

LARGE-SCALE LAND ACQUISITIONS IN TANZANIA: A CRITICAL ANALYSIS
OF THEIR IMPLICATIONS ON WATER SECURITY

by

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ABSTRACT

The surge in large-scale land acquisitions – or ‘land grabs’ – following the financial crisis has provoked a polarised debate centred on the role of foreign investment in African agriculture. A critical, and often overlooked, component of this debate is the role of water. Drawing on fieldwork conducted in 2013, this thesis explores a large-scale sugar project slated to begin in Tanzania in order to understand the likely implications of large-scale land acquisitions on water security. Although the original project bore all of the hallmarks of a ‘land grab’, a change in ownership saw the project reinvented and rebranded as a model for sustainable agriculture. Using a critical lens that transcends simplistic understandings of water security as water availability, this thesis provides some insights on how large-scale agricultural projects approach water management and what this may mean for water security in Tanzania.

LIST OF ABBREVIATIONS AND SYMBOLS USED

ADBG	African Development Bank Group
ASDP	Agricultural Sector Development Program
ASDS	Agricultural Sector Development Strategy
BBM	Building Block Methodology
CEA	Cumulative Effect Assessments
EFA	Environmental Flow Assessment
ESIA	Environmental and Social Impact Assessment
FAO	Food and Agricultural Organisation
FDI	Foreign direct investment
G8	Group of Eight
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GTZ	German International Development Agency
ILC	International Land Collation
IWRM	Integrated Water Resource Management
JICA	Japan International Cooperation Agency
LSLA	Large-scale land acquisition
Mm ³	Million cubic meters
NBTF	National Biofuels Task Force
NEMC	National Environmental Management Council
New Alliance	New Alliance on Food Security and Nutrition
OECD	Organisation for Economic Co-operation and Development
RAP	Resettlement Action Plan
RED	Renewable Energy Directive
SAGCOT	Southern African Growth Corridor of Tanzania
SIDA	Swedish International Development Cooperation Agency
TIC	Tanzanian Investment Centre
TSH	Tanzanian Shillings
WEF	Water energy food nexus
WUA	Water User Association

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

In 2013, news reports began to surface concerning a proposed sugarcane plantation in Bagamoyo, Tanzania. According to several sources, a Swedish investor planned to relocate hundreds of Tanzanians to make way for a plantation and processing plant. These accounts reveal an on-going dispute between villages, district officials, and the firm in question: Agro EcoEnergy Tanzania. A village representative describes how EcoEnergy's predecessor – Swedish bioethanol producer SEKAB – 'invaded' their land in 2007, and then, in a 'dubious' deal, sold the land to Agro EcoEnergy without the knowledge or consultation of villagers (Kitabu, March 8, 2013; The Citizen, March 13, 2013). The land in question includes almost 21,255 hectares of an abandoned cattle ranch. While they hold no formal titles, hundreds of people live on this land, some since the 1950s. News reports claim that 6,000 hectares of the land being acquired belongs to these villages. Yet despite their claim, a village leader alleges "the government is branding [the villagers as] invaders just to please someone powerful" (Makoya, May 11, 2013). In 2013, representatives from the villages travelled to Dar es Salaam in protest of the land acquisition after the former Lands, Housing and Human Settlements Development minister, Professor Anna Tibaijuka, allegedly threatened to evict them, but failed to reach any compromise (The Citizen, March 13, 2013).

These accounts portray this investment as a top-down initiative that failed to include the wants and needs of existing villagers. But other coverage frames this project as desirable and necessary, arguing that the investment will empower communities by employing up to 4,000 locals (Mtema, March 17, 2014) and generating anywhere from USD 13 to 18 million in annual revenue (Magomba, May 11, 2014). Moreover, the output of this project will supply the domestic market with 125,000 tonnes of sugar, 8 million litres of ethanol and 100,000 megawatt hours of electricity, effectively curtailing endemic shortages and promoting economic growth (Simbeye, July 1, 2014; Magomba, May 11, 2014). These more optimistic accounts claim the villages are now welcoming the investment, and have agreed to work with the investor after realizing the benefits of the project. The Chairman of the Bagamoyo District Council says they "will amicably

end the problems that have existed between the investor and the villagers” (Machira, April 5, 2014). Despite conflicting accounts, the initial phase of this project was officially launched in March 2014, with the support of the Ambassador of Sweden, the Tanzanian government, as well as regional and international initiatives promoting agricultural investment and food security.

1.2 THE ‘LAND RUSH’

These conflicting perspectives on the proposed project are a product of a much larger trend that is unfolding across Africa. In 2008 food prices peaked – reaching a level not seen since the 1970s (Allan, 2012). The relatively sharp rise in food prices sparked concerns over the affordability of food. This compelled several food-insecure nations such as Saudi Arabia, China and South Korea to seek out a secure source of food crops. In tandem, mounting concerns over ‘peak oil’ sparked a growing demand for renewable energy – in particular, biofuels (Trostle, 2008).¹ States (and investors acting on their behalf) responded to these pressures by looking for land beyond their domestic borders to grow crops for food and energy.

The rush for arable and available land for the production of food and energy crops led to an increase of foreign direct investment (FDI) in land, predominantly (but not exclusively) in developing countries (FAO, 2013). Developing countries were considered suitable for inward investment because of high proportions of land availability, a relatively favourable climate for agriculture and high potential for greater productivity (Deininger et al., 2011). The World Bank identified 445 million hectares of uncultivated land worldwide that it deemed suitable for investment. Approximately 45% of this land was located in sub-Saharan Africa (Deininger et al., 2011). This enthusiasm, alongside the sharp rise in commodity prices and a willingness on behalf of African governments to alter policies to attract investors, laid the foundation for a significant spike in large-scale land investments across the African continent in 2008.

A provocative and polarised debate has emerged challenging the ethics and morality of the ‘land rush’. This rash of large-scale land acquisitions (LSLAs) –

¹ Biofuels are energy fuels derived from food crops like palm oil, sugarcane and corn

characterised by the speed and scale of these investments – was viewed by some development-centered non-governmental organisations (NGO), such as Oxfam and Friends of the Earth, as socially and environmentally damaging and irresponsible. The Spanish NGO, Genetic Resources Action International (GRAIN), was the first to raise the red flag. In 2008, they published a comprehensive database of alleged land investments underway across Africa, Asia, Latin America and even a few in Eastern Europe. They labelled the process ‘land grabbing’ – which has, for better or for worse, become synonymous with land investment and acquisition. Following this, a number of reports began to circulate depicting the drivers behind, and outcomes of, this process (see for instance Franco et al., 2013a). Likewise, the Oakland Institute has published a series of country reports detailing how alleged land grabs have unfolded across ten African countries (see www.oaklandinsitute.org/publications for full list). The language of ‘land grabbing’ has cast a shadow over transnational agricultural investments, and served to draw attention towards the villages and communities that were being ousted from their land and homes at the whim of foreign elites.

While some saw this process as an injustice, others viewed it as a development opportunity. Proponents of market-led solutions that promote the commercialisation of agriculture, like members of the World Bank Group and the United Nations’ Food and Agricultural Organization (FAO), saw rising investor interest in African land as an opportunity that could be captured and transformed into lucrative partnerships between African governments, investors, and villages, which could catalyse economic development. This vision aimed to promote responsible, inclusive, and pro-poor investment that is deemed beneficial for all parties involved. This ‘win-win’ approach fostered the creation of a series of voluntary guidelines or codes of conduct meant to engender responsible investments while weeding out exploitative investments that merit the term ‘land grabbing’.

The promotion of voluntary guidelines as a solution to the aftermath of the land rush has been met with significant criticism. Opponents of this solution claim these guidelines serve to legitimise a process that is fundamentally flawed because it presumes this kind of development is, under certain circumstances, desirable (De Schutter, 2011).

Instead, critiques suggest a genuinely pro-poor ‘code of conduct’ would reject the process of transnational land acquisitions altogether, on the grounds that the transnational global system from which these acquisitions were born is the root of systemic poverty (Borras & Franco, 2010). This perspective undercuts the possibility of a win-win scenario, suggesting that transnational land acquisitions are part of the problem and therefore cannot, in good sense, be part of the solution to rural poverty.

This deeply polarised debate has sparked a litany of questions and concerns about whether land grabs are credible tools for advancing development goals. In an effort to expose the realities of the land rush, it was accompanied by what Scoones et al. (2013) cleverly call the ‘literature rush’. One particular line of inquiry that has garnered some attention is the role of water resources within the land rush. The next section introduces this critical dimension of the debate.

1.3 THE ROLE OF WATER

Water is an inherent element of agriculture. Agriculture withdraws approximately 70% of renewable water resources worldwide (World Water Assessment Programme, 2009). To that end, any discussion about agriculture is incomplete without considering of the role of water. The vast majority of LSLAs that took place during the land rush were agricultural projects, yet the realisation that water plays a pivotal role in this process was often overlooked. In many ways this was because water was often viewed as an ‘input’, in the same vein as fertiliser or pesticides. In 2011 the role of water took center stage when Woodhouse and Gahno (2011) suggested that ‘land grabs’ might be better characterised as ‘water grabs’. This perspective positions water as a driver and water grabbing as a process “where powerful actors are able to take control of, or reallocate to their own benefits, water resources already used by local communities or feeding aquatic ecosystems on which their livelihoods are based” (Mehta et al., 2012, p. 197). Further study reconceptualised the ‘land rush’ as (in some cases) a product of local water insecurity – highlighting how water insecure countries seek out foreign land to grow water-intensive crops that they are no longer able to grow domestically (Woodhouse & Gahno, 2011).

Water grabbing and land grabbing share many similarities. For example, the World Bank (2013) routinely reports that Africa has only harnessed 2% of their water resources, suggesting the potential for enhanced productivity. Like land grabbing, the language of water grabbing has been wielded to evoke a sentiment of injustice and draws attention towards the reallocation of resources and the (re)production of inequity in these circumstances. Yet, unlike land, water is rarely mentioned by investors, and was downplayed in the voluntary guidelines. This divergence is dangerous because the physical fluidity of water allows it to cross large populated areas, and as a result, the reallocation or depletion of water could have greater adverse impacts than the reallocation of land (Franco, Mehta & Veldwisch, 2013b). For example, a LSLA in Tanzania contaminated the drinking water supply of up to 45,000 people downstream (Arduino et al., 2012). This raises critical questions about the impact of land grabbing on future water security.

Preliminary studies on the water dimension of land grabbing have observed changes in water quantity in Ethiopia (Bossio et al., 2012), water rights schemes in Ghana (Williams et al., 2012) and water quality in Tanzania (Arduino et al., 2012). On the other hand, Woodhouse (2012) claims LSLAs could finance desperately needed water infrastructure. Otherwise, firsthand research investigating the role of water in LSLAs has been limited. Franco et al. (2013b) suggest this silence might be in part due to the nature of water as a fluid resource – changes and variability over time render it difficult to assess cause-and-effect relationships.

My research aims to address this lacuna. Using a case study of Agro EcoEnergy in Tanzania, I explore the position of water within the contentious debate over the potential for LSLAs to achieve development goals. To meet their water needs, Agro EcoEnergy Tanzania intends to pump water from the Wami River for irrigation. The health of the river is vital as it is the only source of water for villagers surrounding the project site. Fluctuations in water availability are a natural occurrence, but unsustainable water withdrawals will likely have impacts on the livelihoods of people living in this region. Cognizant of this reality, EcoEnergy has formulated a water management plan to stave off shortages and mitigate impacts. But EcoEnergy does not operate in a vacuum; it

is embedded in a myriad of formal and informal institutional arrangements that govern water usage and will shape outcomes in important ways. This research seeks to explore the water dimension of EcoEnergy's project and assess how water security is being shaped and (re)allocated by this investment.

1.4 RESEARCH QUESTION

I will employ water security as an analytical framework to explore the water dimensions of land grabbing. Water security is a way of looking at how an event impacts water and the people who depend on it. Early understandings of water security were relatively narrow, focusing exclusively on links between water, scarcity and conflict. Over time, broader, critical understandings of water security have emerged that seek to incorporate both biophysical realities *and* social structures as processes that can create and/or deny water (in)security (Zeitoun, 2011). Backed by a critical understanding of water security, my research explores this quandary using a social science perspective. The research question I pose is:

What are the likely implications of LSLAs on water security in Tanzania?

To answer this research question I have posed to sub-questions:

- (1) To what extent do the driving forces behind LSLAs in Tanzania consider water?*
- (2) To what extent is EcoEnergy's approach to water resource management effective?*

1.5 SIGNIFICANCE OF THIS PROJECT

This research is timely and relevant because several African countries are pursuing strategies that promote the commercialization of agriculture through public-private partnerships that link smallholder farmers with multinational investors as a pathway to development and food security. As this thesis will show, this trend is unravelling in Tanzania under the auspice of the New Alliance on Food Security. This initiative has been a catalyst behind changing land laws to facilitate acquisitions and investment. With a financial backing of over USD \$10 billion, initiatives like the New Alliance represent an influential element of the current paradigm of agricultural development and open up the space for supposedly 'win-win' LSLAs. It is critical to understand how these foreign

investors understand water dynamics, and what impacts these investments might have on water security. As EcoEnergy is believed to be a ‘model for sustainable agriculture’, this case study presents the perfect opportunity to gain some insight on this fast-moving trend.

1.6 CHAPTER OUTLINE

This thesis shows how LSLAs favour technology and infrastructure driven approaches to water management that overlook the social, economic and political determinants that shape water security. This thesis suggests this kind of oversight may inadvertently jeopardise future basin water security if LSLAs continue to be promoted across Tanzania without a sound, smallholder-focused basin resource management framework established. To accomplish this, this thesis is divided into eight chapters. Each chapter addresses a different dimension of the topic, with the aim of developing a better understanding of the implications of LSLAs on water (in)security. The outline of this thesis is as follows:

- *Chapter two* explores the emergence of LSLAs. This chapter provides an overview of the debate that reframes land investments as ‘land grabbing’ in an effort to draw attention towards the impacts on communities. This chapter also examines agricultural initiatives in Africa that encourage and legitimise this approach in the name of development. The second part of this chapter explores the emergence of ‘water grabbing’, including what it means, current understandings and implications.
- *Chapter three* outlines the theoretical framework that underpins this research. To understand critical perspectives on water security, this chapter first explores the emergence of critical environmental security studies. Then, this section shows how our understanding of water security has evolved to include both physical and social understandings of water. This chapter aims to foster an understanding of water security that is – in the words of Cook and Bakker (2011) – ‘analytically robust’.
- *Chapter four* explains the research methods used throughout the course of this thesis. In addition, this section takes a critical look at the challenges I faced during the research process.
- *Chapter five* explores the domestic and international processes that have shaped FDI in Tanzania’s land resources. This chapter explores how Tanzania’s robust legal

framework that governs land can give way to irresponsible investments and shows how water is often considered as secondary, if at all.

- The case study of this thesis is introduced in *Chapter six*. This chapter explores the developments of an investment in Tanzania, focusing on their plans to construct a large-scale sugarcane operation in Bagamoyo. The purpose of this chapter is to explore the dimensions of this project including the role of water.
- *Chapter seven* analyses how EcoEnergy approaches water management and the effectiveness of this approach by drawing on interviews conducted during this research and secondary sources.
- *Chapter eight*, the concluding chapter, summarises the research findings and explores the relevance of this research in conjunction with current events in Tanzania and will offer suggestions for future research.

CHAPTER 2: OVERVIEW OF THE ‘LAND RUSH’: LAND AND WATER GRABBING IN AFRICA

2.1 INTRODUCTION

Historically, foreign investment in African agriculture has been chronically low.² Recent data compiled and analysed by the FAO (2012) shows that the leading investors in agriculture are farmers. This is particularly true in Africa after public-sector investment in agriculture steadily declined from 15% in the 1990s to below 10% by 2002 (Inter-réseaux développement rural, 2013). The need for greater investment in the agricultural sector prompted African leaders to sign *The Maputo Declaration on Agriculture and Food Security in Africa* in 2003. The declaration was a pledge on behalf of African governments to allocate at least 10% of the domestic budget towards agriculture and rural development. Figures, however, show that between 2003 and 2010, only a small handful of African countries have periodically surpassed the 10% benchmark, predominantly in Western Africa (ReSAKSS, 2012). In response, world leaders at the Group of Eight (G8) summit took action by launching the L’Aquila Food Security Initiative in 2008 and the New Alliance on Food Security and Nutrition (henceforth New Alliance) in 2012. The collective aim of these agreements is to mobilise global investment in African agriculture as a means of enhancing food security and reducing hunger and poverty.

The New Alliance is modeled as a network of public-private partnerships (PPP). Crafted between G8 countries, African countries and private sector partners, the New Alliance ambitiously aims to lift 50 million people out of poverty within 10 years. Private sector partners include multinationals like Monsanto, Unilever, Nestle and fertiliser giant Yara International, among many others. The scheme has already attracted USD 10 billion in “socially responsible private sector commitments” (Office of the Press Secretary, 2014). As of 2014, six African countries have developed New Alliance Cooperation Frameworks (NACF), including: Ethiopia, Ghana, Burkina Faso, Cote D’Ivoire, Mozambique and Tanzania. These frameworks comprise a series of policy adjustments

² Data shows an increase in FDI in Africa in the 1990s, particularly in petroleum and telecommunications. The percentage of FDI going towards sub-Saharan Africa at his time is unknown, but estimates suggest that “Only a very small proportion of FDI flows are likely to be linked to agriculture” (Oxford Policy Management, 2002, p. 22)

aimed at increasing private sector incentives and facilitating the rollout of PPPs. Each NACF contains a host of objectives, several of which aim to clarify land rights and facilitate conflict-free land acquisition.

The New Alliance was heralded as a “historic shift in the quality and quantity of private-sector engagement” (Grow Africa Secretariat., 2013, 2), yet it has also been met with scepticism and concern from civil society. Accusations that this partnership will only serve to benefit the private sector (Provost et al., February 18, 2014), and further marginalise small farmers’ control over production and access to food (FIAN, 2014), have fuelled fears that this agreement could mark a ‘new wave of colonialism in Africa’ (Provost et al., February 18, 2014). On the other hand Patel et al. (2014) caution against this interpretation because it belittles the individual agency of Africans – including the many who have welcomed this initiative.

The New Alliance was introduced on the heels of the ‘land rush’ – a period beginning in 2008 characterised by a surge of LSLAs in developing countries. The purpose of this chapter is to review the literature on land and water grabbing to provide some context for understanding the deeply contentious debate that developed during the land rush. The first section reviews the causes and characteristics of the ‘land rush’. Building on this, the next section looks at the polarised perspectives that led to the creation of several governance mechanisms. After which, this chapter concludes by surveying the pivotal role that water plays in this process – and how this critical dynamic has been addressed in the literature.

2.2 WHAT’S DRIVING THE ‘LAND RUSH’?

In 2008, GRAIN, a Spanish-based not-for-profit organisation that supports small-scale farmers, published a hard-hitting report that listed a database of over 100 potential ‘land grabs’. At the time the term ‘land grabbing’ was relatively unknown, but human rights organizations and NGOs, like Oxfam and Friends of the Earth, joined GRAIN in their quest to increase awareness of this alarming and fast moving trend. Within a few years of this publication, ‘land grabbing’ had emerged as a hot-button issue that seemed to be spiralling out of control.

In its most basic form, ‘land grabbing’ refers to a process whereby elites capture and take control of land formerly used by the poor or disadvantaged. Borras and Franco (2012) define it as a “catch-all phrase to refer to the explosion of (trans)national commercial land transactions and land speculation in recent years mainly, but not solely, around the large-scale production and export of food and biofuels” (p. 34). Building on this definition, Daniel and Mittel (2009) view land grabbing as “the purchase or lease of vast tracts of land by wealthier, food-insecure nations and private investors from mostly poor, developing countries in order to produce crops for export” (p. 1). Both of these definitions highlight the transnational character of land grabbing, the capture of land by elites, and the focus on agricultural products, specifically food and biofuels. In some instances this concept has been distorted to explain the capture of land for purposes other than agriculture. For instance, it has been applied to the reallocation of land for conservation efforts (Ojeda, 2012), mining (e.g. Zerrouk & Neef, 2014), and even questionably used to describe Russia’s annexation of Ukraine’s Crimean Peninsula in 2014 (Mankoff, 2014). To a certain extent, the misuse of this idea has watered-down its original intention to capture what Akram-Lodhi (2012) describes as a “process that facilitates a broadening and a deepening of an industrialised capitalist agriculture” (p.120). In practice differentiating between which investments are, and which are not, ‘land grabs’ is a subjective process that is deeply embedded in political and ideological discourses (a discussion which I will return to in section 2.4). For the purpose of this thesis I will focus on LSLAs related to rising food prices during the 2008 financial crisis.

As a starting point, it is important to recognise that the acquisition of African land by foreign operators is hardly new. Unlike 19th century colonialism, the scramble for land in the 21st century was born from a complex set of global crises. Specifically, the 2008 food price crisis is recognised as a critical juncture that precipitated the rush for farmland. The food price crisis refers to an era between 2007 and 2008 when global food prices spiked. Between 1980 and 2002 global food prices experienced a downwards trend interrupted by short-lived spikes in 1980, 1983, 1988 and 1996. Prices began to rise again in 2002, increasing sharply in 2006. By 2008 food prices were reportedly 60% higher than 2006 levels (Troostle, 2008).

Still, rising food prices only tell a fraction of the story. While, the previous food price crisis in 1972 was largely caused by a decline in global food stocks (Timmer, 2009), a drop in food stocks cannot account for the cataclysm witnessed in 2008 as a temporary decline in global grain production by 1.3% in 2006 was rectified in 2007 after production grew by 4.7% (Mitchell, 2008, 14). Rather, Mittel (2009) claims the 2008 crisis was propelled by forces that were not relevant in the previous crisis; these include food price speculation and the growing demand for biofuels. The following paragraphs elaborate on these two factors.

Food price speculation is a relatively new development. Mittal (2009) describes how the futures market is intended to act as a 'stabilizing tool', meaning investors will buy when the prices are low, and sell when they are high. This initially served to manage risk. Leading up to the global financial crisis, the poor forecasts in the housing market made food commodities appealing. Low supplies of food stocks led to speculation on prices rising (Piesse & Thirtle, 2008). As a result, food price speculation was used to establish prices instead of for risk management, meaning food commodities began to be treated like oil and metals (Timmer, 2008). The rise in food prices made African farmland an appealing investment for actors in the financial sector because rising food prices would ensure high returns on agricultural goods. Daniel and Mittal (2009) identify Morgan Stanley, Goldman Sachs and BlackRock Inc. as a few of many wealth managers who have set up funds to acquire agricultural land. The intent of these investment managers was to diversify their portfolio, but few of these investors knew how the agricultural market functioned (Trostle, 2008). The rise in institutional investors pushed prices up and accelerated what has become known as the 'land rush'.

Rising food prices have also been affected by the promotion of biofuels. In recent years biofuels – fuel derived from organic matter – has become an increasingly attractive form of clean energy. The push towards biofuels is driven by fluctuating oil prices and the unpredictability of climate change. Oil prices were steadily rising before the 2008 financial crisis; by December 2006, prices jumped from \$60 USD to \$80 USD a barrel in 6 months (Timmer, 2008). These high and often fluctuating oil prices prompted some countries to seek alternative energy sources, and where possible, reduce energy import

costs (Cotula et al., 2009). Equally, mounting concerns over the impending impacts of climate change has pushed several countries to invest in energy alternatives like biofuels to contribute to greenhouse gas (GHG) reduction. The EU in particular began legislating policies that endorsed the production of biofuels (see section 5.3).³ Notwithstanding the potential GHG savings of biofuels, the reallocation of farmland towards energy crops (instead of food crops) has further squeezed global food stocks, pushing food prices up (Matondi, et al., 2011). On the low end, the US Federal Reserve estimates that biofuels contributed to a 12% rise in the IMF's food price index (Baier et al., 2009). Estimates on the high end suggest biofuels contributed as much as a 70–75% rise in food commodity prices (Mitchell, 2008).⁴

These diverse factors combined to precipitate rising food prices, making grains more expensive to import. Allan (2012) explains how the sharp rise in food prices sparked concern about the affordability of food stocks. In reaction, food-insecure countries strategically sought arable land to produce food intended for export. The High Level Panel of Experts on Food Security and Nutrition (HPLE, 2011) found many of these countries are increasingly unable to produce enough food domestically. Having a secure source of fertile land abroad meant they could by-pass the market and import crops directly, guaranteeing them a secure source of food for the future. Ultimately, a combination of state-led investments, institutional investors and biofuel investments all contributed to the surge in 'land grabbing'.

Most investments have originated from three large regions: emerging economies (such as China, Brazil and South Africa), the Gulf States, and some countries from the global north (especially the United States and several EU countries) (Anseeuw et al., 2012). Regions like the United States and the United Kingdom have heavily invested in land for biofuel crops, whereas food insecure regions like Saudi Arabia and China have focused more on food production. While the motives of each investor vary significantly, the direction of the land investment is almost exclusively targeted towards developing

³ However some European member countries like Sweden, began promoting biofuels as early as the 1980s (Pacini, Silveira & Filho, 2013)

⁴ Timilsina & Shrestha (2011) present a more thorough discussion on these estimates. Notably, the parameters and methods of each study vary significantly.

regions (Africa, Latin America, Southeast Asia and Oceania). European countries have heavily invested in African agriculture, whereas the United States has played a less significant role in Africa, preferring to invest in Central and South America (FAO, 2013).

Research on the geographical origins of institutional investors suggests that the majority of institutional investors are based in the United States (Bergdolt & Mittal, 2012) and the EU (Meriam Research & CRBM, 2009). A study funded by the Organisation for Economic Co-operation and Development (OECD) surveyed 54 firms, which together accounted for USD 7.44 billion in agricultural assets. Of those surveyed, the offices of 32% were based in Europe, 28% were based in North America, 24% in South America, 12% in Asia Pacific, and 4% in the Middle East and North Africa region. They found that over the last decade investment flows were increasingly turning towards South America and Africa; however, they also highlighted the role of FDI in land in the Global North (HighQuest Partners, 2010). Conversely, data from the Land Matrix – an online database of cross-referenced LSLAs (see section 2.3) – shows that no land investments have taken place in developed regions including North America, Western Europe or Australia, while 41% of land deals in the database are located in Africa. Of that total, just over half are located in eastern Africa (Land Matrix, 2015).

2.3 HOW MUCH LAND HAS BEEN ‘GRABBED’?

Accurate information documenting the scale of LSLAs in Africa is hard to come by. There exists some reluctance on the part of both buyers and sellers to disclose the details of these transactions. Land acquisitions are private transactions negotiated between interested investors and governments, meaning the finer details are often not disclosed. The space for community participation in these negotiations is often negligible, but this varies between investors and host countries. The role of private equity – investments from wealthy individuals and institutions – complicates matters further as is not listed on the stock exchange or publically available, rendering it even more difficult to quantify the amount of capital invested from hedge funds and other private investors. The failure on the part of investors and governments to ensure some transparency and oversight has created a climate of skepticism and suspicion surrounding these investments.

Still, many attempts have been made to quantify the amount of land that has been acquired.⁵ Hallam (2009) estimates upwards of 20 million hectares of land was acquired in Africa between 2006 and 2009. In 2012, the Land Matrix Partnership launched the Land Matrix in an effort to collect and cross-reference accurate data on LSLAs.⁶ Using data from the Land Matrix, the International Land Coalition (ILC) announced that just over 200 million hectares of land had been acquired by foreign investors as of 2012. To improve the reliability of the data the ILC cross-referenced this information with other sources. The total number of land deals that were confirmed through cross-referencing as of 2012 fell just shy of 71 million hectares – less than half of the reported cases (Anseeuw et al., 2012, 23).⁷ This suggests some deals were initially exaggerated, or that the initial land requested was not granted. Oxfam (2011) – likely drawing on reported cases rather than confirmed cases – estimated 227 million hectares had been acquired since 2001. The variation in these figures is indicative of the unreliable nature of the available data, and indicates that not all proposed land acquisitions are successful in obtaining land.

2.4 PERSPECTIVES ON ‘LAND GRABBING’

The debate on LSLAs and the role of FDI in African agriculture has been a significant source of controversy. In 2010, the World Bank published a report investigating the potential of the latest wave of LSLAs. This report was a response to GRAIN’s 2008 publication *Seized: The 2008 Land Grab for Food and Financial Security*, which frames LSLAs as an assault on small-scale agriculture. The World Bank concedes that many LSLAs have been ineffective at generating benefits, but by mobilising several case studies, the World Bank aims to demonstrate how this new wave of interest in African farmland could be a valuable tool in the fight against poverty (Deininger et al., 2011).

⁵ Calculating the cumulative amount of land has spawned what Edelman (2013) calls “hectare-centric alarmism”. Edelman is concerned that concentrating on the amount of land ‘grabbed’ as the defining characteristic of the process reduces it to a quantifiable problem, ultimately diverting attention away from the real – but less tangible – problems associated with land grabbing.

⁶ The Land Matrix Partnership includes the ILC, le Centre de Coopération Internationale en Recherche Agronomique pour le Développement, Bern University’s Centre for Development and Environment, the German Institute of Global and Area Studies and the German Agency for International Cooperation. It is funded by several partners including Oxfam, the Student Development Center, the Netherlands Ministry of Foreign Affairs, Federal Ministry for Economic Cooperation and Development and the European Commission.

⁷ This was calculated based off of data available in the Land Matrix as of 2012.

These two narratives have overwhelmingly shaped and polarised public opinion on the land rush. The first, largely driven by civil society, takes a critical stance on this process. Its proponents focus on negative social and environmental outcomes of land deals, and often claim to represent the voice of the people. The second group encompasses investors, states and many development institutions like the World Bank, the FAO and International Fund for Agricultural Development. They deviate from the language of ‘grabbing’, favouring more neutral language such ‘large-scale land investments’ or ‘land transactions’. They suggest this model of investment could be transformed into a pro-poor strategy. The following section explores the contours of these two contrasting narratives.

As a starting point, it is critical to understand the need for greater investment in African agriculture. This cannot be overstated. According to the FAO (2009), by 2050 developing countries will need to increase their agricultural output by 100% to support their growing populations. To accomplish this, it is estimated that the agricultural sector will need an annual net investment of USD \$83 billion. Where this investment should come from and how it should be spent remains deeply controversial. The World Bank envisions a large role for the private sector in bridging the investment gap. They claim “private investment in agriculture—badly needed in many circumstances—can improve smallholder productivity as the central pillar of a pro-poor development strategy” (Deininger et al., 2011, 83).

Underpinning the World Bank’s perspective is a deeply embedded narrative about increasing agricultural productivity as the solution to food insecurity. This narrative portrays African agriculture as failing to live up to its potential. As an example, in 2010 the World Bank estimated that 445 million hectares of uncultivated land is available for agricultural production worldwide. According to these estimates, approximately 45% of this land is concentrated in Africa (Deininger et al., 2011). In addition, they claim Africans have only harnessed 2% of their water resources, implying the rest remains untapped (World Bank, 2013a). This narrative is carefully designed to paint the continent as a pristine land of resource abundance and availability.

This latter depiction of Africa is optimistic and in some ways a welcome divergence from prevalent depictions of the region as a troubled and ‘hopeless continent’ (Economist, May 13, 2001). Yet, despite well-rehearsed optimism over its resource abundance, African agriculture is routinely portrayed as underperforming, underproductive and stagnant. This discourse depicts small farmers as ‘disconnected’ from the market, impeding them from accessing agricultural inputs and profiting from their crops (World Bank, 2009). The ‘yield gap’ is used to support these assessments. The yield gap is a measure that quantifies the difference between yields obtained and the potential yield that could be obtained – often used to provide justification for increased agricultural inputs (e.g. Nin-Pratt et al., 2010). At this time, sub-Saharan Africa has some of the highest yield gaps in the world when compared against other developing and developed countries (Tittonell & Giller, 2013). For example, the Bill & Melinda Gates Foundation (2015, 11) shows how American farmers produce five times as much maize as African farmers. The application of the yield gap as a measure aims to expose two realities. First, African agriculture is underperforming. Second, there is a huge potential for improvement to scale-up productivity. The World Bank and the Bill and Melinda Gates Foundation (2015) proscribe investing in improved technology, agricultural input and agricultural expansion to close the yield gap and subsequently improve regional food security. This is part of a broader ambition to modernise and profoundly transform African agriculture by awakening the ‘Sleeping Giant’ (Morris et al., 2009).

But modernising African Agriculture has proven to be difficult, particularly as the green revolution – which many touted as bringing development to South Asia – seemingly bypassed the African continent. So when the food prices spiked in 2008 the World Bank saw a window of opportunity. They state:

the steep rise in prices of food and agricultural commodities that occurred in 2008 has led to a realization that new opportunities may be opening for countries that are endowed with the land, labor, and other resources needed to respond to the growing demand for food and biofuels feedstocks. (Morris et al., 2009, p.2).

The FAO suggested, if managed correctly, this new interest in farmland could make a ‘significant’ contribution to bridging the investment gap (FAO, 2009, p.3).

These investments will undoubtedly involve trade-offs, but proponents like the World Bank, International Food Policy Research Institute and the FAO envision significant benefits for host governments and surrounding communities if LSLAs are managed in a responsible and inclusive way. These includes the development of social and physical infrastructure (i.e. schools, health centers and roads), improve access to modern technologies and transfer of technological know-how, increased tax revenue, improved access to markets and development of upstream and downstream industries, increased productivity of food crops for local and international markets, and employment generation and related boost in standard of living (Deininger et al., 2011; Von Braun & Meinzen-Dick, 2009; Odhiambo 2011).

The World Bank envisions this arising through “a variety of institutional arrangements [...] used to combine the assets of investors (capital, technology, markets) with those of local communities and smallholders (land, labor, and local knowledge)” (Deininger et al., 2011, 34). In many ways the modus operandi of LSLAs aligns with the World Bank’s vision to modernise African agriculture. They typically involve large-scale farms, mono-cropping, the use of agricultural inputs like pesticides and fertilisers, outgrower programs (contractual arrangements where small-farmers agree to grow a particular crop for an investor in exchange for compensation), promises to link small-farmers with global markets, through which they intend to increase economic growth and agricultural productivity – staples in most World Bank reports. For example, AgriSol Energy Limited Tanzania, a subsidiary of the Iowa based firm, AgriSol Energy LLC, intends to lease land in western Tanzania claiming they are developing a new model that “combines large-scale, commercial farming with local outreach and outgrower programs for small landholders, providing them with efficient and transparent markets for agricultural products, and increased access to modern inputs, micro-financing, crop storage, value-added processing and distribution” (AgriSol Energy LLC, 2013, para 4).

Surely enough, some LSLAs have generated growth and employment. For example, the World Bank demonstrates that LSLAs do generate employment ranging from 10 to 700 jobs per 1,000 hectares (depending on the crop and scale of investment) (Deininger et al., 2011, 39). Another study funded by the OECD demonstrated that 4,116

fulltime positions were created by the 52 firms surveyed across Africa, Eastern Europe and South America (HighQuest Partners, 2010). But raw figures often only tell half the story. An investment in Mali pledged to create 5,000 direct jobs and 20,000 indirect jobs in the long run. While this investment was appealing from a job-creation standpoint, it came at a cost. To make way for the investment, they would have to displace 1,664 people (GTZ, 2009). When compared against the sheer number of potential jobs being created by this investment, the investor views this as a beneficial trade-off. But in reality, many promises made by LSLAs have often never fully materialised, leaving those displaced in precarious circumstances (Aneeuw et al., 2012).

The World Bank has acknowledged this reality. They attribute the failure of many LSLAs to governance gaps and weak institutional capacity (Deininger et al., 2011). But, rather than dismiss this vehicle of investment altogether, they proscribe government capacity building and strengthening procedures. But this optimism is not shared by all. One of the most well-known critiques comes from Olivier De Schutter, the former United Nations Special Rapporteur on the Right to Food. In 2011 he published an uncompromising critique of LSLAs. He aimed to debunk the World Bank's claim that LSLAs are not delivering on promises because of weak governance and capacity. He stresses that "in a context of ecological, food, and energy crises, the most pressing issue regarding reinvestment is not how much, but how" (De Schutter, 2011, 250). He argues that we need to re-evaluate what we consider to be responsible investment and challenges the reader to reflect on the opportunity costs of LSLAs. He encourages investment and regulation that is targeted at strengthening small farmers, rather than propping up foreign investors. He insists that LSLAs should only be considered as a last resort if all other investment models fail.

Others have repeatedly challenged claims by the World Bank that vast swathes of land and natural resources across Africa are available. They argue and effectively dismantle this claim on the grounds that the land depicted as 'available' or 'unused' is often used by communities even if they don't hold an official land title (Borras et al., 2011; Mehta et al., 2012). For example, a case study in Tanzania demonstrates that an investor acquired 1,400 hectares of land that was considered abandoned for 10 years, but

during that period surrounding communities began to use that land for livestock-keeping and seasonal farming (Arduino et al., 2012). A study by Nalepa and Bauer (2012) found that the definition of marginal, available or abandoned varies significantly between each study. Moreover, the methodologies used for quantifying land as marginal, available or abandoned are often misleading. For example, Nalepa and Bauer (2012) discuss how the use of remote sensing data as a tool to assess land availability ultimately masks how people interact with their landscape because it only shows the biophysical properties of land. These findings imply the promotion of land as available or marginal based on these tools will undoubtedly lead to the dispossession and alienation of communities and villages from productive land because their relationship with the land is not being accounted for. For example, a study by Jiao, Smith-Hall, & Theilade (2015) found that the acquisition of this ‘marginal land’ negativity affected household incomes in Cambodia. The villages previously used environmental resources from the land that was acquired (like timber, firewood, game and wild fruit) as a source of income. In another scenario, in the Kisarawe District of Tanzania, communities lost access to water wells and ancestral graves following a land acquisition (ActionAid, 2011). In both cases the land was not agriculturally productive, but was still of value to the communities.

While proponents emphasise the economic benefits that accrue via job creation and economic growth, opponents draw attention to the dispossession of land, the marginalization of communities, environmental degradation and increasing food insecurity. The Oakland Institute – a US based think-tank that engages with issues of social and environmental justice – has recorded numerous case studies where land deals have caused negative repercussions for local communities including eviction and loss of access to resources like land, water and food. (e.g. Oakland Institute, 2011). In addition, they have compiled country-by-country investigations, describing how this process has unfolded. For example, in their report on Sierra Leone they find that over 500,000 hectares of land has been leased to investors even though government institutions are not robust enough to govern these investments responsibly, leaving local populations vulnerable to LSLAs that are not conducted in their best interests (Baxter, 2011). Other accounts explore a host of problems associated with LSLAs including unequal power relations between states, investors, and villagers (Murphy & Spieldoch, 2013); the

impacts of land use change on the environment (German et al., 2013); and, the underexplored impacts on gender (Behrman et al., 2012). These critiques suggest that the realities of LSLAs do not match the rhetoric.

2.5 VOLUNTARY GUIDELINES: A WIN-WIN SOLUTION?

According to David Hallam, Deputy Director of Trade and Markets Division for the FAO, the question “is not whether foreign direct investment should contribute to meeting investment needs but how its impact can be optimised to maximise the benefits and to minimise the inherent risks for all involved” (2009, 3). And surely enough, investors have recognised that land acquisitions need to create mutual benefits to ‘optimise’ investment. In the documentary series ‘*Why Poverty?*’ directors Hugo Berkeley and Osvalde Lewwat examine a LSLA in Mali. They follow the work of Dr. Mima S. Nedelcovych – an American agricultural developer who has been at the wheel of several sugar plantations across Africa. He claims to recognise the importance of cooperation with communities if the project is to remain viable. At a conference shown in the film he said:

Those investors, our private sector partners, that are going out and doing straight land grabs – fully mechanizing and not in any way bringing in small growers and community – you might as well put yourself on death row. That project will not last – socially will not last.

It was clear Nedelcovych understands the importance of developing an inclusive business model, but the bigger question is how?

In 2011, the World Bank, the FAO, the International Fund for Agricultural Development and the United Nations Transitional Authority in Cambodia jointly developed the *Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods, and Resources* (PRAI). The purpose of the PRAI is to provide a series of principles for investors, host governments and communities to improve the positive outcomes of LSLAs. A second set of guidelines known as the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (henceforth Voluntary Guidelines) was endorsed and developed by the FAO in 2012.

Both guidelines have engendered mixed reactions. While it is better to have some guidelines than no regulatory measures at all, most reviews suggest these guidelines are not “guarantors of ostensibly harmless land acquisitions” (Locher, et al., 2012, 26). Adherence to each set of guidelines is voluntary and relies entirely on the goodwill of investors and host governments to ensure they are used in a meaningful and responsible way. Nevertheless, Seufert (2013) suggests that while they may be voluntary, the Voluntary Guidelines reference legally binding international law like the United Nations Declaration on the Rights of Indigenous Peoples. In doing so, Seufert argues this gives the document some teeth. Others question whether this is enough. Collin’s (2014) reminds us that investors and host governments routinely enter into legally binding bilateral investments treaties. This suggests that a binding agreement on the social impacts of LSLAs is possible, but there is less political will to protect vulnerable people than there is to protect investors. Without a binding agreement in place GRAIN (2013) fears investors will simply pay lip service to the guidelines as there are no mechanisms for enforcement.

The PRAI and the Voluntary Guidelines are alike in many ways. At their core Ismar (2013) suggests they share a common aim to clarify and consolidate land rights, and regulate the actions of investors, but, the principles in the Voluntary Guidelines are often seen as more creditable than the PRAI. The PRAI is an efficiency driven approach aimed at establishing and clarifying land rights for the purpose of negotiating with investors rather than for the purpose of empowering local communities (Collins, 2014). Moreover, they largely fail to consider how social, economic, and political inequalities are manifested in land governance and the potential consequences for investment projects (Collins, 2014, 196) The Voluntary Guidelines cover a broader range of land and resource governance issues, but they are not without fault. For example, the guidelines acknowledge different forms of property relations, but assume that all forms of property rights can be formalised. Using a plural legal approach, Locher et al. (2012) argue that these guidelines view the identification of land and the formalisation of land rights as a simple process, ignoring the complexity and embedded power relations in land tenure. Locher et al. (2012) suggest there is a need for a long-term strategy to address the many challenges of customary land rights, rather than a speedy process meant to secure land

titles to facilitate investment. Likewise, Ismar (2013) claims “Guidelines seem to facilitate the transfer of authority over a commodity in a fair and equitable way rather than working towards fair and equitably land and water rights” (p.292). Moreover, she suggests the application of a ‘good governance’ approach, which is touted in the guidelines, ultimately depoliticises the process of ‘grabbing’. For this perspective the governance of this process may be a misguided approach born out of a flawed solution to poor productivity and investment gaps.

While the Voluntary Guidelines are viewed as more progressive than the PRAI (Collins, 2014; Locher et al. 2012), the Voluntary Guidelines fail to address the critical issue of water. Seufert (2013) suggests that water was excluded from the Voluntary Guidelines because of pressure from governments. Franco et al. (2013b) attended these consultations and recount how civil society aimed to have water included in the guidelines, but it was dismissed on the grounds that it was too complicated to include. Despite growing recognition of the impacts of LSLAs on natural resources, water is absent from governance tools like the PRAI or the Voluntary Guidelines. The next section will elaborate on the ‘water dimension’ of LSLAs.

2.6 OVERVIEW OF WATER GRABBING

The surge in LSLAs and the subsequent accusations of ‘land grabbing’ served an important purpose: it reoriented the discussion about land investment away from the promotion of agricultural productivity towards the capture and control of natural resources. Yet, this debate has focused predominantly on the capture and control of land, but silently embedded within this process is the reallocation of water resources. This section will provide an overview on the emergence of ‘water grabbing’, and how this idea has contributed to the debate on LSLAs.

The role of water in agricultural production is undoubtedly vital and unsubstitutable. Although the vast majority of LSLAs that took place during the land rush were agricultural projects, recognition that water plays a pivotal role in this process was often understated or even ignored. Initial studies show that investors viewed the procurement of water rights as a secondary concern (HighQuest Partners, 2010). The

degree to which the integrity of water resources has been overlooked in these discussions is further evidenced by the decision to not include water in the Voluntary Guidelines.

The role of water in agriculture, while apparent, has also been overlooked. It wasn't until the advent of concepts like 'green water' and 'virtual water' that the role of water in agriculture (and industry) became fully apparent. The British geographer Tony Allan (1998) popularised the concept of 'virtual water' – the water embedded in agricultural products – as a solution to water scarcity. Allan (1998) worked on water scarcity issues in the Middle East and North Africa region (MENA). Allan describes how the export and import of food can also be conceptualised as the export and import of 'virtual water'. Allan sees this as a solution for water scarce regions, proposing they import water-intensive crops rather than grow them domestically. Allan (1998) views sub-Saharan Africa and its abundant water resources as the solution to water scarcity in the MENA region through the trade of virtual water.

Countries that experience regional water scarcity, like Saudi Arabia, China and South Korea, are primary actors engaging in LSLAs. While it is often obscured by the overemphasis on land, water dynamics play a crucial part of the motivation behind these acquisitions. For example, because of growing water scarcity in the Gulf States, Saudi Arabia can no longer grow water-intensive crops sustainably (Franco et al., 2013c). According to Smaller and Mann (2009), Saudi Arabia has begun to phase out wheat production domestically because it is a water-intensive crop. They have developed an agricultural fund aimed at investing in agricultural production internationally to take the pressure off their domestic water reserves. Franco et al. (2013c) expect other water scarce countries will follow suit.

Growing recognition of the role of water in LSLAs spurred further inquiry. In 2012 the open access journal *Water Alternatives* published a special issue on 'water grabbing'. In this issue they defined water grabbing as a process "where powerful actors are able to take control of, or reallocate to their own benefits, water resources already used by local communities or feeding aquatic ecosystems on which their livelihoods are based" (Mehta et al., 2012, 197). This issue tied the idea of virtual water to land grabbing in an effort to investigate the implications of land grabbing on water resources.

Taking a critical approach, this special issue was one of the first to use the term ‘water grabbing’, linking water and virtual water with current debates around land grabbing (Mehta et al., 2012). Following this, Allan et al. (2012) began to look at the intersection between the two concepts. In 2012, they published an edited volume entitled *Handbook of Land and Water Grabs in Africa: Foreign Direct Investment and Food and Water Security*, acknowledging how the two processes – the virtual water trade and land grabbing – are deeply interlinked. Unlike the special issue of *Water Alternatives*, which was largely critical of the potential for water grabs as a strategy of agricultural development, Allan’s approach parallels narratives that call for responsible investment. He suggests,

The clever players realise that success will come to those who recognise that an inward investment-led African green revolution will mainly meet the food needs of the extra 1 billion Africans and not just the additional demand for food from Asia and the Middle East. (Allan, 2012, 1)

Likewise, discourses that promote ‘land availability’ have been extended to water. The World Bank routinely refers to Africa’s water resources as ‘untapped’ and ‘unharnessed’. For example in the report *Growing Africa: Unlocking the Potential of Agribusiness*, the World Bank (2013) describe Africa as having “more than half of the world’s agriculturally suitable yet unused land, and its impressive water resources have scarcely been tapped” – insinuating there is an abundance of water available for agribusiness (2013, xvi). This leads to the question of whether water, like land, is truly ‘available’ (Franco et al., 2013; Mehta et al., 2012). Conceivably, Africa has vast reserves of water but when juxtaposed against the fact that in 2000 approximately 300 million Africans (one quarter of the population) don’t have access to safe drinking water (Aquastat, 2005), a very different image is projected. Indeed, Turton (2001) suggests “[n]o serious foreign investor would consider semi-arid areas of the world when water scarcity has been identified” (p. 3).

The acknowledgment that water is a critical component that shapes investors’ choice of location provoked a discursive shift from ‘land grabbing’ to ‘water grabbing’. This perspective positions water as a driver and target of LSLAs. Yet, unlike land, understanding how water can be ‘grabbed’ is less comprehensible because of its fluid

nature. A basic way to comprehend ‘water grabbing’ is the bottling of water because it captures and divorces water from a geographic setting. But in many ways this is too simplistic. As discussed by Franco et al. (2013c) understanding the ecological and geographic context from where the water came is just as significant. Water, whether it is surface water, groundwater or ‘green water’ is all interconnected in the water cycle, which is affected by the climate causing dry seasons and wet seasons and significant variability in between. Water can be found in lakes, rivers, floodplains, coastal wetlands, and even deserts. Reallocating water from a river in a water abundant region will have significantly different impacts than pumping ground water from a desert, just as reallocating water during a dry season will have different impacts than reallocation of the same water source in the wet seasons. For example, from a volumetric perspective Peru has an abundance of water, but 97.7% of the water is to the east while only 1.8% is in the west where 65% of the population lives. Capturing water in the east will have significantly different implications than in the west (Boelens et al., 2014). This is further complicated by plural legal systems that govern water resources. Who has access and who makes the decisions are incredibly important factors that influence the distribution of water. For these reasons, where and how water is ‘grabbed’ could have very different implications on water resource integrity and those who depend on it.

The most common interpretation of water grabbing rests on the diversion of water for irrigation of LSLAs (see Bossio et al., 2012; Duvail et al., 2012). However, several studies have extending the meaning of water grabbing beyond this interpretation. For instance, the pollution of water has been depicted as water grabbing (see Arduino et al 2012), and more recently contamination and the use of water during fracking has been condoned as water grabbing (see Feodoroff et al., 2013; Franco & Feodoroff, 2013). Other instances have also tied hydropower development to water grabbing (Matthews, 2012; Vidal, August 10, 2013). This underlines the many ways water can be controlled and captured.

Assessing the impacts of water grabbing is more challenging than land grabbing due to the ‘slippery’ nature of water (Mehta et al., 2012). In the same vein, because it is interconnected, flowing through streams, below ground and through the water cycle,

changes in water availability or quality can potentially impact more people than the acquisition of a single parcel of land (Franco et al., 2013b). However, the hydrological, ecological and legal complexity of water means pinpointing cause-and-effect relationships between water grabbing and environmental change are at times impossible (Franco et al., 2013c).

Although water may be a driver behind some LSLAs, there is significant concern that investors do not adequately consider the impacts of water resources in the host country. Some suggest managers of LSLAs may be ignorant of water management. For example, Woodhouse and Ganho (2011) fear managers of land acquisitions might not take seasonal variability of water into account. This is critical because some crops require irrigation during the dry season when rivers are often at their lowest. Keulertz (2012) discusses how investments originating from water scarce regions like Qatar – a region deeply familiar with the challenges of resource scarcity – have not shown the same concern for water resource integrity in the countries hosting their investments. This underscores the importance of bringing water to the forefront of the conversation.

2.7 CONCLUSIONS

This chapter illustrates the polarised debate between those who see LSLAs as a pathway to growth, and those who see them as a detrimental tool of the elite to secure access to natural resources for their own gain. Governance tools like the Voluntary Guidelines are well-founded but many suggest they serve as a tool to legitimise LSLAs rather than rein them in. This chapter shows that the consideration of water resource integrity has been widely neglected in this conversation. It is argued that water is a driver behind many LSLAs and for that reason should be at the forefront of this debate. At this time, however, few case studies have examined the impacts of LSLAs on water resources. By exploring the literature on water grabbing, this chapter highlights the need for further investigation on the intersection between LSLAs and water resources.

CHAPTER 3: CRITICAL PERSPECTIVES ON WATER SECURITY

3.1 INTRODUCTION

LSLAs are routinely explained through the lens of ‘security’. As discussed in Chapter 2, food, water and energy insecurity are understood as the driving force behind the ‘land rush’. This discussion is tied to narratives that link environmental scarcity to conflict and risk. Informed by insights from critical security studies and political ecology, this chapter explores critical perspectives on environmental and water security, which forms the theoretical framework for this thesis. The rationale underpinning this framework is to transcend traditional interpretations of security and unearth inequalities that are masked by conventional perspectives of water security that focus on a narrow understanding of resource scarcity and abundance.

In particular, this chapter explores emerging critical perspectives on water security that aim to broaden our understanding of what it means to be ‘water secure’. These ideas expose how water is just as much affected by social and political processes as it is by biophysical determinants. The crux of this chapter is to interrogate ideas of water security that focus on aggregate water supply and to open up space for critical insights that explore broader social, political and economic processes that shape water security. This chapter shows how these concepts have developed and whether they have effectively integrated into water management practices. In conclusion, this chapter explains how this theoretical framework is a useful approach for understanding the implications of LSLAs on water security.

3.2 DEFINING ENVIRONMENTAL SECURITY & CRITICAL SECURITY

Before defining environmental security, it is crucial to understand the context and circumstances that precipitated the convergence of environmental studies and security discourse. As a starting point, ‘security studies’ is the study of threat, particularly threats to the state. During the Cold War era the ideologies of communism and capitalism were pitted against each other. This standoff led to the construction of an elaborate security architecture characterised by the global arms race between the United States and the former Soviet Union. In 1989, the collapse of the Berlin Wall marked the end of the Cold War and a shift in the global political arena.

For four decades security narratives were defined by the protection of the state – the referent object – from an external threat. According to Floyd and Matthews (2013) the end of the Cold War, and the demise of a foreseeable ‘threat’ to the state, diminished the relevance of the elaborate security architecture and narrative that shaped wartime policies. The breakdown of the security apparatus created a space for a new security ‘threat’ to justify the existence of the security regime that had flourished during wartime.

Against the backdrop of the decline of the Cold War, the global community was becoming aware of the impending impacts of environmental change, particularly global warming. The Brundtland report, *Our Common Future*, was released in 1987 followed by the Rio Earth Summit in 1992. Both reflected a growing urgency to address environmental concerns such as environmental degradation and climate change. The Brundtland report explicitly questioned the morality of spending billions of dollars on military needs when it could be better spent on ‘environment security’. The United States adopted the language of ‘environmental security’; in particular, the Clinton administration’s declaration of environmental security as a national security issue in 1993 exemplified this shift (Floyd, 2010; Floyd & Matthew, 2013). In doing so, the environment emerged as a new ‘threat’ to fill the void left by the ending of the Cold War.

Clinton’s choice of environmental security was not coincidental; it was in part a result of the work of author and journalist, Robert Kaplan. Kaplan’s article *The Coming Anarchy: How Scarcity, Crime, Overpopulation, and Disease are Rapidly Destroying the Social Fabric of our Planet* (1991) depicted western Africa – a land he described as running rampant with disease, death and environmental degradation – as a pressing threat to western wealth and affluence. His article insinuated it was a threat that must be contained to avoid spillover into the Global North.⁸

In the 1990s the links between resource scarcity and conflict were strengthened by the scholarly work of Thomas Homer-Dixon and the proliferation of ‘resource wars’ across the African continent. Homer-Dixon’s (1999) work links natural resource

⁸ Kaplan was not the first to make such claims, Richard Falks well-known article *The Endangered Planet* (1971) linked natural resource scarcity to conflict suggesting those with less access to resources will attempt to take them from others, pitting the haves against the have-nots and ultimately leading to conflict.

abundance and natural resource scarcity to conflict, implying causation. Combined with concerns over population growth and climate change, Homer-Dixon's theory presents a bleak image of the future, particularly for poor societies. He exclaims how poor societies "...will be particularly affected since they are less able to buffer themselves from environmental scarcities and the social crises they cause" (1994, p. 38). The work of Kaplan, Falk and Homer-Dixon among others shaped dominant understanding of environmental security, positioning it within a framework where environmental scarcities and population growth represented a growing threat to western democracies.

Political ecologists have put forward an alternative understanding of the conflict/scarcity narrative, a view that rarely gets the same attention as the alarmist interpretations of Kaplan or Falks. Unlike Homer-Dixon's deterministic approach, a political ecology approach seeks to understand "the difference between identifying broader systems rather than blaming proximate and local forces; between viewing ecological systems as power-laden rather than politically inert; and between taking an explicitly normative approach rather than one that claims the objectivity of disinterest" (Robbins, 2012, p. 13). Using this perspective, Peluso and Watts (2001) "see violence as a site-specific phenomenon rooted in local histories and social relations yet connected to larger processes of material transformation and power relations." (p. 5) Similarly, Le Billon (2001) deconstructs Africa's resource wars as a product of scarcity, instead shifting emphasis towards an array of socio-political, economic and geographic conditions from which the conflict emerged. Most political ecologists stress that Homer-Dixon's interpretation of environmental degradation and conflict glosses over case-specific social, political, and economic process. For instance, Peluso and Watts (2001) and Hartmann (2001) argue that Homer-Dixon's inclusion of 'social distribution of resources' in his definition of environmental scarcity fails to consider complex social relations and historical processes that shape distribution. McDonald (1999) concedes that Homer-Dixon is correct in his assessment that degradation can lead to migration, but in the case of South Africa, McDonald explains how Homer-Dixon overlooks the political economy and its contribution to environmental violence. This prompted a shift away from deterministic and one-dimensional discourses towards a broader appreciation for complex, multi-dimensional realities in which conflicts unfold. The following paragraphs

elaborate on the problematic nature of pairing ‘environment’ and ‘security’, and how we might be able to reframe environmental security beyond the scarcity/conflict scenario from which it was born.

The (re)production of the security agenda under the banner of ‘environmental security’ did not go unnoticed. Provoked by the usage and implications of state-centric security discourse, critical theorists began to question the underpinnings of security studies (e.g. Krause & Williams, 1997). Securitisation – the process of making an object in need of security – is, according to Emmers (2007) a ‘speech act’. A speech act is when elites, or those in power, define an issue as a security issue, such as the reframing of environmental change as a security issue by the Clinton administration. This process is problematic because it risks defining and addressing issues through the security apparatus when they might be better addressed through other policy mechanisms. According to Barnett (2001) this process of securitisation is a ‘self-fulfilling mechanism’ because the security apparatus needs something to securitise to maintain its own existence.

Fundamentally, this perspective questions the utility of extending the ‘security approach’ to environmental issues. Dalby (2009, p. 129) suggests our understanding of “[w]hat kind of security is invoked is crucial because it justifies specific types of institutions to cope with future disruptions”. This implies reconsidering how we view security might be of value. Several scholars have suggested broadening our understanding of security to one that is “not just about threats, armies, and government policies dealing with conflict. It now encompasses broader concerns with security, health, drugs, political violence, livelihoods and infrastructure” (Dalby, 2009, p. 7). Broadening ‘security’ has allowed for the consideration of issues that wouldn’t normally be seen as security issues. The implications of this are twofold: on one hand this extends the speech act; on the other hand, it redirects attention towards issues like environmental justice and poverty that aren’t normally allotted the same attention as those of national security.

The expanding understanding of what security means, specifically environmental security, has opened up space to analyse environmental securitisation at an international level beyond a military perspective. Barnett (2001) does this by examining how processes of modernisation in the Global North can impact the environment in the Global South.

Specifically, he suggests “environmental degradation and insecurity can be seen to be a product of meta processes of development in the industrialised North at the expense of underdevelopment in the industrialised South” (p. 13). This is illustrated by the EU’s push towards renewable energy and the subsequent proliferation of LSLAs in the global south, actions which could potentially accelerating environmental insecurity. These ideas are embedded in the conceptualisation of the ‘environmental footprint’ and ‘environmental space’ – ideas that attempt to capture the displacement of environmental degradation (Dalby, 2002). Moreover, this view clearly embeds development, geopolitics, power and structural violence within the discussion of environmental insecurity. The language and grouping of countries as either the Global South or the Global North is overly simplistic and problematic, but it serves to highlight how the production of environmental security for some can lead to environmental *insecurity* for others.

Barnett (2001) defines environmental *insecurity* as “the way the impacts of environmental degradation affect people in areas already subject to underdevelopment where ecological problems exacerbate the social impact of economic processes affecting underdevelopment” (p. 13). This perspective shifts the unit of analysis towards vulnerable people. To this end, Barnett (2001) proposes a human-centered environmental security. A human-centered approach captures the experience of the individual, veering away from state-centric approaches. Human security was first introduced in the 1994 Human Development Report. It highlights the implications of insecurity on individuals, reframing the referent object as the individual and equating security priorities as the priorities of the people. It encompasses a view of security that recognises “...what individuals themselves see as their paramount concerns, and so pluralizes the meaning of security and opens up space for alternative security practices” (Barnett, 2001, p. 8). By redirecting security issues away from the state towards the individual, security prioritise shift from international security towards security of livelihood. In doing so, a human-centered approach embeds scalar analysis within critical environmental security by opening up space for individual security concerns.

Building on this perspective, Schnurr and Swatuk (2012) suggest reframing environmental insecurity as environmental justice. The literature on the environmental

justice movement grew out of the disproportionate burden of environmental degradation and insecurity on marginalised and vulnerable people. To this end it brings environmental equity, rights, and access to the forefront of the conversation. Barnett (2001) argues that an approach that focuses on questions of fair and equitable resource management removes violence from the security equation – essentially de-securing the environment. Moreover, embedding issues of equity and justice within considerations of environmental insecurity forces a shift towards the analysis of geographies where equality, justice and access are absent or challenged. This repositions security studies away from elitist understandings of state security towards causes of individual insecurity.

Drawing on these insights, the following section will explore the coupling of water and security, its similarities to environmental security, and how the idea has evolved to become a useful approach to analyse the relationship between water and people.

3.3 WATER SECURITY: SCARCITY, CONFLICT AND COOPERATION

Just as the 1987 Brundtland report encouraged renewed interest in environmental change, recent exposés exploring ‘the global water crisis’ have stirred fears over the ‘threat’ of future water insecurity.⁹ This narrative has provoked global concern that competition over dwindling water resources will incite conflict, commonly and perhaps crassly dubbed ‘water wars’. While water security is an emerging paradigm, to date it has been applied haphazardly, rarely fully developed with the same scrutiny and depth as environmental security (Cook & Bakker, 2011). The following section will survey common approaches to – and critiques of – ‘water security’ in order to understand how this idea has evolved and how it is operationalised today. Adopting a critical lens, this section will go beyond traditional biophysical and scarcity-oriented approaches to water security and explore how social, economic and political processes continually shape and construct water (in)security. Afterwards, this section discusses how this lens is a useful tool for understanding the central focus of this thesis: the implications of LSLAs on water security.

⁹ A growing number of documentaries, news articles and reports have focused on dwindling water resources in the past decade, including but not limited to: *Blue Gold: World Water Wars* (2008); *Flow: For the Love of Water* (2009); and, *The Coming Global Water Crisis* published in *The Atlantic* in 2012.

Accounts of a looming water crisis have raised credible concerns over future water security. The alleged water crisis is rooted in growing fears of global water scarcity. Water scarcity is widely perceived as a consequence of population growth – increasing the demand and pressure on water resources – and widespread pollution, contaminating water supplies and decreasing the quantity of water available for consumptive use. The crisis is further conflated by climate change and its implications on global water systems including shifting water availability and water patterns over time (WWDR, 2009). In 2010, Gleick and Palaniappan coined the term ‘peak water’¹⁰ reflecting previous concerns regarding peak oil. Peak water suggests consumptive water use will someday outgrow the rate at which water bodies can replenish – perpetuating the idea of water as a dwindling resource. Regions like the Middle East and North Africa already experience high levels of water stress, and have already experienced documented conflict over water resources. This has prompted some consideration of the likelihood of future water wars if water supplies continue to diminish.

Several news media accounts paint this threat of a global water crisis as imminent, suggesting it will pave the way for ‘water wars’. In the 1990s this message was perpetuated by renowned water scientist and author of the annual world water reports, Peter Gleick. Gleick (1993) outlined direct links between growing water scarcity, population growth and violent conflict in the same vein as Homer-Dixon’s work on environmental security and conflict. Gleick, along with two colleagues, formed the Pacific Institute in Oakland, California. The institute is home to the Water and Conflict Chronology – the largest database tracking water conflicts worldwide. This chronology explores water as a driver to conflict as well as water as a tool in war. Branding water scarcity as a ‘global threat’ has inadvertently enmeshed water into the much larger, and often contested, discourse on environmental security.

The ‘threat’ has been particularly prevalent in discussions on transboundary water management. Like many environmental resources, rivers do not adhere to politically defined boundaries, meaning they flow through two or more sovereign states.

¹⁰ The term ‘peak water’ had been referred to prior to this, but never expounded upon. They delineated three peak water concepts: renewable peak water, non-renewable peak water, and ecological peak water

International water conflicts are often framed as a geopolitical, upstream versus downstream dispute. Upstream users feel it is their sovereign right to use water resources that pass through their territory. Interference of water flow upstream – including infrastructure, pollution and extraction – can theoretically jeopardise water needs or ‘security’ downstream.

As previously discussed, the ‘securitisation’ of a resource means it cannot be dealt with through existing means or institutions (Buzan et al., 1998). From this perspective, the securitisation of a river basin means threats cannot be addressed through current governing bodies. This understanding is particularly well-suited when a river is governed by two or more sovereign states. This complex relationship has prompted the creation of international and multilateral treaties, water commission and management bodies to help govern transboundary water basins (for example, the Mekong River Commission and the Nile River Basin Initiative). Turton (2001) proposes the establishment of a basin-wide management institution to fairly and sustainably manage the resource between two or more states as a way to ‘de-securitise’ the basin, or in the words of Wolf et al. (2006), become a ‘pathway to peace’. This reflects Barnett’s (2001) redirection of the conversation towards issues of equity and access, removing violence and conflict from the conversation, and effectively de-securitising the resource.

While my intent is not to devalue the importance of cooperation, it is critical to explore how this unfolds in practice. To date several studies have begun to examine the role of (de)securitisation of transboundary river basins (e.g. Mekonnen, 2010; Mirumachi, 20013, MacQuarrie and Wolf, 2013). As no major wars or conflicts have ensued over transboundary water, many have argued that water scarcity forces water users to cooperate. Alternatively, others have presented mixed results. Instead they show that cooperation isn’t enough to circumvent the securitisation of a basin, and more importantly, it does not necessarily lead to greater security. For example, Mekonnen (2010) shows how the creation of a framework under the Nile River Basin Initiative was used as a cloak to maintain the status quo of participating states by using vague and weak language. To that end, it has not achieved the equitable distribution of water. Similarly, Mirumachi (2013) shows how cooperation between Nepal and India improved Nepal’s

share of water from the Mahakali River, but failed to address underlying issues of inequity. Both studies reveal that high level agreements may not create tangible results for people who live along the river basin.

These examples demonstrate two key points regarding water security. First, scarcity does not necessarily lead to conflict. The characterisation of water scarcity as a cause of either conflict or cooperation is a narrow, deterministic and a limiting way of thinking about water security (Zeitoun, 2011; Arsel and Spoor, 2010). Second, the establishment of high-level commissions or treaties, while undoubtedly needed, does not guarantee water security or equity. Arsel and Spoor (2010) stress it is essential to look past the politics of cooperation and conflict and “necessary to look at the concrete reality of changing patterns of water use, management and distribution...” (p. 10). In short, looking beyond and below high-level politics will illuminate subtleties that contribute to water (in)security at the regional, local and individual level. This departure from the traditional take on the water, scarcity and conflict discourse is the foundation of a more nuanced and critical understanding of water security.

3.4 AN EMERGING CRITICAL WATER SECURITY

A review of the water security literature conducted by Cook and Bakker (2011) suggests that the language of ‘water security’ is becoming increasingly popular across disciplines, yet the prevalence of water conflict focused articles is diminishing. Instead, the literature is beginning to reflect a broader and more subtle understanding of water security. In its simplest form water security refers to the ability to access clean potable water. For example, Webb and Iskandarani (1998) define water security as “access by all individuals at all times to sufficient safe water for a healthy and productive life.” In the same vein, Gerlak and Wilder (2012) discuss how “access to available, safe, and clean sanitation is also integral to human water security” (p. 6).

Still, defining water security remains a challenge. Narrow definitions risk excluding critical variables, while broad definitions are difficult to operationalise. To illustrate, the advent of ‘virtual water’ (Allan, 1998) and its role in realising water security by trading virtual water between water abundant and water scarce countries embedded water security within international relations. Prior to this, the role of water in

trade was not included in discussions about water security. Zeitoun et al. (2009) attempt to bridge this gap by suggesting water security “must also incorporate key elements beyond the basin, in the political economy of international commodity trade, distribution of resources, international relations, and global food markets” (p. 12). Most narrow definitions do not capture the role of virtual water. Cook and Bakker (2011) argue that broad, comprehensive definitions are advantageous as they allow for ‘analytically robust’ research. However, Zeitoun et al. (2013) stress that it is “impossible to capture the breadth and depth of water security in a single snappy definition” and instead advises to “[c]onsider how the concept may serve as a frame that allows space for all of the relevant links water creates with other users and sectors” (p. 9).

As previously mentioned, the scarcity doctrine has played a large role in advancing the environmental security agenda. Critical interpretations of the scarcity doctrine have slowly dismantled the link between population growth, resource availability and conflict. The deconstruction of the scarcity narrative illustrates the changing understanding of water security. Mehta (2011) claims that in nature scarcity rarely takes place, rather:

[scarcity] is usually the result of exclusion and unequal gender, social and power relations that legitimize skewed access to control over finite and limited resources. As such scarcity is a relational concept that is often the result of market forces dictating issues concerning supply and demand.
(p. 3)

To some extent, this perspective is captured in the distinction between ‘physical water scarcity’ and ‘economic water scarcity’. Physical water scarcity refers to regions where water availability is physically limited, due to the uneven distribution of the resource. Economic water scarcity can exist in regions with abundant water resources. From this lens scarcity is constructed through man-made process like laws or institutions. This is the case in sub-Saharan Africa. Much of sub-Saharan Africa is endowed with significant water resources, yet poor access to clean water and sanitation remains a pervasive problem (FAO, 2007). Building on these ideas, Zeitoun (2011) suggests discussions of water security need to consider the biophysical *and* social processes that produce and deny water security. The biophysical processes shaping water availability are widely studied because the study of water – hydrology – is often confined to the natural sciences.

The social dimensions that shape water availability (and access) are, within this view, undervalued.

The emergence of a critical perspective on water security takes into account the biophysical and social aspects of water security – but recognises the need for greater emphasis on the latter. The literature on critical water security studies has been significantly advanced by the work of Harrington (2013). He revisits the idea of emancipation – the freeing of individuals from social structures that bind – to understand water security. He defines critical water security as:

the process of securing vulnerable populations from the structural violence caused by the political, social, and natural impediments to adequate water supplies needed for a good life, while simultaneously ensuring the means by which water security is achieved does not also deprive others of it nor degrade affected ecosystems. (p. 20)

This reflects Zeitoun's (2011) consideration of social and biological determinants. Drawing from human security, Harrington seeks to evoke a critical water security that includes the position of the individual. He claims,

By reframing water security along individual lines, it can provide agency-possessing actors and those who challenge them with a reference point: are the policies currently in practice and are the policies envisioned for the future able to alleviate human suffering and ecological degradation caused by water insecurity? (2013, p. 20)

This reference point embeds emancipation within the debate on water security. He suggests an emancipatory water security rests on three criteria: inclusion, communication and cosmopolitanism (a shared moral ethic). Harrington's work builds on the wealth of literature that has begun to understand water security as a product of political, economic, social and environmental process, but recognises that to reach a state of 'water security' you must overcome processes of structural violence.

3.5 OPERATIONALISING WATER SECURITY

Our widening understanding of water security has, to some extent, been reflected in water management strategies – with varying degrees of success. By the 1990s water managers became aware of the need to incorporate consideration of social conditions alongside biophysical conditions (e.g. Sivakumar, 2011). To capture this, Gleick (2002) coined

what he called the ‘soft water paths’ to water security. Previously, management relied on infrastructure development – or the ‘hard path’. The soft path “[seeks] to improve overall productivity rather than to find new sources of supply. It will deliver water services that are matched to the needs of end users, on both local and community scales” (p. 373). This approach balances the ‘hard path’ by incorporating the water needs of communities.

The emergence of Integrated Water Resource Management (IWRM) and, more recently, the Water-Energy-Food nexus approach (WEF), attempt to push forward an understanding of water security that recognises the multiple uses of water, and the need to integrate and coordinate water usage. These approaches have not been an overwhelming success, but do make a concerted effort to reflect a more multidimensional approach. The following paragraphs will briefly describe these two approaches to illustrate how ‘water security’ is being operationalised in theory and in practice.

3.5.1 INTEGRATED WATER RESOURCE MANAGEMENT

The IWRM approach was formally introduced in 1992 during the International Conference on Water and the Environment in Dublin, Ireland. The idea was founded on the Dublin Principles outlined in the Dublin Statement on Water and Sustainable Development. The IWRM approach acknowledges the cross-sectoral uses of water and recognises the need for a coordinated approach for sustainable water management. In 2006, the Global Water Partnership (GWP) was founded by the United Nations and the World Bank, and tasked with developing a framework for IWRM. The GWP built a framework on three pillars: ecological sustainability, social equity and economic efficiency. Based on these pillars, IWRM seeks to balance water use between humans, the environment and the economy.

The 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” (p. 22). The definition is ambiguous, and deliberately so. The GWP Technical Advisory Committee (2000, p. 22) admit that an “unambiguous definition of IWRM does not currently exist”, but recognises the implementation of

IWRM depends on the context. In short, it is intentionally ambiguous so it can be implemented globally across different social, political and environmental landscapes.

In practice, the rollout of IWRM has been focused on institution building. According to Petit and Baron (2009) (quoted Ghiotti, 2005) this has been based on three pillars: “a principle, the ‘right price’; a method, participation and decentralised management; and a territory, the catchment area.” (p. 51). Starting with ‘the right price’, IWRM views water as an economic good, and promotes the use of economic instruments to institute full-cost recovery (GWP, 2000). This method is meant to ensure a balance between water supply and demand through the encouragement of efficient water use. Many IWRM schemes have implemented water registries and water permit/right systems that require the purchasing of water from the relevant authority. In theory, the establishment of water rights acts as a mechanism to ensure sustainable water use. IWRM adopts a rationale that water management should adhere to hydrological boundaries rather than political boundaries (GWP, 2000). On these grounds basin-level management has become the de-facto norm or territory of IWRM, followed with catchment committees and Water User Associations (WUA) at lower levels. This decentralisation of power is meant to encourage participation in water resource management. Dungumaro and Madulu (2003) insist that for IWRM to be successful it needs to empower local communities and bring their voices and perspectives to the forefront. These components of IWRM are not compulsory, and as Bandaragoda and Babel (2010) point out, the pillars of IWRM can exist without basin level management. This ambiguity has contributed to the confusion surrounding what IWRM actually entails. Regardless, the roll-out of IWRM has by-and-large reflected these ideas.

The implementation of IWRM has engendered mixed results, exposing a large gap between theory and practice. In Brazil the implementation of IWRM’s ‘cost-recovery’ component in the Paraba do Sul River Basin has not led to more efficient water allocation or curbed water use. Instead, Ioris (2008) claims the implementation of water fees has:

been paradoxically used to legitimize the degrading activities of industrial and agribusiness companies, as long as the charges provide a political excuse for not questioning their location, scale, and operation [...]

industrial sector representatives explicitly claimed that they have completed their contribution to restoring the river, especially in the form of water charges. (p. 9)

Similar challenges have faced the decentralisation and participation components. For example, the operationalisation of the participatory principal in Burkina Faso has not been a resounding success as IWRM hasn't fully adapted to local conditions, in particular pre-existing strong hierarchal relationships were replicated in the composition of the WUAs (Petit & Baron, 2009). In Mongolia, the decentralisation of water management along basin boundaries presented many challenges. First because it does not align with provincial jurisdictions and also because ministries did not communicate with WUAs, creating a lot of uncertainty. (Horlemann & Dombrowsky, 2012).

Apart from logistical challenges, IWRM has been criticised for being too vague and easily corruptible. Biswas (2008) believes the undefined and transferable nature of the framework creates a space for IWRM to be co-opted. That is, the term could be increasingly applied to processes that are not true to the intentions of IWRM, i.e. it could be used as a guise to continue 'business-as-usual'. Molle (2008) echoes this concern suggesting IWRM is "likely to be hijacked by state, sectoral or private interests seeking to legitimise their agendas" (p. 134). Molle (2008) goes on to show how different actors will co-opt and manipulate the objectives of IWRM by emphasising and 'cherry-picking' the pillar(s) of the framework that represent their own interest(s) and context. Mehta and Movik (2014) suggest this is one of the core reasons why IWRM has become so popular and persistent model.

The ease with which IWRM can be manipulated may reflect its failure to redress underlying inequalities that favour access to some while not others. According to Franco et al. (2013b) "[p]owerful players can navigate their way through such uncertainties, making them into mechanisms of exclusion for poor and marginalised people, and facilitate grabbing processes" (p. 1657). For example the formalisation of IWRM has provided investors with a 'checklist' to secure access to water. The consultancy process is simplified through the establishment of WUAs, and the establishment of a water rights system makes water accessible to investors. In this light, investors can easily work their way through the IWRM checklist. According to Franco et al. (2013b) this process

facilitates ‘grabbing’ by “silencing further resistance” from communities. These critiques suggest IWRM doesn’t challenge norms or underlying processes that facilitate dispossession or the (re)production of inequality.

3.5.2 *THE WATER-ENERGY-FOOD SECURITY ‘NEXUS’*

The Water-Energy-Food nexus (WEF), which emerged in 2008, is a strikingly similar framework to IWRM. This approach centres on the need to balance trade-offs between water use, energy and food production. According to the International Institute of Sustainable Development the motives underpinning the adoption of this framework include increasing resource stress, increasing demand for resources and greater recognition of the overlapping challenges – i.e. trade-offs – between resources (Bizikova et al., 2013). Several studies have already pointed to ‘the nexus’ – the linkages between food, energy and water – as a critical challenge facing resource managers (Palmer, 2010; Vörösmarty et al., 2010; Verhoeven, 2013). To this end, this framework has become an attractive tool for policy makers and resource managers.

Muller (2015) suggests the WEF approach emerged as a response to the failure of IWRM to bring about its intended results. He suggests that “the benefit of the water-food-energy security paradigm is that it shifts the focus of water resources management from watersheds to problem-sheds” (p. 689) – that is, WEF “provides a structured form in which a complex problem can be described and addressed” (p. 686). While acknowledging the similarities between IWRM and the WEF nexus, Benson et al. (2015) highlight a key difference: water-centrism versus multi-centrism. IWRM, they argue, focuses primarily on water as the pivotal resources, whereas the WEF nexus has a broader scope, allowing for greater integration between sectors. Conversely, Zeitoun (2011) adopts a water-centric approach within the nexus. He shows how ‘water security’ is at the center of the nexus – establishing water as the universal connection between all security areas.

Despite the mounting popularity of the ‘nexus approach’, its reach can be limited. Allouche et al. (2015) suggest the nexus approach is a ‘technical veil’ that “masks a bigger debate, which lies around resource inequality and access that contribute to social instability” (p. 622). In the same vein, Middleton et al. (2015) suggest that

if the nexus approach is to support its commonly stated aspirations for sustainable development and poverty reduction, then it should engage more directly in identifying winners and losers in 'nexused' natural resource decision-making, the inevitable politics involved, and ultimately with the issue of justice (p. 629)

Both of these critiques aim to locate the individual (through inequality, inequity and justice) within the nexus. Verhoeven's (2013) discussion of an agriculture and energy project in Ethiopia exemplifies this. He recognises that the outcomes of the nexus are highly contingent on human decision making. This suggests that while the nexus may hold some merit, it pulls the conversation away from the individual towards a resource-centric approach. In short, this risks defaulting to an understanding of water security that privileges resource availability above all else.

3.6 WHY CRITICAL WATER SECURITY?

As discussed in Chapter 2, 'land grabs' began as a response to international concerns over food, energy and water security at the state-level. In an effort to secure access to these resources, states and investors engaged in transnational land acquisitions. This response inadvertently led to regional and local insecurity in developing countries. While political ecology is an equally useful approach for understanding how "any tug on the strands of the global web of human-environment linkages reverberates throughout the whole system" (Robbins, 2012, p. 13), 'land grabs' were ultimately a *security* response to the unfolding financial crisis. I used a critical approach to water security to engage with the security narrative and redirect it towards questions of justice – a central concept at the root of opposition to LSLAs. This analysis borrows a significant amount of insight from political ecology – and certainly recognises the parallels between the two theories. As illustrated in this chapter, insights gleaned from political ecology (specifically the resource scarcity narrative) were central to the development of critical perspectives on environmental security, and therefore, political ecology is implicated in any discussion on critical environmental and water security.

This approach is useful for understanding the implications of LSLAs on water security because it exposes three dynamics. First, it highlights how we understand water security, and consequently how that understanding of water shapes how we approach

water resource management. This is critical because different actors within the land acquisition process have different motives, capacities and relationships with water resources. Second, it draws attention to changing patterns in water resource management. This is useful because the presence of LSLAs has been shown to promote the formalisation of water resource management (e.g. Williams et al., 2012). Last, and perhaps the most important, like critical environmental security, critical perspectives on water seek to expose how these perception and patterns impact marginalised and vulnerable populations, bringing issues of distribution and justice to the forefront of the conversation. As several investigations have already shown, LSLAs hit the most vulnerable people the hardest. Adopting an approach that considers how individual rights and access are implicated in this process is critical.

3.6 CONCLUSION

This chapter provides an overview of the theoretical framework for this thesis. By chronicling the development of the security discourse, this chapter demonstrates how concepts like environmental and water security have evolved, drawing on insights from political ecology and critical security studies, to show how natural resource challenges can be interpreted beyond narratives that centre on scarcity, conflict and risk. It shows how the critical perspective has also pushed the conversation towards the perspective of the individual, incorporating issues of justice, access and rights. Critical approaches to water security have come to recognise that there are social, political and economic determinants that shape water security in tandem with biophysical conditions. Ideas like IWRM and the WEF nexus have attempted to operationalise these understandings, but neither have successfully reoriented water management towards empowering the individual. By using these insights, this thesis hopes to illuminate how LSLAs approach water resource management and the likely implications of this process on water security.

CHAPTER 4: METHODOLOGY

4.1 INTRODUCTION

This chapter will elaborate on the methods and techniques used during my fieldwork for this research. Obtaining information about LSLAs is particularly challenging because the information is often not publicly available, and much of the information that is available is often inaccurate or only presents a half-truth. Moreover, because of the diverse number of stakeholders, it is challenging to construct a balanced assessment of what is actually taking place on the ground. This chapter will discuss the rationale behind my research, the techniques I used as well as the challenges I faced throughout my fieldwork.

4.2 RESEARCH RATIONALE

Initial data compiled on the ‘land rush’ painted a rough sketch of the magnitude of what was underway, but details were hard to come by. Before long the land rush was accompanied by what Scoones et al. (2013) refer to as the ‘literature rush’. Now, hundreds of studies, news articles and programs detailing the extent of the ‘land rush’ can be found, albeit, with varying degrees of accuracy. In hindsight, we now know that the initial data on land claims was inaccurate and grossly over estimated (McGrath, June 10, 2013). In some instances, land deals that initially sought large tracts of land were denied – or given smaller parcels of land, while in other cases reports were simply inaccurate.

The inconsistent nature of the data collected speaks to the challenge of compiling accurate and in-depth data on a fast-moving and oftentimes contentious event like the land rush. Oya (2013) is critical of the methodologies used to acquire data. She insists:

rather than jumping on big claims based on a few weeks’ fieldwork and some ‘fast fact-finding’, researchers and activists would give better service to their cause by being patient and spending more time to collect high-quality evidence on process, actors and impact and systematically dealing with biases, lies, imprecise figures and the mistakes that are unfortunately common in any research dealing with land use, labour and production in developing countries (p. 512)

In defence of rapid appraisal, Scoones et al. (2013) claim it has a place and a role in a fast moving world. Nonetheless, like Oya, Scoones et al. (2013) see the value in combining both rapid appraisal and in-depth research. They concede that “triangulation and checking

have always been hallmarks of good rapid appraisal” (Scoones et al., 2013, p. 478). Valuable as these datasets are, they fail to capture finer details and nuances of individual transactions in favour of appealing to popular narratives of land investments. Notwithstanding the wealth of academic articles exploring the land rush, many sources on land deals reflect on the drivers and ‘high level’ politics that facilitate and govern this process. While think tanks (e.g. Oakland Institute) and academics (e.g. Clayton, 2012) have begun to bridge this gap by conducting in-depth and thorough research on these processes, more on-the-ground research is needed to catalogue how these events have begun to unfold within the particular contours of different case studies.

4.2.1 WHY TANZANIA?

I gravitated towards Tanzania as an appropriate and relevant location to conduct this research because Tanzania has been identified as a target country for land investment. Investors typically narrow in on regions with fertile and available land, ample water resources and a benign policy environment. In 2011 the World Bank created a typology that indicated which African countries were best suited for investment. The typology included four types of countries: 1) Little land for expansion, low yield gap; 2) Suitable land available, low yield gap, 3) Little land available, high yield gap, and 4) Suitable land available, high yield gap. Tanzania was categorised as Type 4 alongside other African countries like the Democratic Republic of Congo, Mozambique, Sudan, and Zambia. According to the World Bank,

[t]his group includes sparsely populated countries[...]with large tracts of land suitable for rainfed cultivation (in areas of sufficient precipitation) but also a large portion of smallholders who only achieve a fraction of potential productivity. (Deininger et al., 2011, p. 87)

According to the FAO, Tanzania has upward of 44.4 million hectares of land available for investment. In addition, Tanzania’s natural resource endowment and favorable climate led the German International Development Agency to earmark the region as a target country for biofuel production (GTZ, 2005). Apart from land, Tanzania is blessed with large water endowments and vast irrigation potential. As of 2002 only 184,300 hectares of land was equipped for irrigation, accounting for only 8.6% of irrigation potential (UNwater, 2013). Preliminary hydrological models suggest the ‘land rush’ in

Tanzania could be accompanied by one of the highest withdrawals of water in Africa (Rulli et al., 2013).¹¹ As water is the central theme of my research, this component made Tanzania a compelling and relevant region to conduct this research. My research follows on the heels of this emerging discussion in an effort to provide a case study to advance our understanding of the role of water in LSLAs.

In addition to physical endowments, a critical component of land investment is a favourable policy environment. While the Government of Tanzania has been promoting a policy environment that aims to attract investors, Tanzania has also legislated strong land laws that have hindered foreign land acquisitions. Several initiatives (discussed in Chapter 5) aim to create a partnership between investors and small farmers.

The rationale that underpinned my choice of Tanzania as an appropriate research location was predicated on the relevance of this topic in the Tanzanian context, but a secondary factor that influenced this decision was personal safety. Murray and Overton (2014) highlight the importance of considering practical and safety aspects of site selection. For instance: is the location accessible? What are the hazards? And will I have somewhere to stay? Each question was considered at length prior to conducting fieldwork. My limited travel experience prior to this research led me to research regions that would allow me to get around with relative ease. Following the guidance of my supervisor and other professors I chose Tanzania in large part because it is a relatively safe and stable country in which to conduct research.

4.2.2 WHY ECOENERGY?

The selection of EcoEnergy as a large-scale land investment was predicated on the availability of information about the project, and the existence of a ‘water dimension’. Unlike many land investments, EcoEnergy has several documents available online about their project. The initial information I found on EcoEnergy was conflicting – some information indicated it was a sustainable project (Riddell, 2012), while other information linked EcoEnergy to ‘land grabbing’ (Makoye, July 18, 2013). Most importantly, I selected this project because some evidence indicates their goal is to become a

¹¹ This conjecture is based on simulations. The simulations are based on the amount of land presumed ‘grabbed’. Because no single source has an accurate measure of land that has been acquired, this data is speculative at best.

sustainable investment model. This reality allows for a more nuanced analysis that extends beyond the rhetoric of land and water grabbing. As for the water component, several sources highlighted the role of the Wami River in this project – citing potential challenges (Oakland Institute, 2011). To this end, perspectives on EcoEnergy reflected both narratives – land investment as an ‘opportunity’ versus ‘land grabbing’, and the presence of a water component allows this research to assess the role of this project on water security.

4.3 QUALITATIVE RESEARCH: DATA COLLECTION AND ANALYSIS

There is growing recognition that the study of water must include more than just a natural sciences perspective. Zeitoun (2011) remarks that overconfidence in biophysical measures produces limited knowledge. He suggests “[t]he social side of scarcity considers politics, ethics, justice, economics and human water and food consumption in examination of distributional issues” (p. 289). The overemphasis on biophysical measures and simultaneous underemphasis on social processes is a key critique of many interpretations of water security.

According to Creswell (2007), researchers adopt a qualitative approach when a “problem or issue needs to be explored” (p. 39). To uncover the social processes that shape water security in the context of LSLAs, I required an approach that allowed me to explore the multifaceted transnational processes that caused this phenomenon, including complex relationships between investors, the government, communities and water. A qualitative approach is appropriate for this research because it aims to understand complex realities and multifaceted processes (Mayoux, 2006). Specifically, I opted for a qualitative case study approach. According to Creswell (2007), a case study approach is:

a qualitative approach in which the investigator explores a bounded system (a case), or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (eg. observations, interviews, audiovisual material, and documents and reports), and reports a case description and case bound themes (p. 73)

Yin (1984) describes the circumstance in which a case study approach is most appropriate. Typically, ‘how’ and ‘why’ questions are well suited for case studies, however ‘what’ questions – like the one posed in this study – can be addressed through

exploratory case studies. As the aim of my research is to explore the implications of LSLAs on water security and detailed data on most LSLAs is lacking, an exploratory case study approach is particularly well-suited.

The data collection and analysis portion of this thesis happened in tandem. As I will discuss in greater depth, the data for the research was retrieved from a number of secondary sources including academic literature, industry reports, and news sources. I began reviewing these sources before, during and after my fieldwork in Tanzania. During the course of my fieldwork, I learnt more about the project, the context, and the region. As a result, new questions, inquiries and themes emerged as the research process progressed. Even though the data collection and analysis processes were integrated, below I hope to make a clear distinction between the methods used for each process to elicit a better understanding of how I came to my conclusions and answered my research question(s).

The fieldwork portion of my thesis took place between September and December 2013 in Tanzania. My time was divided between Dar es Salaam, Morogoro and Bagamoyo. During this period I conducted 19 semi-structured interviews and one focus group composed of 3 participants. Participants included village members, members of the private sector and NGOs (See Table 1). I selected participants based on their ties to the project; their knowledge of the project or relevant subject areas; and, their willingness to participate. In several cases I used snowball sampling. Snowball sampling was an effective method to recruit people who were knowledgeable and/or involved with the project. Willis (2006) says that snowball sampling can be “the only way to find out about potential interviewees when there is no clearly bounded group, such as village residents, or records of group members, as with organizations”, but “[w]hen using snowballing it is advisable to try to start with as many contacts as possible to maximise the diversity of the interviewees” (p. 148). To account for this I found a large number of my participants through other means (mainly the internet). In each case participants were first contacted using e-mail or telephone, after which I met with them at a place and time of their choosing.

Table 1: List of participants

Interview/focus group	Number of participants	Sector/Organisation and the nature of questions I asked them
Interview	6	<i>Organisations:</i> I posed questions relating to their field of experience. Two participants worked for water related NGOs, one worked for a land rights group, one worked for a development NGO, one worked with an NGO supporting small farmers and the last participant worked with a biofuel research group
Interview	3	<i>Academics:</i> all three interviewees study aspects of water resource management in Tanzania. In both cases I inquired about water management across Tanzania and hydrology
Interview	3	<i>Water Basin Authority:</i> These participants are directly involved with the management of the river therefore, I posed questions about management practices and challenges of managing the Wami, and EcoEnergy's water use.
Interview	2	<i>EcoEnergy:</i> In both cases I posed questions specifically about various components of EcoEnergy's project
Interview	1	<i>SAGCOT:</i> I raised questions concerning the roll-out of large-scale commercial agriculture in Tanzania under SAGCOT, and their perspective on EcoEnergy's planned sugarcane project
Interview	1	<i>ESIA process:</i> I inquired about the EIA process in Tanzania, specifically the one conducted for SEKAB BT
Interview	2	<i>Government:</i> I inquired about the land acquisition process in Bagamoyo
Interview	1	<i>Engineer:</i> I posed questions about other projects on the Wami River
Focus Group	3	<i>Villagers:</i> I asked the villagers about their water use, water management, and their relationship with EcoEnergy

Qualitative research includes a wide range of methods and techniques. I chose in-depth semi-structured interviews with the majority of my participants because this allowed me to ask central questions critical to the research, while still giving the participant the opportunity to speak broadly about their thoughts on the subject matter (Willis, 2006). The open-ended nature of these interviews allows for thoughts and ideas that the interviewer may not have considered. In total I conducted 19 one-on-one interviews with people who are involved in the EcoEnergy project, or familiar with the topic. The purpose is to explore different perspectives about the project and to gather factual information about its ongoing development. As the project had not yet begun, I could not study actual physical impacts, instead I aimed to gather information on the project plans. Because each participant represented a different sector, each set of questions was formulated with each stakeholder in mind. For example, when I spoke with participants involved with EcoEnergy I asked questions related to the progression of the project and project plans, specifically those involving water management. Or, when speaking with participants knowledgeable about the water sector like academics, NGOs and the Water Basin Authority, I asked questions about water management in the region to gain a better understanding of how water management unfolds in practice.

In addition to the semi-structured interviews, I conducted one focus group. According to Lloyd-Evans (2006) “focus groups have become one of the main processes for engendering public participation” in the research process, and they are “commonly used to ascertain information on collective views of social issues” (p. 154). Because my intent was to bring the perspective and experience of the community to the forefront, conducting a focus group was a useful tool to accomplish this.

Initially my research plans included conducting several focus groups with different members of Matipwili village to obtain a more representative sample and a wide range of perspectives. However, this was not feasible due to time and logistical constraints. Instead, I conducted one focus group with three members of Matipwili’s Water Management Committee, comprised of two males and one female. Matipwili Village is located parallel to the project site on the northern bank of the Wami River (See Figure 1). Many people who will be displaced from the project site will be moved to

Matipwili. Likewise, many of Matipwili villagers own land on the other side of the river and as a result will be economically displaced. I selected the Matipwili villagers because they are dependent on the Wami River and will be involved with the project. My inability to reach a larger sample size means the views of this focus group do not reflect the views, perspectives or experience of the larger community. As discussed by Borrás and Franco (2013) research on land acquisitions often misrepresent communities as a homogenous group, but within each community is a complex set of social process that shapes views and norms.

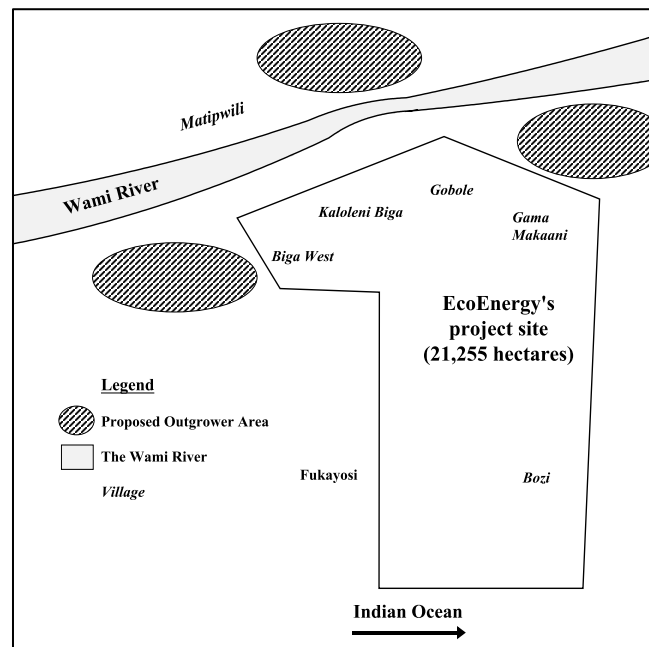


Figure 1: Schematic map of EcoEnergy's project in Bagamoyo (not to scale)

The Matipwili villagers I spoke with spoke only KiSwahili, therefore I recruited a translator to help me conduct the focus group. I found the translator through a local contact. After an initial meeting he was chosen based on his ability to speak fluently in English and Swahili, his knowledge of agriculture (he just finished a degree in agricultural science at the time of this research), and his knowledge of the area, to be precise, he knew how to reach Matipwili. Working with a translator can present many challenges. For example, Bujra (2006) explains how language and the meaning of certain ideas do not always translate from one language to another. I encountered this in my own experience: I had a few difficulties conveying the meaning of the idea 'water right'

through my translator. With the assistance of my translator, I asked the villagers questions related to their water use, management, livelihoods and their relationship with and thoughts on EcoEnergy's project.

An additional dimension of my research was site visits. On two separate occasions I was able to visit the case study project site. The first visit included a guided tour of each community around the site and the site itself; the second visit was to Matipwili to conduct the focus group. The site visits allowed me to understand the scale of the project and where it was in relation to the villages and the river.

To analyse the data I engaged in content analysis of all relevant primary and secondary sources. To put it simply, "analysis essentially means taking something apart" (Stake, 1995, p. 71). To do so, I reviewed the data for common themes. Because many of my participants discussed different components of the research – for example, some spoke about land rights, others about water management, and others specifically narrowed in on the project – I was able to clearly categorise different themes which later formed separate chapters and sections of the thesis. Throughout this process I highlighted gaps in the research and sought to address them where possible, either through primary while I was still in or secondary research upon return to Canada.

To enhance the trustworthiness of my data, I triangulated data where possible. In the case of inconsistencies, I highlighted these inconsistencies in my paper rather than selecting one source over another. Throughout my fieldwork I encountered several anecdotal stories that I was unable to triangulate or verify. In these cases I selected to exclude this information from the thesis because it was often highly contentious and I could not find additional information to support it. I did not use all the information from all the interviews I conducted because some information did not add any relevant detail. For example, my discussion with government officials yielded no new findings, in part because as I learnt during the interview that one interviewee was newly assigned to his post and did not have additional information or insight on the case study. In another case, the participant was reluctant to provide any information or perspectives at all.

4.4 CHALLENGES AND ETHICS OF CONDUCTING FIELDWORK IN SUB-SAHARAN AFRICA

The very nature of fieldwork in a country that is not your own is fraught with challenges, limitations and ethical considerations for which there are no easy answers. As I indicated in the previous section, I faced a number of challenges while conducting fieldwork abroad ranging from logistical and practical challenges, to larger ethical questions. This section will elaborate on my role as a researcher and an ‘outsider’, and how these and other challenges shaped my fieldwork.

First this is my first time traveling to and conducting research in sub Saharan-Africa. To that end, I am a ‘naïve’ researcher (Gokah, 2005). This position bears many challenges and ethical implications that have been addressed in varying degrees in the literature (Gokah, 2005; Adams 1979). A major challenge facing all researchers (naïve or otherwise) is situating their role in the research. This is articulate in the ‘insider’ versus ‘outsider’ debate (Merton, 1972). All researchers must decide whether to do research as an ‘insider’ (as part of a group they identify with or share experiences and history) or as an outsider (a group they are disconnected from). The line between ‘insider’ and ‘outsider’ can be blurred. Smyth (2005) discusses how her research on conflict in Ireland continually repositioned her from ‘outsider’ to ‘insider’ depending on which group she was interacting with. In other cases the researcher could belong to both positions simultaneously (Zulfikar, 2014). There are significant benefits and challenges to both; insiders understand how participants might be feeling and can construct questions accordingly (Zulfikar, 2014). They also can access participants easier than an outsider. Alternatively, insiders can be regarded as biased or easily make assumptions based on their familiarity with participants. The line between insider and outsider is further blurred as researchers must negotiate new ways to collect information if they are unable to spend months at a time immersed in the region they are studying. For example, in Jones et al. (2015) one researcher indicated he employed local research assistants (RA) in Uganda to build and maintain relationships with study participants. Locating the RAs place on the insider outsider spectrum is considerably more difficult. Nonetheless, neither approach is intrinsically good or bad, but they bear different challenges that the researcher must consciously and continually confront.

My own research positioned me as an outsider. Coming from Atlantic Canada, I shared few experiences or history with the participants in my research. Most agree that outsiders cannot fully understand the lived experience of their participants (Dwyer & Buckle, 2009). In an attempt to mitigate this, researchers often engage participatory techniques. My intention was to bring community voices to the forefront of this debate. Doing so would require a translator as the vast majority of rural villages speak Tanzania's national language: KiSwahili. However, Shope (2006) questions the use of translator because the act of conveying someone else's words into English essentially 'mutes' their voices and reinforces power relations. Unfortunately there are few ways to contend with this dilemma beyond learning the language. While ideal, learning a language well enough to conduct in-depth interviews is a long term commitment. During my time in Tanzania I was only able to learn basic Swahili.

As discussed in section 4.3 I was not able to interview as many villagers as planned mainly due to time constraints. This significantly limited my ability to bring the perspective of villagers to the forefront of the discussion. Particularly, my ability to account for gender was limited. A survey of literature indicates that gender is routinely disregarded in discussion on land grabbing (Chu, 2011). As men and women ascribe to different gender roles and hold different relationships to water provision, a gendered understanding of the implications of water grabbing is critical, but not adequately addressed in this study.

The one benefit ascribed to 'outsiders' is a certain degree of detachment, but this is easily contested by the reality that researchers have their own biases and lived experiences that shape and mould their perceptions. For example, Shope (2006) expressed some concern that she – as an outsider studying rural woman in South Africa – might situate her participants perspectives within her own 'master narrative'. This was a challenge within my own research because I was engaging with a politically sensitive and polarised topic. Harrison (2006) says "[s]ensitive information is material that is delicate and could be personal, political, economic, social or cultural in nature" (p. 62). In this scenario, narratives depicting 'land grabbing' are contentious, political and polarised. In one instance, a participant was under the impression I had formed an opinion on this topic

because I am an ‘outsider’, specifically a western researcher. The ‘land grabbing’ narrative is typically used by western-based organisations. Similarly, critical development and agrarian studies are prone to viewing investments in this language; therefore, it is likely that I might have a tendency to share this view. This posed a challenge because it likely altered how participants responded to interview questions if they believe I already harbour a particular view. In another scenario I was refused an interview on the grounds that I could be an undercover journalist investigating alleged ‘land grabs’. In this case, my status as an ‘outsider’ impeded my ability to access certain participants. To mitigate this, I explained to participants that my aim was not to assess whether the case study was or was not a ‘land grab’; rather, my aim was to understand what is occurring, and what potential implications this could have on water security – good or bad. Moreover, as a researcher, I cannot ethically ignore the literature on land grabbing, just as I cannot ignore case studies that demonstrate positive impacts of land investment. Rather, my role is to confront both lines of inquiry during my research.

As Hyndman (2001) suggests, the research process does not end the day you leave the ‘field’. It is present throughout the writing process where you must confront and challenge the ideas and understandings. By taking a qualitative approach I intend to expose the social processes that create and/or deny water security in the context of my case study. But I am also aware of circumstances and social perceptions that may have shaped the evolution of my research. My position as an outsider shapes how people viewed me, but also likely subconsciously shaped how I viewed participants. For example, Adams (1979) expresses his frustration with a student who came to Senegal with misguided ideas about what he was observing and the progression of the development he aimed to study. Adams aimed to show that the student did not fully understand the complexity of what was happening, and that to Adams, the student was just another European dropping in before taking off. As students, part of our task is to complete a thesis, which raises ethical questions about the purpose of the research and who it’s benefiting. Like the student Adams encountered, I also felt that my research question might be premature upon arrival in Tanzania, and felt some frustration regarding the slow progression of my case study.

4.5 CONCLUSION

This chapter explores the methods and techniques I used throughout my research in Tanzania. While I faced several challenges – some which limited my research – adopting this particular methodology allowed for a careful exploration of the processes shaping LSLAs, and the implications of these processes on water security. The following section will begin by introducing some background information about Tanzania. In particular it will provide contextual information on several international and domestic processes that have shaped the emergence of LSLAs in Tanzania.

CHAPTER 5: OVERVIEW OF PROCESSES SHAPING LARGE-SCALE LAND ACQUISITIONS IN TANZANIA

5.1 INTRODUCTION

In January 2013, the Government of Tanzania placed a limitation on the amount of land that can be leased by foreign investors. According to these new restrictions, investors can lease up to 10,000 hectares of land for the production of sugarcane, and up to 5,000 hectares for the production of rice (Kiishweko, December 19, 2012). This change in policy was the result of international pressure to curb alleged ‘land grabs’. Yet, some critics suggest that Tanzania’s investment procedures are already lengthy and arduous enough to deter foreign investors from even considering Tanzania (FAO, 2013).

This chapter explores these contested claims to uncover the broader tensions and processes that have shaped the ‘land grabbing’ debate in Tanzania. The first section explores a number of international and domestic initiatives that aim to attract investment in land and agriculture. The following section focuses on similar initiatives that have led to the rapid rise in biofuel investments in Tanzania. Afterwards, this chapter provides an overview of the domestic legislation that governs these investments in Tanzania, and whether these regulatory regimes serve to facilitate or deter ‘land grabbing’. In conclusion, this chapter reflects on the absence of any meaningful consideration of water in these processes.

5.2 AGRICULTURAL INITIATIVES

In 1999, the Government of Tanzania unveiled its national vision for 2025. This vision aspires that Tanzania achieves the status of a middle-income country by transforming its economy “from a low productivity agricultural economy to a semi industrialised one led by modernised and highly productive agricultural activities” (Planning Commission, 1999, 2). Yet, like most African countries, Tanzania remains predominantly rural-based and dependent on subsistence farming and smallholder cash-cropping (FAO, 2013). Consistent with broader views of African agriculture, the predominance of subsistence farming in Tanzania is viewed as an impediment to development, economic growth and poverty reduction.

Although Tanzania's economy has been steadily growing at an average rate of 6.6% per year, this steady climb has not significantly reduced poverty. In fact, between 2001 and 2007 poverty rates remained steady between 33% and 36% (UNDP, 2012). Agriculture accounts for nearly a third of the GDP (27.7%), employing a staggering 77% of the population (World Bank, 2012). Because such a large portion of Tanzania's population is directly dependent on agriculture for employment and livelihood, the FAO claims its high poverty rates are a product of slow growth in the agricultural sector (FAO, 2013, 15). Viewed through this lens, growth in the agricultural sector could lead to significant advances in poverty reduction. The following section will explore several initiatives aimed at promoting growth, modernisation and commercialisation in Tanzanian's agriculture sector. In particular, this section will focus on two key programs designed to attract FDI to the agricultural sector.

5.2.1 THE NEW ALLIANCE FOR FOOD SECURITY AND NUTRITION

The New Alliance is an international initiative crafted by the G8 that aims to lift 50 million people out of poverty over a 10 year period. To achieve this goal it has partnered with six African countries (including Tanzania), and many private sector investors. This initiative intends to use public-private partnerships (PPP) as a vehicle to promote responsible investment that contributes to poverty reduction activities by linking small farmers with private investors (predominantly agri-business) and integrating them into the global supply chain. In accordance with the New Alliance, Tanzania has developed a New Alliance Cooperation Framework (NACF), which promises to alter national policies to help facilitate this process. This framework states:

The Government of Tanzania intends to pursue the policy goals [...] in order to build domestic and international private sector confidence to increase agricultural investment significantly, with the overall goal of reducing poverty and ending hunger. The Government of Tanzania intends to focus its efforts, in particular, on increasing stability and transparency in trade policy; improving incentives for the private sector; developing and implementing a transparent land tenure policy; developing and implementing domestic seed policies that encourage increased private sector involvement in this area; and aligning the National Food and Nutrition Policy with the National Nutrition Strategy (p. 2)

The NACF aims to adjust policies to attract private investment. Changes include: tax incentives for the private sector (e.g. lowering produce excess taxes); clarifying land rights and titles to promote responsible land acquisitions; and, the commercialisation of seeds and farming inputs. Specifically, the Government of Tanzania has agreed to reduce/lift taxes on seeds, align the time required to release new varieties of imported seeds and register imported agrochemicals from outside the region to reflect international best practices. Although the New Alliance is promoted as an initiative to improve nutrition, the only policy change in Tanzania's NACF that specifically targets nutrition is calling for the update and alignment of the National Food and Nutrition Policy with the National Nutrition Strategy (Feed the Future, 2012).

According to GRAIN (2013), these policy commitments were the result of consultations between African governments and the private sector. The framework defines three performance indicators. The first is an improved score on the 'Doing Business Index', an index formulated by the World Bank Group. A high score on the index indicates that "the regulatory environment is more conducive to the starting and operation of a local firm" (WBG, 2014). Tanzania currently ranks 131, alongside Iran at 130 and neighboring Kenya at 132. The second indicator is an increased dollar value on *new* private-sector investment in the agricultural sector. The last is a percentage increase in private investment in commercial production and sale of seeds (Feed the Future, 2012). Despite marketing the New Alliance as a pro-poor initiative aimed at reducing hunger and poverty, none of these indicators measure food, nutrition or water security.

Since joining the New Alliance in 2012, twenty domestic and international private investors have signed Letters of Intent with the Government of Tanzania. International investors include large Multinational Corporations like Monsanto, Swiss Re, Syngenta, Unilever and Yara International among many others. All investors that operate through this scheme are supposed to adhere to the FAO's Voluntary Guidelines in Tanzania and other participating countries in order to ensure fair and equitable use of natural resources.

5.2.2 SOUTHERN AFRICAN GROWTH CORRIDOR OF TANZANIA

Tanzania has also launched a number of domestic initiatives that aim to increase agriculture production and modernization. In 2001 the Government of Tanzania introduced the Agricultural Sector Development Strategy (ASDS). The main objective of the ASDS was to transform Tanzanian agriculture from subsistence to commercial agriculture by creating an “enabling and conducive environment for improving productivity and profitability of the sector” (United Republic of Tanzania, 2001, Forward). The ASDS was operationalised through the Agricultural Sector Development Programme (ASDP). The aim of the ASDP is twofold. First, it aims to improve farmers’ access to agricultural knowledge, technology, markets and infrastructure, and second, to promote private investment. Under the ASDP, the Government of Tanzania created a ‘basket fund’ for agricultural projects. Donors contribute to the fund rather than individual projects, then funds are allocated by the government. Haug and Hella (2013) suggest that the ASDP has ultimately suffered from lags in funding and inputs. This may be due to a tension between the government and donors regarding the management of the programme. According to Cooksey (2012), donors felt the private sector occupied a subordinate role and favoured greater private sector involvement and leadership. This caused some potential donors to back out.

Tanzania’s agriculture policy soon shifted from the state-led agricultural development model embodied in the ASDP to a private sector led approach known as the Kilimo Kwanza strategy (Cooksey, 2013). In 2009, the Kilimo Kwanza (known as ‘Agriculture First’) was launched as a nation-wide strategy aimed at speeding up the modernisation and commercialisation of Tanzania’s agricultural sector. It was crafted by the Tanzania National Business Council, a platform that fosters dialogue between members of the public and private sectors concerning economic development in Tanzania, and was designed to resonate with global initiatives aimed at fostering greater private sector investment in agriculture. The Kilimo Kwanza is dubbed Tanzania’s ‘green revolution’ strategy, guided by 10 pillars that focus on transforming small farmers into commercial farmers, promoting strategic crops, removing trade barriers, increasing access to agricultural inputs and facilitating the adoption of modern technologies.

The first major attempt to operationalise the Kilimo Kwanza came in the form of Southern Agricultural Growth Corridor of Tanzania (SAGCOT). It began in 2005 when the Norwegian fertiliser company, Yara, met with Tanzanian officials, the Tanzanian Investment Centre, the African Development Bank, the World Bank and the President of Tanzania to discuss the potential of developing a ‘agricultural growth corridor’ in Tanzania (Jenkins, 2012). According to Yara (2014) an agricultural growth corridor aims to “develop underutilized land areas in Africa that have great potential to enhance food production and economic growth”. Yara has identified two growth corridors in Africa: SAGCOT and the Beira Agricultural Growth Corridor in neighboring Mozambique. The introduction of SAGCOT was officially announced at the World Economic Forum on Africa in 2010.

SAGCOT is designed to facilitate PPPs by partnering investors with small-scale farmers to create a value-chain within the agricultural growth corridor. The concept of value-chain captures the step-by-step processing of a product from start to finish. According to an employee of SAGCOT, the main objective of the initiative is “to increase production and productivity in the SAGCOT area, to make sure that the investment is being done in an inclusive way, and [...] it has to be done in an environmentally friendly way” (Interview 6, Nov 7, 2013). SAGCOT’s main role as a facilitator is to mobilise information, tools and help link agri-business with farmers. They promote a shared vision of the commercialisation of agriculture and responsible investment, but they do not have any enforcement powers (Jenkins, 2012).

Notably, SAGCOT and the New Alliance share a similar mandate. Tanzania’s NACF (2012) states that “Tanzania is a showcase for public-private partnership in agricultural growth, exemplified by the development of its Southern Agricultural Growth Corridor” (p. 3). While investments through the New Alliance can extend beyond the SAGCOT area, SAGCOT and the New Alliance have become logical partners in their promotion of responsible investment and agricultural intensification. SAGCOT has also partnered with the private sector and several government bodies. Government partners include: the Tanzania Investment Center, the Tanzania Investment Bank and the agricultural seed agency among others. Private partners include Agro EcoEnergy, Bayer

CropScience, Monsanto, Nestle, Jain Irrigation Systems Ltd, Syngenta International AG, Unilever and Yara International, among many others. Bergius (2014) puts forwards one model of how this partnership will look based on his research. This model shows how PPPs in Tanzania will involve a partnership between investors, local communities and the Government of Tanzania. Bergius identifies two different groups of investors, one group is the initial investor in the project, and the second group provides inputs (i.e. seeds from Monsanto and fertiliser from Yara). Communities will have the opportunity to be involved through outgrower models or contracts established with the investors. Outgrower programs come in many forms, but the preferred by the Tanzanian government is the Nucleus model. This model is a contract between investors and outgrowers. The project nucleus is the main estate or processing plant owned and operated by the investor. Outgrowers are small farmer groups surrounding the estate growing a crop for the investor in exchange for compensation. In this scenario outgrowers presumably benefit from access to markets, inputs and training. Lastly, the role of the Tanzanian government in the partnership is to provide an enabling environment for this process to occur (i.e. policy, infrastructure). Based on SAGCOT's mandate, this will occur within a close proximity to the established value-chain.

The corridor extends horizontally across the country from the western border to the eastern coast, covering approximately one third of Tanzania's land mass. SAGCOT delineated 'cluster areas' within the growth corridor, with the intention of attracting and streamlining appropriate investment in these areas. These cluster areas are "where there is the potential, over time, for profitable groupings of farming and processing to emerge" (SAGCOT, n/d, 8). These areas have favourable conditions that will support the establishment of value-chains like fertile land, access to electricity, roads and rural infrastructure. In theory, the close proximity of each stage of production will link farmers with up-stream processing and markets, facilitating productivity and economic growth. According to a recent SAGCOT report they have identified six potential 'cluster areas' in Tanzania's growth corridor. Each cluster has distinct environmental advantages and challenges (Milder et al., 2013). The SAGCOT blueprint provides recommendations for each cluster. For instance, within the Ihemi cluster, they propose 16 mixed commercial farms and four banana farms, as well as storage and processing facilities. For each cluster

they intend to identify land parcels suitable for investment and link farmers to investors through a variety of schemes. In total, these clusters will require a total investment of USD 3.4 billion – however potential returns mean the net investment may be reduced to USD 650 million (SAGCOT, n/d, p. 49).

Apart from generating significant investment, SAGCOT highlights the importance of promoting investments that are ecologically sound. To mitigate environmental repercussions of proposed investments all projects must undergo an Environmental Impact Assessment (this mechanism will be further discussed in section 5.4) (Interview 1, Nov 7, 2013). A review of the impacts of investments underway in the SAGCOT area reveals that investors, communities and government officials working within the SAGCOT area are not aware of, or employing, the Voluntary Guidelines (Rukuni et al., 2013). From this perspective, SAGCOT and the New Alliance rely heavily on the ability of domestic institutions to enforce environmental standards. As the first major vehicle of Kilimo Kwanza, SAGCOT aims to harness Tanzania's resources, strengthen smallholders by facilitating investment, and fulfill Tanzania's mission to modernise and commercialise the agricultural sector.

5.3 BIOFUEL INVESTMENTS

A seminal report produced by the International Panel on Climate Change in 2013 reiterated the need for a global shift towards renewable energy to mitigate and reverse the impacts of climate change. The expanded use of biofuel – a renewable fuel derived from biomass – in the transportation sector has been identified as a possible way “[t]o reduce dependency on oil and to contribute to growing efforts to decarbonise the transport sector” (IEA, 2011). Some biofuels provide net GHG savings. For instance, sugarcane has particularly high net savings ranging from 70 to 100% (UNEP, 2009, 15). As a result, biofuels have become an attractive form of renewable energy.

There are several kinds of liquid biofuels including bio-ethanol, bio-diesel and bio-methane. Bio-ethanol is by far the most common, accounting for over 90% of biofuel usage (IEA, 2007). It is divided into two subcategories: first and second-generation biofuels. First-generation biofuels are derived from food crops like corn, sugarcane and palm oil among others. The production of first generation-biofuels has been scrutinised

for a number of reasons. Chiefly, they have contributed to rising food prices, they compete for land use and as a result they may not reduce GHG emissions because of land use change such (i.e. land clearing) (IEA, 2008). Concerns that these crops might compete with food crops for land, and result in the eviction of people from their land have embedded the biofuels debate within the discussion on LSLAs (Cotula, Dyer & Vermeulen, 2008). In an effort to bypass the food-versus-fuel conundrum and concerns that first-generation biofuels may not be an environmentally sustainable approach, second-generation biofuels derived from lignocellulose feedstock – non-food plant materials – are under development. However the technology to produce these crops is neither fully developed nor commercialised (IEA, 2008).

The expanding use of fertile agricultural land to grow biofuel crops for export has conflated concerns over food and energy security – particularly in regions where food insecurity is already endemic. The following section provides an overview of how the promotion of biofuels in the European Union has pushed energy investors towards exploring new opportunities in developing countries. This section then elucidates how biofuels have become a crucial factor motivating the expansion of foreign land acquisitions in Tanzania.

5.3.1 BIOFUELS AND THE EUROPEAN UNION

The global rush for biofuel production is largely a result of government policy. The recognition of the potential for biofuels to reduce GHG emissions and reduce dependency on oil compelled the EU to consider biofuels as an energy alternative. This was particularly relevant in the transportation sector. As of 2006, the EU's energy sector accounted for 21% of GHG emissions (Commission of European Communities, 2006). In 2006, *An EU Strategy for Biofuels* was published by the Commission of the European Communities. This report outlines seven policy measures the EU will take to promote the uptake of biofuels, including: (1) Stimulating demand for biofuels, (2) Capturing environmental benefits¹², (3) Developing the production and distribution of biofuels, (4) Expanding feedstock supplies, (5) Enhancing trade opportunities, (6) Supporting developing countries, and (7) Supporting research and development.

¹² That is, ensuring biofuels contribute to positive environmental outcomes like reducing GHG emissions.

This strategy emphasised the potential role of biofuels in developing countries. This rationale was two-fold. On the one hand the EU claimed developing countries face similar energy problems, particularly in the transportation sector, and could benefit from adopting a biofuel strategy. On the other hand, the strategy indicates that “[b]iomass productivity is highest in tropical environments and the production costs of biofuels, notably ethanol, are comparatively low in a number of developing countries” (Commission of European Communities, 2006, 6). From the EU perspective, supporting biofuel production in developing countries is a mutually beneficial strategy.

The EU strategy paper launched a push towards the legislation of biofuel goals and standards in the European Parliament. In 2009 the Directive on the Promotion of Renewable Energy Sources (Directive 2009/28/EC) – more commonly referred to as the Renewable Energy Directive (RED) – was passed. This directive set a target of 20% renewables by 2020 and a target of 10% for the transportation sector. According to the NGO ActionAid (2010), it will take 17.5 million hectares of land to meet this target. If the IEA’s (2011) predictions are correct, the *global* demand for biofuels in the transportation sector will grow from 3 to 27% by 2050, meaning that over 100 million hectares of land will need to be cultivated to meet these targets.

The EU wants to be a leader in sustainable biofuel development, but this motivation has not fully translated into policy. Article 17 of RED includes a list of ‘Sustainability Criteria’. The inclusion of sustainability was the product of several discussions in the European Parliament, and consultations with civil society (Daugbjerg & Swinbank, 2014). The EU Sustainability Criteria include a number of environmental provisions, notably Article 17(3) and Article 17(4) delineating what kind of land can and cannot be used to produce biofuels. For example, forestland and wetland, or other land with a high carbon stock are not allowed to be used for biofuels production because of the negative environmental impacts. Otherwise, RED recognises that community requirements for environmental standards may not be recognised, and thus encourages international schemes to work towards protecting natural resources. Analysis of EU sustainability criteria suggests the framework is strong, but needs to include further measures to regulate the sustainable use of soil and water (Pavlovskaja, 2014). Notably

absent from the sustainability criteria is any mention of what Daugbjerg and Swinbank (2014) call *social sustainability criteria*. According to these authors, there was interest in including social sustainability criteria in RED, but the trade rules established by World Trade Organization blocked the inclusion of binding social measures. Instead, the directive requests that the Commission of European Communities reports back to the European Parliament about implications of this process on communities every two years.

5.3.2 BIOFUELS IN TANZANIA

Like many African countries, Tanzania is experiencing endemic energy insecurity and is heavily dependent on foreign oil imports, spending up to 40% of their export revenue on oil (ADBG, 2012a). Power outages are frequent, even in populated urban areas. Up to 90% of rural Tanzanians use biomass – that is, charcoal – for heating and food production. However the production of charcoal has contributed to significant deforestation and is generally not viewed as a sustainable or healthy option. Moreover, most charcoal producers in Tanzania operate illegally as charcoal production is prohibited in protected areas and most charcoal producers operate without a licence. The introduction of liquid biofuels in Tanzania could help provide an alternative to charcoal, alleviate energy shortages and, if infrastructure and correct policies are in place, Arndt et al. (2011) believe it could promote economic development.

In 2005, the push for biofuels took off after a study funded by the German International Development Agency assessed the potential of liquid biofuels in Tanzania's transportation sector (GTZ, 2005). They concluded that Tanzania's "climatic growing conditions and its arable land can accommodate the production of a wide variety of agriculture crops" (GTZ, 2005, p. 34). At the same time, the EU was scaling-up their efforts to expand biofuel production across Europe and in the global south.

EU demand for biofuels sparked a race for land across Tanzania, although the extent of this surge is up for debate. Kamanga (2008) estimates a total of 37 investors have sought land in Tanzania for biofuel production. ActionAid (2009) estimates that between 2006 and 2008 biofuel investors showed interest in approximately 400,000 hectares of land. In total, Sulle and Nelson claim four million hectares were sought for biofuel production as of 2009. Of that only 640,000 hectares were allotted and only

100,000 granted formal land rights (Sulle & Nelson, 2009). Despite these discrepancies, the scale of land sought by investors illustrates the growing interest in African farmland for biofuel production. Many of these investments intended to grow a tree commonly used to produce biodiesel known as *jatropha curcas* (examples include ventures launched by Sun biofuel, Diligent and Bioshape), while others chose sugarcane (like the venture spearheaded by SEKAB Group, which is discussed in more detail below). In almost every case the biofuels are destined for the EU market.

As discussed in section 5.1, the Government of Tanzania is deliberately trying to attract foreign investors. Yet, in 2005, Tanzania did not have a national biofuel policy to regulate the influx of biofuel investments, sparking some concern (Hultman, Sulle, Ramig & Sykora-Bodie, 2012). The study funded by GTZ recommended Tanzania create a biofuel task force in lieu of a national policy, presumably because policies take longer to develop. Following the recommendations of this report, Tanzania established a National Biofuels Task Force (NBTF) in 2006 with the assistance of the Swedish International Development Agency and the Norwegian Agency for Development Cooperation. The NBTF was authorised to establish guidelines to govern biofuel development in Tanzania. The first draft was introduced in 2008, but the influx of investments prompted the Government of Tanzania to institute a moratorium on new biofuel investments until the guidelines were finalised in 2010.

Hultman et al. (2012) suggest the guidelines offer a sound framework for regulating biofuels. Like other land investments in Tanzania, coordination, approval and monitoring of biofuels is conducted through the Tanzanian Investment Center. The guidelines include environmental impact assessments as well as stakeholder consultation throughout each stage of the project. They also reiterate the need for investors to acquire appropriate permits like surface and ground water permits and to meet waste water standards. Initially, investors are granted a five year probationary lease in which time they must demonstrate ‘investment seriousness’. Providing they meet these standards the lease is extended to 25 years and capped at 20,000 hectares. This plan weeds out any investors who are not intending to commit to a long-term project. In addition, these biofuel investments should not harm communities or displace them and should benefit the

local economy. While the adoption of biofuel guidelines is a good step forward, Hultman et al. (2012) cautions that the implementation of these guidelines will be a huge challenge.

5.4 THE LAND DEBATE

The Land Matrix – a website dedicated to collecting accurate information about alleged land grabs – has identified 29 land investments in Tanzania, a list that includes proposed investments, investments that are currently in operation, as well as abandoned investments. Of this list, 10 investments indicate the intention to produce biofuels along with other activities like agricultural and/or forestry (see Figure 2). Notably, the vast majority of investors are from the EU region. In contrast, another data set compiled by Kamanga (2008) identifies 46 potential biofuel investors in Tanzania most of unknown origins (see Figure 3).¹³ The surge in biofuel projects reflects what one energy expert called Tanzania’s ‘biofuel boom’ that erupted in 2006 (Interview 3, Nov 8, 2013). Both datasets show a large portion of investments in Tanzania are linked to EU countries. The inconsistency between the two datasets reflects two truths about LSLAs outlined in chapter 2: (1) accurate information about land acquisitions is often not available (i.e. the Land Matrix claims their dataset only reflects 41% of the information on Tanzania); (2) Data is often incomplete or out of date. For instance, Habib-Mintz’s (2010) fieldwork in Tanzania examined the East Africa BioDiesel (EABD) company, yet this case was not included in the Land Matrix or in Kamanga’s dataset.

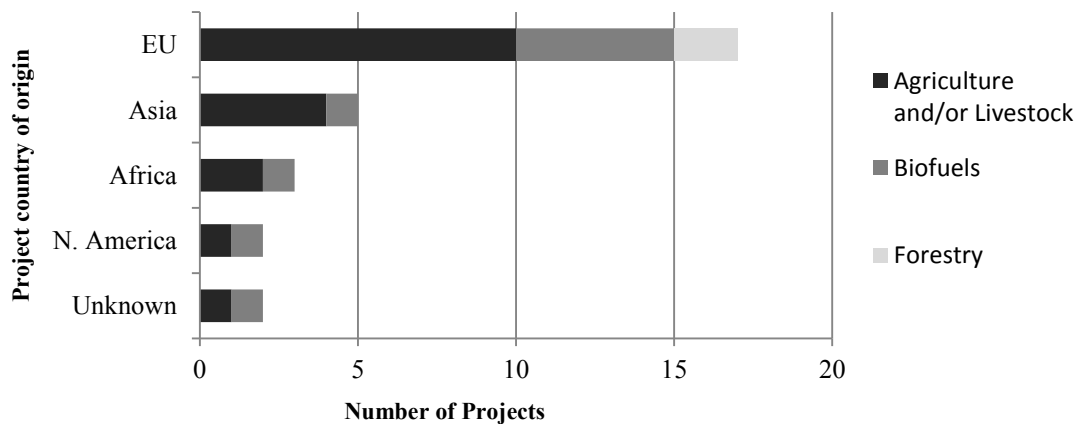


Figure 2: Breakdown of ownership LSLAs in Tanzania. Source: *The Land Matrix*

¹³ Kamanga (2008) did not speculate as to why a significant portion of his data was unknown

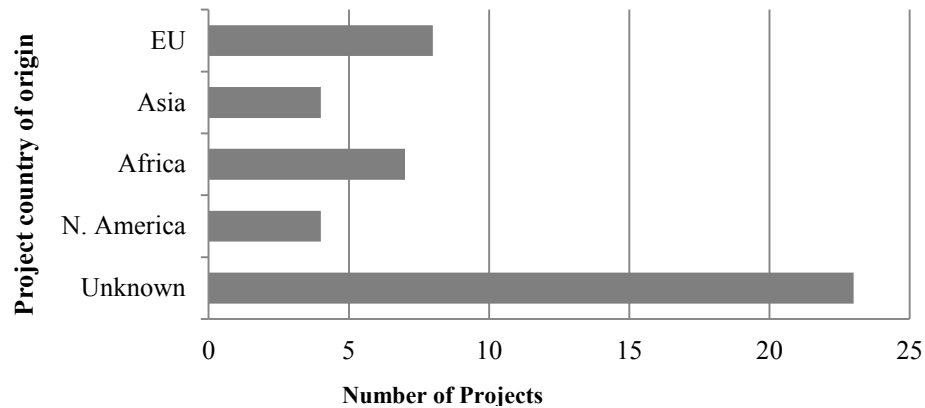


Figure 3: *Proposed Biofuel Investments in Tanzania. Source: Kamanga (2008)*

These datasets indicate significant interest in Tanzanian land although, some of these deals failed to materialise. According to the Land Matrix dataset, 4 of the 29 projects were abandoned and another 6 have acquired a legal or oral contract have not yet started the project. Regardless, the sheer magnitude of proposed deals underline the need for rigorous evaluation of whether Tanzania’s investment procedures are equipped to weed out potentially harmful investments. The following section will explore Tanzania’s land acquisition procedures in policy and in practice.

5.4.1 LAND ACQUISITION IN LEGAL TERMS

Since Tanzania gained independence in 1964, land laws have undergone significant changes. Tanzania’s first president, Julius Nyerere legislated a series of policies that focused on collective ownership (known as ‘villagization’) to fulfill his vision of African socialism. These policies disintegrated in the early 1980s during the promotion private-property rights on the part of lending agencies such as the IMF. This section will review the legal framework that governs LSLAs in Tanzania.

According to The Land Act No.4 1999 all land in Tanzania is vested in the hands of the President, but it can be leased for a period up to 99 years. The Land Act No.4 1999 and the Village Land Act No.5 1999 demarcate four classifications of land in Tanzania: general land, village land, reserved land and hazardous land. For the purposes of this

discussion, general land and village land are the most relevant because reserved land and hazardous land are not made available for investors.

The Land Act and the Village Land Act outline the distinctions between these classifications. There are discrepancies between the two acts, however. According to the Land Act general land “means all public land which is not reserved land or village land **[including] unoccupied or unused village land**” whereas in the Village Act 1999 general land is “**all public land which is not reserved land or village land**”. The first definition includes all unoccupied and unused village land whereas the second does not. This presents a legal loophole for investors seeking village land. Because village land occupies 70% of the nation’s total, this discrepancy has critical implications. Village land includes land that was previously demarcated to villages, land within the borders of villages, and any land villagers have been occupying for 12 years (FAO, 2013). In order for land to be leased by foreign investors it *must* be classified as general land. This means village land first has to be transferred to general land before it can be leased. Notably, the terms ‘unoccupied’ and ‘unused’ are not defined in the Village Land Act. This is the same language that has been used to justify land acquisition. In many cases land might not be formally occupied by a village, but it could be in use by others (for example pastoralists). The use of this language in policy documents legitimises claims to acquire land if it is not formally used.

Investors interested in village or general land must first consult with the Tanzanian Investment Center (TIC). The TIC was formed by the Tanzanian Investment Act (TIA) of 1997. According to the TIA, the TIC is mandated as “a one-stop centre for investors” and “the primary agency of Government to co-ordinate, encourage, promote and facilitate investment”. The TIC has outlined a series of steps investors must follow to acquire land. To apply investors must have a minimum of 400,000 USD in capital. Eligible investors then submit a proposal to the TIC. If the proposal is approved by the TIC and subsequently approved by the Ministry of Agriculture, the Ministry of Environment, and the Ministry of Lands and Housing Development, the investor will then apply for the land from the TIC’s Land Bank (Cotula et al., 2009). The Land Bank is a database of land available for investors. In accordance with Article 6 of the TIA, the

TIC has identified 2.5 million hectares of land suitable for investors, all of which is compiled in the TIC's Land Bank (Cotula et al., 2009). The Land Bank is however, incomplete. Much of the land listed in the Land Bank is still classified as village land instead of general land (OECD, 2013).¹⁴ This means investors must get permission from villagers to transfer the land to general land. This elicits many questions about the true availability of land – a concern raised in the OECD's 2013 Investment Review. In addition, the OECD claims land parcels in the Land Bank are 'too few, and too small'. This suggests the Land Bank may be a misrepresentation of the actual amount of 'available' land in Tanzania.

Once investors have identified suitable land, they must present their proposal to the village council and the village assembly. If an agreement is reached the next step is land valuation undertaken by government authorities to determine compensation. After this, the land is transferred and reclassified as general land (Beyene, Mung'ong'o, Atteridge & Larsen, 2013). Once a lease ends, the land classification returns to general land. This means the land is not typically returned to villages once investors leave.

Once they have acquired the land, investors must show that their project is environmentally sustainable. Under Tanzanian law, investors are required to conduct an Environmental and Social Impact Assessment (ESIA) before the project begins. All ESIA's are processed through the National Environmental Management Council (NEMC), located in Dar es Salaam, with registered consultants from agencies and universities undertaking the actual work on the ground. ESIA's must be completed according to the regulations set out under the Environmental Management Act of 2004. The expectations for an ESIA depend on the scope of the project. A screening is done by NEMC after a project is registered, to assess the level of the project, followed by a scoping exercise. This involves a rapid assessment of the project and identifies the main stakeholders and concerns. Next, the scoping exercise helps to understand what issues need to be investigated in the ESIA. The results of each stage are submitted to the NEMC (Interview 2, Nov 11, 2013). Once NEMC grants approval, the project can begin.

¹⁴ Exact figures are unknown. This is not a public database.

This section clearly shows that investors must navigate their way through a complex legal system to lease land in Tanzania. According to a participant in the investment sector, Tanzania's legal framework is "the best legislation which prevents land grabbing" (Interview 6, Nov 7, 2013). Yet, in spite of this, a number of accusations of 'land grabbing' in Tanzania have emerged in the press. The following section will explore this tension by examining how investors have been known to actually navigate the legal framework in practice.

5.4.2 LAND ACQUISITION IN PRACTICE

Tanzania's legal framework governing land investments has been described as 'time-consuming', 'arduous' and 'costly' for potential investors (Sulle and Nelson, 2009; Practical Action Consulting, 2009). The OECD (2013) claims the prolonged and costly process deters investors from considering Tanzania. Colman Ngalo, former chair of the Tanzania Horticultural Association – a platform that represents value-chain interests – agrees that the bureaucratic process of land acquisition in Tanzania has discouraged investment (Mayallah, March 31, 2014). If this is true, it casts doubt on the land rush that allegedly took off Tanzania.

According to the FAO, the Land Act and Village Act "if effectively implemented, provides a robust framework for safeguarding communal and individual rights to land" (FAO, 2013b, p. 74). Some, however, suggest the laws are not always effectively implemented or followed. The OECD (2013) recognises that "in practice land expropriation is often not conducted in accordance with legal requirements" (p. 40). An interview with a participant from a land rights organisation corroborated this claim. He suggested that investors sometimes arrange deals with villages before consulting the TIC because the Land Bank does not have enough land available (Interview 1, Nov 28, 2013). In 2006, BioShape, a biofuel company based in the Netherlands, allegedly bent the rules in this way. They intended to lease 80,000 hectares of land in the Kilwa District of Tanzania. According to Stanislaus Nyembea, from the *Lawyer Environmental Action Network*, "Bioshape managed to acquire land through the complicity of local authorities which breached the rules on land lease" (Valentino, March 9, 2011). In a similar scenario, another investor, East Africa BioDiesel (EABD), intended to invest in the Bahi District

for the purpose of growing jatropha, a first generation biofuel. According to primary research conducted by Habib-Mintz (2010) EABD “avoided the formal channel of coming to the village through TIC and Ministry of Land, since it found the process too long and bureaucratic” (p. 3993). The investor approached the local government first, before the TIC or any other high-level institution. The local government was in need of investment and readily accepted. The EABD obtained 6,000 hectares from 6 villages. While it is difficult to say how many investors have engaged in this practice, these examples – among others, see for instance Locher & Müller-Böker, 2014 – show that it is possible for investors to navigate around legal channels. Moreover, these examples corroborate claims that the ‘time-consuming’ and ‘arduous’ process of land acquisition in Tanzania does not sit well with investors. But, rather than deter them from investing altogether, some choose to actively circumvent these restrictions (OECD, 2013).

An additional concern posed by a participant from a land rights organisation highlights the vulnerability of villages to the influence of investors and elites (Interview 1, Nov 28, 2013). This informant indicated that most villagers are unaware of the Land Act and the Village Land Act. Because villages are ill informed of their rights and the formal land acquisition process, local leaders are easily swayed by investors who make lavish promises. He indicated investors occasionally rush the process – getting consent from the villages within a day. The lack of awareness means villages do not prompt investors to sign a binding contract. Once the village agrees, the investors go to the TIC to begin converting the land from village land to general land. According to Nyembea from the *Lawyer Environmental Action Network*, this took place in the Kilwa District when BioShape intended to invest in 80,000 hectares of land in 2006. Nyembea states:

villages were not properly informed about the terms of the law [...] They didn't know that they would definitively lose ownership of the land allocated to Bioshape. They naively thought that they would get it back at the end of the lease period that usually lasts 99 years (Valentino, March 9, 2011)

Similar concerns were raised in primary research conducted by Isaksson and Sigte (2009) in the Kilwa District. They claim:

Many villagers do not even know that the village land is being transferred into general land and that they will lose the right to that land. For instance a member of the Village Council in Migeregere Village said that they had leased out their land to BioShape for 33 years and that the land would go back to the village after the expiry of the lease [...] In addition many villagers do not seem to know how big land areas the agreement with the investor concerns. For example a member of the Village Assembly in Liwiti Village said that she had no idea of how much land they had agreed to give away (p. 30)

This research demonstrates that in some cases villages are unaware of the land laws, but also not fully aware of the terms of the agreement. This undermines their ability to fairly assess the short and long term implications of the proposed project.

In some case studies, the involvement of an individual in a position of authority influenced the outcome of the land deal. For example, Isaksson and Sigte (2009) claim village leaders were often bribed during the land acquisition process. Through their position of authority, leaders then influenced the village to agree. Similarly, in the Kisawra district, SunBiofuels (a UK firm) invested in 9,000 hectares of land from 11 villages to grow Jatropha. After conducting business through the formal high-level channels, Habib-Mintz (2010) research indicates the presence of a Member of Parliament during the land negotiation process influenced the villagers' perceptions of the project as beneficial to them because it had government support. While these case studies do not necessarily reflect every land investment, they offer a cautious reminder of how power asymmetries influence this process.

The land rush has also exposed several deficiencies in Tanzania's ESIA process. Some allegations suggest investors may skew ESIA's to improve the attractiveness of their project. For example, BioShape aimed to acquire 'degraded' land for jatropha cultivation, but had to conduct additional studies in 2008, after the integrity of the ESIA was challenged (Sulle & Nelson, 2009). In BioShape's initial ESIA they indicated their intention to acquire degraded land, but after conducting site visits Songela and Maclean (2008) conclude that the woodland was not degraded, drawing attention to the presence of a coastal forest that was not mentioned in the ESIA. Songela and Maclean (2008) question the overall capacity of NEMC to govern ESIA's effectively and suggest most biofuel projects in Tanzania have started without approval from NEMC. One study

suggests the ESIA process may have been skipped altogether because the investor refused to provide any proof that the process had been completed (Arduino et al., 2012). In all, several key issues restrain NEMC's ability to govern ESIA's. These include inadequate staff and financial resources, and insufficient capacity to undertake and monitor the ESIA process (Songela & Maclean, 2008). Institutional challenges like these are not unique to Tanzania. A study from Kenya also points to deficiencies in the ESIA process during a land acquisition (Duvail et al., 2012). These examples suggest NEMC may not be equipped to deal with an influx of LSLAs, and more to the point, may not have the capacity to adequately protect environmental resources.

5.5 CONCLUSIONS

This chapter provides an overview of the domestic and international processes that have shaped and promoted large-scale land investments in Tanzania. Tanzania has a robust legal framework designed to protect Tanzanians from irresponsible investment, but in practice investors have utilised various mechanisms to circumvent these rules. This demonstrates the gap between land acquisition in policy and land acquisitions in practice. Each of these processes has the potential to generate lasting and theoretically transformative impacts on Tanzanian agriculture, yet fails to adequately address the critical issue of water. This chapter shows that the discussion about water has only existed on the periphery, as investors prefer to delegate the role of governing water management of to the domestic regulatory measures. The following chapter will illustrate how these tensions unfold, zeroing in on a particular case study in Bagamoyo, Tanzania.

CHAPTER 6: BAGAMOYO ECOENERGY LTD

6.1 INTRODUCTION

In 2006, the Swedish bioethanol producer, SEKAB Group, expressed interest in obtaining land in Tanzania with the intent of producing biofuel for the European market. However, this project fell victim to controversy and the 2008 financial crisis. By 2009, the project was abandoned by SEKAB Group and transferred to Agro EcoEnergy Tanzania. Subsequently, EcoEnergy steered the original project plan away from an export-oriented bioenergy agenda, towards the production of sugar, ethanol and electricity for the domestic market. In partnership with SAGCOT and the New Alliance, EcoEnergy's project is framed as a model for responsible investment and sustainable agriculture.

This chapter is divided into two sections. The first describes the development of SEKAB Group's bioenergy projects in the Bagamoyo and Rufiji districts. The second section discusses the different components of EcoEnergy's project, and how it is fundamentally different from SEKAB Group's. By narrating the transition from SEKAB Group to EcoEnergy, this chapter explores the water-related concerns that emerged during the land acquisition process, and provides a backdrop for understanding the role of water in EcoEnergy's current project.

6.2 SEKAB GROUP'S CORPORATE HISTORY IN TANZANIA

SEKAB Group is a private Swedish company under the management of Anders Fredriksson. After forming in 1985, SEKAB Group became one of the leading producers of biofuel in Europe.¹⁵ They are heavily invested in the development of second-generation biofuel technologies, though the development of these technologies has been progressing slowly.¹⁶ The relatively slow uptake of second-generation biofuels prompted SEKAB Group to expand their operations abroad with the intention of producing first-generation bioethanol from sugarcane (Havnevik & Haaland, 2009).

¹⁵ Most of their refineries are currently located in Europe. SEKAB Group owns 49% of a Polish ethanol company – Bioagra; otherwise their major refineries are located in Sweden.

¹⁶ At the time of this project, SEKAB intended to have developed commercial cellulosic ethanol by 2012-2013 (BAFF, 2008)

Sugarcane (*Saccharum officinarum*) is a perennial grass that originated in Asia, but today Brazil is the largest producer. For optimum growth sugarcane requires a tropical climate with daily temperature between 22 and 30°C, but germination requires temperatures reaching from 32 to 38°C (FAO, 2013). These parameters limit the regions where sugarcane can be successfully grown. The best regions to grow sugarcane are Latin American and Africa due to their tropical climates; however production is expanding in Thailand and China (Elbehri, Segerstedt & Liu, 2013). An OECD-FAO Agricultural Outlook report (2013) predicts that 28% of the sugarcane produced globally will be earmarked for ethanol production by 2022.

Following the publication of *An EU Strategy for Biofuels* in 2006, several biofuel investors including SEKAB Group began to expand their operations overseas. According to an unpublished World Wildlife Fund (WWF) report, this vision to expand their operations internationally was driven by their former CEO, and the current Executive Chairman of Agro EcoEnergy Tanzania, Per Carstedt (Roberntz et al., 2009). Per Carstedt is well-known for his role in the promotion of biofuels as he was instrumental in the introduction and promotion of ethanol fueled cars in Sweden during the 1990s (Blowfield, 2013, p. 66).

SEKAB Group began expanding by reaching out to South America in 2007. In 2008 SEKAB Group signed an agreement with the Brazilian Sugarcane Industry Association (UNICA). In accordance with this agreement, SEKAB Group has been able to import the majority of their sugarcane from suppliers in Brazil. In the same year, SEKAB Group introduced their in-house sustainability criteria, the *Verified Sustainable Ethanol Initiative*. The criteria includes: zero tolerance for child labour; at least 85% reduction of fossil carbon dioxide as compared to petrol; a plan to increase the degree of mechanisation to 100% by 2014; zero tolerance for the felling of rainforests; employee rights and safety in line with UN guidelines; ecological considerations in accordance with UNICA's Environmental Initiatives; and continuous monitoring of compliance with these criteria. All of SEKAB Group's operations are required to adhere to these guidelines.

During the same period, SEKAB Group developed plans to expand their operations to the African continent. They targeted Tanzania and neighboring

Mozambique for unknown reasons.¹⁷ Li Johansson’s (2013) fieldwork investigates the drivers behind Swedish land acquisitions in Tanzania. According to her report, SEKAB Group is interested in developing sustainable biofuels, but the Brazilian market that supplies most of their sugarcane is strict, allowing little leeway for experimentation with sustainable technologies. Unlike Brazil, Tanzania is much more open to different forms of investment and welcomed their project plans.¹⁸ In addition to a hospitable environment Havnevik and Haaland (2011) suggest longstanding diplomatic ties between Tanzania and Sweden assisted in the facilitation of this investment.¹⁹

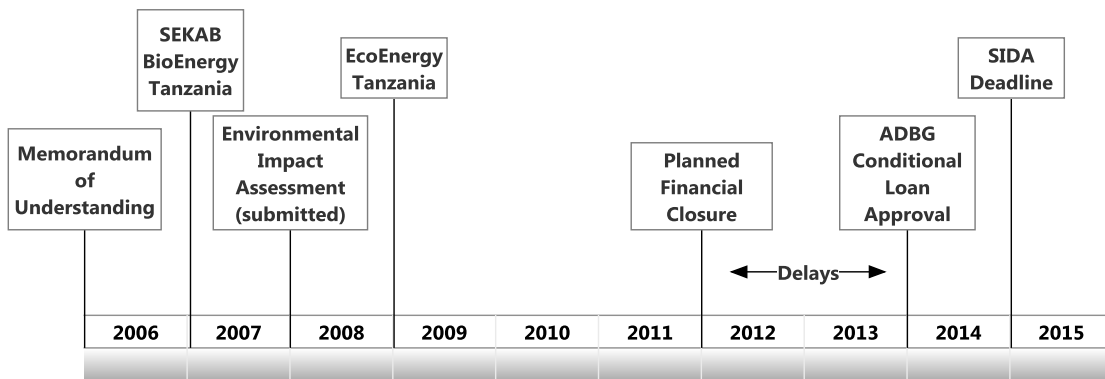


Figure 4: Bagamoyo Sugarcane Project Timeline

The investment officially began in 2006 when SEKAB Group signed a Memorandum of Understanding with the Government of Tanzania (See Figure 4). Then, in 2007, SEKAB BioEnergy Tanzania Ltd. (henceforth SEKAB BT) was formed to govern their projects in Tanzania. Initially, SEKAB BT planned to construct three bioenergy projects. The first project began as a pilot project. It is located along the Wami River in the Bagamoyo District. As of 2008 SEKAB BT planned to cultivate 15,000 hectares of sugarcane in Bagamoyo. The second project never materialised, but it was planned as a much larger project located along the Rufiji River in the Rufiji District. Reports indicate they planned to cultivate up to 400,000 hectares of sugarcane in the Rufiji District. The final project

¹⁷ The project in Mozambique runs under the name Ecoenergia. It is unclear if SEKAB Group is still involved

¹⁸ For instance, Li Johansson (2013) interview with Per Carstedt revealed that SEKAB Group wanted to use their ethanol fueled cars on the plantations in Brazil, but this was not allowed.

¹⁹ Evidence shows Tanzania began receiving substantial development assistance from Sweden since 1963, and has since maintained friendly relations (Embassy of Sweden, 2013)

was intended to be in the Kiliwa District, but no action was ever taken on this project and no information is available on its size or scale. The next two sections provide some contextual information about the land acquisition by SEKAB BT in the Bagamoyo and Rufiji Districts.

6.2.1 THE BAGAMOYO DISTRICT'S GEOGRAPHIC SETTING

SEKAB BT envisioned constructing a 'pilot project' in the Bagamoyo District in eastern Tanzania. The location of the project is upstream on the southern bank of the Wami River, situated parallel to Matiwpili village on the northern bank. Bagamoyo is a coastal district, approximately 100 km North of Dar es Salaam, covering an area of 9,847 km² (Gautum, 2009). It is bordered by the Tanga region to the North, the Morogoro District to the West, the Kinondoni and Kibaha Districts in the South and the Indian Ocean to the East. Population counts indicate 228,967 people resided in Bagamoyo in 2002, swelling to 288,801 by 2011, with higher densities along the coastline. Future projections suggest the population of Bagamoyo will grow at least 40% reaching over 500,000 people by 2035 (JICA, 2013).

Bagamoyo's coastal setting made it an ideal hub of the East African slave trade during the 19th century. Though long over, this legacy of slavery and the stone buildings that once imprisoned slaves has remained as a key tourist attraction. Despite the influx of tourists and five-star accommodations, unemployment and poverty are endemic in Bagamoyo. Most inhabitants rely on subsistence activities like agriculture which accounts for 90% of Bagamoyo's economy, as well as fishing and mining activities (UN Habitat, 2009). While there is some indication that average per capita income is growing, UN Habitat (2009) cautions that population growth might exceed the growth in income and employment. Like most areas in Tanzania, infrastructure is poor. Approximately 65% of Bagamoyo residents live in settlements with inadequate access to basic services (UN Habitat, 2009). As of 2012, only 57.2% of Bagamoyo's population had access to safe water (JICA, 2013). Upcoming economic activities like an USD \$11 billion port, financed by China, are intended to generate new investment opportunities and employment in Bagamoyo (Elinaza, 2014).

SEKAB BT's project is located inland, approximately 20 km northwest of Bagamoyo Town where there is significantly more undeveloped land (ADBG, 2012a). The land requested by SEKAB BT is known locally as the Razaba cattle ranch. The ranch has been abandoned since 1994. The land was previously given to the Government of Zanzibar by Julius Nyerere, Tanzania's first President. As Zanzibar is now part of Tanzania, the abandoned ranch belongs to the Government of Tanzania and was classified as general land. SEKAB BT intended to lease 21,255 hectares of land, and utilise a further 2,000 hectares of village land adjacent to the project site (ADBG, 2012a).²⁰

A driving force behind the choice of Bagamoyo was the carbon poor soils (Li Johansson, 2013). When soil is plowed it releases carbon dioxide into the atmosphere causing carbon emissions. The advantage of biofuels is predicated on the assumption that the production of biofuels releases less carbon than alternative forms of energy. As the EU Sustainability Criteria requires a GHG emissions savings of 35%, land that releases less carbon when ploughed is appealing to investors. However, degraded and low carbon soil is deficient in nutrients that often need to be supplemented using fertilisers, which in turn can contribute to environmental degradation. Although sugarcane can be grown in a variety of soil types, Elbehri et al. (2013, p. 17) indicate that sugarcane requires a high level of nitrogen and potassium, and a lower level of phosphate. Because the soil on the project site is in short supply of nitrogen, potassium and phosphorus, the project will use fertilisers to account for these deficiencies (ADBG, 2012a).

The proposed project area is bordered by several villages and a wildlife sanctuary, known as the Sadanni National Park. Villages that border the project site include Fukayosi, Matipwili, Gama, Mkwajuni, Makurunge, Kitame, Kidamole and Matoni. Two sub-villages of Matipwili also fall in the project area: Kaloeni Biga and Gobole (ADBG, 2012b). The Sadanni National Park lies to the north of the project. There is an on-going land dispute between Sadanni National Park, the villages, and the Bagamoyo project. Recent events suggest that 3,000 hectares of land given to SEKAB BT in 2008 actually

²⁰ These figures vary between sources: Havnevik and Haaland (2011) claim 24,000/22,000; The ESIA indicates they are leasing 21,255 hectares

belonged to the Sadanni National Park (Kisanga, 2015). The park's close proximity means animals routinely walk through the project area.²¹ A participant from a local conservation NGO indicated that this has fueled concern that the project may impact wildlife and biodiversity (Interview 12, Nov 18, 2013).

The impacts of the project on the ecosystem are critical issues, as communities depend on the environment for their livelihoods. While this region is still relatively undeveloped, environmental degradation is growing. In Bagamoyo, there is a link between poverty and increasing environmental degradation caused by deforestation from agricultural expansion, timber and charcoal production (Madulu, 2005). Environmental degradation has led many to seek employment through other means to ensure food security. While some have diversified through small business there is a growing problem with charcoal production in this region. Charcoal production involves harvesting and burning timber which contributes to deforestation. In total, there are 85 charcoal producers that use the project site (ADBG, 2012b).²²

Madulu (2005) stresses that increased environmental change affecting the Wami River is a health threat for the local population because of their dependence on the river. The high water table in this region means that groundwater (and by extension the river) is also susceptible to contamination from pit latrines. According to Madulu (2005), the occurrence of cholera in Matipwili, which was reported during a rural appraisal (date unknown), was proof of this. Matipwili villagers indicated that water is commonly consumed without being boiled or treated (Interview 8, Nov 24, 2013). While the Wami River is relatively undeveloped, river degradation is steadily growing. Some changes in the river have been caused by poor farming practices, the use of fertiliser, contamination from agriculture and industry, and population growth (Ngana et al., 2010). Unsurprisingly, industry and large-scale agriculture have also contributed to river degradation. For instance, an upstream sugar estate in Morogoro has discharged

²¹ This cut through an elephant corridor. According to a contact on the project site, this could be problematic for SEKAB BT if not properly managed because elephants eat sugarcane.

²² This has led to deforestation and further degradation in this region. This is corroborated by evidence gathered for the Global Forest Cover Mapping Project which indicates that deforestation in the Wami/Ruvu basin is happening at a 'very high rate' over the past decade (GLOWS & FIU, 2014, p. 1). Specifically, lowland forests have decrease by 43% between the 1970s and 1990s – a trend which has continued between 2000 and 2012, largely due to charcoal production (GLOWS & FIU, 2014, p. 47).

sugarcane byproduct (molasses) into the river, causing pollution downstream (GLOWS & FIU, 2014). Madulu (2005) stresses that further river degradation could intensify poverty because of peoples' dependence on the river.

The land acquisition process in the Bagamoyo District is not well documented. The Razaba Ranch was classified as general land and therefore could be transferred, but the 2,000 hectares of land from an adjacent village had to be transferred from village to general land before SEKAB BT could claim the title. There were some 'sensitization' activities conducted with people in this area, but no further details regarding the content of these activities has been given (ADBG, 2012b). A report by ActionAid (2009) indicates that representatives from SEKAB BT traveled around the region trying to persuade the villages to accept the project, but again, the details including the dates and terms of these encounters are unknown.

6.2.2 THE RUFJI DISTRICT'S GEOGRAPHIC SETTING

A second and much larger project was planned for the Rufiji District, located 178 km South from Dar es Salaam along the Rufiji River. Similar to Bagamoyo, Rufiji belongs to the coastal region. The Rufiji District is larger than Bagamoyo, covering 14,500 km², but has a smaller population that is faced with growing out-migration, as the younger generation leaves in search of employment. A 2002 estimate indicates 180,000 people live in the Rufiji Basin, but this figure is artificially high as many who have left are still registered as residents. The population has settled along the flood plains of the Rufiji River delta to reap the benefits of the fertile soil and abundant water flows (Sandberg, 2010). The delta is 20 km wide, crafted gradually over time as sediment was deposited at the mouth of the river (Duvail & Hamerlynck, 2007). The delta is often described as a biodiversity hotspot, integrating diverse forests, mangroves and plains.

The population of the Rufiji District relies on flood plain agriculture. While the main source of livelihood in the region is agriculture, fishing and forest activities (charcoal production and timber) are also common. Major crops include maize, rice, cowpea, pumpkin, banana, cashew and sesame, but productivity remains low. This has led to regular shortages forcing people to seek income and food elsewhere. To cope,

villages have increasingly turned to fishing as well as illegal activities like charcoal production (SEI & IRA, 2009).

There is significantly less known about the project plans for the Rufiji district because it was abandoned in 2009 (for reasons which will be discussed in section 6.3). The project area was intended to occupy both sides of the river, divided into several 20,000 hectare plots. Most estimates indicate SEKAB BT was seeking anywhere between 250,000 to 400,000 hectares for this project, but there is considerable variation in these estimates. An unpublished WWF report (Roberntz et al., 2009) claims 200,000 hectares; Sulle and Nelson (2009) claim 400,000 hectares was requested; and, Songela and Maclean (2008) claim between 200,000 and 400,000 hectares was requested. Regardless of the discrepancies between these estimates, it is clear that the project planned for the Rufiji District required a sizable amount of land.

Unlike the Bagamoyo acquisition, the attempt to acquire land in the Rufiji District has been much more controversial. First-hand research by Sulle and Nelson (2009) indicate that SEKAB BT representatives went to the Rufiji region (timeframe unknown) to negotiate directly with the villagers. During this process Mshandete (2013) indicates that SEKAB BT began negotiating deals with at least 12 different villages in this area. Sulle and Nelson (2009) describe how village and district officials raised concerns that villagers did not understand the process. Some villagers signed away almost all of their land and natural resources in exchange for social services and employment; although, these promises were never officially recorded or put into a contract. Mshandete (2013) indicates that after 2008, SEKAB BT officials never returned to the Rufiji District, officially abandoning this project in 2009.

6.2.3 THE ENVIRONMENTAL IMPACT AND RISK ASSESSMENTS

According to a participant who was involved with SEKAB BT's ESIA process for the Bagamoyo project, this project was considered very complex and had to undergo a full ESIA, as mandated by NEMC. Several researchers from Ardji University in Dar es Salaam did the ESIA in association with ORGUT, a Swedish consultancy firm working in the international development sector. ORGUT was chosen by SEKAB BT to be the lead in the ESIA process. Due to the complexity of the project they had to consult with a

wide variety of experts in various disciplines, such as wildlife and water resource management (Interview 2, Nov 11, 2013). The research for the ESIA was conducted between 2007 and 2008. After it received approval from NEMC, SEKAB BT was granted a license in 2009, allowing them to commence the project in Bagamoyo.

The ESIA process presented multiple challenges and was the source of significant controversy. ORGUT accused SEKAB BT of altering the conclusions of the ESIA. Specifically, ORGUT claims SEKAB BT downplayed the impacts of this project on water. The lead consultant for ORGUT told *Development Today* that ORGUT had concluded that water withdrawal would be “high and sometimes exceed available water in the River Wami” and proposed growing a different crop that didn’t require irrigation (Development Today, April 1, 2009). According to the Managing Director of ORGUT, Per Giertz, ORGUT submitted their ESIA to SEKAB BT in May 2008. They continued to assist SEKAB BT up until July 2008 but were not involved with the final ESIA that was submitted to NEMC in December 2008 (Development Today, May 24, 2009).

Allegedly, SEKAB altered ORGUT’s conclusions from the ESIA that was submitted to NEMC. Havnevik and Haaland (2011) reviewed the multiple versions of the report and identified some changes in word choice. For example “the water for irrigation is *high*” was changed to “the water for irrigation is *significant*” and “this suggests that, *at certain times of the year or certain years* – water supplies from the river may not be *available*” was changed to “This suggests that, sometimes water supplies from the river may not be sufficient”. Other changes were more substantial. For instance, in the summary a short paragraph was inserted promoting the project as a ‘welcome opportunity’ that will “reduce the demand for fuel importation but also have an impact on poverty reduction through increased employment and income sources”. According to Havnevik and Haaland, this endorsement was not included in the previous versions signed by ORGUT. This controversy led the Swedish International Development Cooperation Agency (SIDA) to question the legality of the ESIA, a concern that lingered for a number of years and was later cited as ‘resolved’; however, the context under which it was resolved remains unclear (Development Today, March 26, 2014).

Two independent studies (FAO, 2010; Monroy, 2010) raised concerns that SEKAB BT's plan to irrigate 15,000 hectares will withdraw a significant and potentially unsustainable amount of water from the Wami River. The first report was published as a working paper by the FAO (2010). This study uses the Bioenergy Environmental Impact Analysis framework to provide a comprehensive and integrated analysis of the environmental implications of bioenergy projects. Using information from the initial ESIA conducted for SEKAB BT's project in 2008, this report suggests water availability will be a concern if they irrigate 15,000 hectares. In an average year, the project would use approximately 10% of the river flow, whereas in a dry year it would use up to 40%. The FAO report also highlights several limitations of the ESIA, the most concerning being the failure to include the water needs of outgrowers. Considering the plan included an additional 5,000 hectares of land under the outgrower scheme, the real volume of water needed is unaccounted for. They conclude that the issue of water has not been adequately addressed in the initial ESIA.

The second report is an academic thesis. This report uses Aquacrop, a widely used water modelling system developed by the FAO that simulates the water requirements of different crops under different conditions. Monroy (2010) uses Aquacrop to simulate the water requirements of sugarcane irrigation for SEKAB BT's project in Bagamoyo. Monroy explores a number of different irrigation scenarios to assess the impacts of SEKAB BT's project. She found that even in the most water-efficient scenario water withdrawal from the Wami River would exceed the water available for maintaining the seasonal flow (Monroy, 2010).

While the Bagamoyo project was given the green light in 2009, the Rufiji project never reached the ESIA stage. The Stockholm Environment Institute (SEI) and the Institute of Resource Assessment (IRA) at the University of Dar es Salaam were responsible for an initial assessment of the Rufiji project. This report states it is an "internal planning aid for SEKAB as well as an input to a wider consultative process with stakeholders in Tanzania" (SEI & IRA, 2009, p. 6). The purpose of the report is to "identify the critical environmental and social risks as well as the development opportunities related to developing large scale biofuels production in the Rufiji District"

(SEI & IRA, 2009, 6). Even so, there is no indication that this report was part of the formal ESIA process. Just as this report was released in 2009, another separate unpublished study of the Rufiji project was being conducted by WWF Sweden (Roberntz et al., 2009). This study used satellite images, maps, interviews and field visits to thoroughly review SEKAB BT's project plans and the risk assessment conducted by the SEI and the IRA.

Beginning with the project plans, the WWF report (Roberntz et al., 2009) highlights several environmental considerations regarding the location of the project. Specifically, the location of the project overlaps existing forest reserves in the Rufiji area. To make way for the project, land clearing and subsequent land-use change would increase carbon debt.²³ Converting forest reserves to agricultural land does not comply with Article 4 of the EU Sustainability Criteria. As a result, the bioethanol project would not be attractive to the EU market because it would be excluded from contributing to EU's emission reduction targets (Gerasimchuk, 2013). The report also draws attention to the impacts of this project on mangroves and other marine life. They claim that large-scale irrigation (i.e. withdrawing up to 70% of the water flow), and the use of pesticides may damage these aquatic ecosystems in the Rufiji delta.

The WWF report emphasised several deficiencies in the SEI/IRA study. It claims that "SEI representatives have on several occasions expressed support to SEKAB investments in public media. Hence, there could be an ideological influence on the judgement" (p. 25). They infer that this conflict of interest has led the assessment team to make "subjective interpretation of risks and opportunities" (p. 25), and in doing so the report fails to address several key issues. Most notably, the report fails to consider the overlap of project land, village land and forest reserves (overlooking land-use change and land tenure concerns); nor does it mention or consider EU Sustainability Criteria. The report also underestimates associated risks and impacts, or overlooks them altogether (for example, the impacts of pesticide use have not been addressed). Broadly speaking, the WWF is concerned that the risk assessment makes too many subjective assumptions and

²³ This means the carbon footprint of land clearing would be greater than the proposed carbon savings of the project

presumes this project is going to be beneficial, despite the fact that they have failed to even assess the most basic risks and opportunities of the outgrower program. Overall, the WWF reports concludes that the “scale and technology of the planned investment is questionable” and “there are more sustainable ways to combat poverty and promote local development than large sugar cane plantations” (Roberntz et al., 2009, p. 1).

6.2.4 TRANSITION FROM SEKAB BT TO ECOENERGY

The controversy that engulfed SEKAB BT during the ESIA process was not the only problem they faced that year. By 2008, the global financial crisis was unfolding. Several transnational investments in Tanzania failed during the crisis including a USD \$3.5 billion investment in an aluminum smelting business and a \$165 million nickel mining project (Lunogelo, Mbilinyi & Hangi, 2010). SEKAB Group was also hit hard by the financial crisis, experiencing losses up to SEK 300 million in 2008 (approximately USD \$41 million) (Havnevik & Haaland, 2011). As a result of the crisis, SEKAB Group was unwilling to invest more capital in the project. To finance the project, they applied for a credit enhancement guarantee from the Swedish International Development Cooperation Agency (SIDA). A credit enhancement guarantee “[strengthens] the creditworthiness of the sponsors implementing the project on the local or international financial market” (Lindahl, 2006, p. 9). It would allow them to borrow money in Tanzania because SIDA would take on the financial risk. SEKAB BT had already been in touch with local banks, but needed a credit enhancement guarantee to secure loans (SEKAB, 2009). The credit enhancement was denied on several grounds. One prominent concern expressed by SIDA was the potential environmental risks associated with the project (SIDA, 2009).

After failing to acquire the guarantee SEKAB Group was faced with the decision to either shut down their projects in Tanzania, or find new investors. In the end, SEKAB Group sold their project in Tanzania to Per Carstedt, for a ‘symbolic’ price of SEK 400 (approx. 45 USD). This move was controversial as Carstedt was previously forced to step down as the CEO of SEKAB Group following accusations that local politicians used public money to finance private business ventures, allegedly including SEKAB Group’s projects in Africa. Consequently, the Swedish town of Örnsköldsvik, where SEKAB Group is based, is in significant debt (Development Today, Feb 10, 2015).

As the new owner, Carstedt was tasked with finding new investors for the project. A company by the name of EcoDevelopment Europe AB took over the shares of SEKAB BT in 2009. This move was equally contentious because EcoDevelopment is owned by Per Carstedt and two other board members of SEKAB Group. When asked about this conflict of interest, the CEO of SEKAB Group in 2009, Bjorn Edstrom, claimed that they would only sell the project to a company who shares their values of sustainability (Development Today, Sept 12 2009).

Under this arrangement, SEKAB Group no longer has any ownership over the management of the project(s) in Tanzania, but, through the *Conditional Additional Purchase Price* clause delineated in the *Supplementary agreement between SEKAB International AB and EcoDevelopment in Europe AB relating to the Transaction Agreements* (2009), SEKAB Group is still eligible for repayment of the money they invested in the project totalling roughly USD 25 million (SEK 170 million). According to this agreement “the Conditional Additional Purchase Price shall only be paid out of funds generated from the East African Projects, and [...] is thus conditional upon the East African Projects being developed and generating profits” (2009, p. 2). Thus, this supplementary agreement allows SEKAB Group to recover their financial losses providing the project(s) are successful.

In 2007, Agro EcoEnergy Tanzania was registered as a company in Tanzania. Agro EcoEnergy Tanzania is a subsidiary of EcoEnergy Africa, which is a subsidiary of EcoDevelopment AB. Through this series of subsidiary companies (see Figure 5), EcoDevelopment formed Bagamoyo EcoEnergy Ltd. (henceforth EcoEnergy) under Agro EcoEnergy Tanzania Ltd in 2009 for the purpose of running and managing the project acquired from SEKAB BT in Bagamoyo.

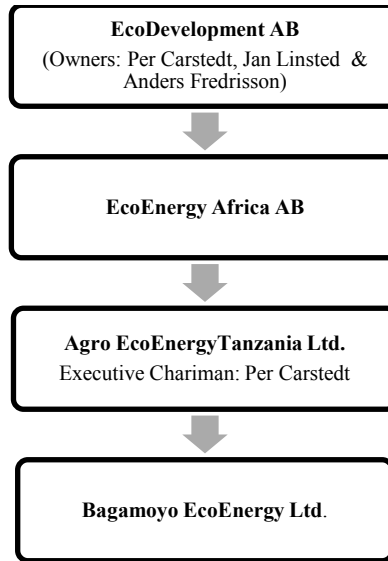


Figure 5: EcoDevelopment AB subsidiary companies.

6.3 ECOENERGY: A MODEL FOR SUSTAINABLE AGRICULTURE?

Once EcoEnergy took over the project, the trajectory and scale of the project changed significantly. Instead of growing 15,000 hectares of sugarcane – leading to detrimental outcomes on water availability – EcoEnergy’s project scaled back the project size to 7,800 hectares. Initially, SEKAB BT planned to export ethanol until a biofuel market was developed in Tanzania, but there was no indication how long this would take (SEKAB, 2008). The acquisition of land to produce biofuel for the export market generated some bad press for SEKAB BT. In 2012, SEKAB BT made it onto GRAIN’s data set listing of over 400 alleged ‘land grabbers’ and SEKAB BT is listed in the on-line database of land grabs, the Land Matrix (<http://www.landmatrix.org>). Per Carstedt reportedly listened to the critics of SEKAB BT and redesigned the output of the project to focus on benefiting Tanzania. Instead of exporting bioethanol, EcoEnergy now plans to produce sugar for the *local market* (Development Today, May 9, 2012). Following the adjustment, Anders Bergfors, the Managing Director of EcoEnergy, reportedly said the EcoEnergy project “is a development project. We will operate locally, buying sugarcane and producing sugar for the local market” (Development Today, November 10, 2011). While ethanol production is still on the agenda, this shift towards the local market was a pivotal moment for the company, severing the link between EcoEnergy and accusations of ‘land

grabbing'. This began their transition towards what the Government of Tanzania calls a model for sustainable agriculture.

Hypothetically, increasing the local production of sugar would help curb endemic sugar shortages in Tanzania. As it stands, domestic sugar production fails to meet local demand, resulting in a deficit. According to an article published in the *East African* newspaper, Tanzania's sugar deficit in 2013 reached 80,000 tonnes (Ndeketela, 2013). To bridge the gap in sugar production, the Government of Tanzania had been importing sugar. The EU subsidises sugar and sells it at artificially low prices, making sugar an attractive and affordable import. As part of the EU Sugar Protocol, Tanzania has had access to subsidised sugar from the EU. Tanzania can access 10,186 tonnes annually, plus an additional 2,486 tonnes under the special preferential sugar agreement from the EU. However, importing sugar at low prices has undermined the ability of local sugar producers in Tanzania to prosper. As a result, in January 2014, the Government of Tanzania placed a ban on sugar imports in an effort to bolster local sugar production (Agritrade, 2010). After the ban in 2014, the *East African* (Ndeketela, 2014) and the *Daily News* (Majaliwa, 2014) reported that the sugar deficit had ballooned to 290,000 tonnes. EcoEnergy's project will produce 125,000 tonnes of sugar annually for the domestic market (ADBG, 2012a). Thus, EcoEnergy's project should reduce the deficit by at least 43%. In addition to EcoEnergy, another 20 sugar mills are planned to help curb endemic sugar shortages (Smalley et al., 2014).

Unfortunately, the import ban has failed to improve the condition of Tanzania's sugar market. Since the ban was introduced, illegal imports of sugar have continued to flow. The imports continue to sell at lower prices undercutting local producers. Some media reports indicate domestic producers are stockpiling large amounts of sugar because they are unable to sell their product (Naluyaga, April 12, 2014).²⁴ The demand for sugar in Tanzania will undoubtedly continue to grow as the country develops, but unless illegal imports and price distortions are reined in, this condition will continue to be a crippling problem for domestic sugar producers, including EcoEnergy.

²⁴ Figures of how much sugar has been stockpiled aren't available

While the energy component of this project is now secondary, it too has been consciously reformulated to benefit Tanzania instead of the EU. According to a media report, Carstedt claims Tanzania spends up to 80% of their export revenue on oil, while other sources claim this figure is closer to 40% (ADBG, 2012a). Regardless, Tanzania does not produce any oil domestically and as a result is dependent on imports. In 2013, Tanzania spent USD 792.5 million on oil, and USD 990.8 million in 2014 (Elinaza, 2015). EcoEnergy's plan to produce 8 to 10 million litres of ethanol for the local market aims to help free up this revenue for other uses (ADBG, 2012a; Magomba, May 11, 2014). By producing ethanol for use in Tanzania, their thinking goes this venture may be able to reduce the country's dependency on oil.

Last, this project also promises to produce electricity. Using a co-generation plant, bagasse (a by-product of sugar production) will be fed into a high-pressure boiler, producing steam and electricity (ADBG, 2012a). Using this method, EcoEnergy plans to contribute 100,000 megawatt hours (MWh) to the national grid. The power sector in Tanzania is serviced by the Tanzania Electric Supply Company Limited (TANESCO). TANESCO is responsible for the national power grid. At its present capacity, the grid serves approximately 18.4% of Tanzanians with electricity (approximately 1,032,000 customers). An additional input of electricity will undoubtedly be of value since most regions in Tanzania supplied with power experience regular shortages.

EcoEnergy has clearly made a conscious effort to redesign the project to the benefit of Tanzanians. The output contributes to national food and energy security. Allouche et al. (2015) argue that increasing the national supply is important, but solutions that champion the increase of aggregate supply often conceal underlying issues of access and inequity which are at the root of the (re)production of insecurity:

These solutions rely heavily on a simplistic availability assumption, namely that increased food supply will automatically reduce hunger or that increased supply of water will improve general access to water. The crucial issue for food or energy security, however, is not whether food or energy is 'available' in the 'average' or 'aggregate' but whether the monetary and/or non-monetary resources at peoples' disposal, as well as distribution networks, are sufficient and without bottle-neck choke points

controlled by trading concerns, to allow everyone access to adequate quantities of food. (p. 616)

This perspective draws on the pivotal work of Amartya Sen. Sen (1999) conceptualised the *Capability Approach* which privileges the ability and capability of an individual to benefit from resources over dominant approaches that focus on resource availability and supply. Increasing the supply of sugar may bridge the national deficit, but access still depends on the ability of the individual to purchase sugar. This is why it is critical to reflect on how this project impacts individual communities hosting foreign investors. The following section looks at the communities who are involved with EcoEnergy's project.

6.3.1 BENEFITS AT THE COMMUNITY LEVEL

To ensure the communities and individuals impacted by the Bagamoyo project are beneficiaries, EcoEnergy has worked with consultants to develop a plan that redistributes the benefits of this project through two distinct schemes. The first is the Resettlement Action Plan (RAP). This plan resettles people living in the project area and consists of a series of measures intended to improve their livelihoods. The second is the outgrower scheme. This plan allows farmers to grow and sell sugarcane to EcoEnergy at an agreed upon price, thereby receiving direct economic benefits. The following two sections explore the scope and prospects of these plans.

The land leased by EcoEnergy is currently used by 1,374 people for living and/or economic purposes (ADBG, 2012b). According to a participant working with EcoEnergy, after news of the land acquisition spread, families moved from surrounding areas in Bagamoyo and Dar es Salaam to the project site so they could claim compensation. This influx of people presents an additional challenge for EcoEnergy. The participant indicated that they wanted to ensure that families who have been living on the project site prior to the investment are properly compensated and relocated. At the time of this research, they hoped to address this problem by creating identification cards for families that have been settled on the project site prior to the arrival of SEKAB BT (Interview 11, Oct 22, 2013).

Families living on the project site will be resettled in a series of phases. At the time of this research, only the first phase of the Resettlement Action Plan (RAP) was

written by consultants, and approved by the African Development Bank Group (ADB). The RAP was written by the consultancy group International Development Consultants Limited (IDC Ltd.). They specialise in RAPs and environmental and social assessments, with regional expertise in Africa (IDC, n.d.). They began working with this project after the transition to EcoEnergy in 2009. Their tasks include but are not limited to: conducting baseline studies, implementing early measure programs and developing the RAP.

IDC Ltd. has designed the RAP in accordance with international standards including the ADB's *Involuntary Resettlement Policy* and the International Financial Corporation's (IFC) *IFC Performance Standards on Environmental and Social Sustainability*. This document outlines a series of 8 performance standards that investors should meet throughout the course of their investment. IDC Ltd. applies *Performance Standard 5: Land Acquisition and Involuntary Resettlement*. Both documents by the ADB and the IFC encourage investors to avoid resettlement whenever possible. If resettlement is unavoidable, negative impacts must be minimized.

Phase one of the RAP plans to resettle two sub-villages of Matipwili: Kaloleni Biga and Gobole. Kaloleni Biga and Gobole are both situated on the northern part of the project area by the Wami River. Through consultations, villagers and IDC Ltd. decided they will be relocated to a host village, Matipwili, on the northern side of the riverbank. Because Matipwili is their main village, this lessens the likelihood of social disruption. Future resettlements will include Bozi, Gama and Gama Makaani, Fuayosi and Biga West. These RAPs will be added as addendums to the original RAP, but they have not been written as of 2013. It is unknown where these communities will be resettled (Interview 11, Oct. 22, 2013).

In Kaloleni Biga 28 households will be physically displaced, totaling 131 people, and 59 people will be economically displaced. The 'economically displaced' refers to villagers who own land within the project area, but do not physically live within the project area. In Gobole, 10 households accounting for 77 people will be physically displaced and 17 will be economically impacted (ADB, 2012b). In addition to the people residing in the sub-villages, a total of 70 Barbaig pastoralists (13 families) move

freely within the project site. They have 3160 cattle, 653 goats and 50 donkeys. The Barbaig are particularly vulnerable because few of them speak Swahili (ADBG, 2012b).

The RAP acknowledges the likelihood of social, physical, economic and social repercussions from the involuntary resettlement of people and the loss of livelihood. To mitigate these repercussions villagers will be compensated. According to IDC, the “*Tanzanian government offers cash compensation at current market rates less depreciation*” (Interview 11, Oct. 22, 2013), and does not include all those impacted by projects like pastoralists or illegal charcoal producers. To rectify this, the RAP proposes the creation of a *Project Affected Person (PAP) Development Fund*. A second budget was created based on the difference between Tanzanian compensation and international standards. According to the participant “*the significant difference of international best practice – or the [International Financial Institutions] – is the replacement value plus improvement*” (Interview 11, Oct. 22, 2013). This means the land and/or housing lost will be replaced and improved upon.

The PAP Development Fund will be used to improve the livelihoods of all people affected by the project. The PAP Development Fund can be accessed through three means. First, it can be accessed by vulnerable people including charcoal producers and the Barbaig pastoralists. Excluding both these groups would clearly lead to deepening inequalities. To account for this IDC included the pastoralists and charcoal producers in their assessment. Second, it may be accessed to fund training programs. IDC Ltd. is in the process of implementing a series of Early Measures Programs. These are training programs aimed to help people diversify their skills. This includes chicken farming, sewing, etc. A site visit to the region demonstrated chicken farming projects were already underway and regularly monitored by IDC Ltd. Last, it may also be accessed to finance a business start-up. This fund is clearly geared towards helping PAP diversify their incomes and gain skills.

At the time of fieldwork the fund was approximately USD\$ 221,000 for all PAPs. PAPs have the choice between cash compensation (figures are dependent on valuation of individual land) versus in-kind compensation (which includes a new home and access to the PAP development fund). The RAP indicates that most PAPs chose to opt for in-kind

compensation (ADBG, 2012b). New homes will be constructed in Matipwili are designed with the intent of improving their livelihoods. According to the RAP new homes will have access to clean drinking water.

The outgrower scheme is another major component of the Bagamoyo project. EcoEnergy has adopted an inclusive business model, through which it hopes to promote economic growth and empower those directly impacted by the project. The ‘inclusive’ component of this project includes outgrower groups, who will work alongside EcoEnergy, growing and providing the processing plant with a secure source of sugarcane. In return, EcoEnergy will also provide them a guaranteed market.

The outgrower scheme is intended to improve the livelihoods of farmers. A case-study of Makurunge village bordering the project showed that there is a need for social and economic improvements in this region (Axelsson & Blomquist, 2014). Outgrower programs have been shown to deliver economic benefits in other regions. For example, a case study on sugarcane outgrowers in Zambia shows that outgrowers earn significantly above the minimum wage (Shumba, Roberntz & Kuona, 2011). Similarly, a study by Zommers et al. (2012) found that outgrowers at a sugarcane plantation in Uganda also had a higher standard of living (e.g. greater meat consumption), though these results were not conclusive (authors were not convinced that the trade-off of a forest reserve made the villagers better off). By providing outgrowers with a secure market for their sugarcane, outgrowers may have the opportunity to improve their standard of living.

Initially SEKAB BT’s project plan included developing the outgrower scheme covering 5,000 hectares within the first 10 years of the project (SEKAB, 2008). EcoEnergy intends to incorporate the outgrowers from phase one of the project, cultivating an area of 3,000 hectares. At the time of this research 28 outgrower farms of around 100 acres each were planned, but none had been officially formed. Each farm would comprise up to 50 farmers (Interview 11, Oct 22, 2013). According to EcoEnergy’s website the current plan entails 25 to 35 outgrower farms, each one occupying 75-150 hectares of land.

EcoEnergy's plan suggests anywhere from 1,500 – 2,000 jobs will be created through the outgrower scheme. Other media accounts have put the rates much higher, topping 4,000 jobs (Mtema, March 17, 2014). However, this does not specify the nature of these jobs. As of the time of this fieldwork these jobs included only 7 permanent jobs per farm. The remaining jobs on each farm will be casual labour jobs²⁵, but no further information is known regarding the regularity or nature of these positions.

The proximity of the outgrowers to the plantation means they are closely linked to the supply chain and will always have a buyer for their product, thus ensuring a degree of financial security. According to EcoEnergy, providing that outgrower farms produce 300,000 to 400,000 tons of sugarcane per acre, revenue will total USD 450,000 USD per farm. The cost paid per ton of sugarcane will be agreed upon between EcoEnergy and the outgrowers. However, to establish these farms each outgrower farm must first take out a loan from the ADBG.

The actual amounts of these loans have varied between sources. One source suggests a loan totaling 2 billion Tanzanian shillings from the ADBG, or USD \$35 million, would be taken out between 28 farms.²⁶ It was estimated that it would take outgrowers approximately 11 years to repay this loan before they receive any dividends. This aligns with figures published in Development Today that indicate each farm would borrow USD 1.25 million (or 20,000 to 30,000 USD per household) (Development Today, March 26, 2014). A report released by ActionAid in 2015 claims each outgrower company will be required to take out a loan of USD\$ 800,000 (or, \$16,000 per farmer). ActionAid's (2015) report was condemned by EcoEnergy and the Government of Tanzania on the grounds that some of the information is inaccurate. In response to ActionAid's concern regarding debt, EcoEnergy stated that:

Access to finance from financial service providers and banks may be involved, and is necessary to ensure longterm sustainability of the programme. But farmer participation is completely voluntary and, when borrowing does take place, it will be preceded by the development of credible business plans (Carstedt, 2015, p. 3)

²⁵ The informant has chosen to remain confidential

²⁶ The informant has chosen to remain confidential

But the company did not comment on whether these figures on indebtedness quoted by ActionAid are correct or a misrepresentation.

Regardless of which figures are accurate, it is clear that indebtedness is a risk that needs to be considered and mitigated. As of 2013, it was unclear whether the risk(s) associated with borrowing capital has been adequately explained to outgrowers. Taking on debt is not uncommon in these scenarios. In Indonesia, a biofuel company acquired land from villages and initiated an outgrower scheme. The farmers recruited as outgrowers were forced to acquire some debt from inputs and transportation. In some cases the figures remain unclear but typically debts ranged from 3,000 to 6,000 USD for a 2 hectare plot paid off over a 10 year period (McMichael, 2013). Likewise cotton farming in Burkina Faso also led to debt creation as cotton prices dropped, but in this scenario wealthier farmers were much more capable of avoiding or overcoming debt than poorer farmers (Gray & Dowd-Urbe, 2013). In South Africa a media report indicates that falling sugar prices have prompted some sugarcane growers to leave the industry while others have taken on more debt (West, June 25, 2010). SIDA is supportive of EcoEnergy's Bagamoyo project but does admit that this project is a high risk development for the outgrowers and communities involved. SIDA fears the resettlement could leave people in worse conditions and could lead food insecurity and indebtedness (Development Today, March 26, 2014). The ability of outgrower to avoid indebtedness and pay back debts while profiting hinges on the success of the project, profit sharing schemes, stable sugar prices and a secure source of water to irrigate their crops.

6.3.2 FUNDING THE PROJECT

From the beginning of the project, funding has been, and continues to be, a major source of concern for EcoEnergy. Since the transition from SEKAB BT to EcoEnergy, EcoEnergy has tried, with some difficulty, to secure funding from the ADBG. Before granting EcoEnergy a loan, the ADBG must complete a series of studies in accordance with the Environmental and Social Assessment Procedures for Private Sector Operations (2001). This includes an ESIA and the formation of the RAP. The ADBG gave SIDA the opportunity to provide some input on the project. SIDA expressed concern about the legality of the initial ESIA conducted in 2008 under SEKAB BT, and recommends the completion of a new ESIA to account for changes. SIDA is also concerned with previous

disregard for the impact(s) of this project on water resources and outgrowers and recommends a greater focus on both (Development Today, September 04, 2011).

A participant working with EcoEnergy indicated they are seeking three loans from ADBG. The first is a USD 300 million private loan, which will be taken out by EcoEnergy (further details below). This loan will pay for the construction of essential facilities (i.e. the plantation, the processing plant etc.). The second loan is a public loan which will be taken out by the Government of Tanzania.²⁷ This loan will pay for the construction of infrastructure including the dykes that will be installed along the Wami River adjacent to the project. The final loan will be taken out by the outgrowers to finance their operations (e.g. irrigation equipment) (Interview 5, Oct 28, 2013).

According to an Environmental and Social Impact Assessment (ESIA) published by the ADBG (2012a) the project is scheduled to begin in 2013. Planting will take place in three phases between 2013 and 2016. The construction of the processing plant was also scheduled for 2013. The timeline of this project was based on financial closure – that is, receiving the loan from the ADBG in December 2012. However, this process was delayed (see figure 2 on p. 76). According to *Development Today* (December 9, 2014; March 26, 2014), the ADBG conditionally approved a loan for USD 300 million in 2014. This loan was conditional on EcoEnergy completing a number of tasks including: the resolution of a land dispute with Sadaani National Park and Makaani Village, agricultural policy adjustments, instituting a government monopoly on sugar imports to protect local sugar producers and finalising a Power Purchase Agreement between EcoEnergy and TANESCO. This means that until EcoEnergy and the Government of Tanzania meet these conditions the loan would not be granted. EcoEnergy also approached SIDA for a credit guarantee. SIDA agreed to offer a guarantee of SEK 600 million if the ADBG finalises their loan. The guarantee will underwrite 30% of the project's financial risk.

While working towards the ADBGs conditions EcoEnergy required a source of funding to keep the project operational. They were granted a short-term loan of USD 18 million from the Standard Bank of South Africa (SBSA). The SBSA agreed to cover 10

²⁷ The amount of this loan is unknown

% of the risk, and SIDA agreed to a short term guarantee of SEK 120 million, covering the remaining 90 %. This short-term arrangement was finalised in March 2014, however, EcoEnergy asked for several extensions due to delays from floods. In 2015 SIDA gave EcoEnergy additional conditions since they failed to achieve the previous conditions over the course of 2014. These include finding a new strategic investor, and to halt shareholder payments. EcoEnergy has until April 30th 2015 to find a new strategic investor. If they fail to do so, SIDA will pull out of the project (Development Today, April 7, 2015). If this occurs and new investors are not found, the project may collapse.

6.4 CONCLUSION

By chronicling the transition in ownership from SEKAB BT to EcoEnergy this chapter provides a detailed account of the sugarcane project in Bagamoyo. The environmental and social implications of SEKAB BT's original project clearly reflect concerns discussed in the literature on 'land grabbing'. Notably, this chapter highlights the disregard that SEKAB BT's showed for conserving the Wami River, and their disconcerting efforts to downplay the implications of their project on water availability. These circumstances draw attention to the failure of NEMC to act despite concerns voiced by ORGUT and SIDA. This supports the literature on 'water grabbing' that views formal processes like ESIA's as a mechanism for legitimisation that primarily act as checklists for investors to navigate. Conversely, this section also demonstrates a conscious effort on behalf of EcoEnergy to step out of SEKAB BT's shadow and shift the dialogue away from 'land grabbing' towards sustainable investment. By redirecting the flow of outputs towards local needs EcoEnergy challenges how the literature views LSLAs and ideas like land and water grabbing. Whether the benefit schemes proposed under the RAP and outgrower program materialises remains to be seen; however the high debt burdens placed on outgrowers has raised significant concern. For outgrowers to pay off these debts they will have to ensure they are able to grow enough sugarcane. This suggests that their access to a secure source of irrigation water will be tied to their ability to pay off their loans. The following chapter will examine EcoEnergy's water management plan in order to assess what, if any, implications this project will have on water security.

CHAPTER 7: EVALUATING WATER SECURITY IN THE WAMI SUB-BASIN

7.1 INTRODUCTION

Having established (1) the broader trends of land acquisition in Tanzania (2) the absence of meaningful consideration of water resources in these processes, and (3) the parameters of EcoEnergy's project, this chapter evaluates how EcoEnergy approaches water management. SEKAB BT's original project plans ostensibly jeopardised local water security by proposing to withdraw unsustainable amounts of water. Since EcoEnergy took over and scaled down the project from 15,000 to 7,800 hectares, the concerns raised over water resource integrity have subsided. Going beyond common perceptions of water security as a matter of water availability, this chapter seeks to draw attention to and understand the social, political and economic dynamics of water security in the Wami Basin. In doing so, this chapter shows how large-scale land acquisitions rely heavily on infrastructure-driven solutions to address water challenges and likely underestimate the importance of local water management politics, capacities, and practices

7.2 OVERVIEW OF ECOENERGY'S WATER MANAGEMENT PLAN

To ensure their project is economically viable, EcoEnergy has opted to withdraw water from the Wami River to irrigate their sugarcane crops. The Wami River is part of the Wami/Ruvu Basin. The basin is one of nine designated water basins in the country, covering an area of 72,930 km², including the Wami River to the north and the Ruvu River further south. The Wami sub-basin accounts for approximately 43,000 km² (59% of the basin). It comprises of the Wami River and five tributaries. The Wami is a perennial river that drains from the Eastern Arc Mountains, extending to the coastal region before discharging into the Indian Ocean.

Located along the eastern coastline of Bagamoyo, the mouth of the Wami River opens to form a large estuary. Estuaries are typically bodies of water that have formed where freshwater converges with salty and tidal ocean water. Estuaries often form in partially enclosed areas, supporting diverse aquatic and vegetative ecosystems that provide significant environmental services. For example, the estuary at the base of the

Wami River delta has significant environmental and socio-economic value. Anderson and McNally (2007) conducted some baseline research in the region and describe the estuary as an ‘important national interest’. Within 1 km of the river’s mouth is a fishing community of approximately 100 people who rely on the estuary for food and income. A little further north of the community is Saadani Village. Saadani villagers harvest prawns from the estuary for sale in Dar es Salaam. During certain times of year the estuary also supports a large number of migrant fishermen. The estuary also plays a role in the regional tourism (Anderson & McNally, 2007). The Saadani National Park is situated on the northern bank of the Wami River and estuary, extending northwards along the coast. It is home to a wide array of wildlife and biodiversity including hippopotamus, elephants and wildebeests. Because of its proximity to the park, the estuary provides essential drinking water for wildlife during migration and the dry season. The Wami River, its tributaries and by extension the estuary, are the only source of surface water in the region, and is the proposed source of irrigation water for EcoEnergy’s sugarcane crops.

The choice of sugarcane for this project has significant impacts on soil and water resources. Sugarcane is often described as a ‘thirsty’ crop, because it requires anywhere from 1500 to 2500 mm of water annually, depending on the climate (FAO, 2013a). For instance, sugarcane production in India requires 3500 mm annually due to the hot and water scarce climate. Sugarcane has a long growing period, generally ranging from 15 to 16 months (FAO, 2013a). Throughout this period the sugarcane continually draws water from the ground. Water shortages are more damaging to the cane during the early stages of growth than the latter stages. Because sugarcane requires year round irrigation, if it is not managed correctly it could have lasting implications on soil and water resources (FAO, 2013a). In Brazil, sugarcane production for biofuels has been on-going since the 1970s, but most has been rainfed, which has had significantly less impact on surface and groundwater resources than other irrigation methods that drain water reserves. However, growing demand for biofuels in Brazil has led to reports of water scarcity, in part due to the poor implementation of water management plans (Moreira, 2007). This highlights the importance of implementing an ecologically sound water resource management framework especially in the context of large-scale cultivation.

Before EcoEnergy can withdraw water from the Wami River, they must obtain two sets of permissions. First, they must undergo an ESIA. As discussed in section 5.4, investors must attain approval from NEMC before they begin their project. This process should identify any potential harm and ensure that appropriate mitigation measures are planned and implemented to protect water resources. Second, they must obtain a water permit from the local water basin board. In this case, EcoEnergy had to apply for a permit from the Wami/Ruvu Water Basin Authority (henceforth WRWBA) to withdraw water from the river. As part of a wider initiative to implement IWRM in Tanzania the WRWBA was created to manage the Wami/Ruvu Basin in 2002. Building on previous efforts to formalise water management, the 2002 Water Policy and the 2009 Integrated Water Resource Management Act enacted the establishment of Basin Water Boards, WUAs and permit systems. Permit systems were first introduced in the colonial era and carried through to present day. In practice, water permits are sought *after* land acquisitions have been initiated. How much water is allowed to be withdrawn and for how long varies with each project. At the time of this research in 2013, EcoEnergy had satisfied both requirements. EcoEnergy obtained a water permit that will last 30 years (Interview 5, Oct 28, 2013). This permit allows them to satisfy irrigation needs for 12,000 hectares (monthly allowances vary), although they only intend to grow 7,800 hectares within the plantation boundaries initially. Expansions are yet to be determined.

Outgrowers will also require water permits to irrigate sugarcane, but their permits will be granted for a period of 5 years. EcoEnergy required a longer permit because they expected it would take them several years to obtain funds and get the project started (Interview 5, Oct 28, 2013). For the outgrowers, this represents a shift towards formal water resource management. While Tanzania may be legislating IWRM, in reality most of Tanzania is governed by a plural legal system. This means water is governed by formal *and* informal water law. Informal water laws predate colonialism. According to Strauch & Almedon (2011), traditional resource management “is the application of local ecological knowledge through customs, rituals and social norms for the equitable utilization, distribution and regulation of natural resources” (p. 93). For many Tanzanians “according to their customary notion of property claims, water is given by God, and use rights are only established on the basis of their own efforts to build infrastructure.” (Van

Koppen, 2007, p. 157). The need for outgrowers to adopt water permits as part of the project prompts a shift towards formal water management. According to Veldwisch et al. (2013), smallholder water use is often ‘invisible’ because they do not pay into or participate in the formal permit system. This push towards formalisation renders outgrower water use ‘visible’. Veldwisch et al. (2013) however, prefer a water rights system that privileges smallholder water use, without the imposition of water fees, which is not the case in Tanzania. At the time of this research in 2013, outgrowers had not been granted water permits, but EcoEnergy was hoping to begin this process soon (Interview 5, Oct 28, 2013)

Upon their acquisition of the project from SEKAB BT, EcoEnergy reduced the amount of land to be cultivated and irrigated (at least initially) from 15,000 to 7,800 hectares. As a result the amount of water needed for the project is significantly less than SEKAB BT’s original plans. In an average year, 15,000 hectares of sugarcane would require 160 million cubic meters (Mm³) of water for irrigation, whereas 7,800 hectares of sugarcane would require approximately 91.1 Mm³.²⁸ This represents a 43% decrease in raw water consumption between the two projects – excluding outgrower water requirements. Initially, SEKAB BT intended to employ enough outgrowers to cover an area of 5,000 hectares, meaning the total area in cultivation would reach 20,000 hectares. EcoEnergy reduced the land to be covered by outgrowers to 3,000 hectares. This means 10,800 hectares will be under cultivation.

Since reducing the volume of water for the project only the ADBG has reviewed EcoEnergy’s plans. No other independent assessments have been conducted thus far. The ADBG (2012a) conducted an Environmental and Social Impact Assessment as a prerequisite for EcoEnergy’s loan application. This ESIA indicates that the impacts of this project on water quantity are ‘very high negative impacts’ during sugarcane irrigation and agro-energy production. Likewise, impacts of this project on water quality fluctuate between ‘minor negative impacts’ to ‘very high negative impacts’ during the operational phase. While the full version of this assessment is not publicly available, the Executive

²⁸ The estimate of 91.1 Mm³ is calculated based on of monthly data provided in the Environmental and Social Impact Assessment (ADBG, 2012a).

Summary does not indicate whether the broader social or environmental impacts of water withdrawal on the river have been assessed. For example, the Tanzania Coastal Management Partnership for Sustainable Coastal Communities and Ecosystems in Tanzania (TCMP) previously voiced concerns that excessive water withdrawal from SEKAB BT's project may lead to an increase in saltwater intrusion (FAO, 2010). Saltwater intrusion occurs when saltwater from the ocean flows inland, increasing the salinity of freshwater. Increased salinity can be detrimental to vegetation, and is not suitable for irrigation or drinking water (Williams, 2010). While this process occurs naturally, it can also occur from sea level rise and from excessive water withdrawals. According to representatives from the TCMP, saline water flows 50 km up the river from the Indian Ocean (FAO, 2010).²⁹ The TCMP fears further salinization may impact wildlife in the Wami Mbiki Game Reserve and the Saadani National Park (FAO, 2010). In addition, Anderson and McNally's (2007) are concerned that the estuary may be negatively impacted by the steadily increasing number of agricultural developments upstream (like EcoEnergy's project). These developments withdraw large amounts of water, and increase sediment load (from land-use changes) and nutrient concentration (as result of fertiliser use). My research found no studies, including the ADBG's ESIA, that have addressed these kinds of basin-wide concerns, therefore is it not known whether the 43% decrease in irrigation withdrawal will mitigate further salt water intrusion. A discussion with a water basin officer indicated the WRWBA is unsure of the water requirements of Saadani National Park. This officer expressed concern that large withdrawals of water may negatively impact the park (Interview 10, Nov 4, 2013). These concerns ultimately point towards the need for a cumulative effect assessment (CEA). CEAs seek to understand the cumulative impacts on an ecosystem – as opposed to EIAs which are typically project oriented. This approach is not widely practised in Africa, and even in developed countries like Canada the implementation has garnered mixed and often inadequate results (Duinker & Lorne, 2006).

²⁹ The results of Anderson and McNally's (2007) interviews with fisherman in the area suggest salt water intrusion may in fact extend anywhere from 5 km upstream to Matipwili village (approximately 32 km inland from Saadani Village). This may equate to 50km, corroborating the TCMP's claim.

Water-use calculations for EcoEnergy's project are based on data collected during an Environmental Flow Assessment (EFA) of the Wami River Basin (published in 2008). The project was funded by the United States Agency for International Development and the Coca Cola Company, but the production of the report involved both academics and NGOs. The EFA conducted a series of measurements at 5 sites along the 490 km Wami River. The final site, before the river discharges into the Indian Ocean is Matipwili village – the village across the river from EcoEnergy's project site (see Figure 1). Notably, because Matipwili is the last site where measurements were taken, no assessment of the water requirements downstream from the project area were taken in Phase I or Phase II of the EFA. This may explain why the WRWBA was unsure of the water requirements for the Saadani National Park. The measurements include water flow, volume and quality, as well as consideration of water use and needs. Specifically, the study outlines the water availability and water requirements at the 5 sites during dry years, maintenance years (i.e. average years), and wet years. The purpose of this project was to provide water managers with initial data on the environmental and ecological needs of the basin (henceforth ecological flow), and the quantity of water available for reallocation. Awareness of the ecological flow began to grow in the 1950s but didn't fully take shape until the 1990s (Gopal, 2013). In 2007, it was defined in the Brisbane Declaration on Environmental Flows as “the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems”. Despite growing acknowledgement of the ecological flows, there is no single fool proof method to assess these flows; instead we currently rely on a host of mixed-methodologies (Gopal, 2013). To establish the environmental flow in the Wami Basin they used a combination of two methods: the Savannah Process and the Building Block Methodology (BBM). Both methods are considered to be holistic approaches for assessing the ecological flow and involve a series of processes including expert consultations, review of current knowledge of the river and the development of water requirements (Richter et al., 2006; King & Louw, 1998). Specifically, the BBM pays particular attention to variation in water flow based on timing, magnitude and duration (e.g. low flows, high flows). These components, or

‘building blocks’ of water flow aide in the development and formulation of ecological flow requirements (King, 2008).

Although consideration of the ecological needs of a river is a step in the right direction, an interview with an NGO in the region expressed some concern. Having worked alongside the primary water authorities of the Wami River, the participant is concerned that the water authorities view all of the water in excess of the ecological flow threshold as available for development, leaving little room for uncertainty. She expressed concern that they are preoccupied with selling water rights to finance their operations, and as a result, cannot adequately act as conservationists (more on their financial capacity in section 7.2.3). The challenge of this mentality may become more apparent overtime if climate change leads to a decrease in water availability (more on climate change in section 7.2.2). Notably, she fears the overuse of the Wami River may someday transform the Wami into a seasonal river. She suggests that the water authorities need to make the decision to either develop or conserve the river (Interview 4, Nov 4, 2013).

A review of the initial EFA by the International Union for Conservation of Nature revealed that it was underfunded, completed in a short timeframe, and had limited resources to draw on as few studies have been conducted on the Wami River (Dickens, 2011). This does not necessarily diminish the findings of the report, but indicates there is a need for further study of the river. Phase II of the EFA was not published until 2014. Because of the timing of EcoEnergy’s project, their information on water availability was drawn from the initial EFA published in 2008. However, results from Phase II suggest there is no need to revise environmental flow assessments for sites 3-5 which include the Matipwili site (GLOWS & FIU, 2014).

Based on data collected for the EFA and assessments of water impacts in the ADBG report, EcoEnergy calculated their water requirements for the project. They suggested that drinking water and water for livestock is negligible, while water for the environment and water for irrigation is substantial, but included all four components in their calculations (Interview 5, Oct 28, 2013). Certain provisions were made to help vulnerable people, for example, a dam will be repaired specifically for the pastoralists (ADBG, 2012a; Interview 11, Oct 22, 2013). After calculating their water needs,

EcoEnergy acknowledged that the project will cause a water shortage in the dry months of dry years (Interview 5, Oct 28, 2013). As shown in Figure 6, during the dry months, the project will consume just over 60% of the monthly river flow, not including outgrower water usage. According to the EFA (Sarmett et al., 2008), low flows are experienced between February and March, and again between July and October. It is worth noting that the ESIA published by the ADBG only outlines water requirements 7,800 hectares, and therefore the outgrower water requirements (an additional 3,000 hectares) were not included in this assessment. By excluding the water requirements of outgrowers from this assessment, smallholder water usage remains ‘invisible’ even though they will be required to pay into the permit system. Moreover, since this is the only public document outlining their plans³⁰, it presents a misleading estimate of total water requirements and raises many questions about the extent of the water shortage once all figures have been factored in. Notwithstanding these concerns, to cope with the water shortage, and mitigate any other potential water-related problems identified in the ESIA, EcoEnergy has developed a three-pronged approach based on the data in the EFA: short-term mitigation measures, long-term mitigation measures, and a plan to share the shortage.³¹ The following sections describe these measures and analyse their effectiveness.

³⁰ EcoEnergy’s IWRM framework is an internal document.

³¹ The water management plans for EcoEnergy’s project are drawn from an interview with a representative in 2013. This assessment does not account for changes after November 2013

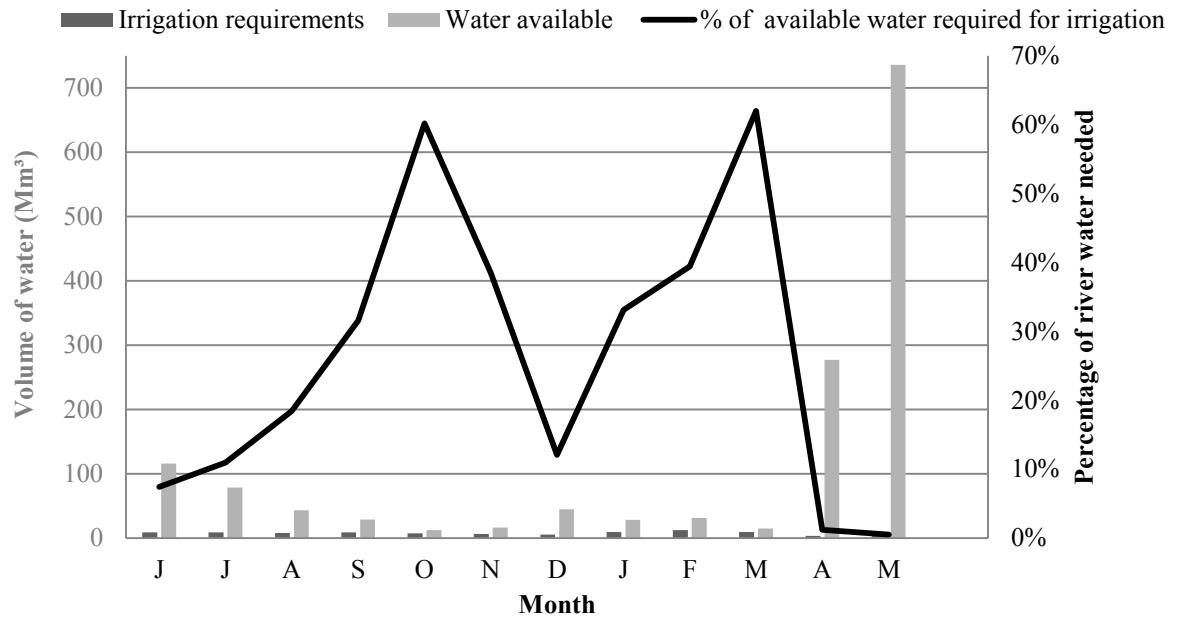


Figure 6: River water availability and irrigation requirements for 7,800 hectares during dry year. Data adapted from ADBG (2012a) Executive Summary of the Environmental and Social Assessment.

7.2.1 SHORT-TERM MITIGATION MEASURES

EcoEnergy has developed a number of short-term mitigation measures to reduce the amount of water they use, and to combat potential shortages in the short-term. Foremost, EcoEnergy intends to use water efficient technologies. This includes, in order of decreasing efficiency: drip irrigation (425 hectares), center pivots (3,162 hectares) and sprinkler systems (4,241 hectares) on the plantation site (ADBG, 2012a). Outgrowers for the project will be provided with information and training about each kind of irrigation system so that they may make an informed decision regarding which system to purchase using the loan from the ADBG. While outgrower groups will have the choice, an EcoEnergy representative expects outgrowers will select sprinkler systems because they are cheaper than drip irrigation (Interview 5, Oct 28, 2013).

In Tanzania, small farmers commonly use traditional methods like furrow irrigation. Conventional drip irrigation systems and sprinkler systems are more often used by commercial farmers (ICID, n/d). The focus group conducted for this study indicated that small farmers in Matipwili use water pumps because their fields are uphill from the river. Their sole source of irrigation water comes from the Wami River. Many farmers

buy (and some share) water pumps to redirect the water from the river into canals. They view the pumps as efficient and effective because they can extract a lot of water, however they are costly. The pump itself costs between 250,000 and 350,000 TSH depending on the size (approximately USD \$125-175) however they indicated that a government program supplied them with access to some pumps. Petrol needed to operate the pump can cost up to 2,500 TSH per litre (USD \$1.37) making them costly to operate.

A female participant in the focus group indicated that women in Matipwili do not use water pumps at all. Instead, women are responsible for collecting household water. Unlike in many other regions, the river is within sight of the village, so the walk to collect water is relatively short. A woman in the focus group indicated that women tend to collect an average of five buckets of water a day (each bucket holds approximately 20 litres) from the river for domestic use. Some men also withdraw water from the river with the intention of selling it (Interview 8, Nov 24, 2013).

The project may prompt outgrowers to shift towards more efficient irrigation technologies. Of the three kinds of irrigation that will be offered, drip irrigation is the most water efficient however this kind of system is not widely used across Africa. A study by Friedlander et al. (2013) shows that farmers feel that drip irrigation systems save on labour and time, but the system can be undermined by problems with access to water and water storage, and the presence of destructive animals (notably elephants and hyenas). Notwithstanding, the vast majority of literature shows that the use of improved irrigation systems has had a positive correlation with poverty reduction and improved livelihoods (Dillion, 2011; Huang et al., 2005; Meliko & Oni, 2011). Access to irrigation technologies has always been a huge constraint across the continent. Consideration of who will and who will not have access to these improved technologies is critical. The inclusion of women as outgrowers suggests their relation to water collection will shift indicating further study is needed to assess these implications.

Apart from irrigation, other water-saving technologies include water-reuse and recycling systems in the processing plant. The reuse of water will reduce daily water consumption from 2,000 m³/day to 450 m³/day (ADBG, 2012a). To cope with shortages not addressed by water-saving technologies in the short-term, EcoEnergy intends to

construct a water storage unit with the capacity to store 4.5 Mm³ of water. Water storage units are typically small reservoirs and/or dams that store water for future use. These can take a number of forms, but are often large man-made ponds. The dam will be placed off-stream to avoid disrupting the river flow and other environmental impacts. The storage unit will be filled in the wet season and used in the dry season or as needed (Interview 5, Nov 5, 2013).

EcoEnergy's plan to construct an off-stream storage dam is well-founded. It demonstrates consideration of seasonal variation in water flows and ensures water availability during the dry season and periods of droughts. What this approach needs to consider is context, distribution and access. The failure to do so is problematic because socio-political relations have been shown to play a crucial factor in the construction of, acceptance of, and effectiveness of small dams. In Malawi, the push to construct small irrigation dams as a water security tool faced a number of challenges that ultimately undermined the success of these dams. For example, some communities felt these dams were being imposed on them, either by the government or donors. Other cases included problems of 'ownership', specifically with regards to management and rehabilitation of dams, while many others faced conflict between different factions of the community over the 'legitimate' use of small dams (Nkhoma, 2011). This case study demonstrates how community needs should be at the centre of dam management and planning.

In the same way, current research from Burkina Faso suggests the construction of dams must be accompanied by measures to ensure fair and equitable distribution. Studies have shown that distribution of water from small dams is subject to intricate power asymmetries between water users, water managers and large investors (Sally et al., 2011; Nkhoma, 2011; Cleaver & Franks, 2005). Like Tanzania, Burkina Faso has been working towards the implementation of IWRM, including the establishment of WUAs to decentralise water resource management and incorporate participation. In the Nakambe River basin, WUAs were put in charge of small reservoirs. The composition of the WUA only included downstream users and did not reflect the views and concerns of other marginalised groups directly impacted by their decisions (Sally et al., 2011). This is particularly relevant in the case of EcoEnergy because of the diverse number of water

users including outgrowers, communities, pastoralists, and charcoal producers. Deciding not only who has access but who is able to access water first may have critical implications. For instance, as outgrowers will be burdened with debt, should their needs come before farmers planting food crops? Who will be in charge and whose interest will be served first have real repercussions that should not be underestimated.

A similar scenario in Burkina Faso exposed tensions between the private sector and small farmers. In the Upper Comoé Basin, sugarcane fields, previously owned and operated by the government, were privatised in 1992. A foreign investor has since taken ownership, although the government hold some shares. Several water reservoirs in the area supply water for the sugarcane fields, communities, and downstream rice producers. While the water reservoirs are still owned by the government the sugar investor has been managing them. Many of the downstream rice producers were evicted from their land 40 years ago to make way for the sugarcane fields. The rice producers feel their water needs are met last, and that they should be given more water from the reservoirs. After protests erupted the company agreed to provide farmers with more water under the condition that they manage their water more efficiently. Sally et al. (2011) claim the company made this condition knowing the farmers do not have the capacity to employ water-efficient technologies, thus preserving the status quo. What transpired in Burkina Faso reflects the need to balance “private interests and downward accountability towards less-powerful stakeholders such as farmers” (p. 375). Each example highlights how power asymmetries can be further entrenched through water management if they are not consciously taken into account, and that what constitutes the legitimate use of water varies with each user. While the construction of small dams may enhance water availability and more importantly water storage capacity, EcoEnergy’s plans do not address issues of access and equity. Greater care and attention is needed to integrate this mitigation measure into local management frameworks to ensure both that communities accept this system and that water is distributed in an equitable fashion.

A secondary and under recognised issue that needs to be considered in terms of the long-term sustainability and economic feasibility is the maintenance of small dams. Research conducted in Australia (Pisaniello et al., 2012), Zimbabwe (Mufute et al., 2008)

and South Africa (Boardman & Foster, 2011), suggest that the maintenance of small dams is often neglected, often due to the lack of resources. At this time, there is very little research conducted on the maintenance and repair of small dams in Tanzania, but the costs of repair and maintenance of water systems is usually financed by water users through water user fees. As previously discussed, many users do not have the ability to pay these fees in an African context. An interview with a member of an NGO in the water sector elaborated on the challenges and implications of maintenance (Interview 4, Nov 4, 2013). From her personal experience, her team found that many water gauges (that measure the height of the river) in the Wami/Ruvu Basin were left unchecked for long periods (some since the 1980s); to the extent that a significant amount of sediment built up at the base of the water gauge, rendering the readings inaccurate. In one case the gauge showed that the river was 2 meters high, but sediment reached up to 1.8 meters. The EFA corroborate her claims. The report shows that many gauges were finally rehabilitated in 2006, but several remain out of order (Sarmett et al., 2008). She believes this failure is in part because the people responsible for checking and recording these meters were poorly paid, if at all. These concerns underscore the importance for regular maintenance of water infrastructure and ensuring the cost of maintenance is budgeted accordingly. This consideration was raised after an interview with representatives from EcoEnergy had already taken place, and because the budget is not public, and the delineation of roles and responsibilities is not outlined in the recent ESIA, it is unclear who will be responsible for maintenance.

7.2.2 LONG-TERM MITIGATION MEASURES

To address long-term water related challenges, EcoEnergy has also put forward a long-term mitigation measure. A representative from EcoEnergy indicated that they intend to build a dam upstream to address changes in water flow from long-term challenges like climate change. This dam would presumably ensure future water availability. At the time of this study, the dam was supposed to be built slightly upstream of the Mandera Bridge (also known as the Wami bridge). This bridge is located on the A14 highway, where the highway intersects with the Wami River in the Bagamoyo District (Interview 5, Oct 28, 2013). This section will review the viability of this measure by analysing current literature on climate adaptation.

While the impacts of climate change are difficult to predict, there are reasons to believe that climate change will significantly impact the Wami River. For example, the basin will have to cope with rising temperatures (including an increasing number of hot days), increased evotranspiration, unpredictable rainfall, and rising sea levels (GLOWS & FIU, 2014). Combined, these changes will have significant implications on the regional water cycle. Whether dams are an adequate adaptation tool to mitigate the impacts of climate change remains unknown and understudied. International Rivers (2011), an environmental NGO promoting river conversation, insist large dams actually render rivers more vulnerable to climate change as water flows become more unpredictable over time. Others see dams as a viable tool. For example, as global temperatures rise, new but relatively untested research suggests some dams might help regulate water temperatures (Cummings et al., 2013). However, most often, these conversations on climate change and dams converge around the use of hydropower as an arguably clean and renewable source of energy, whereas little discussion has taken place regarding the role of storage dams as a viable mitigation measure for climate change.

Despite being part of EcoEnergy's plan, the dam near the Manderu Bridge was not mentioned in the published ADBG ESIA. This research uncovered that the responsibility for constructing this dam falls on the Government of Tanzania (Interview 10, Nov 4, 2013). According to Smit and Skinner, "[a]ny realistic assessment of adaptation options [to climate change] needs to systematically consider the roles of the various stakeholders" (p. 94). In this case, the Government of Tanzania is clearly a key player on several fronts, yet their willingness to fully support the project is questionable, as demonstrated by the unwillingness of the government to tackle illegal sugar imports – a reality that may lead to the collapse of the project if SIDA withdraws support. An interview with the WRWBA indicated that the ESIA for this dam had not been completed as of 2013, nor was it scheduled to be completed anytime in the foreseeable future (Interview 10, Nov 4, 2013). This raises questions concerning *when* and *if* this leg of the water management plan will be implemented. Moreover, this approach focuses on ensuring availability through infrastructure, but to what extent does the assurance of availability improve climate change resilience?

According to Smit and Pilifosova (2003) adaptation to climate change means “adjustments in ecological, social and economic systems in response to actual or expected climatic stimuli and their effects or impacts” (p. 9). As climate change is characterised by uncertainty and variability, there are no templates or proscribed methods guaranteed to increase adaptability to climate change. Recent research, however, emphasises the importance of creating and incorporating flexibility into climate change measures. According to Fazey et al. (2010), climate change measures should allow for and enhance the diversity of responses that can be taken to address climate related challenges (coined as ‘response diversity’). Developments that limit the range of future responses to the uncertain and potentially multidimensional impacts of climate change may be harmful. Fazey et al. (2010) explain how a dam may provide a source of water, but dams are ‘fixed and inflexible’, meaning it they are not responsive to social or environmental change. A study undertaken in Italy suggests the dependence on reservoir-dominated water supply systems may increase vulnerability to challenges like climate change and population growth (Mereu et al., 2015). Instead, Fazey et al. (2010) suggest that climate adaptation measures should focus on (1) addressing underlying causes of ecological changes, (2) incorporating response diversity and, (3) enhancing adaptive capacity, that is “the potential or ability of a system, region or community to adapt” (Smit & Pilifosova, 2003, p. 11).

Although much of the literature focuses to technological solutions to climate change (i.e. water storage, climate forecasts and genetically modified seed varieties) a growing body of work points to low-tech and holistic options that may be more appropriate for small and subsistence farmers (e.g. Sherren et al., 2011). Currently, adaption measures at the farm-level vary significantly across developing regions (Harmer & Rahman, 2014), but several studies point to the diversification of crops, crop calendars and income as a common adaptation tools for smallholder and subsistence farmers. For example, in South Africa, people in the Mantsie region switched to livestock rearing when they experienced a prolonged drought (Thomas et al., 2007). Others in the Mantsie region choose to experiment with different crops varieties and crop calendars (Thomas et al., 2007). In western Tanzania, villages began drawing on other environmental resources like honey and timber to support and diversify their livelihoods (Sorey, 2011).

While it is important to consider the range of measures available, it is equally important to understand the decision making process that leads to adaptation (Smit & Skinner, 2002). Contemporary research on adaptation suggests that adoption of climate measures are influenced by a number of extenuating factors including farmer's perception of climate change and their adaptive capacity. Farmers may perceive environmental changes by observing changes in temperature and precipitation (Bryan et al., 2013; Mubaya et al., 2012), however in some cases they may perceive these changes as a natural occurrence, or an occurrence linked to cultural or spiritual beliefs instead of a direct result of anthropogenic changes (Mubaya et al., 2012). Moreover, their ability to adapt to changes may be constrained by the lack of information and financial constraints (Bryan et al., 2013; Deressa et al., 2009).

EcoEnergy's project is flexible insofar that it can respond to market demand by switching between the production of sugar and ethanol. This, however, may only serve to cushion outgrowers from market booms and busts. As outgrowers are required to take out large loans to participate in the project, their decision-making process may be influenced by indebtedness. Compound with little flexibility in terms of crop choice and crop calendar, outgrowers' adaptive capacity may be diminished because of these rigid structures. When I asked a member of Matipwili's WMC how they cope with water shortages, they instinctively said that they simply add another pipe (Interview 8, Nov 24, 2013), meaning when water is low, they need a longer hose to reach the water and pump it up from the river. This may be predicated on two circumstances: 1) this is a perennial river that does run low, but does not run dry and, 2) because the Wami is their only source of water, they have little choice. While this evidence is anecdotal, this serves as a reminder that adaptive capacity is constrained by poverty. While EcoEnergy's project is promoted as a model for sustainable agriculture, if long-term sustainability is on their agenda a thorough revision of the opportunities to increase the range of adaptation measures and enhance adaptive capacity should be a central component of their plan.

7.2.3 SHARING THE SHORTAGE

In their water management plan outlined in the ESIA for the ADBG (2012a), EcoEnergy has agreed to reduce irrigation when river levels are low. For instance, in the dry years

during October, November and March irrigation may be reduced to 35% of the optimum, and in February irrigation may be reduced to 85% of the optimum. In an interview, a representative for EcoEnergy indicated that this was part of their hope to share the shortage. This meant, in times of drought or periods of water shortage the river basin should cooperate and work together to share the burden of the shortage (Interview 5, Oct 28, 2013). This deviates from technical, infrastructure-driven solutions that dominate Gleick's 'hard path' to water security. Instead, EcoEnergy hopes to opt for an approach that involves basin-wide cooperation. This effort to share the burden among upstream and downstream water users is arguably a step in the direction towards a communicative form of water resource management. However, achieving this agenda demands a strong water governance body with the institutional capacity and ability to coordinate upstream and downstream water usage. This component of the project raises questions about the capacity of the WRWBA to effectively coordinate this basin-wide approach and ensure basin-wide water security. The following paragraphs explore this dynamic to understand the current state of water resource management in the basin, and how it may impact EcoEnergy's plans.

As discussed in section 3.5.1, IWRM is a coordinated form of water management that seeks to balance the social, environmental and economic water demands. As part of a wider initiative to implement IWRM in Tanzania, the Wami/Ruvu Basin was selected as the first basin to formally implement this form of management. After a special request from the Government of Tanzania, Tanzania partnered with the Japan International Cooperation Agency (JICA) in 2010 to begin working towards a joint project: developing an Integrated Water Resource Management and Development Plan (henceforth IWRM&D) for the Wami/Ruvu Basin. The final report for this project contains the blueprint for the IWRM&D plan in the basin (see JICA, 2013).

To effectively coordinate upstream and downstream water resource management, the Draft Interim Report promotes the creation of WUAs – a key component of IWRM. These consist of a localised group of water users who work together to manage water resources. The report indicates that WUAs will be formed to help coordinate and manage water activity in the entire basin. During an interview, the WRWBA indicated that some

WUAs do exist along the basin particularly upstream, but less so downstream (Interview 9, Nov 4, 2013; Interview 10, Nov 4, 2013). Before more WUAs are formed the IWRM&D plans says they intend to strengthen existing WUAs and create a Model of Activities (essentially a framework) that delineate the roles, responsibilities and operations of WUAs. This framework will then be applied to the formation of new WUAs. JICA (2013) predicts it will take five to seven years from 2012 to develop an effective model of activities (i.e. sometime between 2017 and 2019). In an interview, the WRWBA emphasised the importance of creating WUAs to help facilitate upstream and downstream communication (Interview 10, Nov 4, 2013). Most importantly, the WRWBA wants to connect upstream and downstream users so they can communicate with each other. During my research I discovered that a Water Management Committee (WMC) was operational in Matipwili. Interestingly, the committee was recently formed upon the request of EcoEnergy. The WMC had never heard of the WRWBA, and felt unsure who they were supposed to report to, indicating they are not part of the overarching system the WRWBA is trying to create (Interview 8, Nov 24, 2013). It is unclear why EcoEnergy made this request without linking the committee with the WRWBA.³²

When asked about water concerns related to EcoEnergy's project, the WRWBA referred to the challenges of institution building upstream – in particular challenges of establishing effective upstream WUAs. The participant indicated that the concerns come down to 'a matter of time', meaning they need time to address upstream water conflicts and build these institutions and create a platform whereby upstream and downstream water users can communicate with each other (Interview 10, Nov 4, 2013). As a result, EcoEnergy's capacity to share the shortage hinges on the capacity of the WRWBA to establish these WUAs.

The establishment of WUAs is a long-term and costly endeavour. Stoa (2014) demonstrates this in a comparative case study, exploring the implementation of decentralisation – a key component underpinning WUAs – in Haiti, Rwanda and Florida.

³² It is possible that the Chairman of the WMC is aware of the WRWBA, however I was unable to speak with him during my fieldwork.

This study highlights the role of financial resources in the implementation of decentralised water resources management. In particular he focused on the failure to consider the capacity of developing countries to implement these principles despite their attractiveness. Using Rwanda as an example, he suggests that “a robust statutory framework can contribute to water resources management efforts even if financial support is lacking”, however he concludes that decentralised water resources management cannot be implemented overnight. He states:

decentralization should be undertaken with an emphasis on the financial and human resources needed to successfully carry out that approach. Without strong and well-funded institutions, local governments will struggle to effectively manage water resources, and cannot be considered the appropriate governance level the subsidiarity principle envisions. (p. 33)

Hasty implementation of this principle leads to false assumptions that “water resources management should occur at the local level when in fact institutional capacities would suggest that local institutions are not the appropriate governance level” (Stoa, 2014, p. 32). Even in circumstances where decentralisation is appropriate, capacity building is a lengthy process. Similarly, a comparative study by Blomquist et al. (2007) demonstrates that these changes alter the status quo and disrupt local practices. Therefore adequate time is needed to adopt these changes and build trust between stakeholders. These studies do not suggest decentralisation is misguided, but draws attention to the importance of considering local and regional economic and social circumstances prior to and throughout the implementation of decentralisation.

Two participants in the not-for-profit sector also suggested that the WRWBA faces significant financial challenges that may limit their capacity to govern (Interview 4, Nov 4, 2013; Interview 7, Nov 5, 2013). Acquiring funds to run their operation relies heavily on the payment of water user fees. An ICUN report indicates the WRWBA receives 40% of their funding from water fees (Ngana et al., 2010). Unfortunately, many people who live in the basin chose not to pay fees and many are simply not aware of the need to do so – undercutting a major source of revenue for the WRWBA (Interview 8, Nov 24, 2013). During this research, the villagers I spoke with in Matipwili knew nothing of water permits or fees. They simply use the water as they always have. According to

Van Koppen (2007), previous water user fees in Tanzania include a \$40 one-time registration fee and an annual fee of \$35 – a significant amount for small farmers residing in rural Tanzania. To function more effectively the WRWBA will need to begin collecting more water fees. However, the WRWBA is up against what some in South Africa have described the ‘culture of non-payment’. In South Africa the imposition of water use fees on communities who could not afford additional fees led some people to seek untreated water from nearby rivers. McDonald (2002) suggests the real problem is not inherently cultural but rooted in ‘the ability to pay’ (McDonald, 2002). While the costs of permits for the Wamu/Ruvu basin IWRM&D plan at the time of this research was under review, an interview with a member of the WRWBA indicated the shortage of funds had already caused delays in the implementation of their operations (Interview 9, Nov 4, 2013; Interview 10, Nov 4, 2013).

In September of 2013 the WRWBA conducted a meeting with stakeholders on the Wami River (the meeting with stakeholders on the Ruvu River were delayed due to funding constraints). This meeting served to introduce the IWRM&D plan to stakeholders (exact numbers of participants are not known, but both small-scale and large farmers attended). As members of the Matipwili WMC had not heard of the WRWBA, it is unclear whether they were in attendance. At the time of this research, the WRWBA was still waiting for comments from the meeting, but provided some initial insights and perspectives from stakeholders. In particular, one participant – a member of the WRWBA – was concerned that people at the lowest levels do not understand the IWRM&D plan or why they need it. The participant indicated there was a request “to put [the IWRM&D plan] in a simple way or interpret it so the stakeholders can understand.” She indicated participants do not understand how this process will resolve their immediate water problems. These concerns reflect a previous study of the implementation of IWRM in South Asia; Monech et al. (2003) concluded that IWRM was unlikely to succeed in the region because:

People focus on constraints and immediate tasks, not on integration of numerous factors potentially influencing a problem. This is particularly true during periods of rapid social change when individuals and communities are being forced to deal with numerous sources of uncertainty that extend far beyond water related issues. (p. 8)

With this in mind, the participatory approach – while desirable – needs to be relatable and relevant to the local villagers involved. If the WRWBA cannot make this initiative relevant and useful to people along the Wami it could significantly undermine the success of IWRM&D plans.

Given these challenges, the establishment of basin-wide, communicative and collaborative water security is a long way from realisation. While EcoEnergy’s ambition to share the shortage is admirable, it overlooks the complexity and current state of water management in Tanzania. More importantly, this section underscores larger systemic challenges that are often overlooked in the dialogue on LSLAs. While the establishment of IWRM may or may not be the best approach for Tanzania, without a strong governance structure in place, there is no basin-wide body that can ensure water security is not jeopardised by the processes that facilitate LSLAs.

7.3 CONCLUSION

This chapter shows that EcoEnergy made several significant changes to SEKAB BT’s original project and has subsequently reduced the volume of water needed for their project. Contrary to some concerns in the literature that investors may not consider seasonal variability, EcoEnergy has incorporated these variations into their plans. And certainly, the planned construction of dams, reservoirs and irrigation equipment shows that LSLAs can bring the promise of water infrastructure. The implementation, however of these measures are contingent on a number of economic and political variables that are not easily resolved. By exposing the challenge of moving communities towards more formal approaches to water resource management, this chapter demonstrates that LSLAs rely on strategies that protect water availability, and in doing so may underestimate the importance of considering local water resource management capacities in their project plans.

CHAPTER 8: CONCLUSION

This thesis offers a snapshot of the ongoing controversy caused by the acquisition of land and water resources across the African continent by transnational investors. Focusing on coastal Tanzania, it attempts to enrich our understanding of how large-scale land acquisitions may influence water security by analysing the progression of a large-scale sugarcane development. By chronicling the transition from SEKAB BT to EcoEnergy, this thesis examines how water scarcity became a critical concern that was downplayed by SEKAB BT, and how the transition to a ‘model for sustainable agriculture’ under EcoEnergy seemingly resolved the water ‘threat’ by downsizing the project in order to minimise water usage. Using a critical lens that transcends simplistic understandings of water security as water availability, this thesis provides some insight on how large-scale agricultural investors approach water and what that may mean for water security in Tanzania. This thesis demonstrates how LSLAs may adopt approaches that do not confront local water realities, potentially jeopardising the development of a strong water governance system.

The proliferation of LSLAs that took place in relation the food price crisis was a response to global fears of food, water and energy insecurity. This thesis demonstrates how a number of agriculture and biofuel initiatives have promoted the continued acquisition of land in Tanzania. These initiatives aim to facilitate foreign investment and secure access to land for the production of food and energy crops. As demonstrated, these investments have been able to circumvent legal processes that are intended to protect the rights and security of smallholders. This thesis concludes that despite the critical link between agriculture and water, these guiding processes are primarily focused on facilitating acquisition and investment, and place little to no emphasis on preserving water resources integrity.

Through the analysis of this case study, this research shows how the original project plan proposed by SEKAB BT bore all of the hallmarks of a ‘land grab’. The export-oriented scenario posed a significant threat to water resources in the Wami Basin and the communities who depend upon it. The startling reality is this land acquisition was able to push its way through policy machinery that is intended to stop the implementation

of potentially harmful projects. The failure to halt this acquisition under these circumstances could have significantly jeopardised the integrity of the Wami River. These findings provide further evidence to claims that legal processes can facilitate ‘water grabbing’ on the grounds that investors are able to successfully navigate their way through these procedures (Franco et al., 2013b).

The transition from SEKAB BT to EcoEnergy and the subsequent alteration of the project diverges from our conventional understanding of land and water grabbing, and for this reason offers a unique case study. The reduction in water usage is a positive step that demonstrates how projects can take heed of advice and produce a project that is more beneficial to the local market and communities. From this perspective, scaling back the project and subsequently reducing water use was EcoEnergy’s solution to previous concerns that SEKAB BT may withdraw too much water from the Wami River. This ostensibly resolved the water ‘threat’ of the previous project. This reflects the conventional understanding of water that centres on water volume and availability as a dominant concern. From this perspective risk and threat arises when water volume is too low, or in some cases too high. While it is undoubtedly true that low water levels are a credible cause for concern, the emphasis on volume masks the equally critical issues of management and distribution. This thesis challenges this view to attempt to reach a better understanding the implications of LSLAs on water security in Tanzania.

The overarching aim of this thesis is to explore *the likely implications of LSLAs on water security in Tanzania*. This project clearly promotes the formalisation of water resource management as smallholders involved with the project are required to obtain water rights and adopt water efficient technologies (that vary in efficiency). According to Veldwisch et al. (2013), this shift may make their water usage more ‘visible’, but it is a double-edged sword. As discussed in the body of the thesis, outgrowers will be required to take on heavy debt burdens. From this perspective, their ability to pay off these loans is contingent on their ability to have a secure access to water. While EcoEnergy has implemented a number of measures to ensure water availability, this research shows that these measures may not be implementable, and their technology driven approach may overlook local context and power asymmetries that may complicate and shape water

management, access and distribution at the local level. By neglecting to factor in local politics and capacities EcoEnergy inadvertently undermines their own water resource management agenda. Without a strong governance structure that takes account of the social, political and biophysical aspects of water resource management, water security cannot be guaranteed. While LSLAs are often promoted for bringing in water infrastructure, drinking water and social programs, this research suggests the use of LSLAs as tools to promote growth and the commercialisation of agriculture is not a substitute for a long-term water management strategy.

While recent events suggest that EcoEnergy's project may never materialise, the implications of these findings for Tanzania are significant. As discussed, Tanzania is currently party to several initiatives that promote agricultural commercialisation and intensification. Under the New Alliance and SACGOT, PPPs are actively marketed as an engine for growth, prosperity and development. As this research suggests, water is governed by a plural legal framework in Tanzania, and the ability of the water authorities to govern is undermined by weak institutional capacity and insufficient funding. If large-scale commercial agriculture is implemented across the SAGCOT area without strong water governance bodies that are able to effectively regulate these developments and make space for local water management practices, it appears unlikely that investors will take this into consideration either. This could severely undermine the ability of Tanzania to develop a long-term water security strategy that strengthens the water rights of smallholders and makes smallholder water rights and water use visible and counted.

While this thesis only touches on the role of climate change, this research does suggest that EcoEnergy's water management plans do not reflect forward thinking or long-term planning that is prepared to deal with climate change. While this might be true for many developments in Tanzania at this time, to truly be an innovated project and a model for sustainable agriculture these kinds of projects need to consider long-term viability. Perhaps even more importantly, the Government of Tanzania needs to begin mindfully considering the cumulative impacts of LSLAs. This is particularly pertinent for river basin management. While water security often considers upstream and downstream relations where the downstream users are the victims of unsustainable water use

upstream, the opposite is equally true. In this case, if the WRWBA succeeds at governing the Wami River sustainably, it may not be wise for them to allow any large water withdrawals upstream from this project. This raises many questions about what kind of projects upstream may not be able to proceed because they could jeopardise large-scale projects downstream. This underscores the value of implementing measures – and projects – that are flexible, and allow for a broad range of future options (Fazey et al., 2012). By adopting a cumulative and flexible approach they may be able to begin developing a long-term development strategy that is resilient to environmental changes.

While this study explored the perspective of a number of stakeholders involved in and knowledgeable about the project, the research for this project was conducted with limited resources and in a short time frame. Further study is needed to explore how and if large-scale investments, like the one studied in this thesis, interact with local management practices throughout the lifespan of the project. And, more specifically, as this study was not able to obtain a truly representative sample from the community, further study is needed to understand how different members within the affected communities view their changing relationship with water following the acquisition of land.

Notwithstanding its limitations, above all, this study endeavours to enrich our understanding of how LSLAs approach water resource management and confront how this process may unfold in a culturally diverse and dynamic environment like rural Tanzania. Despite the shift towards an arguably more positive and mutually beneficial project, EcoEnergy's project in Tanzania is currently at a standstill as they await a financial decision from SIDA. This goes to show that LSLAs that are contingent on huge influxes of capital may not be the most sustainable or viable options for Tanzania. If the project is able to secure adequate funding, this research demonstrates the need for a significant and sustained effort on behalf of the project management and the government to ensure that water resource management policies are planned in conjunction with local communities, practices and capacities. If investors continue to ignore these realities this suggests that long-term strategies geared towards strengthening smallholder's water rights may not be conducive with LSLAs.

While this thesis is only a preliminary study on the implications of LSLAs, some initial conclusions and recommendations can be drawn to enhance and move forward the discussion on agricultural investment and private sector engagement in sub-Saharan Africa. In particular, I suggest that small-scale investments may be a more appropriate and sustainable alternative to prevailing trends that require large-scale cultivation and large sums of capital. The sheer scale of capital needed for these projects (like in the case of EcoEnergy), may be their downfall. Chiefly due to the risks associated with EcoEnergy's project – i.e. the instability of the sugar market – SIDA was hesitant to back this endeavour. This raises questions concerning scale. Would smaller scale projects be more appropriate? Would they be better equipped to tackle local problems and work within local structures? While these questions warrant further study and research, I suggest that small-scale investments that are pro-poor and climate sensitive may not generate the same sum of profit, but may ultimately be more beneficial for local residents by significantly reduce risk and incorporating flexibility and adaptive measures to cope with environmental and social change.

While EcoEnergy's project is significantly better than SEKAB BT's project, it hinges on significant capital and will consume a significant amount of environmental resources without the appropriate regional governance mechanisms established. Although it is undeniable that investment in rural agriculture is desperately needed, it has become clear over the course of the land rush that large-scale and investor driven projects continually fail to deliver on promises. In conclusion, this thesis suggests the trajectory of agricultural intensification in Tanzania may not serve the long-term interests of the most vulnerable.

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