of institutional bricolage better conceptualises the mix and complexity of institutions in achieving these goals. In short, there is no easy way to define the institutional landscape in allocating and obtaining water, therefore we must move away from the simplistic notion of only informal or formal institutions.

Rooted in IWRM is the concept of decentralisation of water management and the formation of new institutions. The formation of new water rights institutions can aid in social and economic

development and protect crucial ecosystems; however initiatives to improve water allocations might be deemed inadequate, “unless grounded in a good understanding of social institutions that shape rights to water, a careful assessment of the options available for improving water management and a willingness by those involved to experiment, adapt and learn from experience” (Meinzen-Dick & Nkonya 2005, pg. 8). South Africa’s water reform strongly reflects the principles of IWRM and requires the integration and formation of several new institutions into the old institutional landscape. I therefore must discuss IWRM, and its foundations and goals for the management of water. Focus will be placed on integration, participation (decentralisation) and accountability, then the critiques of IWRM will be presented.

### ***Integrated Water Resources Management (IWRM)***

Historically, water resource management was divided, mainly between irrigation agencies and the water supply and sanitation sector. The aquatic flows and water quality related to the environment were managed separately through environmental agencies. Industrial water use was also managed through a ‘patchwork of permits’ from various institutions, with varying degrees of water quality regulation. As the population increases the competition between stakeholders, water users and the requirements of the ecosystems increase, in addition the societal consumption and production patterns change due to increased water supply (Molle et al. 2008). This results in differing “narratives, values, stakeholder groups and power bases for different water uses,” and subsequently leads to difficulty managing the competition between stakeholders and sectors for both quality and quantity of water (Molle et al. 2008, pg. 2). Integrated water resource management (IWRM) evolved from the dysfunctions of sectoral water management and the realisation that water should not be managed sectorally or in isolation from the wider environment (GWP 2000, Molle 2008, Jonker 2007). IWRM has been the dominant water management paradigm in the last decades and it aims to integrate “the management of land and water resources, of surface water and groundwater, of upstream and downstream uses, of sectoral approaches, of economic production and environmental sustainability, and of the state and non-state stakeholders” (GWP, 2000; Biswas, 2004 cited by Molle, 2008, pg. 3).

IWRM encompasses many of the principles of good governance and sustainable development prevalent in policy circles in the early 90's. IWRM was shaped by four guiding principles from the 1992 international conference on water and development in Dublin. The four principals are:

- 1) *Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment.*
- 2) *Water development and management should be based on a participatory approach, involving user, planners and policymakers at all levels.*
- 3) *Women play a central part in the provision, management and safeguarding of water*
- 4) *Water has an economic value in all its competing uses and should be recognised as an economic good.*

IWRM is consistent with the goals of sustainable development that was more commonly accepted into resource management following the Brundtland Commission and the publication 'Our Common Future' in 1987 (Hooper 2006). The Global Water Partnership (GWP 2000) defines IWRM as: "a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment." The GWP definition is about a process with a specific goal and places IWRM within a particular value system of sustainable development (Cardwell et al. 2006).

The literature also discusses a more in-depth and complex integration of the natural systems and human systems, which can be described as "a holistic institutional approach; mainstreaming water in the national economy; cross-sectoral integration in national policy development; linkages to national security and trade regimes; and involvement of all stakeholders across different management levels" (Jønch-Clausen & Fugl 2001 pg. 1). The research focused on the degree of cooperation and integration amongst the human systems. The human systems of interest for the research are the institutions with mandates surrounding land, agriculture (with a focus on sugarcane) and water (for productive purpose).

IWRM is multi-dimensional, which can be divided into four dimensions: Social, economic, political and the environmental. The promotes a social dimension is linked to integration participation, and equity; the economic dimension linked to efficiency and coherence; the

political dimension linked to accountability and transparency; and the environmental and ecological dimension linked to the sustainability of freshwater resources and ecosystems (GWP 2000 and 2009, Saravanan et al. 2009 cited by Herrfahrtdt-Pähle 2012, pg. 552). The theoretical approach in the research is linked to the social and political dimensions of IWRM with a specific focus on integration in terms of water access for the marginalised. Secondary themes are that of participation, accountability and equity. Due to the scope of the research the economic and environmental aspects of IWRM will not be included in the research.

### ***Integration***

At a natural level, water is an integrated resource thus, IWRM endeavours to integrate<sup>2</sup> the management of land, water and related resources. Cardwell et al.(2006, pg. 9) notes that integration of IWRM is often just partial and is not an “all or nothing” thing. Because Integration is not “all or nothing” then interpretations of what should be and should not be integrated to successfully implement IWRM vary across sectors and among policy makers. Integration is a cooperative governance challenge and has linkages with good governance outlined above in the governance section (2.1). The degree of integration is linked to the degree of cooperative governance, alignment of projects, collaboration, accountability to other institutions and local level water users and flow of communication (or awareness). A few key questions are: How can integration be reached? What is the extent of integration and cooperation in the study area and how does it affect HDI farmers’ water access at a local level? A lack of integration frameworks exists in the literature to specifically outline what integration entails and through what processes can it be achieved. Cardwell et al. (2006) propose that “integration” in IWRM must consider at least four axes on integration: Spatial, institutional, temporal and objective. Spatial integration involves “coordination of management with other resources in the watershed;” Institutional is related to the “coordination across mandates, missions, policies, programs, projects, and management measures of governmental and non-governmental institutions into unified achievement of common objectives and goals [and] active participation of all interested groups”;

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<sup>2</sup> IWRM also includes integration of several elements such as: land and water, freshwater and coastal zones, green vs. blue water, water quantity and quality, upstream and downstream conflicting interests and interactions between surface-water and groundwater resources (GWP, 2000).



temporal integration recognises “...the variability of social interests over time..”; and objective integration encompasses “coordination and balance among multiple, and often competing, watershed goals and objectives [i.e. agriculture and land reform]” (Cardwell et al. 2006, pg. 12). The focus of the research and discussion will be based on the institutional and objective integration.

Hooper (2006, pg. 5) outlines benchmarks of the implementation of effective integrated river basin management, one category is related to the coordinated management with stakeholders is a key aspect. Three aspects are linked to effective public participation processes, well-specified and understood roles and responsibilities of all stakeholders, and the Catchment Management Agency (CMA) uses joint ventures and coordinates strategic decisions between partners. Due to the ambiguous nature of the integration component of IWRM, these aspects can help when analysing the degree of integration among the institutions related to land in water. Funke and Jacobs (2011 pg. 83) provide another definition of integration as:

*“The degree to which policies formulated in one government department are harmonised or coordinated with policies developed in other government departments, or other sectors, or acknowledges the interconnectedness of various resources and the degree to which inter-departmental coordination and communication take place in the implementation of said policies.”*

Integration refers to the acknowledgment that land and water are interconnected and policies, mandates, projects are therefore coordinated between and within departments and responsible institutions. In thinking about integration for the improvement of water access for productive purposes, it is critical that water and land (i.e. Agriculture and Land reform) institutions are interconnected and projects are aligned. The outcomes of integration and alignment will therefore naturally over time improve the situation in terms of water access at the local level. Funke and Jacobs (2010 pg. 82) state that in South Africa land and water “resources are still largely managed as isolated policy issues and only limited research focuses on the numerous links between them.” In the translation of IWRM into the South African context, in particular

the integration of institutions, has faced many challenges due to the political nature of water management and the tendency of department in the government to work in silos.

In the literature silos are often referred to as the opposite of integration (Teisman & Hermans 2011) and silos are an indicator of sectoral management and often are reflected in non-alignment of programmes, projects and mandates. Many of the challenges in governance and integration stem from ‘silos’ because “programmes are provided by separate sectors of a higher sphere of government — a province alongside the central government, for instance. In that case, financial resources for the execution of local projects flow through sector programmes, often called silos, to the local areas” (ibid, pg. 38). Silos create many challenges for governments because they do not encourage integration or collaboration, instead silos compromise development and policy goals of each individual ministry (World Bank 2011, pg. 39). The root cause of silos is often linked to national governmental funding mechanisms or incentive structures where projects are not funded in entirety, but rather funded in an individual or sector-focused manner.

### ***Accountability***

The political component of IWRM includes aspects of accountability and transparency. Accountability is also a pillar in achieving ‘good’ governance and Saravanan et al. 2009 emphasises the point that accountability is required to effectively implement IWRM. Challenges and questions are raised regarding legitimacy and accountability within multi-actor and multi-level governance arrangements because often nobody is ultimately in charge (Teisman and Hermans 2011). In South Africa DWA is the custodian of water, but DWA does not have the authority over other land or agricultural institutions, which has led to flawed accountability and difficulties in integrating. “Transparency and accountability increase the predictability of system behaviour. They create trust and confidence in organisations and institutions of water allocation and distribution and thus in the social system and its functioning” (Frewer 2003 cited in Herrfahrtdt-Pähle, 2012 pg .553). Jenkins and Goetz (1999) outline two aspects of accountability that can be measured by procedure or in terms of impact; one is that officials or institutions must explain and account for their actions, and two they must take responsibility for their actions. An

important point for the research is that “one of the paradoxes of accountability relationships is that they put less powerful actors – individual citizens – in a position of demanding answers from more powerful actors” (Goetz 2008, pg. 3).

IWRM has translated into African context with various complexities and challenges related to representation, complex river basins and plural legal management systems (Van Koppen 2000). In addition the international and donor influence in implementing IWRM portrays historic modes of governmental command and control and the transfer of knowledge tends to depoliticise water governance (Molle 2006). The political nature of water management is especially important in the case of South Africa with the historic inequalities in access to resources. Although the South African National Water Act of 1998 does not contain the exact words Integrated Water Resource Management, the philosophy, principles, goals and ideals are outlined in the White Paper and strongly emphasised in the National Water Resource strategies and Catchment Management Strategies (Jonker 2007). Growing evidence suggested by Molle 2006 reports that “the effective implementation of IWRM at the basin level (or otherwise) demands sophisticated institutional arrangements, democratic structures and patterns of governance that are polycentric rather than unicentric, it is apparent that IWRM is still often conceived as something that can be introduced by fiat, goodwill and expert knowledge” (pg. 20). In addition, it is important to ask the question to what degree has IWRM even been implemented in South Africa and how can this be measured? Just like implementation it is also difficult to measure the degree of integration between institutions? Furthermore, to what degree has the formation of new decentralised institutions through participatory processes in South Africa has improved water access for the most marginalised rural farmers?

### ***Participation and Decentralisation***

Aligned with the 1992 Dublin Principles and IWRM, there is a growing global trend of reforming water policies towards management to the lowest appropriate level, and the inclusion and participation of stakeholders in water resource planning and management (GWP 2000, Brown 2006, 2011). However, the globally accepted idea that “more stakeholder participation

necessarily leads to more influence in decision outcomes by historically disadvantaged groups and a fairer balance of power relationships is unsupported in fact” (Jonker et al. 2010 pg. 3). Thus, participation in water governance does not necessarily guarantee improved water rights or access. Often left out of the literature is the notion that the involvement of all stakeholders is not equal and that in fact a hierarchy of leadership and power occurs within communities (Abram and Cowell 2004 cited by Brown 2011). People often categorised all black South Africans as having suffered the same amount of marginalization, and the notion that communities are not homogenous and cohesive is widely critiqued (Cooke and Kothari 2001).

Influenced by the widespread increase of participatory and devolutionary resource management approaches, the Dublin Principles shifted centralised water management towards the assumption that the benefits of participation and decentralisation outweigh the costs (Brown 2006, 2011, Holmes and Scoones 2000). Furthermore, a set of assumptions existed about each country’s ability to effectively create new institutions and carry out participatory processes such as their: ability to form new institutions, distribute transparent information, their capacity to implement new reforms and policies, ability to secure adequate funding and provide incentives (ibid). The heterogeneity of communities (i.e. power imbalances, culture, political positions, education, gender and other socio-economic characteristics) or the consideration that people may not even want to participate are often not taken into account enough when devolving power or planning a participatory process (ibid, Schreiner & Van Koppen 2002). The inability or exclusion from water allocation planning and decision making further deteriorates impoverished people’s access to water, and also contributes to a further decrease on their demand for water through lower productivity (Schreiner & Van Koppen 2002).

The water governance literature recognises the importance, and the challenges of public involvement in successful implementation of IWRM. Molle (2006, pg. 24) states that the “patterns of governance may show varying degrees of (de)centralisation and of public participation, and they may be based on administrative or basin boundaries, and they may cover many or few aspects which need to be integrated. So far, administrative infighting, sectoral and

vested interests, lack of understanding of natural complexity, and insufficient attention to the diversity of uses and values have hindered progress.” Research drawn from the South African context by Du Toit and Pollard (2008) shows the importance of determining the appropriate level of public participation and “to ensure the correct stakeholders are meaningfully and appropriately engaged” (Anderson et al. 2008a, pg. 667). Additionally, other empirical research shows that many participatory processes neglected the impact of power discrepancies within communities, where projects or meetings were dominated by the elite and the marginalised, in particular women and the rural poor, were excluded (Cooke and Kothari 2001; Agarwal 2001 cited by Brown 2011). In many cases participatory processes regarding reforms of scarce resources are political, especially in developing countries where a proposed reform would lead to devolution of power in decision making (Funke et al. 2007).

### ***Critique of IWRM***

Molle et al. (2008, pg. 4) describe IWRM as “promot[ing] a view of a technical optimality to be achieved by good science, rational and neutral problem solving, and negotiations between well intentioned and well informed stakeholders.” Many definitions and translations exist in various contexts and policy circles around the world. The concept of IWRM is criticised for being too broad and difficult to translate into developing world contexts. Molle (2008) refers to IWRM as a ‘Nirvana’ concept, which is an ideal situation that is unobtainable. Scholars have defined IWRM as being so vague that it can be translated and manipulated in various ways that favour one principal over another (Biswas, 2004). For example it is unclear or there is no consensus on how to balance or achieve the IWRM goals of economic efficiency, social equity and environmental sustainability (Molle et al. 2008).

Water management is inherently a regional or local imperative, which has been embedded in larger national and global policy processes (Molle et al. 2008). State and donor driven reforms and policies in favour of IWRM are being pushed by euro-centric experts, NGO’s, donors, governments and influential organisations such as the World Water Council and Global Water Partnership. South Africa is one of many countries that has adopted and reformed their water law

based on the principles of IWRM. Successful implementation of IWRM is difficult to define because the concept is fuzzy and the degree of implementation varies between countries. There are several successful cases of IWRM in developed countries (Europe, and Australia); however developing countries with many small scale users (Hooper 2006), that lack strong institutions, and financial backing are often plagued with complexities; and lack the capacity required for IWRM to function at the river basin level (Anderson 2008, Wester at al. 2003). Possible reasons for the difficulty in implementing IWRM is the lack of human and technical capacity, funding, institutional integration and the theoretical clarity to successfully conceptualise (Swatuk 2005, Allan 2003, Jonker 2004 cited by Jonker 2007).

## ***2.2 Water Rights and Access***

At an international level there is recognition of the role effective water rights systems have in improving access to water for the politically and economically weak members of society (Bruns and Meinzen-Dick 2005). As mentioned in the previously section, as water scarcity increase, competition for water resources increases, and doctrines or water right systems emerge to manage, control and to bring a person predictability regarding their water access (Movik 2012). Institutional frameworks and water right systems take many forms: customary, local arrangements, legal and formal entitlements, informal agreements (ibid). Many water rights systems have evolved around the world, one introduced by the British is the doctrine of riparian rights where by owners of land next to a river or stream are allowed to use water within reason, so that downstream uses can also enjoy the right to reasonable use of water (ibid). Another, water right arrangement is the called the prior appropriation doctrine where the first person to abstract water from a source, gains the rights to the water. Currently, the trend of IWRM and water reform has governments implementing tradable water rights in the form of licenses, permits, grants, and concessions (ibid). Many localised informal and customary water rights systems exist in parallel to legal rights systems, which will be discussed in the following section.

Ribot and Peluso (2003) define access as the ability of an individual or community to derive benefits from a resource and property as the right to benefit from the resource. At the local level

many farmers lack both the ability (infrastructure, conflict etc.) and right (water authorisation from DWA) to access water. “How a community gains, maintains, and controls access to a critical resource can be expressed through an analysis of the means, processes, and relations, or ‘mechanisms,’ that facilitate access,” moreover how a community accesses a resource is embedded in the social, environmental and political histories of a region (Ribot and Peluso 2003, Langridge et al., 2006, pg. 2). Therefore, historical considerations greatly affect certain groups of farmers’ ability and right to access water. Power imbalances, the inability to effectively participate, cultural differences, lack of knowledge surrounding the formal water policy, and failed accountability and integration at the institutional level all affect the most marginalised farmers ability to access water. Furthermore, Ribot and Peluso (2003, pg. 173) outline that “access to technology, capital, markets, labour, knowledge, authority, identity, and social relations,” affect or limit a person’s ability to access water.

In discussing access, it is critical to make the point that if a farmer possesses or secures a water right from the government this does not necessarily secure their access to water. Many governments recognise this and are the first to stipulate in their water laws that they reject any legal responsibility for factually delivering the water ‘promised’ in the formal right that they have granted (van Koppen, 2003, pg. 1052). In short, “the availability of water, and peoples’ access or lack of access to it, are ultimately a function of the effectiveness of policies and institutions,” (Merrey & Cook, 2012, pg. 2). Day to day access to water is determined at the village or local level; therefore local arrangements or plural legal systems devised by HDI farmers in the past and present in accessing water are crucial to the discussion of this research. After a review of the literature in the translation of IWRM to entirely new contexts, many scholars conclude that the one of the most important aspects is the formation of effective institutions and policies through a process involving the state and civil society (Merrey & Cook 2012). Plural legal systems and informal or traditional institutions linked to the African populations adds another layer of complexity to the institutional landscape in the study area. In fact in much of Asia and Africa’s water rights are linked to the land and in Africa social relations

linked to customary law often determine an individual's water access (Meinzen-Dick & Nkonya, 2005).

The focus in the literature is largely on formal institutions, however “in thinking about rural livelihoods, we need to be more aware of overlapping jurisdictions which cross-cut formal-informal and global-local divides, and which involve contested knowledge (Mehta et al, 1999, pg. 6). The plurality of formal and informal laws related to water resources is often not taken into account when reforming water laws, thus greatly impacting the effectiveness and legitimacy of the policies throughout the countries. To break down the dualism that exists among legal systems, I need to explain the concept of legal pluralism. The pluralism of water law in Africa may have increased because “because each of these types of law-especially state, customary, and religious-may themselves be plural. Government land laws may contradict water acts. Many communities have different ethnic groups living side by side and using the same water, but having different traditions regarding its use” (Meinzen-Dick and Nkonya, 2005 pg. 3). The different laws are interpreted differently by different groups and the overlap of laws generates various local laws (Meinzen-Dick and Pradhan 2002).



### **3. Methodology**

The methodology section aims to justify the qualitative research approach I utilised. The next section, I will describe the research design which includes what methods I used to collect the data, followed by how I arranged the interviews and triangulated the data. Then, I will outline how I analysed and coded the data, followed by a section on reflexivity. Finally, I will outline my challenges in relation to conducting my research in South Africa.

#### ***3.1 Research Approach***

The quantitative approach matched the research objectives of the study with the aim of understanding the local contexts and what shapes various actors water access at the local level. Blaikie (1992) suggests that research should be structured by a hierarchy of explanatory levels. For example in my research related to water governance and water access the global discourses, national policy, regional and local institutions, groups of farmers and individual farmers were all used to explain the research questions. The aim of the research was to produce rich deep data of local realities in water access that link to the regional, national and global policies of water governance. Descriptive data was required and an explanation of what shapes institutional integration and how does this affect water access on the ground for communal and land reform sugarcane farmers. This cannot be easily explained due to the various historical, cultural and socio-economic factors shaping water allocation and access in South Africa.

Miles and Huberman (1984) define the qualitative approach to research as a source of "well-rounded, rich descriptions and explanations of processes occurring in local contexts" (pg. 15). A qualitative research approach was utilised to find patterns and suggest various interpretations of the data. Qualitative research focuses on observing reality and, subsequently deriving meaning from it. My research embodied a qualitative approach that was open and flexible, therefore enabling a more contextual, in-depth and rich set of results.

### ***3.2 Research Design***

Bryman defines a research design as a “framework for the collection and analysis of data” (Bryman, 2008, p 31). The epistemology for qualitative research is associated with interpretivism, which bases research on the “subjective meaning of social action” (Bryman 2008, pg. 16). Furthermore, participant observation and semi-structured interviews, employed in the research, relied on my abilities to interpret or understand the subjective meanings related to the research findings. Data collection and interviews were conducted in South Africa, mainly Mpumalanga, from the mid October 2012 to January 2013. Final preparations for my field research was done in Pretoria, South Africa at the International Water Management Institute with the gracious guidance of my co-supervisor Barbara van Koppen. An in depth literature review was conducted from the planning stages of the research proposal (March 2012) to the completion of this Master’s thesis in December 2013. The literature review included: government documents, reports, case studies, academic journal articles, master theses, and unpublished papers. In addition some quantitative data was obtained through Rural Development and Land Administration (DARDLA) regarding water use distribution and licenses.

#### ***Case Study Method***

A Case Study Method was utilised in Nkomazi among HDI sugarcane farmers in relation to research question two and determining how the degree of institutional integration affects their access to water. Also, important to the research was challenges in accessing wet and paper water. Each case presented different challenges in relation to HDI farmers’ water access. According to Cresswell (1998), a case study is an exploration of case(s) during a period of time that focuses on context and in-depth data collection from multiple sources. Successful case studies are carefully planned and executed studies of real life issues, situations or challenges. The case study method was used to contribute to understanding the complex issue of water access and reform at multiple levels, including how the degree of integration steered by IWRM affects water access. The case study method helped to convey a complex web of interests and challenges in regarding water access, which also linked up to the institutional level interviews. The case studies were selected based on the research questions and current challenges in Nkomazi in relation to water access

and integration. The cases studies enabled me to investigate the interplay between the regional (institution) level and the ground level to understand how the case studies link to multiple scales. The conclusions and discussion of this research are drawn from these rich, contextual case studies using multiple sources of inquiry: Semi-structured interviews, participant observation, report review, meetings and informal communication. Multiple farmers and institutions were interviewed to provide many dynamic viewpoints related to the same case. This helped to describe the ‘real life’ situation and add strength to previous empirical research.

### ***Interviews and Participant Observation***

For all the research questions semi-structured interviews were conducted because this method allowed for some consistency with questions between respondents, but allowed flexibility for myself or the respondent to guide the discussion or elaborate deeper into issues related to the research questions. A question guide was prepared beforehand with the research questions and objectives in mind, to ensure key questions were answered and specific issues were examined. This discursive style of interview allowed the respondents more space to discuss and converse about the research topic. The semi-structured interview style resulted in rich and interesting responses that enabled me to investigate in further questioning of interesting issues. Interviews were first conducted at a regional or institutional level in Nelspruit and from these interviews, I was invited to stakeholder meetings and forums, and given other contacts. By starting at a more macro level (the regional level) I was able to understand the issues on the ground from the perception of the various institutions (land and water), then I was able to carry my research out at the local level and see the issues from the farmers perspectives.

Semi structured interviews were used in both a one-on-one and group setting. At the institutional level I only interviewed individuals, but for the farmers level I used a combination of individual and group interviews. As suggested by Bryman (2008), questions were asked with a certain amount of order, so the questions flowed in logical order, but still allowed for discussion and alternative questioning depending on each interview. The questions were formulated using simple and clear language to ensure the farmers on the ground understood or the translator was

able to clearly translate the questions to the respondents. I tried to be careful and not ask leading questions or to mislead the respondents in any way. English is widely used in South Africa, so this made it much easier to conduct interviews and enabled me to be more involved and interactive during the interviews. All the people interviewed at the institutional level spoke fluent English. Many of the farmers spoke some English, a few were fluent, and a large portion felt the most comfortable communicating in their local language<sup>3</sup>. Interviews were given in a comfortable, private setting at the institutional level, but at the local level the interviews were given in the farmers' fields, near their irrigation pump houses or in their administrative office. Verbal informed consent was given to me by the respondents after I outlined all the details and aims of my research. Due to the landscape of Apartheid and the mistrust among farmers in 'white people' or the formal system it was important to build rapport and trust with the farmers. The interview was only recorded if permission was granted. Scratch notes were taken during the course of the interview to note key points and observations. The interviews were then transcribed to further enrich and cross check the notes and observations I took during the meetings.

In addition to semi-structured interviews, participant observation was used for all the research questions, especially at forums, conferences, and water governance and land reform meetings to observe and interpret the diverse set of stakeholders, their interactions, the narratives. For both the research questions it was interesting to observe the dynamics of the stakeholder meetings, and who was participating, and who was the degree of integration at the institutional level among a diverse set of stakeholders with interests in water access and management for example: institutions, employees, farmers, and other stakeholders. For all the research questions, personal communication enriched my research because of the informal nature of the conversations, which lead to interesting data for further investigation. Refer to Appendix A for the list of interviews with relevant institutions and communal farmers.

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<sup>3</sup> Just under 90% of the population in Nkomazi spoke Swazi (also called Siswati), another commonly spoken language is Tsonga

### *Arranging Interviews and Triangulation*

Snowball sampling was used because I had very few contacts in South Africa, especially in Mpumalanga, before I began my fieldwork. I emailed and called various employees from the regional level institutions related to my research, then the respondents were interviewed or they put me in touch with project leaders and field officers to arrange interviews with the farmers. I had an overwhelmingly positive response and this attributed to my successes and ability in actually obtaining information. I feel lucky that my first contacts at the institutional level in Nelspruit were extremely helpful, were interested and encouraged my research from start to finish. The key informants at the institutional level helped map out the situation in Nkomazi, and also invited me to water related meetings, where I observed and arranged further interviews. I had to be persistent to contact the extension or field officers in Nkomazi because they are extremely busy; however once I made contact they were an invaluable resource of information and guidance during my research. One or more extension (field, community liaison) officers from TSB<sup>4</sup> sugar holdings, Department of Rural Development and Land Reform (DRDLR); Inkomati Catchment Management Agency (ICMA); Department of Agriculture, Rural Development and Land Administration (DARDLA); and the NGO LIMA<sup>5</sup> took me into the field to conduct interviews and attend meetings. The extension officers were an extremely important resource because they are the intermediary between the institutions in Nelspruit and the farmers on the ground. They knew the issues that plagued both levels and brought an extreme amount of insight to my research. This ensured that the data was triangulated and lowered the chance of biased responses from the farmers. Multiple interviews were done to cross check and revisit key issues among the respondents. Secondary data was received from respondents and obtained from an in-depth literature review to cross check and enrich the findings. These methods combined with participant observation and personal communication aimed to triangulation the data. Triangulation was critically important to cross check the research outcomes, and to ensure the data had a high degree of consistency, reliability and validity.

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<sup>4</sup> TSB stands for Transvaal Suiker Beperk. The translation in English is Transvaal Sugar Limited, but the company website refers to the company as TSB sugar holdings.

<sup>5</sup> LIMA is working with TSB and Land Reform (DRDLR). They work with social facilitation and governance challenges. In Nkomazi they are working with communal farmers in forming cooperatives and writing constitutions and business plans. <http://www.lima.org.za>

### ***3.3 Analysis and Coding***

Analysing qualitative data is a challenging task because no one systematic method exists. After transcribing the interviews and recording my observations I would highlight issues or interesting data to be examined further. By creating a document of issues and interesting data among farmers and institutions I was able to revisit issues and ask further questions to enrich my investigation and grasp the realities on the ground. During the data collection stage I composed an institutional map to help clarify the linkages and issues between the institutional level and the local realities. Upon returning home to Norway, I reread the results and data, then highlighted issues and looked for trends in the data.

### ***3.4 Reflexivity***

Reflexivity in research involves reflection on self, process, and representation, while examining power relations, politics and positionality in the research process (Sultana 2007). I will carefully outline my own position as a researcher and dissect the process in relation to my background and influences. The fact that I am a white, foreign (Canadian), young female may have had the most impact on my research in South Africa. In preparing for fieldwork I tried to leave my impressions of Apartheid behind and maintain an open mind about each respondent's realities and culture. At times I battled to not feel sadness and sorrow for what the black South Africans had endured during Apartheid. As a Canadian, I was raised in a multi-cultural country built on immigrants and a mix of many races, cultures and nationalities. The acceptance of other cultures and races is embedded in our culture, whereas the opposite was true for South Africa for so many years. The injustice and segregation during Apartheid has shaped the realities in South Africa. I acknowledged that I needed to be open, accepting, and to empty my pre-conceived notions from my mind while interviewing and attending meetings. In addition, I recognised that building trust as a foreigner was crucial for positive research outcomes. I spent close to three months making contacts, working with extension officers and attending meetings, and towards the end of the research I had built trust, acceptance and lifelong friendships. Without this trust, I am not sure I would have been able to access so many people at both the institutional and farmer level. In

short, the process of doing this research changed me in such a fundamental manner that I feel I was better able to observe and interact in a more neutral light, and understand the many complex layers related to water access and integration in Nkomazi.

### ***3.5 Ethical Considerations and Challenges***

I tried to stay neutral throughout the research, and aimed to leave my political self at home and maintain an open mind. Throughout the research I have ensured that personal information was kept completely confidential. When requested the interviews were kept anonymous. Oral informed and prior consent was given by all the respondents and I made clear what my research intentions were before conducting interviews. I will now outline some of the challenges I experienced during the fieldwork in Mpumalanga.

At the institutional level it was difficult to schedule meetings with DWA employees, however persistence paid off and by attending several meetings, I was able to make contacts and schedule interviews. Land reform farmers were difficult to get in touch with, even for DARDLA and DRDLR. Before starting the research I had hoped to interview HDI land reform farmers and to analyse what their specific challenges in accessing water were. However, I soon realised that on many of the land reform farms the beneficiaries were completely disconnected from all farm activities, so in reality the farms were actually a previously intact commercial farm with a hired white farm manager (in many cases the previous owner). I visited land reform farms that DARDLA had scheduled meetings with and when we arrive nobody was around.

False promises or cancelled interviews were somewhat of a challenge, but this was solved by calling to confirm the day before or making alternative arrangements just in case the interviews were cancelled. Trying to uncover numbers and get consistent answers was also slight challenge, but persistence paid off and cross checking data ensured the information was correct and valid. Some of the farmers did not want the interviews recorded, so it was slightly difficult to take detailed notes and conduct the interview at the same time. Finally, in late December several rain storms washed out roads in the communal areas and made the roads inaccessible to finish my

interviews with the farmers. Luckily, a TSB employee offered to drive me to meet farmers in four wheel drive truck. Now I have discussed the theoretical considerations for the research linked to governance, IWRM, integration and participation; and rights, water access and legal pluralism. I have outlined how I went about conducting the research and gathering data, and the challenges and ethical considerations link to the methodology. In the next section I will briefly sketch out the study area, followed by the background to provide context and meaning to the research.



## 4. Study Area

The study area was chosen because the Inkomati was the first officially launched Catchment Management Agency in South Africa (2006), which was characterised by a complex and dynamic participatory process (Anderson et al. 2008a). The study area was chosen due to the prevalent inequality in access to water, and vested interests in irrigated agriculture sector with conflicting interests between the different water users. More specifically Nkomazi has a strong history of sugarcane farming and this area is characterised with many communal (former homelands), land reform and commercial farmers. These farmer groups will be described in detail in Section 7. In the next section I will sketch out a brief description of Mpumalanga where most of the Inkomati stretches through, then a detailed description will be given of the Inkomati Water Management Area (IWMA), Nkomazi, and the former KaNgwane homeland.

### *4.1 Mpumalanga*

The research was carried out in the north-east province of Mpumalanga, bordered by Mozambique and Swaziland to the East, and Gauteng province and Johannesburg to the West. Mpumalanga, ‘the place where the sun rises’ is a province of extreme beauty, rolling hills, and an abundance of wildlife (See Figure 1). The Eastern part of the province lays the southern portion of the famous Kruger National Park.



**Figure 1. Looking East Towards Nkomazi**

The province is situated on a high plateau grasslands of the Middleveld, eventually leading eastward to the mountain peaks, an escarpment to the high potential agricultural region of the Lowveld. The province is characterised by intensive water use by irrigated commercial agriculture with the production of citrus, tropical fruits, nuts, vegetables and sugarcane. The Eastern Lowveld of Mpumalanga province is considered to be some of the most valuable and productive agricultural land in South Africa, where some of the largest land transfers to HDI's under the South African land reform programme have occurred (Bate and Tren 2002).

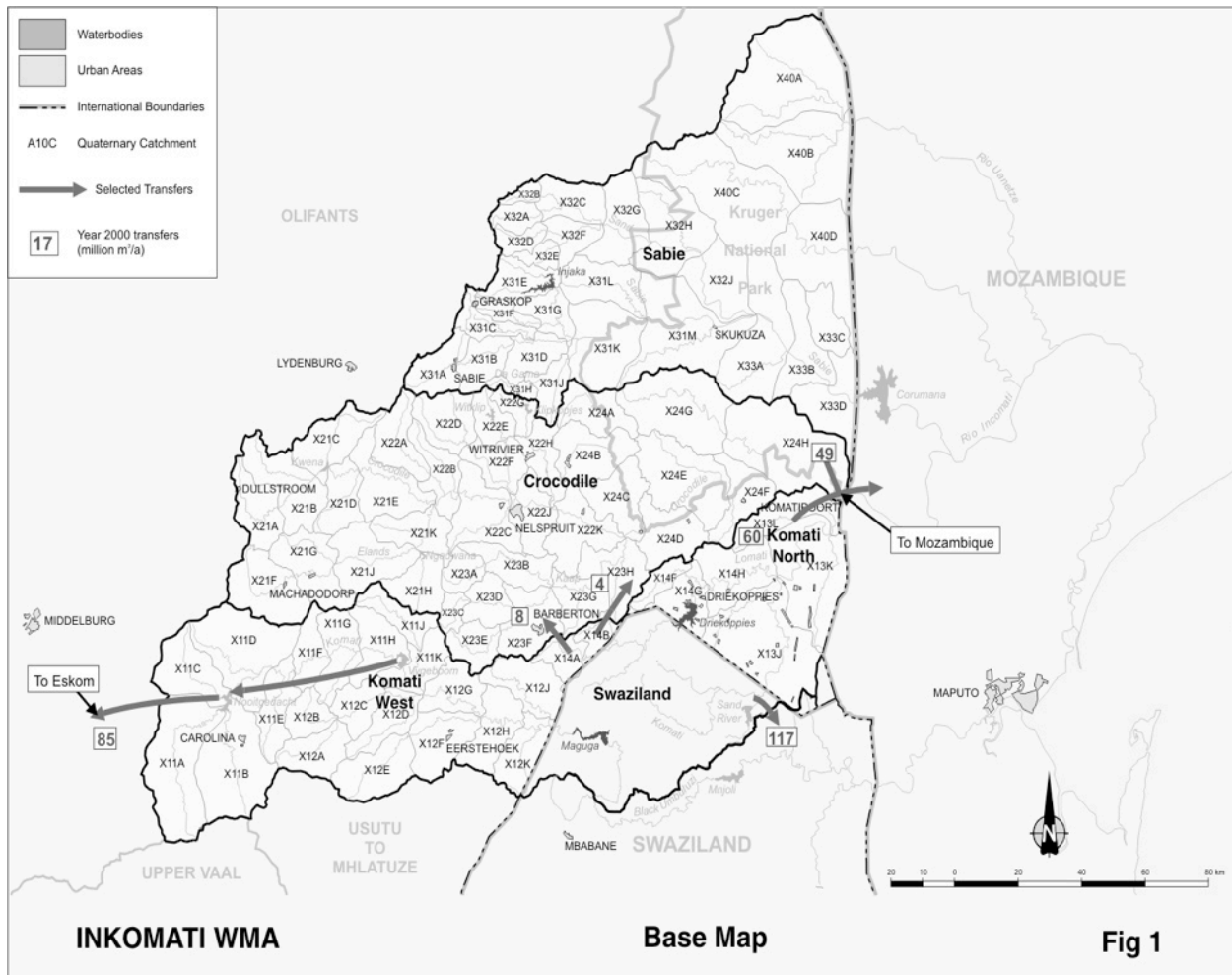
#### ***4.2 Inkomati Water Management Area (IWMA)***

The IWMA expands through most of Mpumalanga and a small part of Limpopo Provinces. The IWMA is comprised of three major catchments that all flow into the Inkomati river system: the Sabie-Sand, Crocodile and Komati. The Inkomati River originates in South Africa, passes through Swaziland, back through South Africa and finally drains into the Indian Ocean in Mozambique. The basin covers roughly 31,230 square kilometres with irrigated agriculture utilising 57% of the average water requirements<sup>6</sup>. The irrigated area inside the basin is estimated to be 63,919 ha, with a total water deficit of 4550 ha in the basin (DARDLA 2012, see Appendix C). The main crops are sugar cane, citrus, sub-tropical fruits, tobacco and vegetables, where irrigated agriculture is one of the greatest contributors to the economy, especially within the Komati and Crocodile sub-catchments.

The Inkomati is water-stressed, according to the water balance figures published in 2004 by DWAF, a water deficit of 12% per year exists in the basin (Woodhouse 2012). The IWMA has frequent water restrictions, growing demands from emerging users, international treaty obligations, and widespread concern regarding water quality and the ecological reserve (DWA 2007). The rainfall is unevenly distributed in the IWMA where most of the rainfall occurs in the mountainous regions. Furthermore, in the future hotter, wetter summers and longer, drier winters are predicted as a result of climate change (DWA 2007), which could greatly impact water available for irrigation in the IWMA.

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<sup>6</sup> Forestry plantations account for 11 %, industrial use (including inter-catchment transfers) 10 percent, international treaty obligations (cross-frontier flows to Mozambique) 11 %, urban water supply 6 %, and rural water supply 2 %.



**Figure 1.1 Map of Inkomati Water Management Area (DWAF 2004b)**

The Inkomati WMA has the largest number of historically disadvantaged and emerging farmers in South Africa (ICMA 2010). Approximately, 9% of the IWMA operates within tribal or communal area boundaries (ICMA 2010). The IWMA spans through three former homelands: KaNgwane, Lebowa and Gazankulu, which depicts the many imbalances stemming from apartheid policies. Much of the irrigated land is held by white commercial farmers in the crocodile catchment, and in comparison HDI farmers have a much lower stake in irrigated agriculture. In South Africa, the IWMA holds the most land claims in numbers and number of hectares (ibid). Land reform is seen to be a significant contributor to the reallocation of water and has the ability to empower black farmers above the Water Allocation Reform (WAR) agenda.

Estimates indicate that between 24% and 34% of water allocations will be transferred into black hands through the completion of the land reform process in the Inkomati (ibid).

### 4.3 Nkomazi the Komati Sub-Catchment

The focus of the study is in the area of Nkomazi, which is located in the Komati sub-catchment. The catchment area of the Komati River and its tributaries, mainly the Lomati River is approximately 11,210 km<sup>2</sup>. Approximately, 2,560 km<sup>2</sup> of the middle portion of the Komati lies in Swaziland. The Lower Komati is located in Nkomazi, north east of the Swaziland border and west of Mozambique where it meets the Crocodile River. This area is “considered to be one of the most fertile agricultural regions in South Africa” (Waalewijn 2005, p186). Refer to Figure 1.2 and the blue area is Nkomazi.



Figure 1.2 Map of Ehlanzeni District and Nkomazi  
Source: Nkomazi Municipality 2012

The Komati River catchment is derived mainly from the Nooitgedacht/ Vygeboom dam systems (upper Komati) and the Maguga/Driekoppies dam systems (lower Komati). The Maguga/Driekoppies dam systems are managed by the Komati Basin Water Authority (KOBWA) and all management decisions in the Komati sub-basin must be in accordance with the international treaties with Swaziland and Mozambique. The catchment is not stressed under the current 2012 water use; however the lower Komati has zero water available for irrigation development. The upper Komati located in the Gert Sibande District, West of Swaziland belonging to Miswati district<sup>7</sup>, has the only surplus of water (2,200 ha) for irrigation development in the entire IWMA (see Appendix C). Irrigated agriculture is extremely important to the local economy and accounts for 58% of the water use in the entire sub basin, and 93% in the Lower Komati (Waalewijn 2005). TSB sugar holdings Komati and Malelane mills are key pillars in the Mpumalanga and Nkomazi economy, and currently produces a total of over 30% of South Africa's total sugar output. Just under a fifth of the formal sector employment in Mpumalanga is in agriculture, half stemming from sugarcane, which employs between 65,000 to 70,000 people.

Much of Nkomazi lies in the The former KaNgwane in the Komati-Lomati river system (sub-catchment). Nkomazi is spilt into eight tribal authorities and 43 villages (See Appendix B). The area comprised of 75% of the emerging farmer base in the entire IWMA (DWA 2007). Historically, the Lomati River, a tributary of the Komati long served as a natural boundary between the black farmers on the right river bank and the white commercial farmers on the other side (Movik 2012, Waalewijn 2005). Despite the booming sugar industry many people in Nkomazi are plagued with several socio-economic and developmental challenges<sup>8</sup> such as: High rates of poverty, healthcare issues, HIV/AIDS, low literacy rates, and a low tax base. Many of these challenges are a product of Apartheid policies and contribute to many of the HDIs difficulties in accessing water, participating and breaking into formal water governance structures.

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<sup>7</sup> Formerly a part of the KaNgwane homeland

<sup>8</sup> It has been estimated that approximately 35% of the population live with HIV/AIDS. The literacy is 49.9%, 25% of the population has had no formal schooling and 35% has had schooling up to grade 9.

## **5. Background**

This background section aims to provide relevant information and context in relation to the research questions. First, I will discuss the history of South Africa and Apartheid and the links to many of today's current water governance challenges. Second, a detailed description of the South African water sector will be given, followed by explanation of the South African water policy and reform. Then I will outline important details regarding Land reform, followed by a description of the South African agricultural and sugarcane sector with a focus on the study area.

### ***5.1 Legacy of Inequality and Racial Division***

The historical legacy of South Africa and the landscape of Apartheid are critical to understanding the current social and economic inequities, and the evolution of water governance and water rights systems. The way water is managed, allocated and the way people participate in water governance are all influenced by the segregated past, the previous water rights system and the discriminatory land acts.

The Dutch created their first settlements in South Africa in 1652, as a base to extend trade for the East India Company to the Netherlands and the East Indies. In 1795, the British took power of the Cape and declared equality between whites and blacks, therefore abolishing the Dutch practices of slavery. South Africa was relatively peaceful, until 1899 when the Boers<sup>9</sup> and British began to fight over natural resources, mainly diamonds and gold. The Anglo-Boer war lasted until 1910 when the Boers surrendered, which resulted in the union of South Africa. The boom in mining for gold, diamonds and platinum created large demand for cheap migrant labour and was a major pillar of Apartheid policies in South Africa. As British powers concentrated in South Africa the water rights transitioned from Roman Dutch, and customary arrangements to a riparian rights based system, where water rights were granted according to land ownership. Land

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<sup>9</sup> In order to escape British rule the majority of the Dutch, also referred to the Voortrekkers, embarked on 'the great trek' north in search of new lands to colonize. By the mid 1800's the Dutch established two Boer states (located in Mpumalanga and Limpopo and the other was located in the Free State) and the British officially recognized these states and granted independence in 1850.

along a river or a lake entitled land owners an equal share of ‘reasonable use’ of the adjacent water or river bank (Movik 2012, pg. 19). The principal of riparian rights formed the basis of the historic water rights in South Africa, where blacks unequal access to water was maintained through land rights, based on the discriminatory Land Act of 1913. The Native Land Act, No 27 of 1913, and No 18 of 1936 provided the legislation to restrict the property rights of the black majority, in which only 13% of the land was reserved for 70% of the black population (Bate and Tren 2002).

The 1913 Land Act “formalised the distinction between the African reserves and white farming areas” (Aliber 2003, pg. 474), and excluded black South Africans from renting, purchasing land or acquiring freehold titles (Woodhouse 2012). The, next 1936 legislation restricted black people to settle anywhere, except constitutionally created ‘tribal’ reserves, also called Bantustans or homelands (ibid). The Native Land Act stagnated the African Peasant movement, provided the basis of the dispossession of large tracks of land, created large disparities in access to natural resources between white and blacks and greatly limited their economic opportunities (see Lahiff 2007, Van Koppen et al. 2009). By the mid-20th century nearly all the fertile agricultural land was reserved for the white minority, and 13% of the more marginal land hosted the majority of the poverty stricken black population in segregated geographical areas (Lahiff 2007, Sparks 2003).

Blacks began to move to the cities and form equal rights organisations such as the African National Congress and the Communist Party. As the black gained power the Broederbond<sup>10</sup> (the brotherhood) formed in 1918 gained more following and power to protect and promote Afrikaner culture. In fear of the blacks gaining power and rights an election was held in 1948, in which only the small minority of whites were entitled to vote. The National Party won the elections and enacted the policy of ‘Apartheid’ which concentrated white power and embarked South Africa on a path towards mass racial segregation. Bate and Tren (2002, pg. 63) described the political

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<sup>10</sup> There was a strong feeling that the Afrikaners were oppressed by the British and they wanted the interests of the Africaners to be promoted. The Lowveld, Mpumalanga was a key area where the Africaners used affirmative action to push forward their interests (Bate and Tren 2002). This group was later inspired by the fascist movements in Europe.

situation in South Africa from 1948 onwards as, “a very centralised, authoritarian, [and] unitary state.” Policies and government sponsored schemes were devised to only support the privileged access to natural resources and the commercialisation of white farmers via the creation of new financial institutions, investment in irrigation infrastructure, marketing schemes and finally the provision of agricultural extension services (Van Koppen et al. 2009). Apartheid involved incentives, laws and institutions that favoured large commercial white-owned farms and largely discriminated smallholder subsistence or labour intensive farming (Lipton et al., 1996 cited by Perret 2002). Van Koppen et al. (2009) state that approximately 60,000 white commercial farmers possessed 86 million ha of land and two million black farming households in the former homelands had access to 14.5 million ha.

The Bantu Authorities Act of 1951 officially recognised the tribal authority as the rulers of the ten newly created homelands, which led to forced removals of over 3.5 million people (Movik 2012). The support given to the white farmers in the early 1900’s were not made available to the black farmers, however some of the government budget was directed to the former homelands in the form of extension services, state run farms and small scale irrigation schemes (van Koppen 2009). The 1956 Water Act maintained the doctrine of riparian rights, and was the legislation behind the formation of Water Affairs and the creation of the Government Water Control Areas (Bate and Tren 2002). Water use was controlled through permits and quotas to ensure some enforcement of water use, but the act centralised control of water users and granted exclusive use of water to landowners. Moreover, the riparian rights system, “resulted in commercial white land-owning farmers having essentially unconstrained access to water, due partly to a tenuous distinction between private and public water and streams” (Hamann & O’Riordan 2000, cited in Perret 2002).

From the mid 80’s onwards, the Apartheid system gradually broke down, officially ending after the democratic elections in 1994, and the victory of Nelson Mandela and the ANC party. The transition to democracy left the majority of wealth and power, including land ownership and water rights, in the hands of the white minority (Marais 1998 cited by Lahiff 2007). The newly



democratic South Africa's was left in a situation where of its 38 million inhabitants; "six million were unemployed, nine million were destitute, ten million had no access to running water, and twenty million had no electricity" (Pinchuck et al. 2008, pg. 839). The newly democratic South Africa sought out to "iron out distortions and discrepancies...[and] the mere removal of past biases against rural black areas has not automatically corrected the balance between white and black rural areas" (Perret 2002, pg. 5). King (2007,pg. 13) also states that "the boundaries of the Bantustans [homelands] have been effectively erased through their political reincorporation, [however] research suggests that the imprint of apartheid spatial planning remains upon the landscape and continues to shape many of the material realities experienced by rural residents." The democratic transition lead the newly elected ANC government towards a predicament to follow the popular neoliberal approach based on productivity and economic growth versus a rights based, equity, social developmental approach (Perret 2002). It must be noted that the National Water Act of 1998 reflects both the rights based and the neoliberal approach. The neoliberal approach is strongly reflected in the principle of Existing Lawful Use (ELU), which will be described below in Section 5.2.

In short the deep historic roots of Apartheid, especially in access to land and water, continue to be negotiated in post- Apartheid South Africa. The colonial and apartheid governments, governed the former homelands through indirect rule, using the tribal authorities, as "a means of controlling society and space, [and] although these systems are undergoing change, they continue to shape the livelihood opportunities available to rural households" (King 2005, pg. 1). Still today, black farmers, many who live in the former homelands, suffer and struggle from the evictions, poverty, under development; and the inequality of support and resource allocation received during Apartheid (Perret 2002). The racial segregation, dispossession and skewed access to resources access of the past have directly impacted the landscape today and the ability for HDI farmers to break into the formal water sector. These historical considerations have affected the ability of integration among institutions because of the duality and overlaps in the institutions governing the former homeland and the central government of South Africa. In

examining the South African water sector and the policy reforms we must remember the historical considerations.

## ***5.2 South African Water Sector***

South Africa is considered a predominantly semi-arid country. In comparison with the rest of the world, the water resources are extremely limited and scarce. Policies, institutional arrangements and the legislative frameworks surrounding water have all drastically changed since the end of Apartheid, however water scarcity has remained constant, demand for water continues to rise and inequalities in water access persist. Water scarcity was a key consideration when drafting the new water reform. Some scholars argue that scarcity in South Africa is not felt equally by everyone and that water scarcity is largely experienced by the marginalised rural poor who of many still do not have access to sufficient water for sanitation, drinking and productive purposes (Schreiner et al. 2010). In comparison the privileged South Africans enjoy a relatively water secure lifestyle and have yet to feel the same effects of the scare water supply. Perret (2002) describe water scarcity in South Africa as more of a ‘socially constructed concept’ due to water disparities in domestic and productive water access. Schreiner et al. (2010) suggest in relation to South Africa that “one of the biggest water challenges is not the absolute scarcity of water, but the distribution of water and the lack of access to water for productive purposes by a large sector of the rural population” (pg. 2).

South Africa has largely been transformed to an industrial economy from an agrarian system, and concurrently the water economy has converted from the expansion of water supply infrastructure to a maturing phase of water allocation reform and management (Backeberg 1994 cited by Backeberg 2005). Urban expansion and growing industrial economy such as mining and commercial agriculture are demanding large amounts of water. Due to this expansion issues are arising related to water allocation, pollution and water quality in South Africa (DWA 2012a) Key threats to the maintenance of healthy fresh water resources and water supply in South Africa are mainly pollution and non-sustainable commercial water use linked to mining, urban development, industry, and agriculture (ibid).

National Water Resource Strategy (NWRS, 2004) concluded that the majority of the 19 Water Management Areas (WMA), soon to be 9 WMA, have water deficits, regardless of the large catchment transfers, advanced infrastructural developments and above average rainfalls. The irrigation segment of the South African water sector is largely exhausted, with the total water available for irrigation supporting 1.59 million hectares or 10% of the cultivated area in South Africa (Backeberg, 2005). Currently, around 1.5 million hectares of land is being irrigated, which could be enlarged by 500,000 hectares through better management and improvement of existing irrigation schemes (Muller 2012). The water requirements for irrigation in the major river systems in South Africa varies from 58% to as high as 93% of total. The high demand for irrigated water contributes to conflicts over how water is allocated, in addition to competition among water users, and export crops such as: sugarcane, table grapes, citrus, cotton. The breakdown of water use per sector is: Agricultural irrigation represents approximately 60% of the total water use, followed by the municipal/domestic sector using 27%, with the urban requirements constituting 24% and the rural 3%. The remaining 13% of water use is shared between mining, power generation, afforestation, industry, livestock watering and nature conservation (DWA 2012a).

Approximately 70% of South Africa's gross domestic product is supported by water from the Limpopo, Inkomati, Pongola and Orange Rivers, which one third of the rivers drain to neighbouring countries (DWA 2008). International agreements and joint management of these rivers are crucially important to South Africa. Four major river systems in South Africa are shared with Botswana, Zimbabwe, Namibia, Mozambique, Swaziland, and Lesotho. International agreements on water sharing based on the SADC shared watercourse protocol have been negotiated surrounding all of these shared river basins. More particularly, the Inkomati is a international river system governed by a number of bilateral and trilateral agreements to regulate use of the water in the Inkomati Basin which is outlined in Section 8.2. The water availability in the Inkomati is extremely important to fulfilling international treaties and the growing demand for agricultural and mining sectors. The next section will briefly touch on the water availability in the Inkomati.

### ***Water Availability in the Inkomati***

DWA (2004) claims that water is over allocated in the Inkomati and few opportunities exist to increase the supply and storage of the water resources. Furthermore, previously issued licenses to farmers cannot be met with a high degree of certainty, especially those without storage infrastructure ex. Balancing Dams. The Inkomati has well developed water resource infrastructure (dams, weirs and canals), was historically reserved for the white population (primarily Afrikaner-speaking). In comparison the black populations might share one weir between dozens of sugarcane projects or often their balancing dams are falling apart or broken. The ICMA Catchment Management Strategy (CMS, 2010) reports that large disparities exist in relation to water access and current water allocations are not meeting the economic and domestic needs of many stakeholders. Department of Agriculture (2012) confirms that largely all the surface water is committed to commercial farmers and access to water by small holder farmers remains a key challenge in the basin. The scarcity of water is therefore not equally felt by all. Due to narratives of over allocation and water scarcity, DWA is currently not issuing any new water use authorisations until the compulsory licensing process under Water Allocation Reform is completed (DWA 2004 cited by Woodhouse 2012). Estimates show the demand for irrigated water is as high as 83% of all water requirements in the basin and the demand for water is around double of the available water supply in the basin (Water for Africa, 2006 cited by Woodhouse 2008). The only possibility for further irrigation developments is in the upper Komati near Miswati. Adding to the challenges with water availability in the Inkomati is the Komati is subjected to major water transfers out of the catchment. 131.5 million m<sup>3</sup>/a is transferred from the upper Komati to the Olifants River Basin for the use of ESKOM (South African Power Utility) and 135.5 million m<sup>3</sup>/a is transferred, mainly for irrigation, to the Mbuluzi River basin in Swaziland (DWA 2004). The large transfers of water to ESKOM to generate power are highly contested in the area, especially by the HDI farmers. They are opposed first because they feel ESKOM offers no social programmes or benefits for taking all the water and subsequently ESKOM tariffs are way too high and continue to rise.

From the background the previous section, it is clear that South Africa and the Inkomati have water challenges in sufficient water availability to satisfy all the demands. Also, the historical context has shaped the relations between the different potential and current water users in how they access water, their ability to participate, and their trust in the formal system. Take forward the message that the challenges that many farmer face today are linked to the past landscape of Apartheid. In moving forward, the next section discusses the South African, IWRM influenced water reforms.

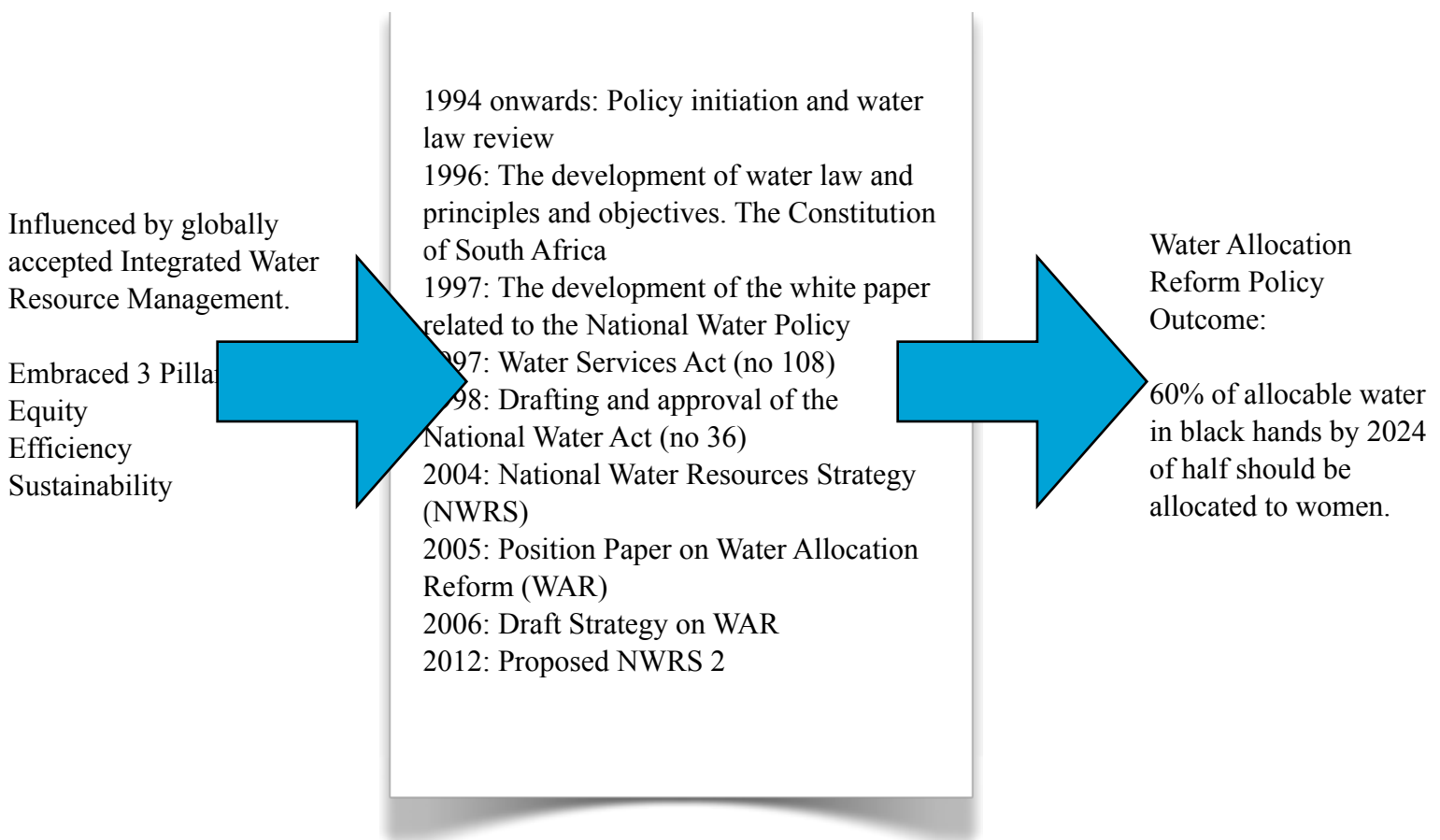
### ***5.3 South African Water Policy and Reform***

*“The availability of water, and peoples’ access or lack of access to it, are ultimately a function of the effectiveness of policies and institutions” (Merrey & Cook, 2012, pg. 2).*

This section discusses the legislative and institutional water reform in post-Apartheid South Africa. Despite the progressive policy, the implementation has been slow, especially in regards to achieving the equity aspect of the priority. Water policy reform was initiated by political, social and economic pressures in combination with the newly formed democratic state. The South African water sector has been constantly changing since the end of Apartheid and the reform is seen as one of the most progressive in the world. As an interesting side note the new legislation was “introduced at the end of a drought period and finalised during a phase of generally above-average rainfall and adequate water storage levels in summer rainfall areas” (Backeberg 2005, pg. 115). This suggests the abundant water supply during the final stages of the policy formulation could have impacted the perceptions of the actual availability of water or the actual political will the Department of Water Affairs required to implement the water reform.

South Africa’s 1998 National Water Act (NWA) differs from the international norm because the explicit goal of the legislation was largely based on social and equity issues, with a focus on redressing past inequalities and the provision of water to the rural poor and previously marginalised (Woodhouse 2012, Backeberg 2005). The main focus however was placed on redressing the past inequalities in water allocation and place a legal obligation on the government

to recognise water as a right, which was stated in the Bill of rights, section 24 in the 1996 Constitution of South Africa. At a global level the NWA was recognised as being the most progressive water policy in the world enshrining the principle of IWRM with a strong focus on equity, efficiency and sustainability. The reform is expected to deliver changes in process (holistic, decentralised, participatory and water as an economic good) and major changes in social outcomes in terms of water as a human right and the reallocation of water from the haves to the have nots (Schreiner et al. 2010). Please refer to Figure 1.3 below for a visual diagram of policy formation and outcomes in South Africa.



**Figure 1.3 South Africa Water Policy Formation and Outcomes**  
**Source: Karar, forthcoming cited by De Jong 2010.**

Prior to the NWA of 1998, water management was based on the supply, was less participatory; and more fragmented and centralised to benefit a fraction of the population. The new water law is demand driven and the state is the custodian of water “to ensure water is protected, used,

developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons and in accordance with its constitutional mandate” (ICMA 2010, pg. 30). Furthermore, the NWA aims to integrate water management, through the creation of new local and regional (decentralised) institutions through with equal representation. The 1998 National Water Act (NWA) is the principal legal instrument related to water management with an emphasis on efficiency, redressing past imbalances and the sustainable use of water to ensure water access for all South Africans, while preserving the eco-systems and environment that the country depends on. The sustainability pillar was supposed to be achieved through the establishment of the Ecological Reserve<sup>11</sup> to protect the vital aquatic systems, which all life depends on. The efficiency (also economic sustainability) pillar is focused on the economic value of water and the full recovery of the costs, through water tariffs, associated with water provision and the subsequent benefits to society. The equity pillar was sought to be addressed through Basic Human Needs Reserve and the Schedule 1 water use where an individual maintained the right to use their basic human needs in the provision of 25L/day. The principle of equity is central to the water policy formation because of the history of exclusion in access to water among the majority of citizens. Equity implies a concept of fairness and the White Paper of 1997 identifies three areas of equity: equity in access to water services, in access to water resources and in access to benefits from water resource use. The water policy white paper was gazetted in 1997, and in the same year the Water Services Act (no 108) was disseminated to ensure and prioritise the service delivery and supply of water and sanitation. To draft the new water policy the old water policy of 1956 was reviewed, global water management paradigms were considered alongside a large scale participatory process. The new water act required existing users to register and license water use (will be described in detail below) and finally to facilitate the emergence of a water rights market (Perret 2002, Van Koppen et al., 2003).

It should be noted that various aspects of the 1956 Water Act through the recognition of Existing Lawful Uses (ELU) water rights under the previous 1956 Water Act were recognised as Lawful under the 1998 NWA. The NWA’s implementation strategy and framework for water governance

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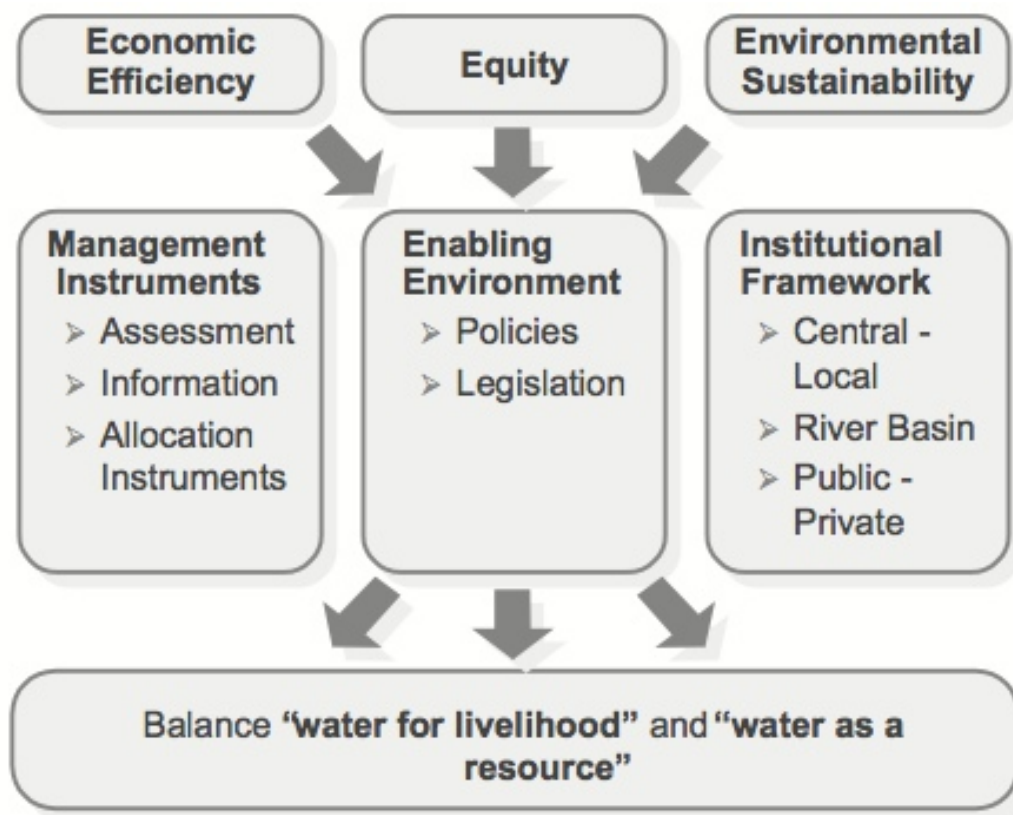
<sup>11</sup> The Ecological Reserve written into the NWA deems that approximately 25% of the mean annual run off must remain in the rivers and estuaries to support the important ecological functions of the water systems.

is based on the National Water Resource Strategy (2004). All authorities and institutions with mandates or power under the NWA must execute and follow the National Water Resource Strategy (NWRS). This NWRS defines “policies, strategies, objectives, plans, guidelines, procedures and institutional arrangements for the protection, use, development, conservation, management and control of the country’s water resources” (ICMA, 2010). A second edition of the NWRS was published in 2012 which “sets the direction of for water resources management in the country over the next 20 years, with a particular focus on priorities and objectives for the period 2013 – 2017” (DWA 2012a, pg. 7). The last edition of the NWRS recognises that the NWA policy and legislation is founded on IWRM, however it is necessary to reinterpret the IWRM principles based on the South African developmental context (ibid)

In policy documents in South Africa IWRM is defined as “a process which promotes the co-ordination, development, and management of water, land, and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of the vital eco systems” (DWA, 2004b). This definition does not provide a list of priority goals for the management of water in South Africa, rather it seems to endeavour to do everything at once (Jonker et al. 2010). This has proven to be a major challenge in regards to the effectiveness and implementation of the policy. By doing everything at once or trying to achieve all the tenants of IWRM, it can be argued that nothing really is achieved. Jonker et al. (2010) also argue that it is time to stop planning implementation of the NWA, and just implement and learn from the mistakes made.

IWRM and the NWA aim to integrate water management, and as the definition of IWRM stated above does outline the requirements to satisfy a coordinated approach (See Figure 1.4). The NWRS 2 specifies and understanding the importance of an ‘integrated’ approach; however the ability or political will to achieve this is in question? The new approach as outlined in the NWRS 2 (DWA, 2012a, pg. 31) aims to learn lessons and builds on experience from the post 1994 period (in South Africa and internationally) such as extending water governance and integrated planning “outside of the water box’ for example agriculture and land reform.





**Figure 1.4 The Three Pillars of IWRM**  
**Source: GWP 2000**

Second, research were taken into place and a focus will be on implementation and good governance. Cooperative governance and good governance objectives were used in evaluating the integration of institutions. According to the NWRS 2 (DWA 2012a, pg. 33) “good water governance requires predictability, participation, transparency, equity, accountability, coherence, responsiveness, integrated and ethical decision making. This must be built around open policy-making, a professional bureaucracy and a strong engaged civil society.”

Eleven water uses<sup>12</sup> were defined in the NWA including Stream Flow reduction associated with commercial forestry. DWA(2007, p3) outlines the water authorisation categories defined by the NWA:

**Schedule 1:** entitles a person to take water for reasonable domestic use in the person's household, for small gardening not for commercial purposes, for watering of animals grazing on the land, or for firefighting. It also entitles a person to use water for recreational purposes. The schedule permits the storing and using of run-off from a roof. It also permits agreed discharge of waste or water containing waste into a conduit controlled by another person who is authorised to accept it and dispose of it.

**Existing Lawful Use (ELU):** a water use that was lawfully exercised in the two years before the commencement of the NWA on 1 October 1998, which is subject to the conditions under which it was exercised. The Minister may declare a water use that was not exercised in the qualifying two-year period from 1996-1998 to be an existing lawful water use. Scheduled irrigation under Irrigation Boards and from Government Water Schemes, which was not exercised in the qualifying period, but for which the rates have been fully paid, has been declared to be existing lawful use.

**Licensed Use:** If no other entitlement applies, then a person requires a license in terms of section 40 of the NWA to use water as defined in section 21 of the NWA. Licenses may be issued by DWA on application after due consideration of the impact of such water use.

**General Authorisation(GA):** Legal Instrument used for small scale water users in non-stressed WMA. Schreiner (2010) describes a GA as DWA allowing greater volumes of water (up to 150 000 m<sup>3</sup> per annum) without the need for an application for a water use license. DWA defines a GA as the use of larger volume of water than a schedule one use with some potential negative impact on the water resource. This category of water authorisation is contested and not clearly defined in policy and in practice.

In terms of water allocation the Reserve<sup>13</sup> under schedule 1<sup>14</sup> use has the highest priority, followed by the amount required to sustain healthy aquatic-systems, then the allocation for the poor and marginalised, and finally the allocation of water for uses strategically important to the national economy. This is the case on paper, but the realities differ at the local level. GAs are not clearly defined and cannot be allocated in a water scarce basin, even though they could be used to minimise the administrative burden of licensing and promote equity in water access to small scale users. Difficulties exist in quantifying the schedule one water use and how GA's should be used to redress past inequalities. The two legal instruments in the NWA that focus on small scale

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<sup>12</sup> All categories of water use above a schedule one must be registered in the WARMS system.

<sup>13</sup> The reserve is defined as the necessary water requirement to satisfy the basic human and ecological need.

<sup>14</sup> Schedule 1 Water use category is defined as the water use required to meet basic human needs. This includes water for subsistence use for example: reasonable domestic purposes, subsistence farming and limited livestock watering.

water users are: the Schedule 1 water use and General Authorisations. Van Koppen (2009, pg. 29) acknowledges that;

*“at the time of drafting the NWA, there might have been too much optimism about the benefits of licenses and of converting from one legal system to another. At the time, it was hardly realised how licenses intrinsically discriminate against small-scale users and distract the regulator’s attention away from the relatively few large-scale users that need to be regulated most, and can be regulated realistically.”*

The discrimination that the formal system has towards small scale users in licensing directly opposes the equity pillar of the NWA. Furthermore, it promotes commercialisation of farms to ease to bureaucratic burden on the system, which has many implication for communal and land reform farmers. That being said since 1994, it is argued that the provision of safe drinking water has greatly improved among the rural poor, however little change has been observed in the provision of water access for productive purposes for the rural poor (Schreiner et al. 2010).

#### **5.4 WAR and Compulsory Licensing**

*“Little substantive progress on the Nation Water Act pillar of equity (redress of race and gender water allocations for productive economic use) has been achieved since its promulgation”* (DWA 2012a, pg. 67).

In 2006, the WAR strategy was published with a strong focus on the scarcity and the historically skewed distribution of water in South Africa. The policy aims to “overcome the ongoing race and gender imbalances in access to water resources” (Greenberg 2010, pg. 10). WAR aims to first reallocate water to implement the ‘ecological reserve,’ then to redistribute from the haves to the have-nots, with additional goals of ensuring beneficial/efficient use of the resource to promote development and growth. Beneficial use of water can be questioned when millions of HDIs lack sufficient access to water and have never been given the chance or the resources to ‘efficiently or beneficially’ use the water in comparison to white commercial farmers. As Movik (2012) notes that in drafting the water reform emphasis was placed on retaining the water rights of commercially and economically viable water users through the recognition of Existing Lawful

Uses, rather than placing complete emphasis on redressing past inequities in water access. The commercial water use was framed as being a beneficial use in the reform policy (ibid). Securing the already economically powerful with water rights in newly the democratic South Africa has contributed to the slow pace of redress and contributed to many feelings of mistrust in the government's ability to carry out WAR (ibid). DWA (2007, pg. 7) states that; "The longer term reallocation processes must ensure 50% of water is authorised to black users." What defines the longer term is a question many black farmers are asking? To this date in the Inkomati the progress of WAR has been extremely political and slow.

The process of water allocation reform in the NWA is based on the verification and validation of 'existing lawful use' (between 1996 and 1998) to establish the amount of water that can be reallocated. In water stressed basins, such as the Inkomati, "compulsory licensing is required...to ensure that water is made available for HDIs" (DWA, 2012a pg. 66). Compulsory licensing requires all water users to apply for a license to continue using water legally. DWA has created a national register of water users called the Water Authorisation Registration and Management System (WARMS) to provide information regarding all authorised water users in a central database for the purposes of WAR, licensing, billing water users etc. According to Anderson et al. (2008, pg .732) "a number of studies have shown that WARMS does not accurately reflect current water use patterns in the country," which greatly affects the monitoring, and indicators of the impact of WAR in South Africa. The widespread lack of information on water use, prompted DWA head office to undergo compulsory licensing of all historic and existing water use in the Inkomati WMA. After this DWA claims they can eliminate unlawful use and then reallocate to the HDIs. Movik (2012) used an interesting metaphor, that through the elimination of unlawful water use, DWA is not reallocating from the same pie, rather just making the pie bigger.

**Table 1. National Targets of WAR**

<i>Year</i>	<i>Blacks</i>	<i>Women</i>
2014	30%	30%
2019	45%	40%
2024	60%	50%

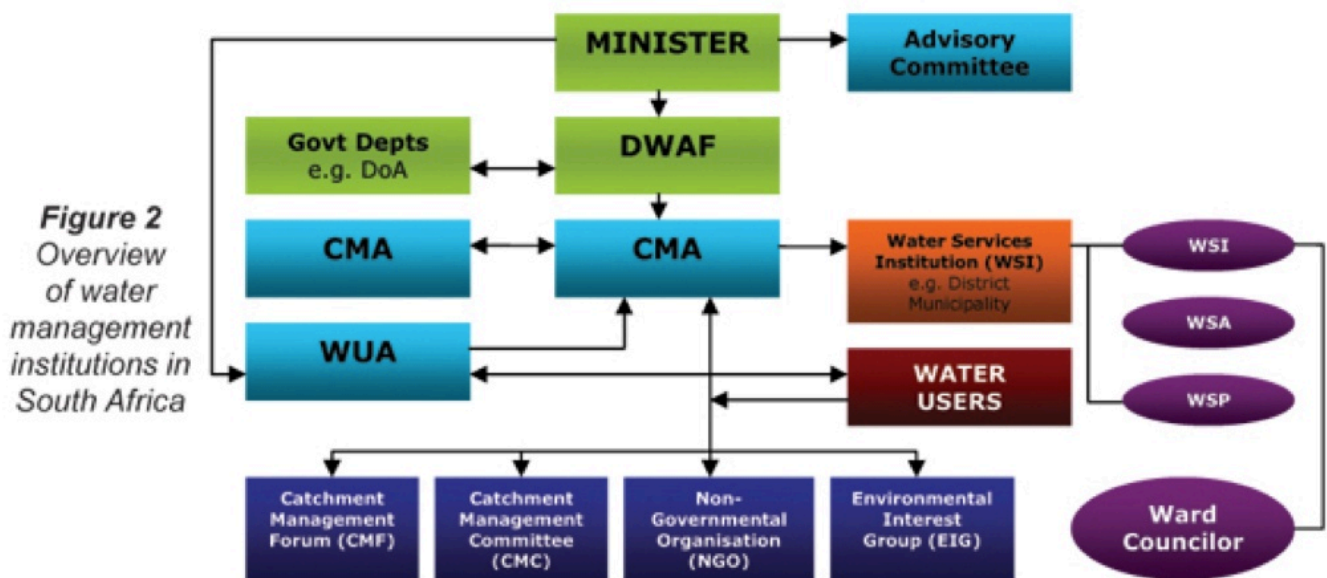
(DWA, 2004)

WAR in South Africa is an extremely political process that has wider implications on the economy of the country. Additionally, from 2004, the beginning of the WAR programme, until 2012 the WAR process has resulted in no redistribution of water from existing commercial agricultural use to HDI's or emerging farmers (Woodhouse 2012). By, 2024 WAR plans on reallocating 60% of water to Black users and of that target 50% should be in the hands of women (See Table 1 above). Many question the actually capability and political will of DWA in carrying out WAR to the extent of the national WAR targets when the fragile economy looms over the department.

### ***5.5 Decentralised Water Governance Structures***

In this section I will outline the new decentralised water (for productive purposes) governance institutions as steered by the NWA and IWRM. Catchment Management Agencies (CMA) and Water User Associations (WUA) are both described to better understand the institutional map in Section 6. The NWA states that all water resources need to be managed in an integrated manner, and where appropriate, management functions should be decentralised and delegated to a regional or catchment level to enable stakeholder participation. Section 73(4) of the NWA states that “the Minister must promote the management of water resources at the catchment management level by assigning powers and duties to catchment management agencies when it is desirable to do so” (RSA 1998). Decentralisation of institutions is considered a key factor in the implementation and acceleration of the NWRS, and the CMA within the WMA plays a crucial role in effectively governing water. The NWRS 2 (DWA 2012a, pg. 52) recognises “the functional distinction between the centralised mechanisms needed for coordination and

enforcement and the decentralised arrangements needed for participatory management.” The first tier of the decentralised water management(see Figure 1.5 below) is the formation of a Catchment Management Agencies (CMA) which report to the Department of Water Affairs (DWA) and are responsible for water governance of the basin in line with IWRM, the NWA, NWRS and international treaties. The CMA’s are based on the boundaries of the river basin not the provincial boundaries, which creates many overlaps and plural legal challenges; however these will not be discussed in my research. Originally the NWA established 19 CMA’s and of the 8 gazetted CMAs, only two are operational.



**Figure 1.5 Overview of Water Management Institutions in South Africa**

**Source: DWA 2004**

The Inkomati CMA (ICMA) was approved in 2004 and was the first officially launched CMA in South Africa in 2006; and second was the Breede-Overberg CMA in the Western Cape was established in 2011. Delegating water governance to the CMA was ground-breaking in South Africa and this created widespread confusion among water users, and many were uncertain of DWAs intentions (Jonker et al. 2010). In the participatory processes leading up to the establishment of the CMA, it must be recognised deep power imbalances persisted from Apartheid that the various groups began having unequal capabilities and knowledge (Brown

2011). Furthermore, it is argued that “there is every indication that DWAF Pretoria realized at an early stage where this blueprint approach was taking them, hence the stalling over reviewing the CMA proposal and their subsequent interventions” (ibid, pg. 181).

Stakeholder engagement has slowly built some knowledge and understanding related to the intentions of DWA and the ICMA; however slow progress of implementation has slowly started to degrade that trust in HDI farmers. In accessing the overall viability and capacity of the 19 WMA's, the minister announced in March of 2012 that in order to improve the integrated water systems management, the 19 WMA's must be consolidated into 9 WMAs<sup>15</sup>. The Inkomati Water Management Area (IWMA) will merge with northern Lesotho to form the Inkomati-Usuthu WMA. Jonker et al.(2010) make a relevant point that reducing the number of CMAs and the long process to establish has eroded the social capital gains and undermined the trust of the stakeholders involved in the participatory processes to form the CMA. The institutional change in the Inkomati is an interest for future research; however at the time of my fieldwork the implementation of the new CMA had yet to happen. This institutional change will have great implications for the ICMA and water governance in the basin, however this is beyond the scope of my research.

Within the WMA, water management should be carried out by local, decentralised Water User Associations (WUA), which are defined as a “co-operative associations of individual water users who wish to undertake water-related activities for their mutual benefit.” In looking at post 1994 water policy challenges, the NWRS 2 (DWA 2012a) focuses on speeding of the establishment and transformation of the necessary water sector institutions. Under the NWA these WUA should have equal representation (sector, race and gender), and bring together various water users to manage the water resources in a more localised and integrated manner. Each WUA is supposed to be managed by a committee that may charge its members to fund its activities. In addition revenues would be generated through the collection of water use fees (Woodhouse, 2012). It was envisioned by DWA that the WUA would work closely with the CMA and collect water use fees

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<sup>15</sup> The 9 new WMA will be named as follows: Limpopo; Olifants; Inkomati-Usuthu; Pongola-Mzimkulu; Vaal; Orange; Mzimvubu-Tsitsikamma; Breede-Gouritz and Berg- Olifants.

on behalf of the CMA. Up to this point, major issues have occurred in first the disestablishment of the high functioning irrigation boards (IB) formed during Apartheid to the formation and sustainability of WUAs in South Africa.

### ***Cooperative Governance***

The Constitution of South Africa defined 3 spheres of government, national, provincial, and local, that are “distinctive, inter-dependent and inter-related”. Furthermore, “each sphere of government is responsible for planning the activities for which it is constitutionally mandated, the activities and the plans and strategies that guide them must be aligned” (ibid pg. 35). The importance of alignment of programmes, planning and institutions is a key determinate of the effectiveness of IWRM. The NWRS 2 accentuates the importance of integration and cooperation between all relevant departments and sectors in order to effectively implement the NWA and satisfy the principles of IWRM. The latest NWRS (DWA 2012a, pg. 55) recognises that “Collaboration of diverse stakeholder groups in water resources management is crucial to effective water governance.”

Now I have outlined a brief history of South Africa, I profiled the Water Sector; water policy and reform; and the decentralised water governance structure. Now I will discuss the Land Reform Programme, followed by an overview of the agricultural sector with a focus on sugarcane.

### ***5.6 Land reform: Restitution, Redistribution and Communal Property Land Tenure***

*“Land dispossession was central to both colonial conquest and the social engineering of grand apartheid” (Hall 2004, pg. 1)*

As outlined in Section 5.1 above, millions of black South Africans were forcefully dispossessed and removed from their homes and land up until the 1980’s (Hall 2004) The monumental elections in 1994 saw the rise of the ANC and the fall of the Apartheid regime that had dispossessed and promoted discriminatory policies against black people’s access to land and water. Given the extreme disparities in wealth and access to land, the land reform policies in South Africa has four main goals: “to redress the injustices of apartheid, to foster national



reconciliation and stability, to underpin economic growth and to improve household welfare and alleviate poverty” (Sibanda 2001, pg. 8). Furthermore, the land reform programme in South Africa “would need to address the legacy of forced removals, and the significance of land not only as an economic asset but also a constitutive element of identity, culture, history and tradition” (Hall 2004, pg.12).

Hall (2004, pg. 1) states that “challenge facing the land reform programme is immense,” where 30% (16 million people) of the South African population lives in former homelands (more recently referred to as communal areas). More than 70% of the rural population is living below the poverty line, and poverty persists in the former homelands and is scattered throughout the prosperous commercial farming areas with (May 2000 cited by Hall 2004). Land reform was high on political priority with the post-apartheid government, and agrarian reform and agriculture were much lower on the priority list, subsequently agriculture suffered large sectoral budget cuts (Schreiner et al. 2010). The budget cuts, lack of extension support and lack of focus on agrarian reform has affected the massive amounts of small holder farmers living in poverty (ibid). The priority of the newly democratic government as to transfer at least 30% of the land from white to black people by 2014 (Nxumalo, 2013). However, in South Africa the perception is that the “Post-apartheid land reform seems to have failed dismally, with only 7.5-million hectares of land exchanging hands from whites to blacks. This represents a paltry 7.5% of formerly white-owned land” (ibid) Currently, the provincial agricultural budgets are stagnating and the 2011 budget projections were lower than 1980 agricultural budget when the real value of money was taken into consideration (Greenberg, 2010).

South Africa’s land reform has three different pillars: Redistribution, restitution and tenure reform. Redistribution involved government grants and programmes based on the ‘willing buyer, willing seller’ principle with an aim to transfer white-owned farmland to black farmers. Restitution aims to address the evictions from the 1913 discriminatory land laws and to transfer land back to the communities or individuals evicted. Tenure reform is aimed at improving tenure security among the 17 million people living in the former homelands, in which communal

property tenure exists and the chief or tribal authority is considered the custodian of the land (Woodhouse, 2012). Widespread dissatisfaction of the tribal authorities and the large spread inequalities in the former homelands regarding access to water and land have been unresolved by tenure reform. Furthermore, the inequalities in access to land and water exist among white and blacks stemming from Apartheid; however in the communal areas divides exist between the rural poor and the rural elite.

Of the ten former homelands stemming from the 1913 Native Land Act and subsequent policies (as outlined in Section 5.1, KaNgwane, is located in the Nkomazi Lowveld area, bordered by the Komati river. During Apartheid, the black communities living in the high potential agricultural land in the Highveld, the escarpment and the Lowveld, were evicted, forcefully removed and resettled on the less productive, more marginal agricultural land located in the KaNgwane homeland (Bate and Tren 2002). The areas where blacks were evicted were developed for white commercial interests such as forestry plantations on the escarpment and Highveld, and irrigated sugarcane and orchards in the Lowveld. As a result, the majority of productive and valuable commercial farms where black farmers were evicted during Apartheid have one or more restitution claims. Close to the end of Apartheid in the late 90's the KaNgwane homeland area had a population of 1.5 million (Woodhouse 2008). As a result of the forced evictions in this high potential agricultural area, and the establishment of a powerful sugarcane industry, Nkomazi (inclusive of the former KaNgwane homeland) is the site of some of the most land claims in all of South Africa.

In 2001, the Land Reform for Agricultural Development (LRAD) programme was designed to improve of the failures of the Settlement and Land Acquisition Grant (SLAG)<sup>16</sup> programme. The LRAD programme increased the amount of grants available for individual farmers to buy existing commercial farms. This programme has been criticised on the lack of focus on infrastructure and post-transfer support given to the individual. In 2005, the Proactive Land

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<sup>16</sup> The initial programme for land redistribution beginning in the 1990's was the SLAG that "explicitly targeted poorer people who generally had to pool their grants in order to purchase a (large-scale) commercial farm, which they subsequently subdivided or attempted to run collectively" (Woodhouse, 2012).

Acquisition Strategy (PLAS) scheme was launched in which government was able to purchase land as it was on the market, and then redistribute or lease out at a later time. Through the PLAS grants and loans the government was committed to reach the 2014 goal of redistributing 30%<sup>17</sup> of commercial farmland to black hands, despite initiatives the goal has been postponed to 2025. By late 2009, only 6.9% or 5.67 million ha of agricultural land had been transferred to 1.78 million beneficiaries (Greenberg, 2010). A major issue with the land restitution programme is ownership comes in the form of a highly commodified farm not in its natural state. The ownership does not necessarily come with the infrastructure necessary for operation i.e. irrigation equipment, farm machinery, vehicles, or packing sheds (Woodhouse, 2008). Greenberg (2010) suggests that the two main challenges the land reform programme face are the slow progress in transfer of land and the flawed support to ensure the transferred land is productive. Two main arguments exist related to the slow pace of land reform: one being the inflated land prices and the other points fingers at the lack of institutional capacity of DRDLR(ibid).

Sibanda (2001, pg. 7) outlined the key constraints to a successful land reform programme as the inadequate government capacity to carry out land reform, lack of human resources within the government department, lack of coordination and integration with other spheres of government and departments, and finally the lack of “effective organisational, technical and managerial support to new farmers and land reform beneficiaries beyond the point of land acquisition.” It also can be suggested that the challenges in land reform can be attributed to the lack of institutional integration and collaboration with governmental water and agricultural related departments. Liebrand (2007) discusses that land claims can also be deemed as water claims. Direct discrimination in access to land was a key feature of the Apartheid regime, and due to the riparian water rights system, the water allocations were also racially defined. An innovative study done by Cullis and van Koppen (2007) showcases the inequalities in water access in South Africa through the use of the Gini coefficient. The Gini coefficient is 0.95 for water access as compared to the income inequality of 0.64. These numbers are alarming considering how much the poor depend on water in breaking out of poverty and securing their livelihoods (Bruns &

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<sup>17</sup> Originally, the government wanted to transfer 30% of the land by 1999.

Meinzen-Dick 2005). The inequality in water and the subsequent reform has become just as politically charged as land reform, or if not more because the importance in water access in commercial agriculture. The availability of water for communal and land reform farmers in the form of both wet and paper water contribute greatly to the success of the land reform programme. Funke and Jacobs (2011) makes an important point that in South Africa, water and land reform are inherently embedded in a complex socio-political and socio-economic environment, but have widely occurred independent of each other. Furthermore, the links between land and water cannot be ignored at the institutional level if equity and livelihood impact goals will be reached. A key in the right direction is outlined in the NWRS 2 is that one of the key objectives is to “promote the development of an integrated land, water and agrarian reform programme” (DWA 2012a, pg. 67). In the next section I must give a rough outline of the agriculture sector in South Africa, with a focus on sugarcane in Mpumalanga. This will provide important background to understand the importance of sugarcane in South Africa and the great demands this industry places on water resources. It must be noted that the political will to reallocate water is probably greater than that of land redistribution because irrigated agriculture is the largest user of water, which is held by powerful white commercial farmers that are dependent on water for economic prosperity (Woodhouse, 2008).

### ***5.7 Agricultural Sector in South Africa***

South Africa is considered a lower middle income, urbanised, industrial country, where agriculture accounts for a small percentage of its GDP compared to other countries in the same economic category (ibid, Greenberg, 2010). In South Africa approximately, 8.5 million people are directly or indirectly dependent on agriculture for income or employment, and the sector contributes about 3 to 5% to the GDP, and 7% to formal employment (DWA, 2012a). At the end of apartheid roughly 82 million hectares or 86% of the total agricultural land in South Africa was owned by some 60,000 white people, that represented just 10.9% of the total population (Lahiff 2007). Much of the black population resided on just 13% of the land in the former homelands with only a small stake in agriculture, and characterised by poverty, and underdevelopment (Hall 2004). In addition, millions of black people and their families worked on privately owned farms

where they faced tenure insecurity, extremely low wages and lack of basic facilities (ibid). Greenberg (2010, pg. 15) describes South African agriculture as being “ built on the back of dispossession of the African population, and their social, economic and political marginalization...[furthermore] it is built on extractive methods that deplete the soil, the water and the natural vegetation.”

The total economic impact of the agriculture sector could be upwards of 30% if the agricultural supply chain and service provision was included in the calculations (Backeberg, 2005). Irrigated agriculture consists of 60% of the water use in South Africa and Small-holder irrigation schemes represent a significant opportunity to positively impact the livelihoods and create employment for the rural poor (Backeberg, 2005, Shah et al. 2002, Lorentzen 2009). In addition, in the rural areas agriculture is the main economic activity and has the potential to create around one million jobs by 2030 (Muller, 2012). Inefficient irrigation infrastructure, water quality and quantity are all limiting factors to expansion in the agricultural sector in South Africa (DWA, 2012a).

### ***5.8 Sugarcane Industry in Mpumalanga***

The growth of the South African sugar industry as a political force was the result of British descendants in the Natal region, but gained significant importance in the lower komati catchment when the first mill was built near Malelane in 1965 by TSB (Movik, 2012). From the start of the development of the sugarcane industry in Mpumalanga, the Broederbond<sup>18</sup> were the major shareholder in TSB, which placed them in an “excellent position to expand production, lobby for increased water allocation and represent the interests of the sugarcane farmers upon whom they relied” (Bate & Tren 2002, pg. 145 cited in Movik 2012). TSB used the “economic importance of sugarcane as a political weapon” and harnessed political support of the Apartheid regime which directly lead to increased access to land and water in favour of commercial sugarcane growers and TSB (Movik 2012). The Sugar Act of 1936 provided legislation supporting the growth and centralisation of the sugar market in South Africa. The fixed prices and regulated

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<sup>18</sup> The Broederbond was a male only, politically powerful, secret organization established to promote the advancement and protection of Afrikaner rights in South Africa. Broederbond means Afrikaner Brotherhood in english.

industry combined with the relative ease of growing sugarcane compared to other crops ensured the future growth and political power of the sugarcane industry. Moreover, the impressive economic potential of sugarcane in South Africa has led to it being nicknamed, 'green gold'.

During the season of 2011/12 of the 29,130 total growers: 27,580 are small-scale growers, of whom 13,871 delivered cane last season, with a 8.59% share of the total crop, whereas 1,550 large-scale growers (including 378 black emerging farmers) (SASA, 2013). During Apartheid the South Africa sugarcane industry was dominated by white (mainly Afrikaner) commercial farmers where large tracks of prime agricultural land was taken from black farmers for lucrative sugarcane production. Post-Apartheid initiatives has prompted the emergence of many black small sugarcane farmers; however evidence exists that this emergence has reinforced the powerful and affluent in access to land and water in the communal areas. Lorentzen (2009) claims that land redistribution has yet to produce the livelihood impacts to the extreme poor; furthermore he states that the sugar industry could be more instrumental in aiding the most impoverished.

In South Africa during 2006, 430,000 ha of sugarcane was underproduction, in which 31,000 ha of the sugarcane production was operated by black growers. The ratio of hectares per farmers shows the racial divide, with 47,344 black farmers operating in communal and freehold areas with each an average of less than one hectare, and the 1,741 white large-scale commercial farmers, with each an average of over 200 ha (SASJ 2004a cited by Kleinbooi 2009). Kleinbooi states (2009, pg. 194):

*“The commercial sector’s political support for land reform has stalled consistently on the economic argument that large-scale agriculture is more efficient, and therefore better for the economy, and that land reform should not interfere with, or in any way disrupt, established farming patterns. Instead, beneficiaries would have to fit in with this model.”*

Evidence shows the relative efficiency of small scale growers compared to commercial agriculture in improving livelihoods, income and food distribution among the rural

impoverished. Despite this evidence, the economies of scale and export capabilities of commercial agriculture dominates the discourses in Southern Africa (Lahiff 2003, also see Klienbooi 2009). In much of South Africa the historic power relations have not been fully broken down because of vested interests and sugarcane's economic importance. Still to this day, white commercial growers' productivity and efficiency far outweighs that of black small farmers. Large land claims<sup>19</sup> jeopardises the sustainability of the sugar mills, so very few alternative crops persist with the political and economic importance that sugarcane does. With water scarcity being such a critical issue in South Africa, you would think that other less-intensive crops would be an option for emerging and communal farmers. Furthermore, Movik (2012) points out that sugarcane farmers in the Inkomati have tendencies to point fingers at other industrial uses of water upstream i.e. Forestry, Eskom for the water scarcity and lack of water allocations.

The sugar industry generates a large amount of water demand in the Inkomati Basin, more specifically Nkomazi through irrigation of crops and as an input to cane milling and processing<sup>20</sup> (Lorentzen 2009). In Nkomazi, the Sugar production is the single most important economic activity and the total effect, both direct and indirect, on the local economy is estimated to be approximately 70% (ibid). At the institutional level sugarcane remains the most successful developmental crop for both the communal and land reform farmers with access to water (Lorentzen 2009). Sugarcane also makes up for between 50% and 80% of the irrigated crops in Nkomazi and the sustainability of the industry is in question because there is not enough water (ibid). Sugarcane is considered a water consumptive crop and in comparison many other crops higher revenues per drop (Woodhouse and Hassan 1999). Lorentzen (2009, pg. 49) states that "the key factor that links sugar cane cultivation, rural livelihoods, and the environment in the Inkomati Basin is water availability. The sugar industry want to expand in South Africa, but we just need the water rights" (SASA representative, Land reform meeting, November 20, 2013).

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<sup>19</sup> For example: In the main commercial sugarcane growing region of the lower crocodile, 40,000ha of commercial sugarcane and fruit orchards are under claim, in which 18,000ha by 2007 was transferred to large communities of beneficiaries (Woodhouse 2012).

<sup>20</sup> Milling and processing do not fall under irrigation legislation but have to comply with regulations concerning discharged water quality objectives (Lorentzen 2009).

## **6. Institutional Findings**

This section will first introduce the overarching regional, district, local institutions with mandates in agriculture, land reform and irrigated water access interviewed for this research. Department of Water Affairs (DWA), Inkomati Catchment Management Agency (CMA), Department of Agriculture, Rural Development and Land Administration (DARDLA), Department of Rural Development and Land reform (DRDLR) are the main institutions involved in agricultural water governance and land reform at the regional or basin level in Nelspruit. In the Institutional map below, due to the enormous amount of acronyms and for readability sake, I will also refer to DARDLA as Agriculture or Department of Agriculture because that is the part of the department I dealt with the most. In addition, DRDLR will be referred to as Land Reform. At a municipal/local level in Nkomazi: The Komati and Lomati irrigation boards (IB), and Mzinti agricultural training centre (DRDLR) will be included in the institutional map. TSB will also be included in the institutional map because they are important players in the sugarcane industry and in water governance structures. LIMA the NGO is working with sugarcane farmers on institutional and governance issue is an important organisation on the ground and various employees were also interviewed regarding the institutional integration. These will provide the basis for the degree these institutions are cooperating, integrated and accountable for their mandates/projects and how the degree of cooperative governance amongst these institutions affects or facilitates water access on the ground for communal and land reform farmers. The analysis of the different levels of institutions will provide analysis of the interface between provincial, local level institutions and the sugarcane farmers. Below is an outline of what institutions are working together, their projects and their point of view of the situation at the institutional and local level.

In this section an institutional map will be presented related to the of level of cooperative governance, project alignment and accountability that reflects the degree of integration between and even within institutions. The institutional map aims to unpack and highlight the dynamics and relationships linked to cooperation and integration between the institutions interviewed. This section aims to answer the first two research questions: What are the impacts of IWRM



influenced processes on integration at the regional level, and what are the dynamics around institutional arrangements at the regional level and what has this meant for different sugarcane farmer groups access to water?

I will present the degree of integration and cooperative governance from the viewpoint of the various institutions working with sugarcane farming and from my personal observations. An analysis is presented of the institutional arrangements at a regional level steered by national and global water policies and what these mean for access to water for different sugarcane farmers on the ground. I will briefly outline each institutions mandates or goals, their projects, and their challenges related to HDI sugarcane farmers, agricultural water and integration. Each section will finish with a cooperative governance section discussing who the institutions works closely with and who they don't, what meetings they hold or attend, and what are the institutions issues surrounding integration. Lastly, I will discuss the relevance and challenges related to stakeholder forums, committees and meetings. These participatory structures play an fundamental part in achieving IWRM through the integration and participation of a diverse set of stakeholders. The institutional landscape is complex in the Inkomati and this section portrays the discrepancies between a progressive water policies and the actual realities and discrepancies at the basin level.

### ***6.1 Department of Water Affairs (DWA)***

DWA is the custodian of all of South Africa's water resources and the head office is located in Pretoria. The institution is responsible for formulating and implementing polices related to the management of all water resources in the country. As mentioned above in section 5.3, the main policies and reform DWA is responsible for are the National Water Act (1998) and Water Allocation Reform (2006). As written in the new NWRS 2, DWA is currently promoting a policy called 'water for growth and development', which emphasises the role water has in economic growth, rural development, food security and land reform.

The National Water Resource Strategy 2 is a "logical business approach to facilitate such an extended concept and the new era of water management is the development and implementation

of an integrated, shared and co-owned water sector strategy” (DWA, 2012). DWA teamed up with the ICMA to share and respond to public comments regarding the National Water Resource Strategy 2<sup>21</sup> (December 5, 2012). The meeting outlined the key issues according to DWA is for stakeholders to ‘own’ the strategy (NWRS2 meeting, November 30, 2012). The NWRS 2 will place water at the centre of all planning in South Africa, so that water availability is factored into decision making. Whether this will change the integration of institutions or the alignment of programmes will be of great interest in the future. Furthermore, DWA might be more accountable and integrated if water is put at the centre of all planning or this policy could have adverse effects such as increased competition for water.

### ***Resource Poor Farmers Programme***

The resource poor farmers<sup>22</sup> support programme (RPF) was started in 2004 to provide financial assistance to HDI populations, in the form of grants or subsidies to develop and revitalise irrigation schemes in the rural areas (outlined in section 61 and 62 of the NWA). At various stakeholder meetings the emerging farmers expressed that DWA needs more programmes for improving water access for the HDIs, for example irrigation infrastructure development. Each time this issue was brought to the ICMA or DWA, the response would be that DWA had the Resource Poor Farmers support programme. Many farmers expressed in the meeting that I attended that the programme is not sufficient enough to help them with infrastructural issues related to water access. In addition, the head of the NGO LIMA in White River (Interview, November 16, 2012) said “we have tried to work with DWA, but it is difficult to get them involved,” then he described a scenario where they put in a proposal to get funds from the resource poor farmer programme, to revitalise a 1068 ha irrigation project in Bushburchridge ridge. In this particular project only 25% of land was being used because of water loss from the canals. After the application was submitted to DWA, then the proposal was presented at the Mpumalanga Coordinating Committee for Agricultural Water (MCCA) meeting (see Section 6.8). After waiting several months LIMA contacted the DWA employee in charge of the RPF,

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<sup>21</sup> The NWRS second edition was published in June 2013.

<sup>22</sup> Also called the Financial assistance for irrigated agricultural development by resource poor farmers. It benefits resource poor farmers who are citizens of South Africa and are members of the HDI population groups.

then DWA said they had no money. In addition, a DWA employee described to me that the resource poor farmer funds has some challenges and gave me an example of Quaga farms where “800 ha of water allocation was given to Quaga farms by the RPF and they have already sold [the water right] and now the allocation is back in the system. Some people see obtaining a water authorisation as a mechanism to make money” (DWA, Interview, December 14). According to DWA, there were six workshops in 2012 to create funding applications for the RPF, but the general consensus among the emerging farmers was that the funds have not really made any major impacts in the Inkomati.

### ***Key Challenges***

The narrative and responses to questions in DWA interviews and stakeholder meetings was often related to water scarcity and the over-allocation of water in the basin. For example if emerging farmers were asking about water licenses, then the response from DWA would be the Inkomati is over-allocated, followed by we are unsure when WAR will be completed. A main challenge for DWA is finalising compulsory licensing and WAR, then water can finally be reallocated to the HDIs. Compulsory licensing is high on the priority list and according to DWA should be completed in the Komati by late 2013/2014. The DWA director of institutional establishment commented about WAR that “time was taken away by events and we almost had to start over, [we] have to get [WAR] up and running again and we must get it over and done” (DWA, Interview, December 14). The feeling that WAR is dragging on and not really showing any results is consistent among local level farmers and institutional employees. According to a DWA informant Another key challenges according to DWA is “that our office is getting 100-150 license applications per year, and other provincial offices only get 8. We have to check the paper work and the area to ensure the details are correct, therefore we are backlogged with paper work” (ibid). Even though over a hundred applications are submitted, DWA advised me that there is very little water left to allocate in the basin and most of the rivers are over allocated.

Breaking down the powerful IB’s is a key challenge in the Inkomati. Disassembling the irrigation boards has been fraught with complexities and difficulties, and DWA “feels like it is taking too

long” (ibid). WUAs are important to DWA in promoting equity, stakeholder participation for the management of water in a mutually beneficial way. Due the water scarcity and over allocation of water in the Inkomati IWMA the farmers can only trade water. DWA only deals with individual licenses, however many people can share the water allocation and the irrigation boards know the intra water trading volumes and what is actually happening on the ground. When asked if DWA has favours HDI farmers in allocating water and licenses, he said that “the only thing we are concerned with is the volumes” (DWA employee, interview, November 14, 2012). From my observations I found that DWA is excellent at citing the national water act and its various sections; however I conclude from my research that they lack on the ground presence in Nkomazi to understand the key challenges related to access among HDI farmers.

According to the other institutions interviewed, few farmers are directly going to DWA regarding water issues, instead they are going to DRDLR, DARDLA, TSB or the irrigation boards. There is overlap and unawareness among the institutions, but as a DWA respondent said “sometimes there is a good reason [for this] and sometimes a good excuse” (DWA, Interview, December 14, 2012). Many farmers are not informed or even feel confused in relation to the NWA, water authorisations, and other important aspects of water governance, which is linked to the lack of on the ground presence DWA has in Nkomazi.

### ***DWA and ICMA***

DWA is responsible for overseeing and carrying out Water Allocation Reform (WAR) in the IWMA. Once verification and validation is finished by the ICMA, DWA can begin the politically charged process of compulsory licensing. DWA’s regional office works in collaboration with the ICMA. Mandates are allocated to the ICMA when the DWA regional office feels the ICMA has the capacity to effectively carry out the tasks. Water licensing and collection of water tariffs are important mandates that should be handed over to the ICMA from DWA. During an interview with a DWA employee I asked why this mandate had not been handed over to ICMA and he replied “only the minster can tell us this” (Interview, November 14, 2012). A large degree of

uncertainty exists within DWA for example; when mandates will be handed over to ICMA and when compulsory licensing (final stage of WAR) will actually be completed

### ***DWA and DRDLR***

DWA or ICMA has not worked with DRDLR to inform farmers of their rights regarding water allocations. This has resulted in large water debt and the loss of many land reform farms. A key challenge according to DWA is when land reform buys a farm the water bills go to the old owners address and the bills go unpaid. As specified by DWA, the WARMS database still contains the old owners on the bills because DRDLR has not provided them with up to date information. DWA is not aware who or when land claim farms are transferred, which causes many difficulties when trying to deal with their water related challenges. DWA generally feels that in the Inkomati there is a lack of information and major concerns regarding land reform farms water rights, even though DRDLR says they always buy productive farms with water rights

### ***Cooperative Governance***

“The success of WAR is largely dependent on collaboration with all sectors (mining, industry and Agriculture” (NWRS 2 meeting, December 5, 2012). DWA recognises the importance of cooperation and integration in order to implement the IWRM, the NWA and to complete WAR. However, DWA has not taken steps to follow through and ensure alignment and coordination is achieved among all institutions related to land reform, agriculture and water. DWA regularly attends the MCCAWE meeting, which will be discussed in Section 6.8. DWA collaborates closely with the ICMA to work with stakeholders and implement the NWA. A challenge is communication flow from the ICMA to DWA “the ICMA must give DWA feedback because they are responsible for operations” (MCCAWE meeting, November 14, 2012) DWA and DARDLA have a good working relationship, however the flow of communication and project collaboration is only satisfactory.

DWA representatives from both Pretoria and Nelspruit along with all institutions interviewed during my research attended the Mpumalanga Regional Workshop regarding the development of a framework and indicators for auditing and monitoring Water Allocation Reform in South Africa (November 23, 2012). From the workshop representatives noted the lack of information regarding WAR and that the WARMS database does not reflect the correct data on the ground. The WARMS data is lacking correct information and is not comprehensive, so it cannot be used in research that will be published (ibid). According to DWA, key institutions are not handing over the correct data to update the database. DWA feels the IB is withholding information and DRDLR are not reporting new owners/beneficiaries of farms, so the data is not representative of the situation on the ground. At the meeting about WAR, DWA emphasised the urgent need for follow up on the ground. Extension officers or local level employees in the Nkomazi area must notify DWA of the projects, farms and beneficiaries that are not correctly reflected in the WARMS database. DWA has tried to link with land reform through the national database of Land reform; however in Mpumalanga Land reform cannot give DWA a list of land reform projects because they have limited spatial data. DWA also needs crucial water user information and abstraction rates from the irrigation boards (Lomati, Komati and Crocodile), but the IBs don't have a contract with DWA regarding water billing etc, so there has been struggles and conflict. According to DWA, the IBs are suppose to give the reports of progress to DWA, but they are not complying. Historically the farm was registered, and now one of the biggest challenges in Mpumalanga for DWA is that the IBs are not willing to register the individual water user. The IB not registering the individual has major implications on the progress of WAR and compulsory licensing in the Inkomati.

A DWA employee from the Inkomati said that “land reform can be difficult to get to these meetings surrounding WAR and there is a gap in the WARMS database when farms are transferred to beneficiaries” (personal communication, November 23, 2012). To complete WAR, DWA acknowledges the importance of bringing DARDLA, DRDLR and themselves together in addition to correcting the WARMS database. The consultants<sup>23</sup> working with development of a

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<sup>23</sup> Aurecon, Crossflow and Batseta.

framework and indicators for auditing and monitoring Water Allocation Reform in South Africa placed emphasis on the need for qualitative research to ensure the numbers in the WARMS database are reflective of what is happening on the ground. A local DWA employee also agreed with the need for research on the ground because “as water affairs we are not sure about the situation on the ground” (Meeting, November 23, 2012).

This project of developing a framework and indicators as mentioned above “will help with see the linkages with land reform and fulfil a need for standardised reporting.” (Crossflow consultant, meeting, November 23, 2012). A DWA representative at the meeting commented about the resource curse issue and that, “[DWA] are really good at writing things on paper, but not implementing...” (DWA, meeting, November 23, 2012). Furthermore, the same person commented that “we cannot achieve WAR without coordination, and it will never happen effectively without cooperation. Inter-departmental stakeholder involvement and cooperation is fundamental” (ibid). The institutions all discussed the importance of coordinating activities and mandates between water, land and agriculture, and all speaking the same language. “The issues that all departments come to us are not unique. We need coordination in terms of strategic management” (ibid).

## ***6.2 Inkomati Catchment Management Agency (ICMA)***

The formation of the ICMA was characterised by a struggle between the white-owned commercial farmers, which make up a large percentage of the water users in the basin, and the head officials of the DWAF in Pretoria (Woodhouse, 2008; Woodhouse 2012). The ICMA is suppose to be the decentralised institution responsible for all aspects of water governance in accordance with the NWA and IWRM. Goal of the ICMA is to support minister of water in all the activities she is suppose to do according to the NWA. The vision statement for the ICMA is ‘water for all in the Inkomati.’ DWA is suppose to decentralise all their mandates to ICMA in order to manage water of the river basin at a local level to ease the administrative burden. No new mandates have been given to ICMA by DWA since 2010, and the ICMA is patiently awaiting for DWA to hand over the full licensing mandate, along with water billing. The

handover of all the mandates, thus power has a high degree of uncertainty. ICMA would like DWA to transfer the billing/tariff functions in 2013/14 after the completion of the verification project. Then the ICMA is then “going into overdrive in creating capacity to implement” (ICMA stakeholder meeting, November 15, 2012). In contrast, during a private conversation a DWA employee told the head engineer from DARDLA that the CMA might not get all the mandates from DWA until 2020.

The Catchment Management Strategy (CMS) is the guiding policy document for the ICMA which outlines their overall approach to IWRM and the desired future for the Inkomati. A key strategic objective for the ICMA is to “ensure collaboration and coordinated IWRM for wise socio-economic development (CMS 2010, pg. 3). The ICMA has the mandate to support, access and engage stakeholders in the Inkomati. The ICMA is partnering with the stakeholders and according to the ICMA public participation should inform, consult, involve and collaborate. The ICMA was given the task to engage with stakeholders and undergo a complete public participation process (2012) in the the middle Komati from Tonga to Maguga regarding the installation of water meters. A detailed case study will be described in detail below in the farmers findings (Section 8.2). The ICMA feel they are working for the HDI farmers in accordance with the NWA, but many HDI farmers feel the progress is far too slow and they lack trust in the formal water governance system.

### ***Challenges in the Inkomati***

The lack of cooperative governance at national, provincial, and local levels are a large threat list in the CMS. Another, threat is if the ICMA is not fully operational in regards to delegations from DWA, staff and finances, which threatens the implementation of Integrated Water Resources Management (IWRM) in the Inkomati Water Management Area (ibid). Water quality and water pollution are a key problem in the IWMA and the ICMA is working hard to address these problems, which can mainly linked to mining. However, due to the scope of the research I will not discuss this in detail. Scarcity of water remains a key issue for the ICMA, Brian Jackson (acting CEO of ICMA) said “if there is a drought year it will be disaster in the



basin” (conference, November 4, 2012). The scarcity narrative has affected the progress of WAR which has been fraught with complexities and power struggles. A ICMA senior employee stated that “the problem is that [we] have to take from one to give it to another... All water allocations cannot be frozen” (ICMA, interview, November 6, 2012). A narrative in the Inkomati is that the water cannot just be taken away from the economically important industries to give to the HDI farmers. The economic and political implications of WAR are overriding the historic inequities.

### ***WAR: Verification and Validation***

DWA wants ICMA to double check the flows, needs, and water rights in order to redress past inequalities, so the ICMA was given the mandate to undergo the verification/validation process. Validation is being done to ensure what people registered is correct. A key issue for both DWA and the ICMA is that if the farmer is registered (ELU) that does not mean that they are authorised for the water use. From 1997 to 2000 many farmers registered, but were not authorised and it was noted at the MCCAWE meeting that many people took their chances and gave inflated values on their water use. The ICMA described that a high resolution land classification of the entire Inkomati WMA was completed for the verification project. The ICMA is working with the RISKOMAN projects that aim to assist the ICMA and various stakeholders in identifying, implementing and continually adjusting efficient water allocation policies through improved real time information about the river etc. In addition the ICMA is collaborating with the Watplan<sup>24</sup> project to develop and implement an operational earth monitoring system for the entire Inkomati basin to aid water resource allocation and current water use. The verification of existing lawful uses has been delayed by the crash/loss of data at the Mpumalanga Survey general office. All the water licenses are currently attached to the land or farm, instead of the individual due to contract disputes between DWA and the IB. At the time of the research the ICMA has completed 70% of the 6800 registrations for verification and validation.

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<sup>24</sup> <http://www.watplan.com/>

### ***Conversion of IB to WUA***

The ICMA is having major difficulties with establishing WUA, which are central to governing water in the NWA. Currently, the ICMA only has the mandate to form WUA with voluntary membership, which does not provide any incentive for people to join, form or to effectively run a WUA. A ICMA senior employee said that “it is useless to have a WUA with no paid staff, so it was inhibiting us from forming WUA” (Interview, December 8, 2012). An effective WUA needs an office, monitoring staff, database, and have the capacity to collect water user charges. The ICMA’s priority is too establish WUA’s and they recommend an amendment of the NWA in regards to the voluntary membership (no paid staff) clause (ibid). There are two registered Water User Associations: Badplass WUA and the Upper Komati, Elands conservation WUA, which are non operational. The ICMA first priority is to revive the Elands WUA and establish a Sabie river WUA. In early December 2012, DWA has now given the ICMA the go ahead to establish all the WUA’s. Two employees of the ICMA working in Nkomazi met with Walda chairman to discuss if the Komati irrigation board was ready to convert. An ICMA employee responsible for Nkomazi said “I believe [the Komati] irrigation board are ready to convert” one of the main reasons is they have equal membership of blacks and white and no major assets or liabilities need to be transferred (ibid). He also emphasised the importance of keeping an even playing field between HDI farmers and commercial farmers. According to the ICMA, little motivation exists in forming a WUA because many stakeholders are either not interested in attending or feel no benefit or motivation to form a WUA. In addition, municipalities, various industries are not worried about attending the WUA meetings (Interview, November 8, 2012).

### ***Land Reform and Water Issues***

A key informant from the ICMA noted that land acquisition failures are a huge issue because important water issues are tied to the land claims. Another key issue for the ICMA is that HDI farmers say the government is telling us to pay for water, but water is owned by god. The ICMA said that many HDI farmers say why should we pay for water, it is natural resource?

ICMA recognises that land claims have a big impact on equity and lots of land and water has been transferred to previously disadvantages; however “nobody is supporting [land beneficiaries] in using the water efficiently” (ibid). An ICMA employee said that “there should be a strict hand over process for land reform farms” (Interview, November 6, 2012). The ICMA described to me that when they do an audit of the farm the transferring and mentoring does not go well. It often takes months for farmer to move onto the farm after it has been bought and by that time the farm is overgrown, the buildings are vandalised, assets are broken, water bills have not been paid. Farm workers who had skills have left, and the farm is no longer productive. In the past, farmers were left on their own to run a commercial farm with no support, few management skills and water debt. DRDLR is unable to tell the ICMA how many farms have been transferred and simple data that is needed for the ICMA to do their job. There is a total lack of communication with DRDLR” (ICMA stakeholder awareness, Interview, November 6, 2012). The ICMA needs to know how many land beneficiaries or farms that have been transferred, “if DRDLR cannot tell us, then we cannot address these emerging farmers issues with water and then their issues will not be discussed in various meetings for example the MCCA meeting” (ibid). Instead of contacting DRDLR the ICMA has had to contact Department of Human Settlements to obtain pertinent information. The ICMA employee responsible for stakeholder engagement said he has been to DARDR office and the secretary says the manager he is looking for is out or he tries to call and they don’t answer his calls. The ICMA needs the latest land claim information and wants to include the correct information in the data base, so the ICMA can include the beneficiaries in stakeholder meeting, and the irrigation boards or WUA. He further commented that there is lots of overlap amongst the institutions and senior officials pass the bag or hide and not take responsibility (Interview, November 9, 2012).

### ***Cooperative Governance***

As from the above description you can see the information is not flowing from DRDLR to the ICMA. The ICMA is collaborating and working closely with DWA on its mandates, and according to the ICMA they have began to align with other institutions and recognise the importance of cooperative governance. They have already made agreements with Mpumalanga

Tourism Agency, San Parks and the ICMA intends to make agreements with other relevant institutions. ICMA brought up that “in the past there has been an issue with communication between the governing board and DWA and the minister; however the ICMA chairperson now communicates with the minister every 3 months, then she reports back to us” (Meeting, November 15, 2012).

At the ICMA stakeholder meeting in White River in November (2012) the HDI farmers that attended expressed major concerns and issues with accessing both wet water and a paper water (license). Many of the farmers also spoke up about the slow pace of WAR and how the goals to redress the past inequalities has not being achieved. A farmer in the meeting said in an angry tone, “even if you are given an license, how can you help me abstract the water to my farm?” ICMA responded that “we do not have the mandate for licensing, so we have no power to make changes. DWA should give us the mandate to allocate licenses.” The ICMA also said that “the issue with access to irrigation infrastructure is not a ICMA authorised expenditure, this is shared between DARDLA and DWA.” The ICMA also commented that “We realised the problem with paper water. Getting a license does not mean [HDI farmers] are getting access to water. This is a cooperative governance issue. Department of Agriculture, ICMA, and DWA are all involved in the chain of reallocating, but there seems to be a gap and we are lacking cooperation” (November 15, 2012). A key concern in the ICMA is not knowing who to talk to in each institution because there is so much changing and reorganisation of people. The ICMA noted that they need to have a good understanding of how the provincial institutions work and what each institutions mandates are, and this “is not know by us” (ICMA, Personal communication, December 6, 2012). Another key issue outlined by the ICMA is the lack of coordination among Environmental affairs, agriculture, and DWA regarding water quality. The question of how to work together is key challenge when so many layers and mandates exist.

The ICMA both holds and attends various stakeholder functions/forums/meetings. Forum meeting are an important tool for bringing together relevant stakeholders and to receive feedback and promote collaboration. The ICMA noted that it is important to be putting issues on paper at

the Catchment Forums (ICMA, Stakeholder meeting, November 15, 2012). A women from the Department of Health who works with water quality and has been attending the ICMA stakeholder meetings since 2010. She said that “nothing has changed, the same issues keep coming up, but there is no real solutions or change and it seems like people come only for the free lunch. Feeling like it is a waste of money to spend all this money to have these meeting and forums instead of spending the money on the small farmers that really need it. I feel like the meeting is just a funding scheme that lacks accountability, communication or coordination” (Personal communication, November 15, 2012). Invited to these meetings and forums are the departments of public health, rural development and land reform, Agriculture, education, tourism, environment, and house of Traditional leaders and human settlements. ICMA believes all the institutions listed above should all be attending and working together because it is important to ensure that these people get water and comply with the NWA etc. Forums are set up in the Inkomati sub catchments: Crocodile, Sabie and Komati. In 2012, the ICMA developed an action plan for an Equity Working group and set up twenty awareness campaigns for HDI’s. In addition, the ICMA set up six empowerment meetings with farm associations regarding water use licensing, conservation, dam management etc.

ICMA attends the MCCA W meetings and according to a ICMA representative, the MCCA W meetings are functioning, but the processes are long and certain departments are reluctant to solve problems or collaborate (personal communication, November 15, 2012). The MCCA W meetings will be discussed in section 6.8. The ICMA has been working closely with the NGO AWARD on adaptive governance, which contests the linear approach to coming up with causes and solutions to water related issues. AWARD in collaboration with the ICMA are stressing the importance of working and acting collectively and being able to learn and be flexible. CMA forums are an example of collective action; however forums are not talking about certain issues and it is a complex environment with many institutions, and “integrated planning is not happening” (Sharon Pollard, Inkomati day seminar, November 5, 2012).

### ***6.3 Department of Agriculture, Rural Development and Land Administration (DARDLA)***

The Comprehensive Agricultural Support Programme (CASP) funded by DARDLA aims to improve all aspects of the farms such as: Infrastructure, financing, training, management support and extension services. CASP wants to focus on sustainability of the farms, instead of just infrastructure that was focused on in the past. Commercial farmers are looking after themselves, but this programme is focused on addressing the major issues among emerging and communal farmers. In addition to CASP, DARDLA is collaborating and devising a Tractor programme with the Mill Cane Committee where the small farmers can use the tractors as long as they pay the running costs.

Most of the projects that DARDLA are working on are on public or communal land, where 7-8% of the land is being irrigated. The apartheid government invested in 32 irrigation projects in the communal areas and seven of the projects have completely failed due to cash flow issues, debt, lack of management, support, and ownership of the project. According to an respondent from DARDLA, “government officials gets paid on how much of the budget gets spent, and most of the money is spent on infrastructure” (Marius Van Rooyen, Interview Nov 1, 2012). It is easy to spend money on infrastructure compared to dealing with governance and social issues. The solution to sustainable projects is ownership and resolving the social issues that plague projects. DARDLA is in the process of revitalising 10,024 hectares of irrigation projects in Nkomazi for sugarcane production (DARDLA 2012). The main emphasis in revitalising the irrigation projects are: pump stations, main lines and balancing dams. Many challenges are associated with irrigation schemes in the communal areas, and in their opinion many of the challenges stem from inadequate maintenance and various social/governance issues. According to DARDLA, any “new infrastructural development initiatives for agriculture must consider water availability, prior to engaging in unsustainable developments with high water demands” (DARDLA 2012, pg 16). In 2011/12 DARDLA drilled 52 boreholes in Nkomazi and only 29 or 56% were successful or ‘wet.’ The potential irrigable land from these borehole is 61 hectares affecting 21 projects and 685 beneficiaries.

### ***DARDLA and Agricultural Water***

DWA is the custodian of water; however the DARDLA still has the allocation power of 9,500 ha of water rights in the former homeland. The bills go to DARDLA and people don't pay their bills, but instead the tariffs are taken from their cane delivery at TSB. DWA sends agricultural water applications to the Department of Agriculture's engineering department in Nelspruit to review and comment on. The application transfers are reviewed and the department advises DWA if the farm that will receive the water, is viable and economical. Engineering department also looks at the land and the soil to determine if the farm is feasible for irrigation.

In an interview a DARDLA employee expressed concern that "there is lack of allocable water in the Inkomati, over-utilisation of water in most of the rivers in the basin and the surplus of farms demanding agricultural water has lead to a politically charged debates surrounding the allocation of water (Interview, December 13, 2012). Sugarcane farmers in Nkomazi are given 12,000 meters cubed per annum in water rights, but the farmers are only getting 9,500 m<sup>3</sup> per annum. Farmers are missing 2,500 m<sup>3</sup> per year and only getting 80% of the water allocation needed. The main issue is the amount of the water in the river and mismanagement of water in the Maguga dam. The last five years there were good rainy seasons, so the Maguga dam was full and the water allocation was never higher than 79% of their allocation or 9,500 cubic meters. Currently, 100,000 hectares are being irrigated in the former homelands; however 1.5 million hectares of land can be irrigated. Many people need water and many people that misuse water lack basic understanding of water management" (Interview, December 17, 2012). Some employees from DARDLA believe that if a farmer does not use the water they are allocated then they should lose it. An engineer from DARDLA said that "if a farmer is producing low yields then they should not get water" (Interview, November 15, 2012). Approximately 100 million cubic meters of water is allocated to former homelands and 200 million cubic meters to the commercial farmers. According to DARDLA 50% of the farmers are producing 75% of the sugarcane yield and the other 50% only produce 25 % of the yield. Efficient use of agricultural water is important to reduce the level of stress in the basin. DARDLA expressed that they have many burning

questions about Water Allocation Reform (WAR) in the Inkomati and DWA or ICMA have yet to answer them or solid finish date.

### ***Cooperative Governance***

From my observations DARDLA was in attendance and has a strong presence at all of the cross institutional meetings regarding agricultural water (including land reform meetings). DARDLA hosts The Mpumalanga Coordinating Committee for Agricultural Water (MCCA), which brings together multiple institutions to speed of the transfer of agricultural water by discussing and commenting on water transfer applications (discussed in detail in Section 6.8). They also maintain a good working relationship a some degree of collaboration with all the institutions interviewed. DARDLA works the most closely with the farmers on the ground and has extension officers living in Nkomazi. The extension officers in Mzinti are important for the farmers, but there are not enough officers to fulfil their demand and attend all the meetings for every sugarcane project. DARDLA is working closely with Land reform on the RADP project, but on several occasions the extension officers or appropriate employees did not show up to the meeting on the ground (i.e. Boschfontein Phase 1 meeting). Furthermore, many of the farmers and institutions interviewed felt that DARDLA are making false promises and lacking follow through (accountability). DARDLA also work closely with TSB on sugarcane projects and irrigation revitalisation and they have a good working relationship. At last, DARDLA admits that projects, mandates and institutions should be more closely aligned in Mpumalanga. An extension officer commented that there is a

*“lack of understanding about water and the NWA in DARDLA, though DWA tries to make presentations to HDI’s and emerging farmers DARDLA feels it is important to understand what is going on with water. Any irrigation projects should involve communication with DWA and ICMA, but this is not always happening” (DARDLA extension officer, interview, November 26, 2012).*

From the point of view of a respondent from DARDLA “the irrigation boards in Nkomazi are the ones really managing water in the area, and the Lomati/Komati irrigation board have the capacity, are proactive and therefore are effectively managing water” (Interview, December 17,



2012). A key issue according to DARDLA is current and/or potential water users are going to various institutions regarding water authorisations or issues, instead of directly going to DWA.

#### **6.4 Department of Rural Development and Land reform (DRDLR)**

*“How do you change the landscape of South Africa? And how to bring black emerging commercial farmers in the playing field? Programmes have been in place in the past to introduce Black farmers into the mainstream, but they have not had the required impact”* (DRDLR, Interview, November 8, 2012).

DRDLR wants to revitalise both communal and land reform irrigation schemes and sugarcane farms through the recapitalization and development projects (RADP). The RADP grant covers all pertinent aspects of the farm and requires the farmers to form a cooperative and consolidate the farmers into one unit. The RADP funding covers inputs, governance aspects, infrastructure, irrigation revitalisation costs, but does not pay off each farmers individual debt. DRDLR felt that this was the most effective use of budget and would have the maximum impact on livelihoods and development (DRDLR employee, Interview, November 20, 2012). The cooperative must devise a business plan and constitution with the help of the NGO, LIMA. DRDLR is stressing sustainability under the RADP and a means to achieve long term success is through solving past governance and social issues amongst the farmers. A case study will be outlined in the farmer finding Section 8.1 regarding RADP and failure communal irrigation schemes.

DRDLR in Mpumalanga sees sugar cane as “green gold” in Nkomazi due to the high demand and returns. Most farms in the Nkomazi have claims on them, so the sustainability of the mill is at risk if communal or land reform sugarcane farms fail. There are vast tracks of land to be developed for sugarcane farming, but there are huge issues with obtaining water rights according to DRDLR. A DRDLR employee commented that “many impoverished communities struggle with unemployment and high potential land is sitting next to them with no water authorisation” (Shakespeare S, Interview, November 6, 2012). Furthermore, another DRDLR senior employee said that “all the water is committed in the Inkomati and black farmers are

finding it difficult to enter into sugarcane farming due to their failure to access water. In terms of water reallocation the only positive thing that has happened for HDI farmers is buying a farm with water.” (David Gindiza, Interview, November 6 2012).

Some land reform farms have irrigation infrastructure, but the most important thing is the farms come with water rights, even if the infrastructure is old. Informants from DRDLR recognise that “land without water does not have value...[and] what inflates the prices of land is water and I am always praying that it rains” (DARLR, Interview, November 6, 2012). DRDLR mentioned that a key issue is lack of new water allocations in the Inkomati combined with the old and deteriorating irrigation infrastructure in the communal areas. People were planting sugar cane on the land and 60 to 70% of the land was not suitable for sugar cane. In addition DRDLR commented that the Landbank<sup>25</sup> was lending recklessly which resulted in the inability of farmers paying back their debt and fallow fields. In Nkomazi the PLAS redistribution programme has bought 17820,81 hectares of land in Nkomazi. Many of the PLAS farms are owned by the Royal South Africa Government and have been leased to commercial farmers to keep the farming running until the farm is handed over. According to DRDLR, Nkomazi Restitution farms equal a total of 38,866 hectares and the number will continue to grow as claims are settled.

### ***Representation and Water Governance***

DRDLR feels DWA needs to inform rural farmers about the water legislation and sensitise them so they are aware what are their alternatives are regarding water, what is happening, and how they can participate in water governance. Shakespeare, a senior DRDLR employee, was involved in the DWA public consultations before the legislation was past in 1998 and again when the ICMA was established in 2004. He feels that “these consultations were not filtered down to the grass roots level and there is a need to strengthen local level participation” (Interview, November 6, 2012). He further commented that “people living in the rural areas do not understand this complicated NWA, NWRS or the role of the CMA because they just want food on their tables.”

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<sup>25</sup> Landbank only gives loans to farmers with water rights.

Furthermore he said that the majority of communal and land reform farmers are “illiterate about the NWA and believe that water belongs to god” (ibid)

The HDI farmers don't understand why they can't farm their land if they don't have a water license because they see water flowing in the river and they say “what do you mean there is no water” (DRDLR, Interview, November 20, 2012). Many black farmers are not aware that land and water is separate and “how do you tell them it is committed because you cannot tell them DWA and the CMA own the water” (ibid). DRDLR finds it difficult to inform communities about water governance and to tell farmers that just because there is a river flowing through their farm does not mean they can take it. Many farmers come to the DRDLR office in Nelspruit saying they have no water and they tell the farmers to go to DWA to apply for a license. The farmers are not aware of the formal channels of water access or the NWA or DWA and the ICMA would be flooded with farmers everyday asking questions. “Those famers who go to DWA go because we refer them there” (DRDLR, interview, November 6, 2012).

### ***Water Debt Issue***

Water debt on the land reform farms is a major issue and the department is beginning to lose farms claimed only ten years ago to auction because of water debt. The issue according to DRDLR is the land claim farmers get water rights; however they lack of funds, support and the skills to run and manage a farm. The beneficiaries often cannot work the land right away when they receive a farm and the water rights bills add up, and DWA comes and says “we have to take the land”. If the farm is fallow, then the farmers must still pay for the water even if they don't use it. Water rights are not being used and the bills accumulate to 300,000 per year and the farm gets auctioned. DRDLR provided an example of a redistribution (LRAD) 265.50 ha farm in Nkomazi named Solane Community trust. The Solane community rented out their water rights and the money the beneficiaries made went into their pockets instead of paying of their previous water debt, so the farm was repossessed by the bank.

There is a need for a better programme to help farmers with water debt. An informant from DRDLR said “there must be better ways for emerging farmers to be allocated water” (DRDLR, November 20, 2012). DRDLR finds it embarrassing to buy farms to redress past inequalities and the farm gets auctioned due to water debt, so they have to buy the farm back again because of water. The department sets targets on redistribution, so they must keep the land in the department. It is a waste of public money and “this is reversing the gains of freedom (DRDLR, Interview, November 10 2012). A employee of DRDLR said “ I am sorry to say this, but we don’t want the farms to go back to white hands (Personal Communication, November 8, 2012).” A key informant from DRDLR commented that “we have obtained political freedom, but there is a cry for economic freedom” (ibid). From their point of view, DWA does not want to align their programmes or come up with special programmes to deal with the water debt issue for emerging farmers.

### ***Cooperative Governance***

DRDLR hosts the Land Reform Development Committee, which was formed in March 2012. The meeting is chaired by the South African Sugar Association. TSB, SASA, DRDLR, DARDLA, KMPG accounting, and two farmers attended the meeting. This meeting also acts as a forum for farmers to express their concerns. The meeting lacked any representation from DWA or the ICMA. Representatives from Land reform had not attended the MCCAWE meetings and two senior employees were not even aware of the meeting. In addition two key informants felt that the Catchment forums are simply to discuss, but have no relevance in terms of making an actual impact. Thus in their view, water forums must not just be about discussing issues, they must carry weight. From my observations a disconnect and complete lack of communication exists between DRDLR and DWA. Both are complaining about each other, but neither institution is taking any action to improve the situation. To improve the conditions for black communal or emerging farmers it is essential that these two institutions collaborate and align their programmes and mandates.

The lack of alignment of the various governmental programmes for the benefit of communal and land reform farmers is a key issue. In an interview with the head of the NGO LIMA, he said that at an institutional level there is the silo effect where none to very little interconnectedness, cooperation and communication exists and “every time there is a new minister of land or water affairs they forget the lessons learnt” (Interview, November 15, 2012). DRDLR is working closely with LIMA, TSB, to some degree DARDLA. The land reform employees had some negative connotations towards both the ICMA and DWA and one respondent commented that “DWA must acknowledge the role water has in changing peoples lives in our country with skewed access to resources... DRDLR, DWA and DARDLA are three critical departments that should be collaborating and working together” (ibid). They feel that the one institution that is not collaborating with DRDLR is DWA. CMA’s are commissioned to carry out water governance; however “I want to work with DWA who had a constitutional mandate to deal with water allocation and custodianship” (DRDLR employee, Interview, November 24, 2012). Currently, the department is not participating in DWA structures, they communicate on an issue basis, and just recently entered into discussions with DWA regarding water debt.

DRDLR feels that government institutions need the responsibility to ensure programmes are designed to make it easier for black farmers (emerging) to break into commercial farming. A DRDLR informant passionately said “I don’t see DWA coming up with any programmes to assist black farmers and they pay the same rate as white commercial farmers. We are still waiting for programmes from water affairs” (Interview, November 6, 2012). They feel DWA is punishing their department because of the high water bills, lack of aligned programmes and the farms being auctioned off. The same respondent also said that “poor black farmers [because of Apartheid] should get water for free for a particular period so they can compete...[DWA] must have deliberate programmes aimed as those people who were deliberately made the way they are by Apartheid” (ibid) As stated by DRDLR they are the leading department on Rural Development and they have a large budget, so DRDLR is prepared to work with DWA on developing aligned programmes and sharing the financing. The respondents discussed that DARDLA does not have a big budget and the CASP project is mostly focused on infrastructure development. They also

noted that competition exists between the two institutions, and that DARDLA says that land reform just gives money to projects and they lack evaluations and monitoring. Political will exists among the institutions, however according to DRDLR there seems to be competition not cooperation especially at the district and provincial level.

According to the key respondents from DRDLR there are no easy solutions to all the water issues; however if the departments could align programmes and work together this could solve most of the problems. Farmers are key stakeholder in water management, so it is important to DRDLR that the voices of farmers are heard and they are informed. DRDLR believes that cooperative governance is key to solving all the issues with water allocation and management. The legislation to ensure cooperative governance such as the Development Facilitation Act or the Inter-Government Relations Act should be enforced to ensure collaboration, integration and less overlap of mandates. “Water allocation cannot be done in isolation from other departments because it has an impact on the other departments...Programmes must be put in place to make it easier for black farmers to get access to water and to understand the water policy” (DRDLR, Interview, November 24, 2012). In addition he commented that “there is a legislative and constitutional basis in terms of developing the lives of people; however the pace is slow on the part of government and we lack partnerships to collaborate with our department” (ibid).

### ***6.5 The Komati and Lomati Irrigation Boards (IB)***

The head irrigation board office is responsible for the management of the Komati and Lomati rivers and the head office is located in Malelane, Nkomazi. The IB is responsible for the administrative activities, enforcement, facilitation of water leases and transfers. Also, the IB works with the technical aspects of water management, and two employees ensure the water metering systems are functioning and running on the Komati, Lomati and Crocodile. Each month KOBWA looks at the water level in the Dams and they determine the allocations to farmers according to the water levels in the Dam. Andre, from TSB and Willie du Toit will then distribute the water to the irrigation boards. Every second month the irrigation boards meet and they are told how much water was abstracted last month and the distribution of water for the month. The

irrigation boards try to accommodate farmers needs for example from August to September citrus growers need more water, so the irrigation boards try to save water because sugarcane does not grow very much in those months. From October onwards “it is crucial for sugarcane farmers to have enough water...we try to allocate water to please everyone” (irrigation board employee, interview, November 20 2012). It is especially important to save water because if it is a bad rainy season then it is critical that sugarcane farmers get water allocations. The IB sees water scarcity as a major issue because there is not enough water allocations for the demand of the farmers. All the rivers are stressed: Crocodile, Lomati and Komati and in some years in the past water use has been restricted and sugarcane farmers experienced huge losses when water was restricted (Irrigation board interview, 22 November 2012). From all the institutional interviews conducted the general consensus was the irrigation boards are functioning and effectively managing the water (Several interviews and communication with various institutions, 2012).

### ***Challenges***

A major challenges is associated with the installation of water meters in the middle komati (case study is presented in section 8.2) and the difficulties in getting the farmers understanding the importance of the meters for water management. Another issue is that culturally black farmers believe water is a gift from God, and many farmers do not realise that land and water are separate. Difficulties have arisen for the irrigation boards in getting emerging (communal and land reform) farmers to understanding why they have to pay for water (Irrigation board interview, November 20 2012). The IB facilitates the transfer or leasing of water rights with one condition is that all water debt must be paid on the farmers account in order to be able to transfer or trade water. Trading of water from one to forty years is permitted if no further irrigation activity exists on the land of the seller. Farmers that have fallow fields or broken infrastructure with decreased or no yield have major challenges in paying their bills and currently nobody is taking responsibility. A 100 ha farm will pay between and 50,000-70,000 Rand<sup>26</sup> per year for water. Even though the water in the Inkomati charges some of the lowest rates compared to other basins in South Africa, farmers still cannot pay the bills if their field are fallow. The irrigation

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<sup>26</sup> In December 2012 1 USD equaled 8.48 Rand or 1 Rand equaled 0.66 NOK

boards try to tell the black farmer representatives to tell other farmers about leasing water rights, but people are not aware of this process and the black farmers are suspicious and think if they lease their water they will lose it (Irrigation board Interview, 27 November 2012). There are major issues with false perceptions of the formal system among black farmers and the translation of the messages from the irrigation board meeting back to the farmers on the ground. The representatives are paid 100 Rand (close to 12 dollars) as incentive to come to the meetings, but many of them are not interested or actively participating (Lomati chairperson, Interview, 27 November 2012). There are many challenges for the IB, however I will focus on the following in the next section: Conversion of irrigation board to WUA, water theft and water debt.

### ***Conversion to a WUA***

In the Inkomati, 26 Irrigation Boards are operating under the previous Water Act of 1956 and 2 Water User Associations, Elands River and Upper komati WUA, have been established under the 1998 NWA, but neither are operational. The Irrigation boards want to convert to WUA. DWA's perception is that the irrigation boards don't want to transfer in WUA. Immediately after the 1998 NWA, irrigation boards drew up constitutions to convert to a WUA. Irrigation boards still want to convert to a WUA. The irrigation boards want more stakeholders to be involved including HDI's, municipalities, forestry, tourism etc. A key issue with converting the irrigation boards is transferring assets(ex. canals or weirs) or debt. Key questions are what will happen to the assets when a WUA is formed, irrigation boards are scared of free-riders (WAR consultant, personal communication December 2012). According to the chairperson of the Lomati irrigation board "many people actually don't want the irrigation board to be converted to a WUA, [but] I believe that the irrigation boards need to be converted" (Interview, 27, November 2012).

The IBs try to balance the farmers attending the meetings to be 50% emerging growers and 50% commercial white farmers. The government desires to get a balanced sheets of black and white farmers within the irrigation boards and challenges arise because both groups are different and originate from very different cultures. Black farmers are more relaxed, philosophical, understanding, and not trained to think ahead or plan; in contrast white farmers can be greedy,



well informed, plan and budget for the future. Some of the black farmers have the mentality “that you owe us” (Lomati chairperson, interview, 27 November 2012), which stems from Apartheid. In the study are the Lomati chairperson is a white man that speaks fluent siswati, and the chairperson of the Komati irrigation board is a black man that is fluent in the local languages. This helps the black farmers feel more comfortable, when the meetings are translated and there is equal representation. The chairman from the Lomati irrigation board said that;

*“we have equal representation, [however] black farmers seem to be out of the loop. The boards counting on the representatives to take the messages back to the communities and other farmers, and the I think that this is not effectively happening” (Interview, 27, November 2012).*

### ***Land Reform Issues and Water Debt***

Currently in the Inkomati, several million Rand (over 235,849 USD)<sup>38</sup>of unpaid water tariffs are owed to IB’s and DWA on land claims (IB interview, November 27, 2012). Water debt is a key challenge for all of the institutions in Nkomazi and the IB feels that nobody is taking responsibility in solving the problem. An informant from the IB explained that a large problem exists because several million Rand are owed to the irrigation boards/DWA on land claim farms. The IB suggested that the lawyers for land reform should be checking the debt on the land before the farms are bought and also said that “the billing process lacks follow through and enforcement by DWA” (IB employee, interview, November 20 2012). The IB highlighted a case where a white farmer in the Lomati had 700,000 Rand of water debt and he sold the farm to Land reform and the farmer never paid the debt and got away with it. The irrigation board notified DWA, who notified Land reform. Then land reform leased the farm back to original farmer and land reform is paying the water debt. This is a complete loop and a waste of public money.(Lomati irrigation board chairperson, Interview, 29 November 2012). He also said that often, the beneficiaries or land reform are not aware of the outstanding debt and there is a complete lack of communication and capacity to deal with these issues(ibid). Another case described by the IB was related to Inala Farm, a flagship land reform farm, that has had to be helped back on its feet twice. The community has destroyed the farm, accumulated both financial and water debt and at

the time of the research their lawyer is negotiating with DWA about the water bills. Sloppy land reform farm transfers are a key challenge in Nkomazi where the beneficiaries lack capacity to take over a farm with a operating cost for example of 8-10 million Rand per month. The previous owners often grew up on the farm and have tons of experience, so when the transfer to the beneficiaries the farms often get run down. Nkomazi is much better than other areas; however TSB cannot afford another farm to go fallow (Irrigation board interview, November 2012).

### ***Cooperative Governance***

The IB collaborates with the ICMA on a regular basis, especially since ICMA has received more mandates from DWA. Willie du Toit from the irrigation board works with the ICMA extensively on water quality. The IB works with DWA on billing and the IB bills the water users on DWA's behalf. The IB is however not responsible to collect or enforce the payment of the water bills. The irrigation boards receive a percentage of the paid bills from DWA. The water use charges if collected by the IB would fund the CMA, however a contract disputes between the IB and DWA has prohibited this from happening.

The IB employee or representatives from the IB's often attend the ICMA or DWA meetings and a member of the IB spoke in reference to the November 15 ICMA stakeholder meeting that he feels "the ICMA is starting where we were 10 years ago and we are not getting anywhere. The same issues are brought up each year at the stakeholder meetings" (Interview, November 27 2012). He also thinks "there are issues in the translation of the messages from the meeting back to the departments" (ibid). From the perspective of the irrigation boards a major issue is the lack of flow of communication and cooperation among various institutions regarding agricultural water. The IB noted that the lack of communication between the IB and DRDLR is a major problem because all the water to date has been reallocated through land reform and DRDLR is not updating the IB with pertinent information about the beneficiaries and farms. An employee from the irrigation board told me that "if I was not on the ground, the [the irrigation board] would not know if a farm was sold...We write tons of letters to Land reform[DRDLR} regarding these issues and there has been no resolution" (IB, Interview, November 20, 2012). According to

the IB, DRDLR is suppose to report the status of claimed or transferred farms to DWA, then DWA should report this information to us. This flow of information is not happening and irrigation boards lack important information regarding the beneficiaries, and have no way of ensuring their participation in the irrigation board or that the beneficiaries are aware of the billing and transfer system.

### ***6.7 TSB and sugarcane organisations***

TSB is the main private sector actor within my research and they have learned lessons on social facilitation and genuinely have made advances in building trust and improving institutional arrangements among HDI growers. On the other hand TSB is a for profit company that is reliant on all growers to fulfil their cane delivery agreements, which is best achieved through large scale commercial agriculture. TSB is the largest sugarcane factory in South Africa. TSB provides 3,500 permanent jobs in Nkomazi. 4 million tonnes per year are crushed between the Komatipoort and the Malelane mill. According to TSB 67% of sugarcane supply in the area is delivered from communal lands or restitution farms (TSB, Interview, November 12, 2012). There are 10,000 hectares of small scale farmers in the area. Small scale farmers have the resource capacity to deliver 800,000 tonnes of cane and currently they only deliver 400,000 tonnes. TSB has contributed to the successful hand over (operational and profitable farms) of many land reform farms in the area due to its various programme listed below.

TSB is a mentor for RADP project and puts business plans together for the RADP projects to ensure sustainability of the projects and to receive the the grant money from DRDLR.

Hydrological and soil studies are done by TSB to ensure the viability of the projects. In addition to the mentors, TSB has extension officers and project committee department that provides support and early intervention to small growers and emerging growers. The intervention includes: Grant funding, fixing the irrigation infrastructure, providing seed cane and input costs. As a RADP mentor, the extension officers and social facilitators assist the farmer or project to

ensure the cane delivery agreement<sup>27</sup> is met and the debt is paid. In addition to TSB's mentoring role, TSB has joint ventures with land reform farms, which have been considered very successful. TSB has also worked with land reform farms and communal farms to lease/trade water.



**Figure 1.6 TSB Malelane Mill, Nkomazi**

A key issue for sugarcane growers is their cost of living exceeds their income. Attention to detail has become more important as margins decrease in the cane industry. Ten years ago it was easy to make money as a cane grower, now food prices and school fees have gone up and profits have gone down for small farmers resulting in farmers spreading less fertilisers, weeding less or

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<sup>27</sup> The cane delivery agreement is a contract signed by the farmers outlining the the tonnage of cane and the date it should be delivered to the TSB mill. TSB looks at the water authorization, past tonnage from the farm etc. to ensure the viability of each particular farm in fulfilling the cane delivery agreement.

irrigating less because of electricity costs. This cycle leads to lower yields and profits until the cycle leads to a failed farm with large amounts of debt ( TSB, Interview, November 12, 2012). Not taking profits to reinvest in the farm; therefore everything collapses. An employee that solely works with land reform farmers said that “it is important to understand our clients in order to maximise their success and for them to break out of the cycle of poverty” (Dave Thompson, Interview, November 12, 2012). Slowly building the change is important to TSB instead of trying to make unsustainable rapid change. Building trust is important for TSB and they are trying to understand the issues that plague these failed projects. Some of the communal farmer are learning to accept change and breaking into the formal system is a major issue when it is not working for them (ibid). A previous employee of LIMA works with TSB on understanding and solving the social and governance issues that plague projects said that the 7 projects in the communal areas that have failed are accepting consolidation as a last resort now they are prepared to listen because they are desperate (TSB social facilitator, Interview, November 21, 2012).

A women is in charge of social facilitation for TSB aids farmers in forming a cooperative and works with them to communicate and solve issues within groups of farmers. If farmers want to form a cooperative then her job is to make sure all the members want to be apart of the cooperative and she give the farmers information. She talks to them about Group dynamics problem solving, leadership, and tries to capacitate them on how to agree and come to a consensus (ibid). The farmers are venturing into a new way of doing things, so TSB and LIMA helps them understand the process and gives them the skills they need, instead of assuming the farmers will figure it out (TSB social facilitator, Interview, November 29, 2012). TSB has learned that technical and infrastructure issues can be fixed, but projects can be delayed or will completely fail because of unresolved social issues. She said that “in the past development projects were done by technical experts, [such as] engineers and many of those projects failed because the social issues of the project [were] ignored. Projects and institutions need to understand that the social and technical are linked” (ibid). There are projects in Nkomazi that have new irrigation and all new infrastructure and the social issues are prohibiting the project

from prosperity. Several challenges HDI farmers face that were discussed in detail by TSB were: high input costs, literacy, numeracy challenges, aging farmers, sloppy land reform hand overs, difficulties managing resources, participation, water debt and widespread unawareness regarding water policies.

### ***TSB and Water***

Water debt is a huge deal among black farmers, so TSB is encouraging farmers not to give up access to land and water by informing farmers that they can lease their water rights. For example one restitution farm was fallow and still had 300 ha of water rights, so the beneficiaries leased out the water for 20,000 Rand a month. TSB supports these transparent leasing processes in collaboration with the irrigation boards. TSB has one employee directly working with irrigation and water issues amongst TSB farmers. According to TSB "there is very decent land left for irrigation in Nkomazi; however with energy costs so high now we have to look at the land and the quality of soil for irrigated sugarcane" (Manager of Land Reform at TSB, Interview, November 12 2012). Another respondent that works with the farmers on the ground felt that "many farmers are unaware of their ability to transfer water rights" and nobody is really taking responsibility to inform them of these processes (TSB social facilitator, interview, 21 November 2012). TSB informants all discussed that Water Allocation Reform (WAR) is a big issue in the region for farmers and a major issue is farmers not having sufficient water rights to plant sugarcane on their piece of land. This is a really complicated issue because black farmers cannot understand why they cannot get more water. According to TSB many black farmers always feel the white farmers are favoured to get the water in the Inkomati.

### ***HDI Farmers Participation in Water Governance***

According to TSB their small scale growers think it is good that they have representation in various structure such as the irrigation board; however their main challenge is they don't have a strong enough voice and are not influential yet. A key issue brought up by the TSB social facilitator is the issue with language and translation in water governance meetings. Some farmers have complained to TSB that some of the IB meeting are in Afrikaans and many of the

stakeholder meetings are held in English. Some of the farmers say they can speak or understand English but they really don't, so the farmers are present but lack the important messages from the meetings. TSB feels as institutional stakeholders it is important to break the messages/manuals/training etc down to the level of the farmer and in the mother tongue of the farmer to make the material meaningful. "When farmers just say yes to everything, this is a sign they are not understanding [and] it is embarrassing for them to say they don't understand." (TSB social facilitator, 21 November 2012).

Black farmers attend the irrigation meeting and the important messages are not getting back to the farmers on the ground. From the IB meetings, the representative decides what is important, and what is not important and only the representative's perceptions are relayed back to some of the farmers. In the opinion of a TSB employee the "black farmers don't have an understanding of water management [and] lack knowledge how the whole water network operates" (TSB employee, personal communication, November 29 2012). Furthermore, it is "important [for black farmers] to have a voice and the capacity to represent on the irrigation boards. They go to these [irrigation] meeting with the big guys and they get bulldozed and can be intimidated" (ibid).

### ***Relationship with HDI Farmers***

Historically, TSB has not had the best reputation with black farmers, and a large amount of mistrust existed. Today, however things are changing and from my observations the extension officers have great rapport with the farmers. The extension officers are able to speak the local languages and the farmers are able to relate to them. I met five TSB extension officers over the course of my research and found that they are aware of the issues on the ground and really care about the livelihoods of their farmers. I visited several projects with a TSB extension officer and he waved, smiled and greeted all the farmers with respect and courtesy. That particular extension officer also told me that if one of his farmers dies he attends their funerals and the "TSB is really working hard to repair the past" (personal communication, December 10 2012). Many farmers also blame or distrust TSB for their problems, which will be described in more detail in the

Farmer Findings (Section 8). TSB is a business that relies on communal and land reform farms for cane supply, so I found that they are more efficient and timely at responding to their farmers needs.

### ***Cooperative Governance***

TSB is working closely and is engaged with all the institutions and stakeholders involved in water and agriculture. TSB has representatives attending the Land reform Development committee, Mill Cane Committee, Irrigation board meetings. TSB also attends all of the ICMA and DWA meetings and forums. TSB works with DWA, Mpumalanga cane growers association, and South African Sugarcane Association. According to TSB “we try to collaborate but it is difficult because we all have difference mandates [and] as stakeholders we need to find common ground for example: Land reform has grant funding, TSB is an expert in the market, DWA is the expert in water management and Department of Agriculture has free tractors and inputs.” (TSB social facilitator, 21 November 2012). TSB mentioned that they try to coordinate stakeholder relationships/meetings with other institutions (LIMA, DARDLR, DRDLR) to try and avoid fatiguing or wasting the farmers time with meetings and overlapping questions. In terms of integration, TSB is one of the best at aligning programmes, studying policy and participating in cooperative governance forums.

### ***6.8 Cooperative Governance: Stakeholder Forums, Committees and Meeting***

*“Water should be flowing to everyone, not just the rich” (Land Reform Farmer; November 2012)*

National Water Act steered by IWRM stresses the importance of integration and cooperation among all stakeholders. Integration is especially important at the institutional level to ensure mandates, projects and programmes are aligned. Meeting, forums and committees at an institutional level are crucial to the success or failure of the implementation of IWMR in the Inkomati. In the section I will outline my observations and overall finding in respect to participatory and stakeholder(all levels) meetings, forums and committees that I attended.



Forums and water related meeting must have more impact to gain legitimacy amongst rural farmers. I agree that it is important to discuss the issues between stakeholders; however farmers feel little has changed since the establishment of the ICMA. Meeting and forums must make an impact to improve stakeholder attendance and contribute to effective decentralisation of water management. The forums still lack crucial heads of departments in attendance. For example the Crocodile and Sabie forum's wants someone with authority from DARDLA to attend the meetings even though several letters were written regarding the importance of these meeting and forums to the head of the department (DARDLA). The head of all the departments should recognise the importance of these meetings and forums in hearing the concerns of various water users and stakeholders. However, some institutions and stakeholders, such as agriculture, have more interest in water allocation and authorisation, so they are the ones attending and participating in the meetings.

At the ICMA stakeholder meeting a representative from the ICMA said "you are eyes and ears out there, we only have so much staff. Your input is important. We rely on forums to get info from stakeholders and everyone should participate to create a better future." The issue is that only the well informed or powerful in the communities are effectively participating, so the voices of the most marginalised farmers are not included. The ICMA or DWA must have more on the ground presence to ensure the voices of the people not participating in forums or meeting a chance to speak up.

Many of the HDI farmers are sick of the status quo and simply are not satisfied with attending a meeting for a free trip and meal. In addition, I observed that the invites given to the farmers on the ground were very ad hoc or last minute, and many of the farmers only heard about the DWA NWRS2 meeting from the ICMA field community liaison at the Mill Cane Committee the day before the meeting. Also, the meetings are often in English or Afrikaans and many of the HDI farmers are not comfortable communicating in either of those languages. Some of the meetings were translated when requested, but often large parts of the discussion or meeting were not

translated to one of the local African languages. In addition, at both the ICMA and NWRS 2 stakeholder meetings several HDI farmers questions remained unanswered because they were short on time.

A diverse group of stakeholders attended the NWRS2, and several of the same emerging farmers that attended the ICMA stakeholder were present and many of the question or comments also overlapped. Due to the difficulties in obtaining water licenses and lack of accountability farmers are finding other channels to access water. An emerging farmer commented that “farmers are building illegal dams because they apply and hear nothing back from DWA.” The farmers attending or not attending the meetings are unsure how to access information regarding water or who holds the decision making power because so many overlaps exist. The HDI farmers were speaking up at the meetings I attended, but I observed that their questions were not being answered concretely, or no solutions were discussed, or the response was “that is not our mandate.” The HDI farmers at the meetings wonder “Who is blocking water from us?” A HDI farmer spoke up and said that “water should be flowing to everyone, not just the rich,” and that policies should affect the poorest/emerging farmers. Many of the same questions were being asked by the HDI farmers at all the meetings I attended and all the questions were related to WAR, redressing inequalities or water access (both wet and paper).

I felt that many of the important more political topics or questions were either not brought up or not responded too. From my observations the discussions were focused on getting the technical or environmental aspects of water management right before the more challenging and political reallocation and equity aspects were addressed. At the ICMA stakeholder meeting in White River, an emerging farmer passionately reminded the ICMA and DWA that “it is your legislative mandate to redress the inequalities of the past” (November 15 2012). These issues brought up by HDI farmers will be described in detail in the farmer findings (Section 8).

### ***Mpumalanga Coordinating Committee for Agricultural Water (MCCAW)***

In regards to the MCCAW meeting held in Nelspruit. Major issues exist with representatives from Land Affairs, Land reform (DRDLR) and the municipalities not attending. The meeting I attended there were only eight representatives and all were from DWA and DARDLA. All the representatives in attendance were concerned with getting the meeting up and running, to ensure that the process of water transfers are sped up. In comparison to the well attended Limpopo MCCAW meetings, the MCCAW is not functioning very well in Mpumalanga. DWA proposed guidelines for the meetings and a white paper was drafted by parliament, but it was just a political document with no real guidelines (DARDLA representative, November 11, 2012). Here is an example of overlaps and confusion in institutional mandates and water policy. The ICMA at the last meeting MCCAW meeting had requested that dam building for small scale water users be on the agenda. First, the ICMA was not in attendance to follow through with the request. Then, DARDLA representative said that he thought “that dams less than 10,000 m<sup>3</sup> are ok to construct without a license, but I heard that has changed?” Then the DWA representative responded that the farmers must apply for a license through DWA even if the dam is 10,000m<sup>3</sup>, then DWA will visit the site, then DWA will inform applicant what they should do. DARDLA representative said that small or emerging farmers don’t have money to follow the application process. He went on the comment that we have done many small dams for small scale farmers without a license and I thought up until now 10,000m<sup>3</sup> is ok, so when farmers come to the Agriculture side “we (DARDLA) now will follow the guidelines, even if we don’t believe in them.”

The MCCAW meeting is the most relevant cooperative governance meeting regarding agricultural water. The representatives are well informed in regards to agricultural water and irrigation and even 24 years after the NWA was promulgated the Department of Agriculture and Land Reform still are unclear about the water rights and authorisations. A representative from DARDLA said that “there should be a workshop given to ‘land affairs’[meant DRDLR] and they should be apart of this meeting...same with Agriculture extension officers and the Head of the Department should be invited. DWA must organise workshops for awareness.” Previously DRDLR (Land Reform) was called the Department of Land Affairs, now previously the

Department of Agriculture is now called the Department of Agriculture, Rural Development and Land Administration. One of the DWA representatives at the meeting commented that “I want to know the difference between land affairs and administration.” Nobody was really clear what the difference was and another representative from DARDLA said that “it is easy to get confused about the institutions.(November 11, 2012). According to a manager in Department of Agriculture(DARDLA), “[MCCA] is not a meaningful meeting. There is a lack of leadership and follow through. Recommendations and ideas from the committee are not put forward” (ibid). A DARDLA representative at the meeting said “a change of water into new hands should not be that difficult.”

At the MCCA meeting DRDLR was not present, so they had no opportunity to explain the issue of restitution farms being bought without water rights or water debt. “Ignorance by land reform is prevalent and the most important thing is that water should always come with the land” (MCCA DWA representative, interview, November 14 2012 ). Other issues brought up at the meeting was when farmers sell their farms to land reform, then the farmer sells the water rights after the deal has been finalised. DWA and DARDLA were unsure about the guidelines and policies that DRDLR has regarding purchasing land reform farms. At the meeting some representatives felt that there is a complete lack of guidelines surrounding land reform farms and water authorisations. A representative from DWA believes that DRDLR is not aware of water rights/authorisations and they only worry about land. The same is true with DARDLA. “People think they can make water” (DWA representative, MCCA meeting, November 14 2012). In addition, DWA or ICMA has not worked with DRDLR to inform farmers of their rights regarding water allocations. This has resulted in large water debt and the loss of many land reform farms.

## 7. Sugarcane Farmer Groups

This section describes each farmer group of importance to the research. The focus was primarily on black farmers, sometimes called land reform, emerging farmers, small scale or HDI farmers. In defining and studying different farmer groups, I am to unpack the challenges and dynamics linked to the the regional institutions, participation, and other key challenges in accessing water. By breaking down the farmer groups I was able to investigate and categorise the challenges and realities in more detail, and also discover the differences and similarities across groups. An appropriate breakdown of the farmers for this research was to categorise the farmers into communal (often referred to as small scale growers), land reform (often referred to as emerging farmers) and commercial farmers. By breaking them into these groups I avoided the ambiguities and subjective definitions. For example, TSB defines all small scale growers any farmer who delivers less than 5000 tonnes per ha of sugarcane<sup>28</sup>. I found each institution interview categorised emerging and small farmers in different ways according to sugarcane output, colour of skin or hectares of land.

As a result of apartheid policies the majority of black farmers in the study area are referred to as potential or emerging farmers because they lack water authorisation, must develop stronger networks, and lack planning and management skills to high-input irrigated farm (Woodhouse 2012 ). The communal farmers and land reform beneficiaries are also described as Historically Disadvantaged Individuals<sup>29</sup> (HDI) in the literature. It must be noted that HDIs is a category of people created after the end of Apartheid, which “reflected the democratic government’s goal of addressing inequalities through affirmative action” (Movik 2012, pg. 65). It is suggested that there maybe a better way to classify individual who suffered from the Apartheid regime because the general categorisation of HDIs is based on colour and “it fails to adequately distinguish those in real need of affirmation and empowerment” (ibid, pg. 77). For the purposes of the paper I will continue to use HDI because a clearer classification has not been distinguished, in addition when

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<sup>28</sup> Small scale growers are eligible for the supplementary payment fund which is calculated based on the tonnage the farmer delivers. The lower amount of cane the farmer delivers increases the per tonne payment the farmer will receive for their sugarcane.

<sup>29</sup> Also referred to as Previously Disadvantaged Individuals. Would prefer not to use this terminology however it proved difficult to find another concise word to describe this group of people.

the term in used in my findings and discussion it is referring to black communal and land reform farmers that have not necessarily enduring equal suffering during the Apartheid regime.

All of the local level case studies were carried out in Nkomazi (see Figure 1.6). All groups of sugarcane farmers are represented by the Mpumalanga Cane growers association and deliver their cane at the TSB mill in Komatipoort or Malelane. In Nkomazi, the economies of scale commercial growers enjoy allow for easier access to credit to reinvest or to upgrade the farm, which in comparison is difficult for the less commercially viable small farmers. I first will describe communal farmers, then land reform farmers.



**Figure 1.6 Map of Nkomazi and Part of the Former KaNgwane Homeland.**  
Source: King 2005

## 7.1 Communal farmers

*“The communal areas are home to nearly a third of all South Africans and the site of the deepest concentrations of poverty in the country. Many residents have insecure forms of tenure, which is both a potential source of conflict and an impediment to investment and development” (Hall 2004, pg. 48).*

Communal land is comprised of the former homeland that is tribally owned, not titled with the chief issuing a Permission to Occupy (PTO)<sup>30</sup>. The chief is the custodian of the land in the communal areas, but has no power to allocate water. Historically, when the irrigation schemes were being built, securing a PTOs to a irrigated plots differed depending on the Chief and Tribal Authority. Some Chiefs wanted money or cattle, and it was up to his discretion to determine the size and quality of the plot an individual received.



**Figure 1.7 Nkomazi, TSB Sugarcane fields, kids playing the floods, cane being delivered.**

<sup>30</sup> Also referred to as right to occupy (RTO)

For these reasons, inequalities in access to water not only exist between white and black farmers, but also within the communal areas between genders and socio-economic classes. Access to land and water are important drivers of poverty alleviation in the communal areas, but unfortunately not everyone is included. Communal lands have massive amounts of small farmers and the demand for land and water has increased drastically in the last twenty years. These farmers will be the most affected by WAR in Nkomazi as demand for water continues to rise in the communal areas. Small-scale growers in Mpumalanga face future sustainability challenges, which is driven by small farm sizes, failing irrigation infrastructure, water access and institutional arrangements (Dlamini and Thompson 2011). Communal farmers water tariffs are subtracted from their cane delivery at TSB, whereas commercial and land reform farmers pay the Irrigation Board directly. The farmers are unhappy about this because this creates a duality and two different sets of rules. DARDLA deals with the communal lands water allocations, water tariffs for sugarcane farmers are subtracted at the mill and DWA is the custodian of water in rest of South Africa. This creates overlaps in who to go to with water related issues and billing, and also creates division not integration in water management. Above in Figure 1.7 shows what the communal farmers strive to have their fields; however their fields often look more marginal due challenges with water, debt, governance issues

## ***7.2 KaNgwane Water Rights***

Water rights in the former homelands during the 70's were held by the tribal administration, however the water rights were not directly controlled by the chief, but rather water was allocated by DWAF then administered by the KaNgwane Department of Agriculture (Woodhouse 2012). When the homelands ceased to exist post 1994, the KaNgwane water rights and management duties were allocated to the then Mpumalanga Department of Agriculture (DoA, now DARDLA). DARDLA holds the water rights for the bundles of small scale farmers in the former KaNgwane homeland and DWA allocated the water rights for the remainder of the IWMA. At the time this seemed the most rational way to allocate rights, however this creates confusion and a conflicting institutional overlap, which further complicates the channels of water access and participation of individual impoverished black farmers. The danger of this dualism is that it



reinforces historical institutional separation of water governance and there is a great risk that DARDLA will participate and represent communal farmers in water governance structures (i.e. WUA, irrigation boards) therefore jeopardising their wider participation and inclusion in water governance (Woodhouse 2012).

By default water was unfairly allocated to white commercial farmers during Apartheid because the inability of the KaNgwane administration to secure the water rights via the development of irrigation infrastructure. Therefore, now there is large-scale demand for irrigation infrastructure and water allocations in the former homelands. This has created implications in allocating water because of the current scarcity constraints and the political difficulties of taking water from the prosperous white farmers and giving to a more marginalised small-scale black farmers. The narrative that Inkomati is a ‘water-stressed’ catchment and that all water has already been allocated, is consistently used to postpone any reallocation of formal water rights to the HDIs (ibid). Efforts have been made to redress historical imbalances in water access through land reform, development of water supply and small scale irrigation schemes, the construction of dams, and other government support.

During Apartheid, TSB, built its mills in Komati to specifically source sugarcane from small scale growers, while TSB provided extension support, the government developed the Nkomazi Irrigation Expansion Programme (NIEP) for irrigation infrastructure. Sugarcane was chosen because it is suppose to be easy to grow, farmers have access to a secure market, stable prices and therefore a dependable income (Movik 2012). During the early 90’s the NIEP was launched in Mpumalanga to promote development in the impoverished Nkomazi by taking advantage of the water access provided by the Driekoppies Dam and the ready market offered by TSB. Many of the irrigation schemes were poorly designed and constructed on unsuitable agricultural land, which has contributed to widespread challenges among communal farmers. Furthermore, at the end of Apartheid much of the agricultural support given to the farmers involved in the irrigation schemes was withdrawn, which consequently lead to the degradation and collapse of many of the NIEP schemes (Shah et al 2002, Perret 2002). In the former homelands of KaNgwane in

Nkomazi, 36 irrigation schemes were developed for sugarcane production during Apartheid in the late 80's and early 90's. Of the 36 small-scale irrigation projects developed for sugarcane production in the Communal areas in Nkomazi during Apartheid, ten projects<sup>31</sup> have completely failed. All 36 projects are under communal land tenure with a total of 1243 growers, 750 males, 450 females, and the average age of each growers being 56 year old. The communal farmers have approximately 10,056 ha cultivated with sugarcane and the average farm size is 7.3 hectares (Dlamini and Thompson 2011).

All the irrigation projects Communal farmers in Nkomazi deliver 400,000 tonnes of cane, however these growers have the resource capacity and opportunity to deliver double their output (TSB, interview, November 12 2012). Approximately, 1.5 million ha could be irrigated in the former homelands; however only 100,000 ha is irrigated (Interview, DARDLA engineer, November 9 2012). The communal farmers deliver 750 tonnes of sugarcane to TSB with an average of 70 to 80 tonnes of cane per ha, where the commercial farmers produce 110 to 220 tonnes per ha. An extension officer attributed this gap to lack of capital, issues with water, soil quality and social issues (Mzinti training centre, November 16, 2012).

### ***7.3 Land Reform Farmers or Beneficiaries***

These are the farmers or family members of farmers that were evicted from their land during apartheid and have claimed their land back through the land reform programme. All the farms are titled and bought through DRDLR at the provincial level, then farmers or beneficiaries are selected to takeover the farms. Governance issues are a major challenge. In 1918 one white farmer now 500-5000 people on the same farm. The land beneficiaries of large land reform farms are generally not involved in day to day farming, and lack motivation to be involved. The large amount of beneficiaries are not involved or do not participate in the water governance structures. Many of the white commercial farmers still run their old farms that were bought by land reform, so major changes in representation and participation have not occurred. Department is making

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<sup>31</sup> Langelooop, Magugu, Mzinti, Phiva, Skhwahlane, Ntunda, Sambo Brothers, Boshfontein one and two, Sitfokotile Farmer coop, Masitsandzane farmer coop, Tikhontele.

targets, but livelihood impacts remain largely unchanged. During the course of my research I interviewed beneficiaries of the restitution and the LRAD redistribution programme. I also interviewed the previous white farm owners that are often managing the farm on behalf of the beneficiaries or the government (PLAS programme). Some of the major challenges linked to land reform farmers are: sloppy transfers, water debt, insufficient water rights, challenges in participating, lack knowledge regarding formal water policy, poor management skills, and issues with group dynamics.

#### ***7.4 Commercial White farmers***

As outlined in the background, the black farmers were evicted to the more marginal land in Nkomazi during Apartheid, and the white farmers (mainly of Afrikaner descent, but some British) settled on the most fertile and productive land. The majority of the prosperous white commercial farms are located in the Komati or Crocodile near Komatipoort, and currently many of these farms have been claimed by land reform or have claims on them. Some farmers have opposed, others have agreed to sell their farms and act as mentors or managers to ensure the farm remains productive. This category of farmers are often Existing Lawful Users of water.

The white commercial farmers built excellent water infrastructure and storage (balancing dams, weirs), in comparison to the black farmers that lacked the financial capacity or support to construct. In addition, the white farmers have a long tradition of representation and participation in water management through IB's. This has enabled them to understand current complex water policy/laws, and to effectively participate and shape decisions at an institutional level. In addition to sugarcane, many commercial farmers have the capital and markets to grow lychees, mangoes or other tropical fruits. The tropical fruits have high revenues but can be risky because the crop prices are determined by the world market. Examining some of the white farmers viewpoints and challenges with water access created an interesting comparison to the HDI farmers.

## **8. Farmer Level Analysis and Findings**

This section focuses how institutional integration shapes local level water access for various groups of sugarcane farmers. Water access is defined by the formal system as obtaining an water authorisation from DWA; however in reality this does not guarantee wet paper access. It is important to differentiate wet and paper water access for the purpose of the research. The communal farmers in the former KaNgwane homeland that possess the Permission to Occupy (PTO), and are members of a irrigation schemes developed for sugarcane production will be broken down into two categories: The failed schemes that must form cooperatives or schemes that have formed associations of small growers. These case studies focus on sugarcane projects in the former homeland of KaNgwane and water access for irrigation purposes. The case studies in this section aim to answer and present the main obstacles and challenges in water access on the ground, but also to note the importance of water access (wet or paper) in determining the success or failure of a farm, and hence the livelihoods of HDI farmers. Furthermore, these case studies will highlight how institutional integration is affecting local level water access.

Integration can be conceptualised through harmonisation of policies and projects, cooperative governance and accountability. The cases will also showcase how integration can be improved to improve on the ground water access for the marginalised. Finally, the case studies and finding portray the disconnect between the eloquently crafted policies at the national level and the actual realities at the local level.

The first case study in Section 8.1 focuses on the challenges in water access and what factors contributed to the failure of these communal sugarcane projects: Boschfontein Phase 1 and 2 and Tikhonte. The second case in Section 8.2 describes the middle Komati metering case which showcases themes of water access challenges and inequity, integration and accountability of institutions, and finally the lack of participation of communal farmers in water management. The third case in section 8.3 outlines the challenges in accessing water via formal channels and their quest for paper water. The case also discusses the wet water and paper water and alternate or informal channels of accessing water for farmers. In the last section the challenges and obstacles in accessing water for land reform farms will be outlined. The land reform group represents

redistribution and redistribution beneficiaries, and the managers (often the previous white owners) currently running the farms.

### ***8.1 Failed Communal Projects Case Study: Boschfontein Phase 1 and 2, Tikhontele***

In this section the failed projects will be described in detail to help understand why irrigated sugar schemes in the communal areas have failed. Moreover, this case will outline the role water access and awareness of the formal water governance systems lead to the projects demise. First, the Boschfontein Phase 1 and 2 case will be outlined to showcase challenges in water access both wet and paper. Finally, the Tikhontele sugarcane project's water debt and irrigation infrastructure challenges will be presented. All of these projects are in various stages of the RADP funding process and as a requirement of the RADP the farmers must form cooperatives and create business plans to ensure sustainability of the farm. At one point all of the sugarcane projects have completely failed, and water access contributed to major challenges or the complete failure of the project. Abundant and reliable water access contributes significantly to the sustainability of sugarcane projects and thus improved livelihoods in the communal areas.

#### ***Boschfontein Phase 1 and 2***

Sitfokotile Farmer Co-operative, also referred to as Boschfontein Phase 1, and Masitsandzane Agricultural Co-operative, also referred to as Boschfontein Phase 2 are situated near the village of Boschfontein governed under the Mhlaba Tribal Authority in rural Nkomazi district municipality. In 2009, the Boschfontein farmers' association members requested assistance under the Small scale sugarcane grower support programme<sup>32</sup> (SSSGSP), and more recently the RADP and job funds<sup>33</sup>. LIMA will provide social facilitation and business and constitution plan<sup>34</sup>

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<sup>32</sup> The SSSGSP is a programme that helps farmers re-engineer their projects to allow them to return to profitability. The SSSGSP is a facilitation process whereby elected representatives forming a planning committee look at all aspects of the new business arrangement and develop a business plan which documents the way forward for the group (Boschfontein business plan, 2012).

<sup>33</sup> The Jobs fund was launched by the Presidency in February 2011 and launched in June of the same year. Its main aim is to fund projects, through infrastructure recapitalization, that will create sustainable jobs for the community in which they are located (Masitsandzane Business Plan 2012).

<sup>34</sup> Constitutions and business plans are both requirements of the RADP and job funds<sup>34</sup> grant to ensure the cooperative has social cohesion and is viable in the long term.

implementation support to both Phase 1 and 2 to eliminate social issues and ensure sustainability of the projects. DRDLR (Land Reform) is responsible for the RADP funding, and DARDLA and TSB provides the agricultural expertise until a mentor has been assigned.



**Figure 1.8. Images of Boschfontein Phase 1 and 2**

Sitfokotile Farmer cooperative (Boschfontein Phase 1) has 26 members with a total of 390 hectares, which they would like to plant all with sugarcane. The farmers have organised and initiated this project with DRDLR under the RADP programme. The farmers were desperate and impoverished and this was their last resort to revive the sugarcane project. Several reasons were listed by the members of the cooperative as to why the project collapsed in 2008, two were directly related to water: Theft of irrigation infrastructure, cables and fences, and when the dam dried up there was no funding or assistance. Currently, Phase 1 are not paying for water, and many of the members admitted that it would be extremely difficult to begin to pay for water.

“Water is from god and it flows freely through our land, so how can we be charged for that and what services will be get in return for our payment” (November 24, 2012).

Masitsandzane Agricultural cooperative (Phase 2) has 12 members totalling 130.1 hectares, which they aim to revitalise 64.6 hectares for irrigated sugarcane. They started farming sugarcane in 1994 and the fields have been fallow since 2006. The cooperative formed in 2010 and now they are working on getting the farm to be operational again and should have sugarcane planted by March 2013. The collapse of the project was attributed to decreased productivity related to irrigation and debt, which lead to unsustainable margins. Phase 2 sees the limited water supply as a major threat, and if it is not managed properly then the whole project can be destabilised. Major challenges in accessing water contributed to the failure of phase 2 and these challenges were linked to high electricity costs, the distance to their balancing dam, theft of irrigation infrastructure, poorly installed irrigation infrastructure, no previous budget for maintenance, and drought.

A prayer was said at the beginning of the meeting I attended and the prayer concluded with “bring us water from the Lomati” (Meeting, November 28, 2012). This exhibits how valuable water is to these farmers and the possible impact it could make if more water authorisations were obtainable. This prayer also shows the cultural value water plays and the connection that water has with ‘god’ to many of the farmers, Water is not just some to be allocated by a formal institution, water is allocated by god and the earth for the betterment of all. In regards to paying for water, phase 2 was not paying before and one farmer said “they would only start if the irrigation board maintains the dam.” The farmers feel like if they pay for water they should get some additional benefit. The farmers at the meeting agreed that the mindset about paying for water will have to change and it is going to be difficult (Interview, November 28, 2012).

### ***Water and Institutional Overlaps***

Soil studies were being completed for both Phases during the research in December 2012, and according to DARDLA Phase 1 has high potential land for sugarcane. Phase 2 has land viable for

sugarcane, but due to the lack of water rights only the best soils will be planted with sugarcane. Furthermore, the land or soil was not even considered for other crops that would require less water. Sugarcane maintains all the extension support, funds and a consistent market, so it is economically and politically difficult to grow other export crops. Both projects must completely revitalise their irrigation infrastructure. The infrastructure must be operating optimally in order to maximise the success and benefits to the cooperative. According to the Masitsandzane Co-operative business plan (October 2012):

*“irrigation is the central nerve of the project’s viability and success; therefore irrigation management is key to the operations of the project. Planing the irrigation schedules with the weather forecasts, budgeting for maintenance and ensuring water is effectively managed are key to the viability of both Phase 1 and 2.”*

Water for irrigation purposes for both projects will be abstracted from the Mbambiso (Boschfontein) Dam. This dam has a relatively small catchment dependent solely on rain, and studies have shown that it cannot support the requirements of the 358 ha sugarcane that was previously irrigated at Boschfontein 1 and 2 projects. The Dam was built for the community in 1988 and before the dam was constructed the members were dry land farming maize. The Dam was built by the Department of Agriculture during Apartheid and no further assistance was offered after the construction. According to a Phase 1 farmer the “the white people came to build the dam and they were never consulted and given support.” The dam was used for domestic use and agriculture until 1993, then the farmers began to grow sugarcane. The dam is located on the Mzinti river which has no tributaries, therefore it is completely reliant on rain. According to TSB, the dam has low water security and a limited supply, which if not managed properly can jeopardise the sustainability of both projects. The farmers said that the level of the water in the dam decreases substantially in the dry season but rarely goes completely dry, however TSB and a few others say it does dry up. On the contrary one of the farmers from Phase 1 said that the dam actually does not dry up because a spring exists at the bottom. Many of the farmers speculated that the dam is not just a rain catchment (Interview, November 24, 2012).



TSB conducted a water study in August 2012 and checked the capacity of the Dam and concluded that only 240 ha of water is available for irrigation, instead of 390 ha. After the study was done on the catchment an agreement with 12 members of the co-operative, it was decided that Masitsandzane Co-operative would irrigate a maximum of 64.6ha. This excludes the one member of the old association that opted out of the co-operative, and he will irrigate 5.4ha on his own. According to the TSB study the Sitfokotile Co-operative only has 120 ha of water rights available. To ensure the sustainability of the mill TSB will only give them a cane delivery agreement based on the water license, viable sugarcane land and finances to ensure the project will abide by the agreement. The farmers cannot understand why they cannot obtain all the water to irrigate their whole sugarcane project. The water allocation is unclear and DARDLA said “there is no exact water allocation from the dam and this is highly contested” (Interview, November 24, 2012). Large ambiguities exist regarding the water allocation and the amount of water actually available in the Dam.

The farmers recognise the importance of effectively managing their water supply and its contribution to the long term success of the projects, but the farmers mistrust the TSB studies regarding the capacity of accessible water in the dam. The mistrust can be linked to Apartheid and the mistreatment of black farmers. TSB recognises that trust can only be build over time and therefore TSB is working hard towards transforming and improving the relationship through field support and social programmes. Phase 2 farmers met with DWA when they were disputing the water study done by TSB. DRDLR advised the farmers to go DWA to demand the water allocation for the whole project under their existing lawful use application, and they are still waiting for a response. Confusion existed in who is the ultimate authority over water and who will advocate for the farmers rights. DARDLA holds the cooperatives water rights, but the application for ELU was made to DWA and the water study was completed by TSB. Also, DRDLR holds the project meetings, the power to allocate funding and has little expertise regarding water management. DRDLR understands the importance of water access in determining the success of these projects, but at the institutional level they are not cooperating with DWA and/or the ICMA. ICMA and DWA are not attending the project meetings or are not

collaborating with DRDLR. Furthermore, DRDLR holds large amounts of funding and if water is the key to success for these farmers, then DRDLR must be more aware of the policies and channels of access to provide the correct information to the HDI farmers.

The members of Phase 1 want to irrigate the remainder of the 120ha with boreholes like many commercial farmers in the Lomati. Phase 1 has one borehole that can be used in emergency situations, but they don't know the capacity or quality of the borehole, so they are waiting for a geological report from TSB. Many white farmers have boreholes to provide supplementary water for irrigation, so black farmers wonder why they don't have them. At one of the meetings I attended in Boschfontein DRDLR did not express a concern regarding water availability or the process of obtaining the right to drill a borehole from DWA. In contrast, a IB informant told me that under the NWA it is difficult to get a license for a borehole and the farmers must get an environmental impact assessment (EIA) done. An agricultural extension officer from Mzinti was not present at the meeting, so they were not there to provide advice regarding the boreholes. The meetings for both Phases lacked attendance from key institutional stakeholders, and this led to ambiguities and complications surrounding both wet and paper water access. The institutions present at the meetings did not have a high degree of knowledge on the formal water system or how to obtain more paper water rights etc, so DWA or the ICMA must give workshops or be present at these meetings if they want the NWA and IWRM to make an impact at the local level.

According to both Phase 1 and 2 there are no downstream conflicts or do not feel there is large inequalities in water access because they only rely on the catchment dam and only share it with Phase 1. Both cooperatives formed an informal water committee between Boschfontein Phase 1 and 2 to manage the dam and the relationship with the each other is superb (Interview, November 21, 2012). Currently, informal governance arrangements are working for Phase 1 and 2. Although the farmers are aware of the importance of water access and management many of them are still not involved or even aware of the formal water sector. Moreover the farmers are not participating in water governance structures (i.e. forums, meetings etc.) and they are unaware of the formal meetings/forums or how to participate outside their own informal water committee.

The integration of the communal projects into the formal water governance structures is completely lacking therefore, the NWA or IWRM has not yet reached the most marginalised in the formal homelands, which the act intended to affect the most.

### ***Institutional Integration and Cooperation***

During interviews with the farmers I asked about their contact with DWA and the ICMA, along with their knowledge and participation in water governance structures. According to Phase 1 DWA came to talk to the farmers once about water use charges, but they did not say much about the new NWA or the new laws. Both Phases do not feel fully informed and they still want to understand more about the formal water management and policies (Interview, November 26, 2012). According to the chairman from Phase 1 said that the chief used to communicate with DWA regarding water, but he had died so currently there is no representative. DRDLR told the phase 1 farmers that they “should go to KOBWA at Driekoppies dam in regards to water” (Meeting, November 16, 2012). Neither of the phases of Boschfontein have representatives in the irrigation board or have somebody reporting to them about water governance. The danger of these RADP projects is that only the mentor or farm manager is informed and participating in water governance structures and the messages and knowledge transfer are not getting to the actual farm owners. The lack of knowledge and participation of farmers from cooperative in the communal in formal water governance structures illustrates the lack of on the ground presence from DWA and the ICMA. Farmers are unaware of their rights surrounding water and there are overlaps or confusion in what institution to approach about water.

The next case will describe the serious issue of water debt among communal and land reform farmers with a focus on Tikhontele sugarcane project. The key difference with the water debt problem between land reform and communal farms is that land reform farms have title, so they can be auctioned off, whereas communal farms can never be auctions or repossesses by the bank.

### ***Tikhonteles and Water Debt***

Tikhonteles sugarcane project was started in the late 1980s by the KaNgwane Homeland government. Tikhonteles sugarcane project is 242 ha in size and is located near Louisville (Low's Creek), just before the Nkomazi toll gates. Tikhonteles is considered one of the most challenging failed communal sugarcane projects due to the major challenges related to water and other governance issues. The projects fields eventually became fallow in 2007 and still were fallow during the time of my research late 2012. A key challenge for the project was "the delivery of irrigation water constantly and efficiently to enable the up keep of a crop like sugar cane" (Tikhonteles Business plan, 2012, pg. 3). In addition to the projects challenges with water supply, Poorly installed irrigation infrastructure, theft, vandalism and debt play a role in the failure of the farm.

The project was approved for the RADP funding in July 2012, and has applied for a jobs fund grant. DRDLR and LIMA worked with the farmers to consolidated in 2009 and form a cooperative. TSB is set to be the mentor for the project and a farm manager will be hired. It is stated in the business plan that "the farm manager is responsible to manage, co-ordinate and control all water related matters in the project" (Tikhonteles Business plan, 2012, pg. 4). Having expertise in farming and water management, and the right irrigation infrastructure is crucial to failed agricultural projects; however knowledge transfer is important to ensure the HDI farmers are learning and can one day run the farm themselves. Without the skills transfer in regards to paper and wet water access the inequities of the past will remain the status quo. Gains in redressing past inequities should not be just on paper, the right numbers or financial gain. If the mentor and manager run the farm successfully, but no skills are transferred then from my point of view the gains at redressing past inequalities can be question.

Only 150 ha of sugarcane will be planted due to their limited access to water. This has been really difficult for the farmers to understand why they do not have enough water rights to plant all the land with sugarcane. The water flows through channels that were originally designed for vegetable irrigation (sugarcane requires at least 2.5 to 3 times more water), so major issues have arisen because the irrigation system is designed for a much bigger area than they have the

allocation for. In addition, their boreholes are not functioning and the engineers from DARDLA were suppose to fix the boreholes and complete a survey, but their promises have yet to come through on the ground.

The “water access was flawed from the start and set the project up for failure” (LIMA, Interview, November 16). Suitable and effective irrigation infrastructure specifically for sugarcane, could have made the project much for viable and eliminated their current challenges with water debt. Water debt is an emerging issue among HDI farmers. Many of the HDI farmers are not aware of the trading or leasing policies or are not participating in water governance structures such as the IB to know that Section 25 of the NWA allows trading and that they must declare their trade by writing a letter surrendering the water. In addition, if a farmer wants to trade or lease water then the farm must not have any water debt and the farmers can only trade between the same water use category. The projects fields were fallow, since 2007 (5 years at the time of the research) without any warning or intervention from any agricultural or water institutions. And now the project has accumulated 300,000 Rand of water debt. A key informant from TSB commented that;

*“how can [Tikhontele] resuscitate the farm with that debt. They are aware that they have to pay the bills and they just left them and the bills kept coming with interest. If they were aware they could have leased the water and could have made money. Now DWA is finally in discussion with them about the repayment of the bills. These bills are killing projects”* (TSB social facilitator, interview, 21 November 2012).

In response to the water debt challenge a DWA director said that letters went to the irrigation boards, but nobody is ensuring the debt is settled (Interview, December 13, 2012). He described this situation as risky and that DWA/IB’s lack capacity and time to enforce the bills (ibid). The system should be working for the farmers to help them pay their bills or the system should at least be explain the water billing system to them. Farmers are unaware of the formal system, and it is astounding to them that if you don’t even use the water you have to pay for it. Tikhontele project should have been helped before the water debt became such a large issue or one of the responsible institutions should have facilitated the temporary lease of the water authorisation.

In conclusion, the failed communal sugarcane projects case highlights the implications of “the drastic withdrawal of pre-1994 support to smallholder irrigation schemes by the Department of Agriculture led to widespread partial or full collapse of irrigation schemes” (Schreiner et al. 2010, pg 2). In regards to the past inequalities in water access, many of the farmers have not seen major changes since the end of apartheid. Many of the farmers however do see the land reform RADP funding and mentoring as an opportunity for success and a vehicle for change in the impoverished communal areas. Water related issues played a pivotal role in the failure of each sugarcane project. In the case of Boschfontein 1 and 2 limited water access (authorisation and infrastructure) and Tikhontele water debt has greatly decreased the scale of the projects, thus the income and livelihood impacts. The Boschfontein case also showed the cultural value of water in the communal areas. Paying for water and breaking into the formal water governance system requires fundamental shifts in cultural values and in the aspect of participating in formal institutions to access water. Mistrust and lack of knowledge of the formal system also played an extensive role in the failure of each project, which links to the challenges in the farmers knowing their rights. This issue is also linked to the next case study regarding the quest to install water meters in the middle Komati in the communal areas. This case is highly controversial in the area and it is bringing up long unanswered questions related to WAR, licensing, funding and water management.

## ***8.2 Middle Komati Metering Case***

This case study describes the situation in the middle Komati and the struggle against the installation of bulk water meters. Abstraction rates are monitored by water meters in the Lomati and the rest of the Komati; however one section in the middle Komati lacks water meters that are required by international treaties. The installation is highly disputed by local communities in the middle Komati and the farmers are leveraging their power at the stakeholder meetings to demand answers to questions unrelated to the installation. The case portrays the lack of institutional collaboration, accountability and legitimacy to effectively carry out the participatory process and the implementation of the meters. Furthermore, the case shows the urgent need to on-the ground

presence In the next section the legal aspects behind the installation of the meters will be presented followed by a description of the history of the case and the 2012 public participation process. Finally, the thoughts and concerns of the farmers regarding the metering case will be outlined, including my observations and conclusions.

### ***Context of the Installation of Bulk Water Meters***

The Komati river is an international river shared with Swaziland and Mozambique. Legal frameworks exist to govern negotiate agreements on international watercourses. At an international level the UN Convention on non-navigational uses on international water (1997), SADC protocol on shared watercourses, within the NWA (Article 102). In 1992 South Africa and Swaziland signed a joint water commission and the treaty on Development and utilisation of water resources of the Komati Basin. KOBWA's main mandate is to manage the driekoppies dam in South Africa and the Maguga dam in Swaziland. KOBWA currently estimates the water usage in the middle Komati because there are no water meters.

In August 2002, the Tripartite Interim Agreement on Water Sharing of the Maputo and Incomati Rivers was signed (the IncoMaputo agreement). An obligation of South Africa's international shared water agreements, is the abstractions points on the Komati river must have bulk water meters installed. According to empirical interviews compiled from 1991 to 2002 a major issue affecting international decision making was:

*“Reliable data on water abstractions from the river system are lacking. Information on water abstractions is based on the permissible abstraction volume (regulated by means of permits) or on calculations based on surface areas per land-use type. There are very few hydrological-flow stations in place and, with the exception of South Africa, the hydrological networks need improvement. This lack of data and the unreliability of the existing data mean that the parties involved do not always trust the data provided”* (Slinger, Hilders and Juizo, 2010).

The installation of bulk water meters for measuring water abstractions, to adhere to international agreements, has only one stretch of river left in the Middle Komati. This section is located in the

former KaNgwane homeland in Nkomazi and the middle Komati is the stretching from Tonga to Maguga, north of Swaziland (see Figure 1.8 below). For close to ten years, the metering issue has remained a highly contested and sensitive issue among farmers in the area. The communities are protesting and they don't want the bulk meters installed. Most of the farmers in this area farm 7-10 hectares of sugarcane and are scared that the meters will take away their water.



**Figure 1.8 Middle Komati Area**

According to an informant from the irrigation board he believes the farmers were misled and somebody told them that metering their water usage will lead to restricted water use (Interview, November 22, 2012). According to a irrigation board employee, the installation of the meters is important to be able to manage the water in the river and in contrast to a popular narrative among farmers an attempt to control or limit water use or charges. Furthermore, the IB said that “over abstractions in the middle Komati is not a major concern, rather the issue is without the meters the IB is unable to manage the river effectively” (Irrigation board, interview, November 22,



2012. The irrigation board is trying to get the farmers in the middle Komati to understand that if a farmer can measure how much water they are using or how much they are pumping, then the farmer can lease the excess water rights and make money (ibid). The water governance institutions are trying to make the people realise that installing the meters will help manage the river better and improve their water situation, but the farmers are still resistant.



**Figure 1.9 Sugarcane Farmers in the Middle Komati**

In 2004, the Lomati/Komati irrigation board tried to install the meters and the communities closed the gates, which lead to the intervention of DWA. DWA has also tried to install the meters with little success. In 2011, DWA then handed over the responsibility to the ICMA to carry out a public participation process and a water pump survey of the area, in order to create plans for

implementation of the meters. The ICMA in November 2011 hired PD Naidoo & Associates Consulting Engineers (Pty) Ltd (Nelspruit) to carry out the first phase of the public participation process. Due to complexities of coordinating meetings and the unavailability of key decision makers the public participation process was only completed in August 2012. The “process was deemed unsuccessful by several stakeholders because people were resistant to participate [and] inappropriate methods/structures were used to engage people (TSB employee, personal communication, December 10).

### ***Participation Process***

The ICMA outlined the purpose of the project for the public participation stakeholder meeting held in the middle Komati. The ICMA outlined the Inco-Maputo Agreement between Swaziland and South Africa and the implementing organisation, the Komati Basin Water Authority (KOBWA). The ICMA told the farmers that installing the meters on the middle Komati was an “obligation to Royal South Africa in honouring the treaty” (PDNA 2012). Currently, abstractions and water consumption is estimated on the middle Komati, which “makes it difficult to effectively manage the water use” (DARDLA, Interview, December 16, 2012).

During the initial consultation, only the chairman of each irrigation project were invited to a participatory/information meeting. I met the Walda Chairperson under a tree on the farm in the middle Komati, and he discussed that;

*“I have participated in two meetings and was never invited back for more. Us farmers are trying to understand the reasons behind installing the meters. Only certain chairpersons were called to the meetings, then throughout the consultations not all the farmers were included. Around June/July[2012] it was a big fight”* (Interview, November 26, 2012).

The consultants discovered that during the initial consultation that there was poor communication between the chairperson, the members and the irrigation board representatives. Members of the various irrigated sugarcane projects were not aware of critical information related to issues discussed at the irrigation meetings and the public participation meetings. In

short, the farmers were also frustrated because they were not included in the meetings from the start. 21 communal irrigation schemes<sup>35</sup> are involved in the Middle Komati metering case.

Several key issues of interest were outlined in a report prepared by the consultants following the participatory process (PDNA 2012):

- Farmers had a major issue getting information from consultants not linked to DWA. Relevant stakeholders, sectors and mainly DWA should have been present to disseminate and answer questions.
- Farmers had many unresolved issues with various departments that date back 10 years
- Total lack of mistrust in the government and irrigation board
- Public participation should be done before an implementation plan is in place to ensure the farmers opinions and concerns are acknowledged and captured.
- All stakeholders should be involved or invited to join the public participation process
- Lack of accurate information given to all the farmers
- Major concerns in which the farmers lack information are: WAR to individual farmers and projects, Inco-Maputo interim agreement, budgets and government spending, water use and conservation, and payment for services.

Previously unaddressed issues brought up again by farmers during the public participation process were: water storage, infrastructure leaks and breaks downs, billing/tariffs, how the irrigation boards functions, and the need for informative workshops regarding the NWA and WAR. The public participation process brought attention to the large scale mistrust that exists among the farmers about the intentions of the project and the formal water institutions. The response from the ICMA was that they are a government entity that would not mislead the farmers. It seemed as if the ICMA or DWA simply expect the farmers to see their institutions as legitimate and accountable, rather than building the trust and legitimacy. The farmers were mistreated and misled by the apartheid government and trust must be built. The legitimacy must be built by the institutions and earned over time, even though the ICMA wants to partner with

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<sup>35</sup> Spoons 7A, 7B, 8; Figtree A, B, C, D; Sibange, Magudu, Sikhwahlane, Madadeni, Ntunda, Phiva, Walda, Mangweni Dairy, Siboshwa, Mzinti, Mfufane, Shinyokane, Luggedlane; Mbunu A, B and C.

and work for the stakeholders, and align with the NWA. The historical legacy of imbalances and mistrust in the government makes it understandable that farmers have major concerns with the installation of the water meters.

Mfumfane sugarcane association (December 6, 2012) feel they cannot understand the mutual benefit of the bulk metering project. They want individual meters, so they can see who is using what amount of water. Each of the 84 members included in the scheme have their own plots, and all the members are currently sharing three pumps, in which only two are functioning. The concern of various members of the project is the lack of sufficient water authorisation combined with the farmers with plots closer to the pump can abstract more water than a farmer further away. This is a result of poor irrigation design (ex. small balancing dam), and a leak in the main pipeline. As a result some farmers have attached another pipe to the main irrigation stands and take water under the radar. They are aware of the new water act, but are not sure their rights or the content, just receive bills from the irrigation board. However, on a positive note the metering case according to Mfumfane members has drastically increased their contact with the ICMA and questions regarding water policy have been answered to some degree. Five out of the six projects interviewed during my research felt that the meters would restrict their water use, which would lead to decreased productivity and certain projects might be destroyed. The Siboshwa Agricultural Cooperative feels that regardless of their participation that the government has the final say, and that decisions are centralised without much regard to their perspectives (Chairman, interview, December 10, 2012). The chairman from Walda sugarcane association said that only certain chairmen were invited to the consultations and not all the farmers were involved. He said that “it was a big fight in June and July, but we are trying to understand the reasons behind installing the meters” (Interview, November 26, 2012). In contrast, a very successful LRAD and communal farmer attended most of the middle komati stakeholder meetings and he felt that did a good job engaging the farmers. He comment “that most of the other farms on middle Komati don’t want meters, but I am not opposed [because] water must be measured. We are not the only ones using the water” (Interview, December 4, 2012). A farmer from Figtree A feels that the majority of farmers are not buying into the metering project and she fears water restrictions

during dry season and that the pumps will be shut off (Interview, December 7, 2012). On the other hand a well informed and prosperous communal and land reform farmer said that,

*“other farmers on middle Komati don’t want meters, however I am not opposed...Water must be measured and we are not the only ones using the water. I attended the ICMA meetings and he felt they did a good job at engaging the people”* (Interview, December 8)

Farmers are scared that the water meters will restrict use because Eskom installed meters during the power crisis in 2008 that restricted water use and killed projects. From the participation report and my research it is clear that farmers do not want bulk meters, instead they would like individual meters. Bulk meters are installed in the Lomati and farmers pay for water per hectare of land. This bulk metering has created challenges when for example 20 farmers share one pump. It is difficult to know who is over abstracting, and for this reason many of the farmers located in the middle Komati want individual meters. The farmers pay their water bills according to the size of their farm, not their individual abstractions, so one farmer could easier take more water without paying extra. Consequently, farmers in the middle Komati want individual water meters and their other demands met by DWA and the ICMA before the meters will be installed.

Many of the questions and concerns of the farmers went unanswered and were referred to DWA, ICMA, irrigation boards, and DARDLA. The institutions were not all present at all of the meetings, so the farmers never received a direct and clear response to their questions, which further exasperated their concerns and mistrust. Farmers felt the project was being forced on to them, instead of being consulted and engaged. From my observations the farmers were confused by the overlapping of institutional mandates and lack of integration of institutions. The farmers were not aware of where to find answers to their questions until the public participation was undergone for the metering case. Currently, DWA has suspended the granting of new water rights in the middle Komati until this metering case is resolved.

A recommendation from the consultant was that the sector departments should be involved and represented in the implementation of projects (PNDA 2012). A narrative from the institutional

perspective was that the “farmers don’t understand the importance of water management” (ICMA, Interview, December 8, 2012). An informant from the ICMA said “why do we spend so much money on meters and engaging stakeholders on many other issues? We are working for them [black farmers] and we must work according to the NWA” (ibid). The farmers so called lack of awareness regarding the importance of water governance is clearly linked to the lack of information, engagement and coordination among institutions regarding water governance. According to a key informant from the ICMA, they are not sure when the meters will be installed because “we need more stakeholder involvement and participation before we can install the meters” (personal communication, December 6, 2012).

This middle komati metering case exhibits empirical evidence of the lack of mistrust in the formal system and the flawed ‘participation’ process. The case also portrays the overlapping institutional mandates and how the lack of integration and coordination affects the HDI farmers. Furthermore, the absence of institutional accountability and legitimacy is showcased through the opposition and tension surrounding the installation of the meters and the prevalent neglect of other water related issues. The next case is related to the mechanisms of accessing water among farmers (mainly HDI) and the use of formal and more informal channels of access.

### ***8.3 Wet and Paper Water: Rejected licenses and Informal Channels of Access***

The next case study exemplifies many of the HDI farmers quest for both wet and paper water. As outlined in the section 2.1.2. The quest for paper water via formal channels for all groups of farmers is a challenge because no new licenses are being allocated in the Inkomati until compulsory licensing is completed. Transfers or leasing water is another formal channel of access through the irrigation boards. However, only few farmers benefit from the leases or transfers such as the well-informed commercial farmers, mainly the white farmers or HDI farmers (often with mentors, managers in joint ventures or cooperatives) that are participating and aware of these processes. Some of the communal and land reform farmers have applied through DWA for more water allocations. The water authorisation applications are just sitting with DWA until compulsory licensing is complete, and there is no regard to the size of the application. Due



to the long waits, complexities and unawareness of the formal channels, some farmers are finding alternative channels or informal channels to access water. This case will showcase the challenges with accessing both wet and paper water. The demand for water is growing in Nkomazi among ‘emerging farmers’ (both communal and land reform that require more water). In the table below 18950.2 hectares is the formal demand for water authorisations among emerging farmers, which can be broken down into 8376.7 ha in the Lomati and 10573.5 ha in the Komati (Refer to Table 8.1 below).



**Figure 2.0 Challenges in Accessing Water: Infrastructure**

**TABLE 1.2 Summary of DWAF Recognised Areas (ha)**

<i>Type of Farmer</i>	<i>Lower Komati</i>	<i>Lomati</i>	<i>Middle Komati</i>
Commercial	7865.36**	7 399.10**	0
Commercial (Surplus)	6 529.97***	0	0
Emerging	800	2 999.40	7 669
Emerging Requests	0	8 376.70	10 573.50
TOTAL	15 195.33	18 775.20	18 242.50

\*\*The IB/AGRIC recognised areas data have slightly higher values, 7 961.14 and 8 388.20 respectively.

\*\*\* The IB/AGRIC recognised areas data is lower with a value of 6 364.87.

**Source: DARDLA employee, 2012**

### *Paper Water vs Wet Water*

Many farmers that are unaware how to access formal water rights and are finding alternative informal arrangement to access ‘wet’ water. This is exemplified in the case studies and empirical evidence compiled from the field research. For example, Ngogolo cooperative, located in Nkomazi, has poorly designed canals inherited from the SSIS built by the KaNgwane government. The canals and balancing dams are leaking and the infrastructure must be upgraded. DARDLA is working with the farm to upgrade with funding from CASP, however the plan to restore the canals was disputed by the ICMA Nkomazi field officer during a field visit, in which he suggested that the project should install pipes. The chairman of the farm directly addressed the extension worker from DARDLA and said “we have had many false promises from DARDLA and we just need to know how to access more water” (Interview, November 26 2012). The water license for Ngogolo Cooperative is 400 ha, however over the years the farm has expanded a few hectares at a time and they currently irrigate 150ha that is unlicensed (See Figure 2.1 below).





**Figure 2.1 Ngogolo Cooperative**

As a strategy to obtain more wet water the cooperative has a gentleman agreement with a neighbouring leather farm. Another case that is common among HDI farmers is like Figtree A where a farmer has enough paper water, but is unable to properly pump the water due to infrastructure, financial issues or Eskom (electricity) tariffs. The chairman of the Lomati irrigation board described a case where a white commercial was stealing water by disconnecting the wires to the pump meter at night. Another commercial farmer caught him and he was angry because he is paying for water and that guy is stealing it. The IB confirmed the theft and past the

case to DWA and the farmer was charged with seven counts and the case is in court. Regardless of court case the white commercial farmer is still farming and irrigation his sugarcane fields.

DWA claims that the Komati, Lomati and Crocodile are all over-allocated, so no new licenses can be issued until compulsory licensing (WAR) is completed. After verification and validation are complete DWA will look at the allocation framework to eliminate these illegal water uses, then undergo compulsory licensing (CL). CL is one of the main legal instruments in the NWA to enact WAR and redress past inequalities in water allocations. Under licensing arrangements water should be re-allocated from 'existing lawful use' to achieve a fairer allocation of water, to improve the efficiency of resource management or to protect water quality (section 43 of NWA). As mentioned in the background (Section 3.4), WAR has been plagued with complexities and delays, and HDI farmers are losing trust in the government to complete this reform. Currently, the economic and political implications of WAR are overriding the historic inequities. From my point of view the beneficial use and overallocation of the rivers narrative is being used to protect the water allocations for commercial sugarcane interests in the Inkomati. The redistribution of water to less water intensive crops besides sugarcane in Nkomazi could in reality impact three times the amount of people with the volume of water currently being used for sugarcane production.

### ***Emerging Farmers Water Demands: 2ha vs 2000ha List***

This case study is based on a document that was given to me by a DARDLA employee. The title at the top of the list was: Application for water rights: Emerging Farmers, Nkomazi. DARDLA (Agriculture) claimed the list was actually the emerging farmers rejected licenses in Nkomazi, but DWA claimed the list outlined the need for additional water in Nkomazi. The document was prepared by DWA in 2012 and contains a list of Nkomazi emerging farmer or HDI farmer (the list includes both land reform and communal farmers) applications for water authorisations (Refer to Appendix D for list). I asked a DARDLA informant about the rejected licenses and they were not sure why the farmers were rejected because they said "it is DWA who deals with

issuing water authorisations.” DWA claimed that this list outlined the demand for water in Nkomazi, which would be considered once compulsory licensing is completed in the IWMA.

The smallest application is for 2 hectares from Blue Sky nursery in the Lomati and the largest is for a 2000 hectares sugarcane project in the Komati. However, stated in the NWA is that water is allocated according to need with a priority given to HDI’s, smaller allocations, youth, women and disabled people (Section 21 A and B of NWA), even though the list showed women’s groups and small farmers being rejected for licenses requiring allocations under 7 ha. The list also does not take into consideration the crop the farmers were applying for. For example sugarcane is the one of the most water intensive crops in the area requiring 13,000 cubic meters of water per ha and vegetable farming requiring approximately 4500 cubic meters per ha. Consequently, vegetable farming should have priority to obtain water rights. However, through the Existing lawful use authorisation and land reform most of the water rights are retained in politically and economically powerful crops such as sugarcane.

According to the ICMA many cases exist where a farmers has a mix of formal water rights and/or illegal or informal channels of access. For example a farmer had a ELU for 30 hectares and when DWA checked the farmers were using 50 hectares of water, so some of the water use was partially lawful. A major issue according to DWA is the lack of correct and standardised data in the WARMS database, which accurately reflects the situation on the ground. DWA must make serious efforts at collaborating with the field and extension officer from all the institutions because they have the most contact with the farmers and know what is going on at the ground level. The disconnect is that many to the field officers have lack decision making power and sufficient time to ensure the information is flowing back to the relevant regional and national institutions.

In regards to the list given to me by Department of Agriculture (DARDLA). Even though the extension officers from TSB and the Mzinti training centre (DARDLA) had never seen the list of rejected licenses, they were able to describe and decipher the list much better than DWA or the

ICMA in Nelspuit. This showcases the important on-the-ground knowledge the extension officers have in comparison to DWA and the ICMA. Clearly the information is not flowing from the local level to the institutional level and vice versa. The first major issue pointed out by the extension officers was that many of the project details were wrong on the list, i.e. Mbunu C was spelt Mbunda C or Temeleni Sugarcane farmers association was Langelooop 2. Furthermore, issues also existed with two associations having the same name on the list because associations are a loosely formed group and most of them are not legally recognised. Some of the associations applying for water rights on the list are already farming with that allocation according to the TSB extension officers. For example; Phaphamani Nitobenele Women's Club, Sambo Brothers are on the list, but have water rights and are approved for the RADP grant by Land Reform. Many of the applicants on the list the projects in the communal areas have applied for additional water rights to expand their projects or to obtain the sufficient water rights for their projects, but there is no water left to be allocated in Nkomazi. For example Mfumfaan, Mbunu C and Mangaan is being run as one association. sharing one pump house and they applied for 117 hec of extra water rights. The association has 152.1 hec of sugarcane planted now with each farmer having on average 6 hec, but only 5.4 in water rights. Each farmer has on average an extra hectare without water rights. Mfumfane B located next to Mfumfane A (irrigated sugarcane project) are dry-land farming and growing cotton. Mfumfane B requested 1300 hectares of water rights to start a sugarcane project, but were rejected, so they wanted share or get water from Mfumfane A. This is a contentious issue because Mfumfane A does not want to share their water rights. Furthermore, many of these farmers on the list find it difficult to understand why they cannot get water rights after the gross inequalities in water access during Apartheid.

A DWA employee commented that it is a list of needs that were submitted before the licensing process came into place. The smaller allocations on the list could have been looked at, but the larger allocation requests are another category (DWA, interview, December 13, 2012). The employee made it clear that if these farmers that have applied don't have a dam or storage infrastructure, then there is no use of allocating water because we will set them up for failure. In addition, he commented that if you over allocate for a certain yield then you set these emerging

farmers up for failure (ibid). I asked a senior DWA employee “what is the point of emerging farmers even applying for new water authorisations when DWA is not allocating any new water?” He nodded in agreement and responded that currently farmers can only trade or buy from other farms, which is the irrigation boards job to facilitate intra water transfers (DWA, interview, December 9, 2012). Subsequently, it is the irrigation board that holds the current power with respect to water transfers/leasing. This creates a major issue for HDI farmers when the majority interviewed felt unrepresented at the irrigation board meetings, and unaware of the NWA and water billing, leasing and transfers. According to the ICMA, DWA wants to double check the flows, needs, and water rights in order to reallocate and redress the past inequalities. Many cases exist where a farmers; for example had a ELU for 30 hectares and when DWA checked the farmers were using 50 hectares of water, so some of the water use was partially lawful. A major issue according to DWA is the lack of correct and standardised data in the WARMS database, which accurately reflects the situation on the ground.

The irrigation board, DARDLA, the ICMA, TSB and DWA are not all sharing data regarding water allocations and each have a different perspective on what this ‘rejected license list’ or ‘water needs’ means. DARDLA has been looking at the list for awhile and is unsure how to address the needs of the emerging farmer. DARDLA and DRDLR see these general authorisations as tool to allocate water to small scale users and avoid long bureaucratic processes. Despite this agreement, large discrepancies exist between the various institutions regards what should the threshold in hectares be to be entitled to a GA. A DWA employee replied to a question posed about the use of GA’s in redressing past inequalities in water access and he said that “there are no preferences in allocating GA’s to HDI’s...it is not about colour, it is about the volume of water and the risk to the resource” (DWA, Interview, November 14, 2012). He did not see a GA as a tool to promote equity, and he commented that a GA is not the safest bet for farmers because it is only valid for 5 years (ibid). There are polarising views and lack of clarity of what a general authorisations entitle which has resulted in widespread ambiguity between institutions and a lack of livelihood impacts among small scale water users. Furthermore, due to the slow pace of WAR and lack of knowledge of the formal channels of water access farmers are

seeking other informal channels of access such as the gentleman agreement for 150ha of extra water rights mentioned above.

This case shows the lack of communication between the institutions and the lack of on-the-ground presence and knowledge of the water use and demand by farmers. This ties into the issue mentioned in Section 7.1 and the lack of information in the WARMS system. This case first shows the large demand for water in the Nkomazi and the lack of priority or use of GA's to prioritise small water users. All the farmers on the list were rejected and currently DWA is not issuing new licenses, so applying via the formal system, offers no benefit to HDI farmers. Therefore the farmers are finding other channels of accessing water which ties into the wet vs paper water issue. The time of effort it takes to apply for HDI farmers to apply for water authorisation offers no benefit and not even a timeline of when they might be eligible or able to access the water. Instead the farmers must either trade or lease water through the IB, and many farmers are not aware how to go about this process or how to access information or even how to participate in the IB. Wet water is the most important to the livelihoods of the people; however the paper water is a legal requirement that has proven to be a slow, bureaucratic and uncertain process for HDI farmers. This has resulted in large scale mistrust in the formal system, TSB, government structures, and white commercial farmers in the IWMA. The next section will highlight some of the water related issues specific to land reform beneficiaries and farms

#### ***8.4 Land Reform Sugarcane Farmers***

*“The availability of water for HDI's and black farmers can data mine the success or failure of the particular land claim farm”* (DRDLR senior employee, Interview, November 6, 2012).

Many of the Land reform farmers have similar challenges as communal farmers; however I will outline some of their unique challenges and issues related to institutional integration and water access. During the course of the research I visited Redistribution and Restitution (PLAS and LRAD) farms. In the study area of Nkomazi, restitution land claim purchases amount to 38,866 ha, LRAD programme redistribution land is 2670.22ha, and finally the PLAS programme

purchases amount to 17,820.81ha (DARDLA, interview, December 10 2012). The majority of the PLAS redistribution purchases have not been handed over to black farmers, but are being leased to white commercial farmers to ensure the farm remains productive. The joint ventures, mentors, and hired managers are part of a larger debate of the actual livelihood impacts, participation and knowledge transfer that is actually happening between the land reform beneficiaries and the mentors/managers. I had many touching and passionate conversations about land reform and Apartheid with field and extension officers. One particular conversation occurred with a Land reform extension officer as we drove through one of the Koomatipoort land reform farms. The area was beautiful surrounded by green sugarcane fields and to the east the Lebombo mountains and Mozambique. He questioned the “livelihood impacts of both Land reform and Water Reform when large unemployment persists and farmers are being removed from the farming operations” (ibid). Large groups of people take over the land reform farms and most are distanced if not completely removed from all farming operations. This discussion of livelihood impact is extremely interesting and important; however I am unable to go into detail regarding this subject due to the scope of the research. Throughout my research I communicated with and interviewed several beneficiaries, chairmen, managers, strategic partners and previous white commercial owners of land reform farms managing their old farms. An entire thesis can be written on the challenges of the Land reform programme (see Hall 2004, Greenberg 2010), instead I will touch on a few of the issues connected with water access and institutional integration.

A major issue that plagues land reform farmers is the sloppy transfer of farms from the previous white commercial farm owners to the beneficiaries. This challenge can be linked to poor institutional integration. Infrastructure is not in place or has been sold by the previous farmer, the beneficiaries lack management skills to run a commercial farm. Many of the beneficiaries know how to farm, but lack the skills in planning and management of a commercial farm. DRDLR insists they only buy farms that come with water rights. However all the institutions interviewed mentioned that many cases exist where the water rights are sold to another farmer before the farm is sold to land reform. From the time of the sale to the transfer the the community, the

previous owner sells or leases the water rights. DRDLR and DARDLA investigate what happened, then they discuss and negotiate with the previous owner regarding the situation. In many cases the farmer sells the water authorisation to a neighbour or another commercial farmer, so when the beneficiaries take over the farm they report the situation to DRDLR, then they write a letter to IB/DWA or DRDLR tries to negotiate with the previous farmer. This process can take anywhere from six months to two years and once the water right is sold it is very difficult to get back (Mzinti Land reform community liaison, Interview, November 16, 2012).

Another main challenge is a farm owned by one commercial farmer is often transferred to large groups of beneficiaries (up to 2000), so governance and social issues plague these farms. The beneficiaries lacked support during the initial hand over of the farm, which leads to a cycle of decreased yields, then fallow fields, water debt and thus a failed farm. An emerging issue among many land reform farms is their inability to pay their water bills and their lack of knowledge on how to prevent this water debt. DARDLA is trying to learn lessons from the previous sloppy handovers of farms and the issues that plague the success of these farms. A major problem according to a commercial farmer in the Lomati is the “government [Land Reform] looks at the numbers of beneficiaries given land...[and] the focus is on the numbers and not on the success cases” (Interview, November 27, 2012).

Another huge issue plaguing both communal and land reform farmers is water debt incurred mostly from their lack of knowledge or inclusion in the formal system. Most of the debt is incurred when the farms fields go fallow or the farm has low yields. This challenge was outlined in detail in the institutional map (Section 6). I visited Inyathi restitution farm owned by Mhlaba trust. These farmers face many challenges, however the greater problem they face is water debt. In an interview with the managers and chairperson, they described their fear of leasing water rights and the water being taken away. The managers were unaware of the procedure to lease water rights or seem to be unaware of their rights regarding their water allocation. Before the water debt issue they had not been participating in water governance structures and had very little contact or knowledge regarding the formal water governance system. One of the farmers



spoke about white farmers selling or leasing their water rights before the final transfer of land to Land reform and nothing happens, and for these reasons they fear their water rights will be taken (Interview, December 2, 2012). At the time of the research they had leased their excess water rights and land to a white commercial farmer (220 ha) and they are growing 80ha of sugarcane with 65ha of water rights.

***Propex Investment, LRAD Farm***

Propex Investment is owned by one farmer who was the beneficiary of the LRAD programme in 2002. The government gave him a 720,000 Rand grant and he paid the remained 1.8 million Rand to purchase this 53 ha farm (see Figure 2.2). The farm has been approved for a 3.9 million Rand RADP grant and now the farmer and his wife are waiting for the funding.



**Figure 2.2 Propex Investment: LRAD Farm**

According to the ICMA Nkomazi community liaison, the owner of this LRAD farm, among a few others in the communal areas is the “most successful black farmer I know” (Interview, December 4, 2012). The LRAD programme bought the farm without investigating the infrastructure or the water rights, so this project has been plagued with problems from the start. The farm was bought with only 24 ha of water rights and “when we received the farm the previous white farmer had sold the water rights, took all the new water infrastructure (including the pipes) to sell and installed old pumps. Essentially “everything was gone and we had to start new” (Interview with Propex owner, December 4, 2012). The high bills, lack of water rights, and support from DRDLR lead to only 12ha being planted with sugarcane. Most of the fields are fallow and they should be getting 110 tonnes/ha, but they are only getting a very marginal crop of 40 tonnes/ha. The owner was trying to negotiate with the government regarding what happened with the previous owner and he asked the Agriculture officials to talk to DWA, but nothing has happened and it has been a long route. The farmer felt that the institutions were not being accountable for what happened with the water rights. He said that “I felt really alone because here I was suppose to be benefiting from the Land Reform Programme The farmer is now waiting for RADP funding to replant the old sugarcane, fix his tractor, replace the stolen cables and transformers, and fix the irrigation infrastructure.

### ***Lekkerdraai Land Reform Farm***

Lekkerdraai farm located on the Lomati river was sold to land reform, but the previous owners are renting and keeping the farm productive until the beneficiaries take it over. The government has lost so much money on land reform farms because of unproductive farms, so leasing or forming strategic partnerships with the previous owners or TSB has been a key strategy in sustaining land claim farms. The Lekkerdraai farm has three communities claiming the farm, so the dispute is being settled by Land Reform. The farm is growing 230ha of sugarcane and 20ha of Mangoes. The challenges faced by this farm are much less than other land reform farms because the previous owners are experienced commercial farmers, with detailed plans and knowledge on how to manage their limited water allocation, boreholes and infrastructure. Water

availability is a major issue on this farm because they only have 98ha of water rights, but they have six strong boreholes that if carefully managed they can irrigate the whole 250ha. According to one of the managers “if we had at least 100ha more water rights, yields would increase substantially...we are always looking to buy or lease more water rights, but it is very difficult” (Interview, December 4, 2012). As a strategy to gain more water access “my father bought a nearby small farm which is 100 ha with 110 ha of water, which only 80 ha of water is being used... [an option] might be to temporarily use water or transfer water from that farm to this farm” (Interview with assistant manager, December 4, 2012). Buying another farm for water access is not really a viable option for an HDI farmer to access for water. In addition the old commercial farms bought by land reform tend to have better water storage and supplementary boreholes to their allotted water authorisation. Moreover, if the previous owners or a manager is hired, they are generally more aware of the formal water policy and leasing mechanisms to access more water than HDIs.

### ***Conflicts and Water Access***

Conflicts with black land reform and white neighbouring farmers shapes water access for both groups. Many land reform respondents described scenarios where white farmers have cut pipes, built weirs and blocked canals leading to their land reform farms. In reference to the conflicts surrounding water infrastructure and selling off of land reform water rights a respondent “White farmers can be arrogant, they take chances and will just refer you to their lawyer” (Interview DARDLA, November 16, 2012). Historically, two neighbouring white commercial farmers may have shared a pump, so pipes ran through one farmers property to the neighbours farm. When the black land reform farmers took over the neighbouring farm the white commercial farmer cut the pipe leading to their property. Pipes and a new pump are expensive to replace and were not incorporated into the start up costs of the farm, so the land reform farmers were plagued with difficulties from the beginning.

A farmer from Barberton expressed his unresolved water conflict with a white commercial farmer at the ICMA stakeholder meeting and the DWA NWRS2 consultation meeting. He can

only water one ha of his 72 ha because a white farmer blocked the canal upstream of his farm. The land is now being used for grazing and he reported the case to DWA, but he has been waiting for a resolution from DWA and the courts since 2010. He does not have the money to go to a higher court and he has paid for his water right. The farmer spoke about his need for water to support his family. He is actively participating in all the water governance structures, but is losing his patience because there is no enforcement or accountability related to water conflicts by DWA (Mr. Maseko, personal communication, November 15, 2012).

In short, the difficulties with land reform farms in relation to water is often linked to sloppy transfers, flawed accountability and poor integration of institutions. Water debt, water conflicts, and the issue of ‘sold off water rights’ on land reform farms are all pressing issues in Nkomazi. This water access challenges are all prohibiting the gains of the land reform program. The Lekkerdraai farm is a claimed farm but being run by the previous owners. The previous owners have extensive knowledge and experience in water management structures, furthermore they have access to capital. The knowledge and access to capital allows the farm to manage their boreholes and participate in water governance structures; and the capital allowed them to purchase another farm for more water rights. Many of the beneficiaries and even the communal farmers lack this knowledge, power and capital stemming from Apartheid. In the following section a few final thoughts will be discussed before moving onto the discussion.

### ***8.5 Final Thoughts***

The farmer case studies and findings highlight the complex landscape of historic inequalities in knowledge, power and water access. Accessing and managing water is clearly a corner stone in successful sugarcane projects and improved livelihoods in Nkomazi. The farmers are losing faith in the formal system because of the institutional overlaps, poor communication, flawed accountability, the lack of integration and the slow pace of WAR.

These cases display the challenges in accessing water and the links to flawed cooperative governance and integration. However, in moving forward and learning from these challenges, the NWRS 2 recognises some of these flaws and that;

*“Proactive steps are required to meet the water needs of historically disadvantaged individuals (HDIs) and the poor and ensure their participation in productive use of water. To elevate the public and political profile of the Water Allocation Reform (WAR) programme it requires linkages to broader government and private sector programmes of redress in land, agriculture and business”* (DWA 2012a, pg. 67).

A great deal of empirical data has been provided with general themes linked to institution integration, water access and broader water governance. A discussion is need to link these findings together and discuss these themes in the broader theoretical context. Furthermore, recommendations and future research ideas will be suggested throughout the discussion.

## **9. Discussion**

A deeper analysis and discussion is needed regarding the degree integration and cooperation among water and land (agricultural) related institutions, as steered by national and global policies. In preparation for the discussion, I must revisit the first two research questions which are:

1. What are the impacts of the IWRM influenced processes on integration at the regional level?
2. What are the dynamics around institutional arrangements at the regional level and what has this meant for different sugarcane farmer groups access to water?

### ***9.1 Integration***

Aligned with my research is the fact that “water governance is about people and the processes through which we manage and govern our water resources... It thus derives meaning from the interests that societies have in these water resources” and should be about connecting people (Teisman & Hermans 2011, pg. 69). Connecting people is linked with integration and cooperative governance at an institutional level that is filtered down to the lowest levels (i.e. farmers on the ground). Connecting people and governance is also linked to social relations, identity, knowledge and varying degrees of authority, which are associated to people’s ability or inability to access water (Ribot and Peluso 2003). Therefore integration is linked to people’s ability or inability to access water. As mentioned in section 2.1, Cardwell (2006, pg. 9) writes that integration is not an all or nothing thing, therefore integration can be partial. Perceptions of what actually fulfils integration are consistent with that of the subjective nature of IWRM. The ‘coordinated approach’ is perceived differently in many contexts, and of interest to the research is to what degree does integration and collaboration between and within institutions linked to land and water satisfy a ‘coordinated’ approach under an IWRM approach. This is ambiguous and open to interpretation as to what degree and how to achieve integration. In the case of South Africa mentioned in Section 5.3, is the fact that the word ‘integrated’ was mentioned 35 times in the NWRS 2 ranging from ‘integrated’ planning, governance, solutions, implementation, arrangement and development; and not once was integration or for that matter coordination specifically defined. In addition, the strategy did not mention a plan to achieve this integration or

coordination or what does ‘integrated’ actually means in the South African context. Therefore, integration or the term integrated is fuzzy and vague and open to interpretations, which parallels the literature critiquing IWRM (see Biswas 2004, Molle 2008, Allan 2003, Jonker 2004).

For these reasons, I argue it is important for governments when reforming water law to specifically outline what coordination, cooperation and integration mean in the particular country, and how can these be monitored and enforced to improve integration as defined by the government. As noted by the ICMA in Section 7.2, a key concern is not knowing the mandates or who is the responsible employee in each institution. Another key question is what can promote and aid the institutions in working together? I propose that an institutional cooperative governance handbook should be created at the provincial level or basin level where the mandates, project, goals and funding schemes are outlined with the corresponding contact people within the institutions. Governmental institutions must be held accountable to the integration aspect of IWRM if South Africa is serious about implementing. In reflecting on the institutional map presented in Section 6, TSB was perhaps the most integrated institution in regards to agriculture, land reform and water. I speculate that this could be because of the profit incentives of integrating and cooperating. Incentives and funds therefore must be provided to encourage and enforce integration of governmental departments.

The NWA steered by IWRM promotes governance arrangements that are opposite to the historic, centralised, top down management styles of the past. The NWA followed the global trend towards decentralised, participatory management of natural resources, which is often associated with more equitable distribution of resources and sustainable development. The institutions dealing with the water and land (i.e. DWA, land reform and agriculture) in the study area are experiencing severe issues in coordinating and integrating programmes/mandates. Reflecting back to Section 3, Vatn and Vedeld (2010) and the fact that the governance structures for water for productive purposes is made up of many actors and institutions and how the structures are maintained depends on conflict resolution and integration. In the literature possible explanations to the challenges in implementing IWRM in Southern Africa is linked to the unwillingness or inability of policy makers to commit to the integration aspect (Swatuk 2005, Jonker, 2007).

Major challenging linked to institutional integration in the study area are: Issue based communication, lack of participation in key stakeholder meeting, non-aligning of projects, even competition (animosity), silos, lack of accountability, leadership and few incentives to collaborate. These challenges have all lead to a scenario where the reallocation of water to HDIs has been stagnated, little has changed in the form of redress, and existing power relations have yet to be broken down. I will discuss some of these challenges with integration and water access in the following sections of this discussion.

In direct response to the first research question, it is argued that IWRM is more of an academic concept in Inkomati that has very little empirical life in Nkomazi (Van Koppen, personal communication, March 25, 2013). Beyond DWA and the ICMA, at the regional and local level very little was mentioned surrounding IWRM in policies or in practice. Large debates and questions exist regarding the feasibility of actual institutional integration or what degree of integration satisfies the requirements of the implementation of IWRM in South Africa? My research outcomes align with Gupta (2011) that a shift towards IWRM governance arrangements with multi-actors and decentralised institutions allows for a more flexible, adaptive system; however these systems “tend to lack accountability, legality and legitimacy. They are not always equitable and often reflect existing power structures, as they do not follow any formal rules of procedure and give room for forum shopping to specific countries” (Gputa, 2011, pg. 7). As in the case of South Africa, IWRM was adopted to break down historic power relations and aid in the equitable distribution of water; however implementation has been proven more difficult than expected, especially in areas where commercial agriculture interests are dominant. In particular , this is the case in Nkomazi.

The literature and my research outcome summon a large and urgent need for integration of institutions, especially those linked to land and water, to improve the outcomes of IWRM influenced processes (Gupta 2011, Funke & Jacobs 2010). Although, IWRM and the NWA promote integration as a solution for inter-sectoral conflict and improved governance, evidence from the research notes that coordination is not always an easy task because the lack of clarity on



what satisfies integration; in addition to the interdependence of sectors, reforms and mandates and silos. The overlapping mandates between agriculture, land reform and water institutions provides empirical evidence that there is a lack of political will, capacity, leadership and/or accountability in both the Inkomati and Pretoria to effectively collaborate and integrate at the regional or basin level. In the theory section 2.1, Jonker et al. (2010, pg. 10) overtly stated that “institutions and various government departments in South Africa have a constitutional mandate to collaborate and work together to achieve the goals of the government.” Even though cooperative governance is written into the South African constitution on paper, it is far from happening among the institutions in Nelspruit. However, in reflecting on the literature (Section 2.1) and the definition of good governance, Rhodes (1996) acknowledges the need for “...other oversight organisations,” and Punyaratabandhu (2004) states that the definition of good governance is subjective. In the South African case the definition of good governance as defined in the NWRS 2 (see Section 5.3) encompasses so many words of subjective nature, including: Integration, participation, equity, and accountability. The subjective nature is linked to the above discussion regarding what integration and even IWRM mean in the South African context.

In reflecting and examining the commonly used Global Water Partnership (2000) definition of IWRM (refer to section 2.1), the definition does not clearly describe what degree should aspects of water management be coordinated and integrated. This leaves the definition open to interpretation as to what, how, and who to integration to coordinate action? (See Jonker et al. 2010). The definition also does not explicitly map out how integration and coordination can be achieved in various diverse contexts. In reference back to section 2.1, Merrey & Cook (2012) describe that complex institutional challenges cannot be remedied with a simplistic blue print solution, so a key theme throughout this discussion is how can integration in the complex institutional landscape of the Inkomati be achieved? In the case of South Africa, more specifically the Inkomati, the CMA and DWA want to implement IWRM and integrate stakeholders. Despite these intentions the explicit means of achieving this are not clearly defined. In reflecting back on the IWRM integration theory in section 2.1, Cardwell et al. 2006 propose a framework for the ‘integration’ aspect of Integrated Water Resource Management. The two

variables of interest are the institutional and objective integration axes in the framework. The institutional and objective integration aspects of IWRM are low, which is due to the flaws in departmental accountability and communication; funding silos, low degree of alignment and coordination in terms of improving of cooperative governance and achieving common goals. Moreover, the institutional integration is low due to the lack of active “participation of all interested groups” (Cardwell et al. 2006, pg. 12).

## ***9.2 Participation and Institutional Decentralisation***

A set of assumptions existed in the NWA, that South Africa has the ability to form new water institutions, carry out participatory processes, and the capacity and funds to implement the policy (Brown 2006, 2011). Participation challenges can also be linked to fragmented communication, power discrepancies, and difficulties in retaining past lessons. It cannot be denied the institutions interviewed have went to great lengths to encourage participation of black farmers, but the ability to effectively carry out a participatory process can be questioned.

In referring back to Hooper (2006, pg. 5) in section 2.1, the first aspect of coordinated management that reflects the degree of implementation of IWRM states that “public involvement processes are effective, providing for joint decision-making and conflict resolution.” In examining this statement in reference to the controversial Middle Komati metering case in Section 8.2, I provide empirical proof in the lack of institutional accountability and coordination to carry out an effective participation process. The task of installing the meters and engaging farmers was passed between the IB, to DWA, to ICMA to a consultant. Farmers had to leverage their power and demand answers to many unresolved issues with various departments that date back ten years. The participatory process was flawed because several key institutions did not consistently attend or participate in meetings, and therefore the consultants (or the ICMA) were unable to answer pertinent questions asked by the farmers. The large scale mistrust and opposition by the farmers can be linked to the long over-due, poorly planned and executed participation process. One of the few positive things that came out of the participatory process was increased contact and awareness between the institutions and the farmers. This case

illustrates the capacity constraints that exist in the newly established decentralised institutions and governments in carrying out effective public participation processes, in making key decisions, strategic planning and being accountable to their stakeholders (Anderson et al. 2008b, Robot and Larson, 2005).

In referring back to Section 2.1 stating that the functionality of an institution, depends on the ability for an individual to use and participate in governance structures (Perret 2002). A common theme throughout the case studies and research is that water in the past and even to this day is held by powerful people, and water and land are still racially and politically divided in the Inkomati today. Challenges have arisen due to what Rhodes (1996) refers to as 'self-organising, inter-organisational networks' (Section 2.1) when decisions are based on a variety of actors, in contrast to the old command and control style of governing water during Apartheid. The racial divide and power differences among different actors greatly affects the more marginalised groups' ability to participate and access water through the formal system. Cleaver et al. (2005) refers to this as a 'double marginalization' because the poor and oppressed cannot participate or utilise institutional channels and therefore remain poor and vulnerable. This is the case in the study area where large imbalances in knowledge and power has resulted in the majority of the black farmers lacking a 'voice' or the 'ability' to participate in formal governance structures. Moreover, this disadvantaged group lacks crucial knowledge regarding the NWA, the formal licensing system and WAR. At the time of the research, DWA had visited very few of the projects (evident in all the case studies) and over 50% of the farmers interviewed had only heard there was a new water act. In drawing from my empirical research, ICMA and DWAs presence is limited on the ground, which contributed to disruptions in the flow of information, knowledge and communication regarding the NWA, WAR and compulsory licensing. Both land reform and communal farmers are present at water governance meetings, but largely lack a voice to influence decisions and effectively participate (TSB social facilitator, interview, December 17).

Since the end of the Apartheid in 1994, South Africa has undergone significant institutional change, beginning with the new constitution in 1994 and the National Water Act in 1998. Jonker

et al. (2010, pg. 10) state an important point that “the water act itself displays tensions between devolution of authority to the new institutions and retention of ultimate authority within the minister.” The NWA influenced by IWRM requires the creation of new decentralised institutions (ICMA, WUA) parallel to existing institutions (DWA). New channels of governance were required in the South African context in moving away from hierarchies and centralised control of water to a new mode of hybrid governance (see Rhodes 1996, Teisman & Hermans 2011). However, research done by Jonker et al. (2010) make a crucial point that much of the ‘buy in’ across socio-economic classes and racial groups has largely been lost to the delays in deciding the correct institutional arrangements to govern water. Resonating with the research in the Inkomati is the notion that “stronger government is desired, [however] effective governance is needed” (Teisman & Hermans 2011, pg. 61). In this respect water governance is a “dynamic balancing act [and] multi-level governance capacities increase when actions across levels and across domains of content and responsibility are sufficiently aligned (Gupta, 2011) or synchronised (Teisman & Hermans 2011, pg. 64). Alignment, and water access, can be improved through legitimate institutional integration, accountability, cooperative governance measures and a better balance of water issues factored into the broader socio-economic and cultural context. A crucial question that requires further research is: How institutional alignment and integration can be improved from the macro to micro level?

Striking the balance between principles of decentralisation, holism, integration and the state being the centralised public trustee of water remains a challenge in the Inkomati. The two opposing forces of holism and decentralisation further complicates governance arrangements and the ability for the powerless, less informed, and/or rural poor water users to access both water. A key point from the literature is that non-hierarchical governance structures have difficulties being accountable because nobody is ultimately in charge (ibid). As such, in the case of the Inkomati, DWA retains only partial power of water, so challenges exist in accountability because nobody is fully taking responsibility. Jonker et al. (2010) state a crucial point that DWA should stop planning and should begin implementing projects/policies/plans to develop a best practice in South Africa. I however argue that DWA must choose either to first decentralise or integrate (or

vice versa) and actually follow through with the implementation. After the establishment of the ICMA in 2006 up until now, the ICMA (as outlined in Section 6.2) is still awaiting the delegation of many core functions, especially licensing and water use charges, from DWA. DWA is retaining power until the ICMA has the capacity; however learning by doing is an important for the ICMA to build capacity and trust. The long term goal is to allocate all functions to the CMAs which should consist of a diverse and equally represented group of stakeholders, however Greenberg (2010, pg. 10) notes that in reality the CMAs are “dominated by those with resources and capacity to develop, articulate and lobby for their own policy positions.”

There is no specific date when the complete devolution of power will occur, so this has led to uncertainty, difficulties in planning, and coordination among the institutions. Moreover, the lack of full decentralisation has greatly affected the ICMA's ability to build legitimacy and fully address the needs of the stakeholders in the basin. As mentioned in the findings, DRDLR prefers to deal with DWA directly because they have the ‘legitimate’ authority in the Inkomati. The challenges and complexities ICMA faces as portrayed by the findings; cannot be solved by a simplistic blue print solution such as governance arrangements proposed by IWRM (see Merrey and Cook 2012). Furthermore, the context, culture, plurality of legal systems must be taken into consideration when forming new institutional arrangements. As outlined in the theory in Section 2, without considering social and cultural institutions; and existing water rights systems the initiative to form new water institutions might be unsatisfactory to improve water allocations (Meinzen-Dick & Nkonya 2005)

### ***9.3 Coordinated Management***

In referring back to Hooper (2006, pg. 5 ) and the third aspect of coordinated management in implementing IWRM is that “the river basin organisation uses joint ventures and coordinates strategic decisions between partners.” The water related forums are an important tool in promoting cooperative governance and providing a place to discuss; however a large amount of interviewees felt the forums and many other stakeholder meetings lack the ability to actually make changes. Both the institutions and the farmers are tired of just discussing and not seeing

any major changes in the basin. Moreover, farmers and other key stakeholders feel little has changed since the establishment of the ICMA. The Lomati IB passionately spoke in reference to the November 15 ICMA stakeholder meeting that he feels “the ICMA is starting where we were 10 years ago and we are not getting anywhere. The same issues are brought up each year at the stakeholder meetings” (Interview, November 27 2012). Forums and water related meetings must have more impact to gain legitimacy in the Inkomati. Farmers are sick of the Status quo and are not satisfied with a simple free trip and meal. In considering the findings, major false perceptions of the formal system exist among black farmers, and challenges in translating the messages from water governance meetings and forums back to the farmers on the ground. Translation is not happening and the flawed flow of communication has major impacts on local level water access and trust in the formal water management institutes. A HDI or communal farmer represents approximately a 100 black farmers during the IB meetings, and clearly the messages are not reaching the farmers at the local level. The representative decides what is important and what is not, then report his perceptions back to the community/farmers. In addition, the farmers attending or not attending the meetings are unsure how to access information regarding water or what institution holds the decision making power because so many overlaps exist.

The MCCA W meeting in Mpumalanga aims to speed up the transfer of water license applications for agricultural use and in-depth cross-institutional discussions showed the possibly for integration and cooperation in the future. Other common issues brought up at the MCCA W meeting (and throughout my research) were related to farmers selling their farms to land reform, then selling their water rights after the deal had been finalised. The effects of sloppy land reform transfers and low institutional integration in dealing with the transfer of water was shown in the Propex Investment LRAD farm in Section 8.4.

DRDLR was not in attendance and was not even aware of this meeting. DWA and DARDLA were unsure about the guidelines and policies that DRDLR had regarding purchasing land reform farms, but DRDLR was not in attendance so the issue was left unresolved. Trading/leasing/selling of water authorisations must be streamlined and accessible. MCCA W does not have any

guidelines regarding allocating agricultural water, so the meetings lack an effective and transparent process of recommending water allocation. If the attendance of the MCCA meetings for all institutions linked to agriculture and water was mandatory, then this meeting could be an important first step towards a more integrated institutional landscape. The forums Komati, Sabie and Crocodile forums are also working hard to bring together a diverse group of stakeholders to discuss water related issues. These forums are seeing some success in bringing together a diverse group of stakeholder to discuss about water related issues.

The findings show that disorganisation exists in the planning of public participation and stakeholder involvement events. For example, during my research invites to the DWA, NWS2 meeting were given to the farmers a few days before the meeting because ICMA and DWA needed some black farmers to be represented. The meetings are often held in White river, which is over an hour drive from Nkomazi. Meeting are also often held in English (sometimes Afrikaans), and translation was only done at an ad hoc basis. The agendas of the meetings were filled with Power Point presentations with limited time allocated for comments and discussion. At both of the ICMA and DWA stakeholder meetings I attended, the question periods were cut short and HDIs were left with unanswered questions or comments. In addition, the HDI farmers that did get to ask their questions were not satisfied with the answer given or no real solutions were formulated.

Challenges are present in regards to coordinated management at the basin level and these transcend to the local level organisations. Key issues that persist in the formation of WUA are: The lack of diversity of stakeholders representatives, effective participation of the HDIs, few incentives, transfer of IBs existing assets, liabilities, functions and powers to the WUA (Woodhouse 2008). In the Inkomati, 26 Irrigation Boards are operating under the previous Water Act of 1956 and 2 Water User Associations, Elands River and Upper Komati WUA, have been established under the 1998 NWA, but neither are operational. According to DARDLA the irrigation boards are functioning and managing the water effectively because farmers directly depend on water, so they understand the importance of managing it. In the case of the Inkomati,

“the conversion of IBs seems to be a political imperative rather than a water governance necessity” (Jonker et al. 2010, pg. 8). In contrast an argument in favour of WUA is that “governance capacities will increase when a governance network does not only cater to the vested interests that have historically shaped existing governance structures, but also admit entrance of new interests into the water-related policies and management” (Teisman & Hermans 2011 pg. 65). I recognise that the manner in which to form the WUAs is a complex and interesting debate in the Inkomati; however this debate is beyond the scope of this discussion.

Efforts are being made to include black farmers in water governance structures, but their participation is not really influencing decision making. DRDLR, TSB and the NGO LIMA feels that black farmers are not well represented. The farmers are present at the meetings, but lack a real ‘citizen voice’ to actually make a difference. Large discrepancies exist in the knowledge and how informed black and white farmers are in regards to the NWA and water policy. However, on the positive note, Woodhouse (2012) points out that large amount of land restitution claims, especially in the Inkomati has started to challenge the IB’s existing power structures and altered their ‘business as usual’ approach to water management. Often Black farmers don’t understand why they cannot get more water allocation and “they feel the white farmers are favoured to get the water” (Jabu, TSB social coordinator, November 21 2012). The mentality of getting equal numbers in representation, instead of equality in voice and influence will continue if the HDI farmers are not informed at the lowest level regarding water policy and governance. At the moment there are no incentives to join or form a WUA. Information is not flowing from land reform or DWA regarding land reform transfers to the IB, so the IB posed an important question: How is a WUA is supposed to function with more stakeholders and complexities if information is already not flowing and participation is lacking from other industries? (Irrigation board Head office Interview, November 22 2012). In short, the institutions are striving for principles of good governance in the Inkomati, but complexities and lack of integration among the institutions have delayed progress of the implementation of water policy, and the redress of historical resource inequalities. The institutions must find a balance of integration to promote better governance arrangements. Furthermore, accountability and cooperative governance arrangements (i.e.



interrelationships) should be a priority rather than the number of decentralised institutions formed (Jonker et al. 2010).

#### ***9.4 Awareness of Roles and Mandates***

In utilising Hooper's (2006, pg. 5) benchmarks of effective implementation of IWRM (Section 2.1), I will discuss how the impacts of the IWRM influenced process on institutional integration in the Inkomati. In regards to the category of the coordinated management with stakeholders (including farmers and institutions) three aspects are outlined. The second aspect says that "the roles and responsibilities of stakeholders are specified and understood." All of the institutions and many of the farmers were unclear or unaware surrounding what each institution was responsible or what their mandates were. Moreover, the institutions are not directing the farmers to the correct institutions to secure water rights or to solve water related concerns. Overlaps and confusion exist regarding water policy and governance arrangements among the various institutions and stakeholders in Inkomati, which presents proof of the flawed communication and flow of information from the national to local level. In addition the institutions were not fully informed on the details surrounding WAR and compulsory licensing; and large speculation surrounded the actual completion date. These are all common themes throughout the institutional map (Section 6) and the case studies (Section 8).

As outlined in the theory section (2.2), Ribot and Peluso state many variables that affect a person's ability to access water, and knowledge is one of the variables outlined that is flawed in the Inkomati. DWA/ICMA must clearly and explicitly explain the NWA, licensing and WAR to the correct governmental departments. Moreover, pertinent information and completion dates of such important processes such as compulsory licensing must be disseminated in a transparent manner, so all stakeholders are aware and have the correct information to translate back to the farmers on the ground. Filtering the correct information, dates and project goals to the lowest level is of the utmost importance for improving water access. On the contrary, all the institutions could take initiative to learn and study the water and land reform policy to improve the water challenges experienced at the local level. Difficulties however arise when the policy is open for

interpretation or lacks clearly defined guidelines. As highlighted in the Institutional Map Section 6.1 and 6.8 there are few guidelines in regards to land reform farm and agricultural water transfers, and in addition DWA has no guidelines on what exactly constitutes a Schedule 1 water use, or a General Authorisation. DWA also has no guidelines or policies when it comes to enforcing or collecting water tariffs or until recently a policy on small dams (Section 6.8). Due to the lack of strict guidelines and poor cooperative governance the institutions are lacking the correct procedures to intervene (i.e. water debt issue) or carry out certain projects with overlapping mandates.

The communication between DRDLR (Land Reform) and DWA was minimal or on a reactive/issue basis, which is not effective for actually solving water issues on the ground. While DRDLR is passionate about helping redress past inequalities and securing water rights for HDIs, they lack the initiative to approach DWA or to attend many of the important water related meetings on behalf of the department. However, the meetings that are being attended, the messages are not flowing back to DRDLR. Another issue is that certain institutions not being informed about certain water related meeting (i.e. the MCCA meeting, Section 6.8). Furthermore, DRDLR has large budgets to help recapitalize the farms and fund water related projects, but they don't have cooperative governance arrangements with DWA or the specialised knowledge required. An 'integrated' approach would benefit both of the institutions outcomes and goals. I believe that an 'integrated' approach requires incentives or specific hired employees to work on this matter and enforce the policies. For example, DRDLR could have an employee specialising on water governance in the department and DWA could have an employee to work with land reform and communal farmers on the water transfers/licensing etc and both these employees could align and coordinate projects, mandates etc., to improve the flow of communication between institutions. In short, "a concerted multi-stakeholder and multi-sectoral effort is required at all levels, from the local to the national, if integration is to be operational and implementable" (Funke & Jacobs, 2011, pg. 81).

False promises and lack of accountability between and within institutions is a major issue that is attributing to the difficulties implementing the NWA and WAR. A common theme that contributed to the mistrust and scepticism was that promises were made to farmers and the follow through was slow, delayed or non-existent. This was the case with the boreholes and surveys DARDLA (Agriculture) promised Tikhontele and Ngogolo sugarcane projects (Section 8); with DWA and reallocation of water rights; with the ICMA and the finalisation of the verification and validation process; and DRDLR promising water rights to beneficiaries and they have been sold off etc. In the case outlined in section 8.4 regarding water conflicts, debt and sloppy land reform transfers; the farmers are trying to advocate and actively participate to have their needs met, but the institutions are not following through with promises and not integrating (see Institutional Findings in Section 7) to come up with solutions to these ‘water’ problems linked to land reform. “Water is essential to the success of land reform farms, and many land reform farms have failed precisely because water has not been available for production” (Greenberg 2010, pg. 11). Drawing from section 2, Frewer (2003) outlines the role that accountability and transparency have in building trust and confidence in water institutions. In reflecting on this statement, the formal water governance structures must positively alter the current landscape to show stakeholder that they are legitimate and powerful enough to equitably manage the water in a fair, coordinated and accountable manner. In short, institutions must “be both enabling and constraining” (Mehta 1999). Due to the history of Apartheid, formal water institutions must ‘enable’ the HDI farmers to prosper through a more equitable distribution of water, then trust will be renegotiated and re-built.

The cyclical nature of project failure and the sustainability challenges land reform and communal sugarcane farms face related to both farming and water access must be addressed and lessons have to be learned at an institutional level. Interestingly, all of the institutions interviewed saw the lack of integration, cooperation and alignment of projects as a serious issue in the Inkomati; and they all also recognised the need for a more integrated, and cooperative governance arrangement. All the institutions interviewed also admitted that a better flow of communication, alignment of programmes and improved accountability could all have a profound impact on the

equity principle of the NWA and improved water access for the marginalised. Furthermore, in the newest edition of the NWRS, DWA recognises that;

*“strong leadership by DWA is needed to align these different ways and to ensure synergy amongst the various processes to create the right conditions for water management to support growth, development and equity...Collaboration of diverse stakeholder groups in water resources management is crucial to effective water governance”* (DWA 2012a, pg. 55).

Crucial leadership, incentives, accountability or enforcement were lacking in order to follow through with an integrated approach, despite the recognition of cooperative governance flaws at both the national level (in the NWRS 2) and regional level. Anderson et al. (2008, pg. 668) point out that “perfect integration between all sectors, across the hydrological cycle and between all users is unlikely. One cannot wait to achieve this integration before tangible benefits are achieved on the ground.” If the institutions can work together, cooperate and be accountable to stakeholders (especially the disadvantaged rural poor) then this can filter down to the micro level. Leadership and accountability at the highest levels will be key in order for the ‘integration principle’ to trickle down. I believe this is a crucial step, regardless of the different interpretations of what the implementation of IWRM requires. My views align with Merrey et al. (2005) and the call for IWRM to place the people and wellbeing at the centre on the priorities. In addition, future empirical research would be beneficial to follow up on the progress of institutional integration and how the alignment or non-alignment of programmes affects water access in the Inkomati.

### ***9.5 Integration of Land and Water Reform***

Funke & Jacobs (2011, pg. 81) state that “water and land reform in South Africa is a special case highlighting the importance of integrated approaches.” Land and water in South Africa are governed with overlapping mandates and goals, but are managed by different governmental structures, institutions and funding schemes. Furthermore, in South Africa water and land reform processes have largely occurred as detached, parallel processes, even though both processes are

embedded with historic inequities of both water and land (Woodhouse 2012, Movik 2010, Funke & Jacobs, 2011). At the regional level in the Inkomati and nationally DWA and DRDLR recognised the need to join and align land and water reform processes (Kleinbooi, 2009). Questions persist on how to integrate and overcome the divide when two different government agencies were assigned authority over land and water (Meinzen-Dick and Nkonya, 2005). Moreover, a paradox exists when the Ministry of Water in charge of implementing IWRM, has little control over other important processes and departments linked to water, such as agriculture and land reform (Hübschen 2011). Furthermore, often mandates important to the implementation of IWRM are another person's or another department's problem or responsibility. Greenberg's (2010) report on the progress of land reform in South Africa states the links between land reform, agricultural support and water resource provision are weak, and that water allocation and land transfers must be connected at an institutional level. Policies and reforms related to water were devised to avoid sectoral management, but in reality silos have resulted from funding schemes and fragmented project ambitions. Reform policies related to land and water, must have incentives and funding structures that promote the opposite of silos: Integration and cooperation. A shift must occur so that government department's performances are measured based on joint activities, integration, cooperation, accountability, and the degree the department improves the citizens' livelihoods (World Bank 2011). In exploring the linkages between land and water, Hodgson (2004) found that "few formal mechanisms exist in law to ensure a coordinated approach to the allocation and administration of land tenure rights and water rights" (cited by Meinzen-Dick and Nkonya, 2005, pg. 8). The national government departments realised the need to integrate land and water reform, but both processes have followed completely separate paths for example: Land reform is based on the commodification of resources and more neoliberal approach, and in contrast water reform was initiated by a human right and sustainable development approach (Woodhouse, 2012). Both processes are extremely complex and are still lagging in projected outcomes (Greenberg 2010, Funke & Cook 2011). Moreover, water use patterns are still highly skewed and a little progress has occurred in allocating water for productive purposes (DWA 2012a).

I argue that the low degree of integration and collaboration between Land Reform (DRDLR) and specific water governance institutions (DWA, ICMA, IB) is greatly affecting land and water reform outcomes, especially in regards to water access. This is evident with the growing ‘water debt’ problem in the Lomati and Komati where many land claims farms (i.e. Inyathi restitution farm, Section 8.4; Solane Community trust, Section 6.4; IB example, Section 6.5) are being auctioned or are in extreme debt because of unpaid water tariffs. As for the case of Tikhontele sugarcane project in Section 8.1, their fields were fallow for 5 years and they accumulated 300,000 Rand of debt with no immediate intervention from any of the responsible institutions. Furthermore, the farmers were unaware of their ability to lease their water rights before the debt piled up. The only positive thing is that the sugarcane project is located on communal land, so the farm cannot be auctioned off. Water debt is a large problem among both communal and land reform farmers, and the institutions are not working in an integrated manner to solve this problem or even to prevent it from happening in the first place. DRDLR (Land Reform) views the water debt problem “as reversing their gains of freedom,” (DRDLR Interview, November 8 2012) and that DWA/IB is not aligning programmes or informing farmers of their rights. DWA and the ICMA say that DRDLR is not communicating or sharing important data linked to land claims, so they lack pertinent information to help the farmers. The IB attributes the water debt problem to DRDLR not checking the debt on the land before they buy the farm, and to DWA for not following through or enforcing payment of bills. From the viewpoint of TSB nobody is really taking responsibility for informing farmers about leasing or trading water rights. The IB also expressed in interviews that they try to ensure the black farmer representatives are reporting to other farmers in the communities, but people are not aware of their rights and think if they lease their water rights they will lose them. As you can see the case of the water debt is complex and not one person or institution took ownership of the problem. Each institution made excuses or blamed another institution. For example the water debt issue in Nkomazi could be solved if DRDLR, DWA and the irrigation boards (even TSB and DARDLA) collaborated and communicated regarding the status of the both communal sugarcane projects and land reform farms, to ensure the farms are operational and using their water allocations. If the water is not

being used, then a transfer could be facilitated, and the appropriate institutions could address why the farm is not operational to achieve the land reform objectives.

In reflecting back on the entire findings section a recurring theme is the institutions in Nelspruit are lacking on-the-ground knowledge of the farmers challenges, and the lack of on-the-ground presence is one of the roots causes of many issues at both the regional and local level. I argue that in the case of South Africa, policy focuses on macro level aspects of the institutional framework. Whereas the rural poor access water at the micro and meso level where “processes of decentralisation take place in practice, with their important outcomes in terms of power and access for individual citizens” (Cleaver et al. 2005). Furthermore, local objectives in water management may conflict with national policy objectives and the literature notes that this tension in water management has a long history (Savenije & Van der Zaag 2000, Gupta 2011). The local level realities in Nkomazi are not playing a key role in policy making, instead policies are shaped by executives, government officials and people from a higher socio-economic class in Pretoria. These policy makers are far from the local level and don’t fully understand the needs and desires of the people. DRDLR commented that if the local level realities and voices were included in policy, then Nkomazi would be a much different place (see section 6.4). DRDLR stated that the situation on the ground must be studied and understood, so that the various institutions can acknowledge the role water access has in impacting the livelihoods of the marginalised. Of the water management institutions, the IB maintained the most on the ground presence and knowledge, and on the agricultural side it was TSB followed by DARDLA. But, overall more local level presence is needed in Nkomazi to better understand the realities and challenges in water access. Currently. The ICMA is increasing their on the ground presence in Nkomazi, which an important step in improving local level water access and governance. In reflecting back on the question of how to integrate once again, Funke and Jacobs (2010) state that the recognition of multiple cultural and social realities in one of the first steps to integration. My research aligns with their conclusions that accessing and being aware of the needs of farmers on the ground will make it easier to establish how institutions can coordinate more effectively.

Water is a key issue inhibiting black farmers from prosperity, so DWA/ICMA must initiate negotiations and discussions in a proactive manner with other institutions to institute real change in terms of water access for the HDIs. The disintegration of land and water reforms is a perfect example of a seemingly good policy on paper and the discrepancies and realities in practice. In the Inkomati, and I would argue throughout South Africa, there is a need to develop a strategy and vision for the institutional and governance arrangements needed to ensure an altered trajectory in the redistribution of both land and water. It cannot be ignored that WAR is an extremely political process that has wider economic and social implications. The next section will discuss WAR in the Inkomati and the wider goal of equitable water access.

### ***9.6 Equity, Water Access and Water Allocation Reform (WAR)***

The equitable distribution of water is a complex challenge due to the role it plays in both economic and social development. Redressing the past inequalities in productive water access was supposed to be a major policy outcome of the National Water Act, but most of the investment has gone to the provision of safe drinking water (Schreiner et al. 2010). As a result little has changed for the rural poor and “access to water for productive purposes mirrors the ongoing economic inequity in [South Africa]” (ibid, pg. 7). As years pass by the strong political will and push to redress inequities in water after 1994 is fading. An important note often not mentioned in the literature or in policy documents is prevalent inequalities, as outlined in Section 7, that exist not only between white and black farmers, but also between current and potential HDI farmers in the communal areas. Equity is a major priority written in the NWA; however at the local level water reallocation has been slow and water has mainly been transferred back to HDIs through land reform. Land continues to be tied to water through the land reform programme. This interconnected relationship between land and water is a “politically, economically and culturally complex and this complexity is expected to increase with the progression of growing populations, increasing water scarcity, growing demand for water, and food security concerns” (Funke & Jacobs 2010).



A senior DWA employee<sup>36</sup> repeated several times in an interview that their department is not concerned with the colour of skin of a farmer or the size of the farm, but the volume of water utilised. This statement depoliticises the allocation water, even though the NWA has equity directly written into it. DWA focuses on IWRM as a process to achieve goals; however the fuzzy conceptualisation often favours one dimension of IWRM over another (see Biswas, Mollinga 2007). There is no consensus in the literature how to balance equity, efficiency and sustainability (Molle et al. 2008). At some point a trade-off exists and due to the slow pace of redressing past water inequalities in the Inkomati, I argue the equity dimension is a priority on paper, but in practice this is not the reality. The process of reallocating water is politically charged, and the narrative and excuse among the institutions is that the technical and environmental aspects of reallocation must be a priority because water is scarce and over-allocated in the Inkomati. From my observations DWA and the ICMA often used the narrative that in order to complete WAR they had to first get the flows and numbers right. Woodhouse (2012, pg.864) also states that “DWAF’s water reform has sought legitimacy in technocratic arguments based on sustainability and efficiency of water use.” I would also argue that the construction of scarcity is used as an excuse or argument for the slow pace of WAR and the reinforcement of historic inequalities in water access (see Movik 2012, Mehta 2000, 2005). Further proof of this outlined in research done by Schreiner and Van Koppen, (2002, pg. 970); in the case of South Africa, growing competition for scarce resources are often felt the most by the poor where the “high-volume, non-poor water users acquired the socio-political power to assure their permanent access to water. Poor people were typically excluded from these formal and informal water management institutions.” This narrative of over allocation and scarcity is dominant in global water governance narratives and greatly influenced the development of IWRM and the translation throughout the world. The narrative is dominated the water governance institutions in Nelspruit and in line with Mehta (2000) as mentioned in Section 2.1 that water scarcity is often seen in absolute terms and is not universally felt by all. This is the case in the Inkomati, where the scarce water supplies are felt more by the historically marginalised farmers as they wait for WAR to be completed. Furthermore, in reflecting on literature by Mehta (2000, pg. 4) the communal farmers

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<sup>36</sup> If it is of interest this employee was black South African, so no racism was intended by the statement.

and land reform farmers experience water scarcity and are unable to benefit from its use “due to various technical, political, financial, social or governance challenges.” Furthermore, in the case of South Africa, farmers inability to access water can be linked to historical considerations.

From all the interviews and from my personal observations the over-allocation and water scarcity narrative was consistent across all the institutions interviewed. To make my point, I will re-quote a DARDLA employee (Section 6.3); “there is lack of allocable water in the Inkomati, over-utilisation of water in most of the rivers in the basin and the surplus of farms demanding agricultural water has led to a politically charged debates surrounding the allocation of water (Interview, December 13, 2012). To make my point clear I will quote an DRDLR senior employee again from Section 6.4 “all the water is committed in the Inkomati and black farmers are finding it difficult to enter into sugarcane farming due to their failure to access water...In terms of water reallocation the only positive thing that has happened for HDI farmers is buying a farm with water.” (David Gindiza, Interview, November 6 2012).

The uncertainty and endless issues with Water Allocation Reform (WAR) has led to widespread anger and mistrust of the formal system amongst HDI farmers. Not only were the communal and land reform farmers frustrated in the small advances since the end of apartheid, the white farmers are also not satisfied with the pace. This issue of WAR and redressing past inequalities in water was brought up at each stakeholder I attended and the questions go unanswered and the water institutions lose credibility. DWA needs to give all the water users a date that WAR will be completed and be accountable to the deadline. This deadline will give farmers some hope that they may be reallocated water and could gain some trust in the formal system and believe that by participating in the meeting actually made a difference. It is well documented in the literature that the WAR process has been fraught with difficulties and complexities (Movik 2012, Anderson 2008, Woodhouse 2012, Funke & Jacobs 2011). The slow pace of WAR and the ambiguities associated with it have led to a lack of confidence and trust in DWA and the ICMA. As mentioned in the Section 6.1, a senior employee from DWA directly said that the implementation of NWA and WAR has taken too long and that we almost have to start over. The

ICMA was originally mandated with WAR; however the delay of establishing the ICMA lead DWA to take back the mandate because of the large financial and technical capacity required to carry out WAR, power struggles and threats from powerful commercial farmers. From interviews carried out in the Inkomati many institutions and farmers are sceptical of this process and when WAR will actually be completed. Some have estimated the date of completion of WAR in the Inkomati from 2014/15 up until 2020. Furthermore, the farmers are demanding answers at the stakeholder meetings in regarding to WAR, and no concrete answer was given to them. In the case of the middle Komati the farmers are demanding long unanswered questions regarding WAR and the formal water governance system in an unrelated participatory process, and still no solid answers were given to the farmers. In Nkomazi there is a loud and urgent call for water to be reallocated, which is outlined in the 2 vs 2000 hectare case in section 8.3.

### ***9.7 Livelihood Impacts and a Thirsty Crop***

The reform on paper is about reallocating water to the marginalised black population, but in reality WAR has secured the elite class with water rights through existing lawful use authorisations and framed it as being the best for the public interest or a ‘beneficial use’ (Movik 2011). That is framing the public interest in rather narrow terms (i.e. GDP and the economy), and largely ignoring what is in the marginalised black populations best interest. More specifically the beneficial water use narrative was used in Nkomazi to protect the economically and politically important export crop like sugarcane. This in combination with the narrative of scarce water resources in the Inkomati have greatly shaped access to water for the marginalised and the progress. Moreover, this has led to the elite capture of water, reinforcement of historic power relations and the postponement of WAR in the Inkomati. Aligning with these thoughts, Lorentzen (2009, pg. 53) states that the provincial authorities do not recognise the conflict between

*“economic development and the ecological integrity of the region... but they fail to recognise that the importance of the industry may become a liability in the future. As far as they are concerned, the sugar industry is important, but they fail to realise that this is a transitory situation. This current positive contribution to regional income and employment may eventually become a liability.”*

The commercialisation and growth of the sugarcane industry is reflected in the narrative of sugarcane being 'green gold.' Consequently this 'green gold' is only benefiting a limited percentage of the population, hence funding and extension support for alternative, less water consumptive crops could greatly benefit small farmers. Irrigation increases output of sugarcane; however Greenberg (2010, pg. 10) argues that "in a context of water scarcity and climate change one has to ask whether irrigation is the best way forward" Despite the narratives of water scarcity in the Inkomati and the fact that sugarcane is a 'thirsty crop,' it is strange alternative export crops or less water intensive crops have not gained popularity in Nkomazi. From an IWMI research report it is suggested that in the long term it might be more beneficial for small farmers in Nkomazi to grow crops with more value per drop as demand for water rises (Faysse and Gumbo 2004). My research reflected that the expansion of the sugarcane industry is currently reflects the historic patterns of privilege and power (Lorentzen 2009). DWA must acknowledge and draw attention to the environmental degradation and the immense water consumed by the sugarcane industry, and they must make alternative crops and markets available for poor farmers. More discussion must occur regarding alternatives to sugarcane, such as water smart crops.

With access to water still highly unequal in the area, it can be concluded that the elite sugarcane growers (i.e. land owners with access to water) are the winners (Lorentzen 2009, also see Lahiff 2007). Land claim farms are highly commodified, which require substantial management skills, smooth hand overs and support. Because of the widespread failures of land reform farms the beneficiaries are distanced from the farm operations and often a white commercial farmer or the previous farm owners will manage and run the farm. The land reform beneficiaries and communal farmers are generally being distanced from the farm operations with strategic partnerships, joint ventures and cooperatives. As this trend increases the participation and awareness of the HDI farmers will decrease as the well informed industry experts or white commercial farmers manage the farms and participate on their behalf in water governance structures. In adding to this point, Schreiner et al. (2010) argue the prevailing dualism in South Africa's agricultural sector, especially in sugarcane can be overcome by agrarian reform and

maximising the involvement of farmers in water management, both in formal and informal access.

Historically and still today, the commercial sugarcane growers maintain rights to a large percentage of the irrigation water and are economically important force in South Africa. Through land reform the water previously allocated to commercial white sugarcane farmers is slowly being transferred back into the hands of HDIs. In short, TSB also has a strong motivation to keep land reform farms producing sugarcane, to secure cane supply, water allocations and to also establish sugarcane farming as an promoting 'black economic empowerment'(Woodhouse 2012). I agree with the argument of Woodhouse (2012), but I may also add that I also found that TSB was the most accountable to both the communal and land reform farmers in providing extension and governance support, and they are working very hard towards building trust among black farmers and sustainability to sugarcane projects. In addition, TSB actively participated in all the water governance forums and meetings, and I believe that this was not only in selfish, for-profit manner, but also to act as representative on behalf of their HDI growers.

The transfer of water through land reform however has occurred by means of an input to a historic commodified pattern of commercial farming (Woodhouse 2012). In many cases the commodified farm in Nkomazi is growing sugarcane and in order for the farm to succeed the beneficiaries are often distanced from farming operations. Also in the communal areas the farmers are forced to form cooperatives after sugarcane project failures and then are distanced from the operations. Evident in the study area is this new category of elite 'arm-chair farmers' that are a product of these consolidations and joint ventures (Schreiner et al. 2010). This opens up questions on the actual livelihood impacts and the degree of empowerment land reform has contributed to in the study area. The commercialisation push among the sugarcane farmers, has also shifted water reallocation into commercial ventures, and left small farmers without any formal options of securing formal water rights in the immediate future. Without any formal channels of water access, farmers are looking to more informal channels or stealing water (see section 8.3) to satisfy their needs.

Focus has been put on ‘efficient’ or ‘beneficial’ water use, which are advocated at the institutional level and translated to the local level through discourses on efficiency and sustainability. The commercial or efficient use of water is evident in the way the IB and DWA are encouraging emerging farmers in the Lomati and Komati to group together to form a cooperative, to avoid the paperwork of allocating a license to a farmer with 2-3 ha. In this case, small farmers are being discriminated or forced to join cooperatives or associations because of bureaucratic governance challenges. This is where a general authorisation would be useful; however the Inkomati is not utilising or encouraging GAs as a tool to promote equity. Instead, the consolidation and commercialisation is being pushed to remove the overload of licensing applications. In addition, several of the institutions, especially DARDLA at the MCCA meeting are promoting “you don’t use it you lose it” policy on water allocations to encourage efficient use of water. And black farmers are being accused of not efficiently using their water allocations, but many of the inefficient use is related to governance, social and historic reasons.

### ***9.8 Water Access, Institutions and Legal Pluralism***

In the case of South Africa, water is a highly contested resource with many layers of historic inequalities, thus managing water is an intricate and politically charged task. So what does all of this mean for water access for the marginalised? In revisiting research question two: What are the dynamics around institutional arrangements at the regional level and what has this meant for the different sugarcane farmer groups access to water? In the previous sections I have written regarding the lack of knowledge of the water policy, reforms and on-the-ground presence. I outlined the detached land and water reform processes, issues with equity and the mistrust in the formal system, the lack of an ‘integrated’ approach and its unclearly defined meaning. These in combination with the push for beneficial water use and commercialised agriculture have all affected how HDIs benefit from and access water. Now, I will reflect back on the Section 2.2 and the point North (1995, pg. 25) makes about formal policies can be published overnight, but the informal rules and norms gradually change with time. Institutions must take into account social and cultural identities and relations, as outlined also in Section 2.2 is the idea of ‘institutional

bricolage' (Cleaver, 2001). Institutions should reflect and adapt to the dynamic contexts and realities and not simply be dominated by global and national policies. Furthermore, how communities access water is embedded in historic, social and environmental considerations of the context.

Plural legal systems existed due to the establishment of indirect rule in South Africa due to the boundaries of the homelands and the several layers of institutions that shaped rules and regulations (i.e. Tribal Authority) (see Meinzen-Dick & Nkonya, 2005). In the communal areas DWA is distanced from the actual realities on the ground because DARDLA is largely responsible for the water allocations in the former homelands. This creates a divide in who actually is in charge or has the correct knowledge in regards to agricultural water. DARDLA was formerly the Department of Agriculture during Apartheid and offices were set up in the former homelands, so this may be why DWA when drafting the Water Act chose to leave those allocations with DARDLA. However, now this created a duality creates a divide and two sets of rules, one for the communal farmers and one for the rest of the farmers. The communal farmer in Boschfontein case study in Section 8.1 feel that the plurality of rules (i.e. they pay TSB for water not the IB) and the different institutions that manage the communal areas water allocation creates a separation. The HDI farmers' access to social relations are important because they link them to other farmers, institutions (i.e. IB, WUA, ICMA, and DWA) with the ability to influence decisions and policies. These social relations "strongly influence the ability to gain and maintain access to the distribution and use of a resource" (Ribot and Peluso 2003, cited by Langridge et al., 2006, pg.2). As mentioned above, many communal farmers and land reform farmers are being distanced from operations and decision making, they are also being distanced from social relations and institutions linked to water. The knowledge in terms of water policy and the formal system among HDI farmers is low, which impacts and influences their ability to participate and access water.

Distrust in the formal system and alternative informal channels of access stems from Apartheid policies where the majority populations of Black Africans were marginalised and resources were

allocated based on skin colour. These inequities between blacks and whites can still be felt in South Africa today. The degree the more marginalised black farmers can access water rests on effective institutions, policies, and the recognition of plural legal systems and traditional management practices. Throughout my research at the institutional level the communal and land reform farmers were accused of being unaware of the importance of managing water, especially in the middle Komati metering case. ‘Managing water’ was framed in the formal sense and because the specific farmer groups did not adhere to formal governance rules, then it was assumed that managing water was unimportant to them. The Boschfontein case (Section 8.1) also showed the cultural and religious values water. Paying for water and breaking into the formal water governance system requires fundamental shifts in cultural values, and learning a new way of participating in formal institutions to access water. Culturally black farmers believed water is a gift from God, (think of the prayer at the meeting in Boschfontein 2), and many farmers still do not realise that land and water are separate management entities and departments. Difficulties have arisen for the IB/DWA in getting emerging farmers to understanding why they have to pay for water (Section 6.7). Plural legal systems and differing social and cultural values must be understood to improve the institutional landscape and have greater impact on local level water access (see Mollinga 2008). In short, integration in the Inkomati requires the acknowledgement of the “diverse multi-actor landscape and consequent diverging interests and perceptions that make up the water allocation and land reform.” (Funke & Jacobs 2011, pg. 82)

Water is dynamic, fluid in nature, which can be challenging to access in the form of both paper water rights and actual wet water as compared to a static natural resource. Under the NWA, farmers should obtain the ‘formal right’ (paper right), with this right the farmer then derives the ability to the benefits through irrigation of crops. It is argued in the African context that not sufficient attention is placed on local arrangements, domestic policy, and micro-scale cultural and social institutions (Funke & Jacobs 2010). Research completed by Cleaver (1995, 1998c cited by Cleaver 1999) shows that in some cases water resource management occurs entirely through customary and culturally embedded practices, social networks and interactions outside formal water governance structures (i.e. institutions and organisations). As mentioned by the farmers in the ICMA stakeholder meetings, a paper water license is useless if the farmer cannot access the



actual wet water (see Van Koppen 2003). Many governments recognise this and are the first to stipulate in their water laws that they reject any legal responsibility for factually delivering the water 'promised' in the formal right that they have granted (van Koppen, 2003, pg.1052). The resource poor farmer funds DWA has for accessing 'wet' water is not sufficiently meeting the demands of the farmers. This concept of institutional bricolage outlined in the institutional theory section 2.1 (Cleaver 1999) is important to the research in addressing challenges for HDI farmers in accessing both wet and paper water. Many farmers that are unaware how to access formal water rights and are finding alternative informal arrangement to access 'wet' water. During my research cases were prevalent where farmers have a license, but are unable to access water due to a combination of reasons outlined in the findings such as: White farmer conflicts, lack of participation or knowledge of how to obtain funding or more water, poor infrastructure, theft and/or unable to obtain financing or funding to repair or purchase new infrastructure etc. Exemplified in the case studies and empirical evidence compiled from the field research is that major challenges exist with HDI farmers being able to break into the formal water system and to access both paper and wet water. Consequently, various channels are used or negotiated to access wet water outside the formal water system at the local level. Among others, wet water can be obtained through informal arrangements, as in Section 8.3 Ngogolo sugarcane project had a gentleman agreement with the neighbouring farm to access 150ha of more water rights. Wet water is often accessed through mixed arrangements (both formal and informal) or abstracted illegally (as in the case of the white commercial farmer in Section 8.3).

The 2 vs 2000 ha case (section 8.3) showed the large inequities in water access in Nkomazi, where many farmers that were not historically allocated the RTO for an irrigated plot are now applying via DWA and the formal system. The lengthy wait and uncertainty surrounding when water authorisations might be reallocated are affecting many impoverished farmers in Nkomazi. Furthermore, no priority was given for small scale users on the list. This therefore, accentuates the need for pro-poor solutions in former homeland areas with concentrated poverty through the allocation of water and the development of water infrastructure (Schreiner et al. 2010). Furthermore, I argue that small farmers should be able to avoid bureaucratic licensing processes

to access water or farmers will go outside the formal system to access the actual wet water. Several researchers have also argued for the use of General Authorisations in speeding up the allocation of water to small scale users (Schreiner et al. 2010 , Van Koppen, Movik 2012). In thinking about IWRM and the NWAs focus on equity, DWA must recognise that “the provision of water is, and has been shown, a significant part of enabling improved livelihoods in rural areas” (ibid pg. 13). The duality in formal and informal channels of access reflect the plural legal systems and varying cultural values in South Africa, and they must be taken into consideration when forming the institutional landscape (see Mehta 1999, Cleaver 1999, Meinzen-Dick and Pradhan 2002 etc.).

## 10. Conclusion

In South Africa, departments dealing with the water and land (i.e. DWA, land reform and agriculture) have experienced challenges in coordinating and integrating programmes and mandates. This is empirically proven by the lack of communication, funding silos, and the failure to align mandates among the overarching regional institutions interviewed. At the basin level institutions and the NWRS 2 recognise that integration is imperative in moving forward, however no detailed plan or explicit definition of what an ‘integrated’ approach actually entails is outlined in the South African context. Moreover, the perceptions of what actually fulfils integration are consistent with that of the vague and subjective nature of IWRM (see Biswas 2004). At an institutional level there is consensus that cooperative governance, combined with communication and alignment of programmes would have a substantial impact on water governance and water access for both the historically marginalised and rural poor; however a multi-concerted effort to achieve this desired integration has yet to be realised in the Inkomati. The slow progress in implementing IWRM and the ‘integration’ aspect is evidenced by the lack of knowledge surrounding the on-the-ground realities, flawed participation, power imbalances, the slow progress of redress, and the stalled formation of water institutions (i.e. CMA, WUA).

The lack of focus on redressing the past inequalities in water access for productive purposes is proven in the slow progress of WAR, and the lack of representation and knowledge of the formal channels of water access. Furthermore, many farmers are not informed or even feel confused in relation to the NWA, water authorisations, and other important aspects of water governance, which alters their ability to access water (see Ribot and Peluso 2003). The inability of HDI farmers to access water through formal institutional channels has lead their discovery or creation of alternative channels in accessing water. Furthermore, the challenges in water access and the flawed institutional accountability has contributed to a general feeling of opposition and mistrust in the formal governance system, which mirrors historic feeling of injustice and inequality. In addition, the effectiveness of policies and institutions, greatly reflects people ability to access water and benefit from its use (see Merrey & Cook 2012).

The push for beneficial or efficient water use through commercialised agriculture in the Inkomati, has affected how HDIs benefit from and access water. This trend is also distancing farmers from the operations and thus the water governance structures, which brings up the broader question of livelihood impacts of both land and water reform. Furthermore, I argue that with the current scarcity narratives looming in the Inkomati, that a more water smart crop other than sugarcane would be a viable option for the 'beneficial' use of water. Programmes must be biased to address the inequity of both wet and paper water access and the social issues that are prohibiting efficient use of the water on the ground compared to commercial farmers. Furthermore, both land reform and communal farmers must be given extension support for alternative crops other than sugarcane. The general narrative of water scarcity must be a catalyst for institutions to provide profitable alternatives to sugarcane to HDI farmers. A shift must occur, so that farmers have more opportunity to grow less water intensive crops with more value per drop, regardless of the current political power sugarcane holds in Nkomazi.

Efforts have been made to engage black farmers and include them in formal water governance structures; however the farmers generally feel that nothing has changed in ten years. The flow of communication is a major challenge preventing integration in the Inkomati. The messages are not filtering down to the lowest levels from the meetings and the realities and challenges in accessing water on-the-ground are not filtering up to the highest institutional levels. The cultural and socio-economic realities of the different actors surrounding water must be taken into place when forming new institutions, planning participatory processes, and integrating institutions. Like building trust and legitimacy, integration is a process and requires strong leadership and incentives.

My research argues that the equity aspect of the NWA is lacking in the Inkomati because the narratives in the study area of overallocation of the scarce water resources, in combination with the historic power imbalances have placed emphasis on less politically charged issues such as: efficiency, and technological aspects of water governance.

*“The equitable utilisation of water in the real world is a very complex challenge involving a wide range of often competing actors and factors that need to work synergistically and be integrated if we are to effectively manage this valuable resource for productive land use” (Funke & Jacobs 2011, pg. 81).*

Programmes must be biased to address the inequity of water access or the socio-political issues that are prohibiting efficient use of the water on the ground compared to commercial farmers. By addressing these inequities in water access the ICMA and DWA will gain legitimacy and farmers will begin to slowly gain some trust in formal water governance institutions and structures. There is a serious cry for governmental follow through and enforcement of more coordinated approach to ensure water will flow into the hands of the marginalised and rural poor.

Even though water and land reform are completely detached processes, water is largely being transferred and reallocated via land reform. This further acknowledges the need to integrate land and water reform processes. The literature and my research outcomes summon a large and urgent need for integration of institutions, especially those linked to land and water, to improve the outcomes of IWRM influenced processes (Gupta 2011, Funke & Jacobs 2010). Integration is not an easy task due to departmental silos and their interdependence of reform and mandates. In reflecting back at the simplest level the term ‘integrated’ is defined by the dictionary as: To have made whole by bringing all parts together; or with various parts or aspects linked or coordinated. Integration is a gradual process that requires the acknowledgement of local social and cultural values and “can only be achieved through the acknowledgement of a diverse multi-actor landscape and consequent diverging interests and perceptions” (Funke & Jacobs 2010, pg 82). For these reasons, what ‘integrated’ in IWRM means in the South African context must be explicitly outlined in policy documents, and the processes and means to actually achieving an ‘integrated’ approach must be a priority. This could substantially improve the flow of communication, and provide new and improved channels of access to water for the marginalized and rural poor farmers; but also improve policy, projects and programme outcomes of land reform, agriculture and water departments.

## 11. References

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## 12. Appendix

### Appendix A

#### Institutional Interviews

<i>Institution (Nelspruit or Nkomazi)</i>	<i>Relevant employees Interviewed*</i>
DARDLA and Mzinti Training centre in Nkomazi.	4
DRDLR	4
DWA including WAR consultants.	5
ICMA	4
LIMA	4
Irrigation Board(Lomati and Komati)	3
TSB	10
South African Sugar Association	1
Mpumalanga Cane Growers	1
Nkomazi Farmers Association	1

\*Several employees were interviewed more than once.

#### Communal Farmer Interviews

<i>Communal Farmers</i>	<i>Institution</i>	<i>Male</i>	<i>Female</i>
Boschfontien Phase 1 Sitfokotile Farmer coop RADP project	DRDLR, LIMA	Chairman + 12	8
Boschfontien Phase 2 Masitsanzane agricultural cooperative	LIMA	5	3
Ngogolo Cooperative	ICMA, DARDLA extension officer	Chairman +1 member	

<i>Communal Farmers</i>	<i>Institution</i>	<i>Male</i>	<i>Female</i>
Walda Association	ICMA, DARDLA extension officer	Chairman +2 members	
Mfumfane Association	ICMA	4	2
Langeloop 1 Association	TSB	6	Chairlady + 5
Langeloop 2 Cooperative (RADP project)		Chairman +1 member	
Figtree A			1
Siboshwa Agricultural Cooperative		Chairman	

**Land Reform farmers interviews** (Includes previous owners or white commercial farm managers):

- Inyathi. Land restitution farm owned by Mhlaba Trust. Black chairman, male member, and female member were interviewed with ICMA and DARDLA.
- Lekkerdraai restitution farm. Johan Basson-white son of previous owner-was interviewed. State is currently the owner now, so the previous white owners are renting it to ensure the productivity of the farm until the beneficiaries take over.
- Propex Investment (LRAD) Land reform farm: Interviewed owner and wife. Farm is completely fallow and they are awaiting RADP funding. Owner also grows sugarcane in the middle Komati.
- Elsana estate. Joint venture with Community and TSB
- Bambanani Farm owned by Mlambo Community Trust and managed by previous owners. Very few of the beneficiaries are working on the farm.
- Barberton restitution farmer. Major issue with blocking a canal upstream. Took the case to criminal court and it was thrown out June 2009, now he is still waiting for DWA to help him.
- Badplass restitution farmer. Felt the NWA is being used to return us to the past inequities.

### **White Commercial Farmers:**

- Lowveld sugar estate owner.
- Informal interviews at water meetings.
- Previous owners of land reform farms.

### **Meeting, Forums and Conferences:**

November 5: Inkomati Day of the Fresh water governance conference in Drakensberg

November 6-7: Fresh water governance conference in Drakensberg

November 14: MCCA W meeting in Nelspruit

November 15: ICMA stakeholder meeting in White River

November 20: Mpumalanga Land Reform Development Committee in Nelspruit

November 23: Mpumalanga Provincial workshop on Framework and indicator for monitoring and auditing water allocation reform in Nelspruit.

November 29: Mill cane committee meeting at TSB Malelane.

December 5: NWRS2 consultation meeting in White River.

### ***Appendix B***

Nkomazi is split into eight tribal authorities and 43 villages:

- Mlambo Tribal Authority: Mbuzini, Mabidozini, Samora Park, Emacambeni, Mbangwane; Ekusulukeni, Khombaso; Tsambokhulu; Mananga; Masibekela; Mandulo; Mthatha, New Village, and Hlahleya.
- Hhoyi Tribal Authority: KaHhoyi (Figtree), Eric'sville and Goba.
- Siboshwa Tribal Authority: Part of kaMaqhekeza; Block A (KwaZibukwane); Block B (KwaSibhejane); Block C (Esibayeni); Tonga, Los My Cherry, Ngwenyeni and Dlunduma
- Kwa-Lugedlane Tribal Authority: Mangweni and Steenbok.
- Mawewe Tribal Authority: Magudu; Mgobodzi; Madadeni; Sibange; Phakama.
- Matsamo Tribal Authority: Jeppes Reef; Schoemansdal; Buffelspruit; Dreikoppies; Middleplaas; Schulzendal, Mzinti; Ntunda; Phiva; Mdladla; Phosaville; Langeloo; Ekuphumuleni; Sikhwahlane.



- Mhlaba Tribal Authority Magogeni; Bochfontein; Skoonplaas.
- Lomshiyo Tribal Authority Louieville; Shiyalongubo

### *Appendix C*

#### **Water available for Development in the Inkomati**

<b>DISTRICT</b>	<b>RIVER SYSTEM</b>	<b>TOTAL</b>	<b>Commercial</b>	<b>Emerging</b>	<b>Water available for Development</b>
(Municipality)		(ha)	(ha)	(ha)	(ha)
<b>EHLANZENI</b>					
	<b>INKOMATI CMA</b>	<b>63,919</b>		11,500	<b>-4,550</b>
<b>EHLANZENI</b>					
Bushbuckridge	Sabie & Sand	1,450			<b>-1,450</b>
Nsikazi	Nsikazi river	900			<b>-900</b>
Crocodile Valley from Kwena Dam	Crocodile river, East	20,020			
	Lomati river	7,399			
Nkomazi / Onderberg	Lower Komati	31,400	20 400	11,500	0
<b>GERT SIBANDE</b>					
Mswati	Upper Komati	2,750	550		<b>2,200</b>

## Appendix D

### APPLICATION FOR WATER RIGHTS: EMERGING FARMERS: N'KOMAZI

FOLIO	FARMERS ASSOCIATION	ADDRESS	HECTARES	RIVER
1	Madumbe	P O Box 5094, Schutzendal 1320	953.8	Lomab
2	Sophuthuka	P O Box 420 Malelane 1320	745.8	Lomab
3	Ehede	P O Box 420 Malelane 1320	60.0	Lomab
4	N M Shongwe		7.0	Lomab
5	Khetukuthula	P O Box 1072, Shongwe Mission 1331	408.0	Lomab
6	Vokanole	P O Box 2326, Shongwe Mission 1331	150.0	Lomab
7	Luzanto Sugar	P O Box 1765, Shongwe mission 1331	235.0	Lomab
8	John & George Sambo	C/O Box 678, Matlana 1320	40.0	Lomab
9	Impomelelo	P O Box 7425, Mbenzeni 1333	485.0	Lomab
10	Abert Ngeanya	Langeleop	12.0	Lomab
11	Nelzabahlen	P O Box 745, Malelane 1320	200.0	Lomab
12	Langeleop Phase II (Additional) #1	P O Box 465, Malelane 1320	0.0	Lomab
13	Imvuthuka	P O Box 1053, Shongwe Mission 1331	130.0	Lomab
14	Lokumbalethu (B) (Theresa Lethe "B")	P O Box 405, Sidamafa 1332	1000.0	Lomab
15	Blue-Sky Nursery	P O Box X8008 Imbenzeni 1333	2.0	Lomab
16	M M Shongwe	P O Box 7033, Malelane 1320	10.0	Lomab
17	P E S'bambu	P O Box 9182, Malelane 1320	6.5	Lomab
18	S F Thimera	Private Bag X530 Malelane 1320	6.5	Lomab
19	F P Thabethe	P O Box 1038, Kwalagedane 1341	21.8	Lomab
20**	Kancane-Kancane Syeta	P O Box 205, Mabenweni 1337	778.4	Lomab
21	Mshamo Lake Beneficiary Schaemansdal	PM O Box 1427, Nelspruit 1200	0.0	Lomab
22	Mshamo Lake Beneficiary Moddepluis	PM O Box 1427, Nelspruit 1200	0.0	Lomab
23	ThuThukani Womens Club	P O Box 5019, Schutzendal 1335	3.0	Lomab
24	Ntswane Sugarcane Growers	P O Box 716, Shongwe Mission 1331	257.6	Lomab
25	Schaemansdal	P O Box 1427, Nelspruit 1200	114.5	Lomab
26	Nakhu	P O Box 614, Shongwe Mission 1331	114.5	Lomab
27*	Teemelen Sugar Cane Farmers	P O Box 40, Mabenweni 1337	565.7	Lomab
28*	Masikhuthusane	P O Box 1899, Shongwe Mission 1331	440.0	Lomab
29*	Bunte Buyeza	P O Box 901, Shongwe Mission 1331	176.0	Lomab
30**	Lumamvoti	P O Box 9267, Shongwe Mission 1331	366.8	Lomab
31	Youth 2000 Club	P O Box 1140, Shongwe Mission 1331	7.0	Lomab
32	Masibambani	P O Box 1469, Malelane 1320	880.0	Lomab
33	Khanakwane	P O Box 2342, Shongwe Mission 1331	200.0	Lomab
		<b>SUBTOTAL LOMATI</b>	<b>8376.7</b>	
	Note 31*** License B2/2110(52) issued on 18-02-2004			
	Note: 20** Change of address 24-05-2003			
1	Phambanisa Project	P O Box 627, Kwalagedane 1341	40.00	Komati
1	Mfundu C	P O Box 627, Kwalagedane 1341	133.00	Komati
1	Mfundu A	P O Box 627, Kwalagedane 1341	56.00	Komati
1	Mfundu Mfundu C, Mangam	P O Box 627, Kwalagedane 1341	117.00	Komati
1	4 Farmers at Mananga	P O Box 627, Kwalagedane 1341	28.00	Komati
1	Intsabo Farmers	P O Box 627, Kwalagedane 1341	270.00	Komati
2	Simungu	Private Bag X741, Malelane, 1320	300.00	Komati
3	Mawetwa Brothers	P O Box 103, Kama 1204	29.00	Komati
4	D S Ngomane & M J Lekhukh	P O Box 578, Shongwe Mission 1331	29.00	Komati
5	Trybe M & Trybe J	Private Bag X11304, Nelspruit 1200	60.00	Komati
6	K J Thandana	P O Box 196, Komatipoort 1340	4.00	Komati
7	Phaphanani Ntabenele Womens' Club	P O Box 885, Kwalagedane 1341	24.00	Komati
8	Mangweni Fish Distributors	P O Box 739, Kwalagedane 1341	3.30	Komati
9	Sibweni Communal Project	P O Box X449, Matibekela 1342	128.00	Komati
10	Mogokela Box Vegetable Ass	P O Box 190, Matibekela 1342	150.00	Komati
11	Vukani	P O Box 906, Kwalagedane 1341	66.00	Komati
12	Mshane A extension (J P Temb)	P O Box 744, Kwalagedane 1341	12.00	Komati
13	Mshane Water Project	P O Box 1611, Kwalagedane 1341	100.00	Komati
14	Masikhate Youth Project	P O Box 653, Kwalagedane 1341	8.00	Komati
15	Lucas	P O Box 5704, Kwalagedane 1341	570.00	Komati
16**	Phaphama	P O Box 66, Sidamafa 1332	558.00	Komati
17	Thuthukani Matlana	P O Box 89, Shlangu 1349	1000.00	Komati
18	Bushcor (Pty) Ltd	P O Box 9151487, Faine Glen 0043	2000.00	Komati
19	Nobwane	Shongwe M J (Capt 082 763 9616)	1050.00	Komati
20	Syavuma Cassava	P O Box 1272, Matlana 1320	235.00	Komati
21	Syavumana Mpeudu	P O Box 4172, Mabenweni 1334	218.29	Komati
22	Mfundu "B"	P O Box 746, Kwalagedane 1341	1300.00	Komati
23*	Intsabo	P O Box 291, Hoyt 1345	494.00	Komati
24	P S Ngomane Project	P O Box 601, Kwalagedane 1341	250.00	Komati
25	Imveto	P O Box 424, Matibekela 1342	725.00	Komati
26	Good Hope (Mpeudu)	P O Box 331, Malelane 1320	480.00	Komati
27	Sykhana Vegetable (Nicomo M F)	P O Box 31, Menty 1352	200.00	Komati
28	J M Marikela	P O Box 240, Komatipoort 1340	10.00	Komati
		<b>SUBTOTAL KOMATI</b>	<b>10573.5</b>	
		<b>TOTAL</b>	<b>18950.2</b>	
	# Dept of Agric redistributed water to accommodate Langeleop Phase II			

