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“Where the power flows”

Exploration of power relations amongst actors in the water management of the Rift
Valley Basin, Ethiopia

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Abstract

The research aimed to provide answer as to how power dynamics of the various actors influence the water management of the Rift Valley Basin. The overall aim is met through answering in what way do: 1) private sector, 2) smallholders, and 3) government officials play a role in the water management of the Rift Valley Basin?" and utilising the analytical power of concepts such as institutional bricolage, structural power and boundary organisations, all under the umbrella of a political ecology study. By analysing two districts in the regional state of Oromiya, it has utilised a case study and constructivist approach. Data collection was done through semi-structured interviews as well as desk reviews. The main findings are: first, through institutional bricolage it is evident that differences in scale and levels contribute to differing worldviews between actors. Second, knowledge-creation is shaped by economic-political interests in the Basin as analysed in boundary organisation concept. Lastly, it can be concluded that smallholders are the least to influence, whereas similarities in interests between the government and the private sector make the maintenance of power easier through controlled participation and knowledge dissemination to other actors.

Key words: Rift Valley Basin, Ethiopia, boundary organisations, institutional bricolage, structural power, water management, political ecology, multi-actors

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List of acronyms

a.s.l.	Above sea level
ATJK	Adami Tulu Jido Kombolcha
CPR	Common pool resource
CRV	Central Rift Valley
CSA	Central Statistical Agency
EC	European Commission
EU	European Union
GDP	Gross Domestic Product
GIRDC	Generation Integrated Rural Development Consultant
GTP	Growth Transformation Plan
HoAREC&N	Horn of Africa Regional Environment Centre and Network
IFPRI	International Food Policy Research Institute
IWMI	International Water Management Institute
IWRM	Integrated Water Resource Management
<i>Kebele</i>	Village-level governance in Ethiopia
MOWIE	Ministry of Water, Irrigation and Energy Resources
MSP	Multi Stakeholder Platform
NVIVO	A qualitative data analysis software
ODI	Overseas Development Institute
RBA	River Basin Authority
RV	Rift Valley
RVLBA	Rift Valley Lakes Basin Authority
SNNPR	Southern Nations, Nationalities and Peoples' Region
<i>Woreda</i>	District-level governance in Ethiopia
WSDP	Water Sector Development Programme

1. INTRODUCTION

Water is the source of life. Consequently, the physical and social characteristics of water management are interdependent (Ison, Röling, & Watson, 2007). Humans conceptualise different ways of understanding water, making management consist of a wide variety of values, knowledge, and perspectives in a collaborative and participatory decision making process (von Korff, Daniell, Moellenkamp, Bots, & Bijlsma, 2012, p. 1). The words ‘collaborative’ and ‘participatory’, in turn, entail multiple perspectives and stakeholders which can increase both connectedness, and also complexity, uncertainty and conflict (Ison et al., 2007). They are even called the ‘messes’ or ‘wicked problems’ especially in the public policy sphere (von Korff et al., 2012, p. 1). Therefore, the multiplicity and complexity of actors and perspectives make studies of water management very challenging from the economic, sociological and political point of view.

Water governance and its management is an inherently political subject in the sense that they involve conflicts in the allocation, and in general the use of an increasingly scarce and valuable resource (Araral & Wang, 2013, p. 3952). The Rift Valley Basin in Ethiopia¹ provides such a stage where various actors, and their diverse interests and interactions on water management come into play. Home to around 11 million people, the Basin serves not only the livelihoods of the local communities, such as irrigation for small holders, water for livestock, and fishing; but also the existence of various economic and political interests, i.e. floriculture and horticulture companies, and interests of two administrative regional states (GIRDC, 2010a, p. 10; Pascual-Ferrer, Candela, Pérez-Foguet, & Kebede, n.d.). This coupled with pervasive water degradation that is both man-made and natural in the area make the water management issues even more complex and challenging in this region (Hengsdijk, Van Driel, Haile, Argaw, & Jansen, n.d.).

The issue of the ‘human’ management of a water basin therefore, comprises of many layers of social, political and economic institutions, various types of users and various

¹ The Rift Valley Basin in Ethiopia is also called the Central Rift Valley (CRV) Basin, denoting its central location in the East African Rift; or the Rift Valley Lakes Basin, denoting the presence of many lakes in the Basin. In this study, I use the first name (Rift Valley Basin) for simplicity and uniformity’s sake.

type of water usage and allocation, as well as levels of governance and regulatory framework (Berger, Birner, McCarthy, Díaz, & Wittmer, 2006). This complexity provides an arena for power relations to be exercised between actors whom all have high stakes and interests in the resource. Such a case thus requires looking into the concept of power, and politics as an exercise of power, in relations to environmental change and management (Garcia-Lopez, 2009, p. 23). The purpose of this qualitative study is therefore to explore and contribute to knowledge regarding power relations between the different actors (i.e. smallholders, private sector, the public sector, academia, donor, and civil societies) and institutional arrangements, that are involved in the water management of a common pool resource² located in the Rift Valley Lakes Basin.

The overall aim of this thesis is to “investigate how power dynamics of the various actors influence the management of water of the Rift Valley Basin.” The overall aim is met as we provide answers to the questions of the roles of the three biggest actors in the RV-Basin, *In what ways do the: 1) private sector, 2) smallholders and the civil societies, and 3) government officials shape the water management of the Basin?* The study employs a case–study approach from a constructivist standpoint and relies on data from desk reviews and fieldwork from two districts in the Oromiya regional state of Ethiopia. The study is conceptualized with the analytical power of concepts such as institutional bricolage, structural power and boundary organization - under the umbrella of a political ecology.

Literature on the Rift Valley Basin mostly focuses on physical conditions in a temporal sense, smallholders and their livelihoods, as well as agricultural production analysis. At the same time, studies on institutional arrangements and power relations looking through the lenses of a post-institutionalist, multi-level analysis are few. My original contribution to this field of knowledge is to fill this gap in the empirical and theoretical literature - through this institutional study that addresses power relations amongst actors at various level, focusing on the dynamics in an economically,

² Commons are natural resources that are accessible to all parts of society, and thus held in common, such as air, and earth. Common pool resources (CPRs), on the other hand, are systems that generate finite quantities of resource units (e.g. water) so that one person's use subtracts from the quantity of resource units available to others (Cleaver, 2002). They have characteristic of both public goods and private goods problems: free riding problem and problems on governance and management of appropriations, respectively (Ostrom, 2002, p. 1317). Ostrom further notes that irrigation systems are the most important types of CPRs (Ostrom, 1990, pp. 21-33).

environmentally, and politically sensitive common pool resource such as the Rift Valley Basin. I focus on two operational areas³ – two representative upper-stream districts from the Rift Valley Basin to discuss that water as a resource transcends (administrative) boundaries. These two districts represent the whole Basin in the holistic sense: they are both small to medium size towns, have agriculture production as the mainstay, and possess similar socio-economic and socio-demographic background as the rest of the Basin. I also specifically focus on the use of surface water for agricultural purposes (i.e. irrigation and livestock water supply) vis-à-vis the research questions.

The rest of the thesis is organised as follows: The second chapter provides information on the background case study. The third chapter brings the literature review, and guides the reader through the concepts and themes used in the thesis. The fourth chapter presents the framework, and how it is applied in the analysis section. The fifth chapter outlines the methodology of the study, research design as well as its strength and weakness. It further discusses the reliability and validity aspects, and processes of data collection and analysis. The sixth chapter explores the analysis. Finally, the seventh and final chapter concludes and presents recommendation for future research.

2. BACKGROUND

There are several issues pertaining to stakeholders' views and institutional dynamics in a water basin. This section provides a detailed overview of these issues, relating to how water basin is managed in Ethiopia, including the existing policy and legal framework, as well as context on the Rift Valley Basin as well as the various efforts to manage it. I start off the section by providing the following general information about how water basin is managed in Ethiopia

2.1. Water basin management in Ethiopia

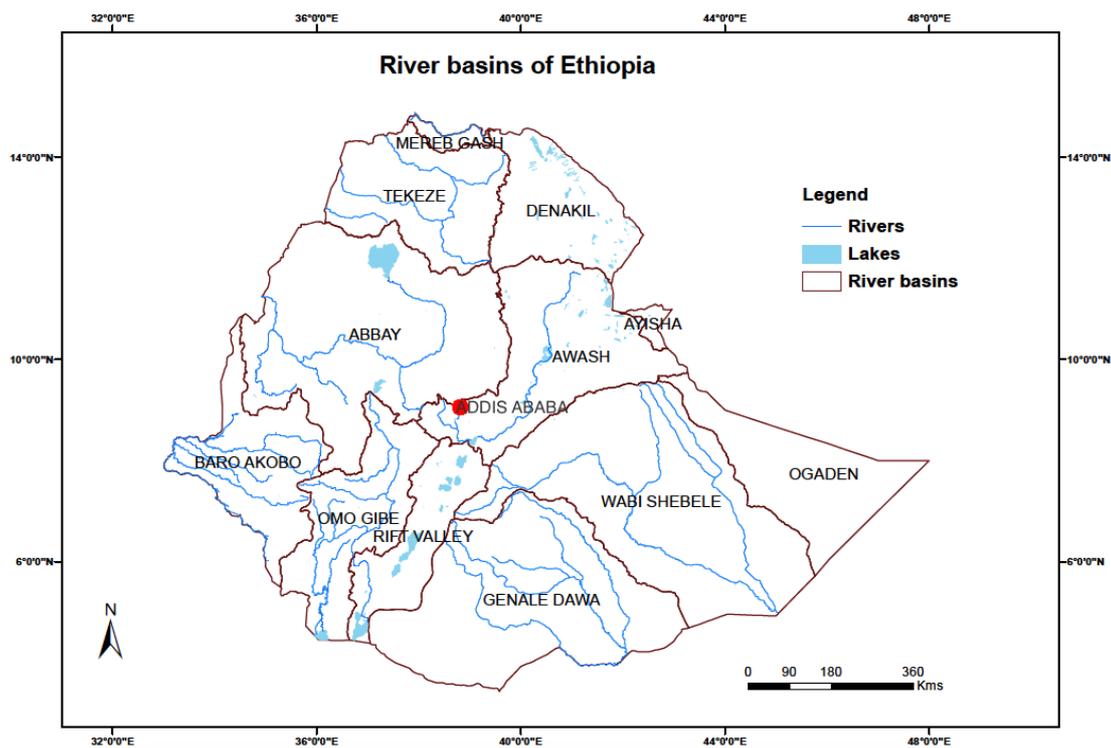
Water is a critical resource in Ethiopia, the second most populous country in Africa. It is endowed with 12 river basins with an annual runoff volume of 122 billion m³ of water, which makes an average of 1575 m³ of physically available water per person

³ Operational area is a translation of (abstract) concepts into (measurable) variables. It is also selected as places where the social phenomena are indicators of the social concepts used in this paper (Ostrom, 2002).

per year, well above the universally accepted scarcity threshold of 1000m³ (Awulachew et al., 2007; ODI, 2015). Although abundant, the calculation does not take into account the spatial and temporal distribution, nor quality of the water (ODI, 2015). In fact, in 2002-2003 Ethiopia faced a major drought, which led to famine and massive decline in its real GDP growth (Mwanakatwe & Barrow, 2010).

As a consequence water management is vital in the country. Water planning in Ethiopia recognizes river basins as hydrological boundaries for planning unit and water resources management domain. This includes allocation and apportionment aspects (Ministry of Water, 2001).⁴ The map below shows the 12 basin boundaries of Ethiopia.

Figure 1 Map of Ethiopia's 12 river basins



Source: Gandhi (2015a)

To illustrate the importance, water is regulated up from the constitutional level down until strategy level. Water and other natural resources are regulated in the 1995

⁴ Granted, river basins are often advocated in water governance discourse as the most logical unit for water resources planning and optimum utilization of available water resources, as they involve various dynamics that transcends beyond engineering concept (Harvey, 2012-15).

Constitution of the Federal Democratic Republic of Ethiopia. It stipulates that all natural resources (including water) are the common property of the Ethiopian people (article 44) (ODI, 2015). It is operationalized in the 2010-2015 quinquennial plan called the Growth and Transformation Plan (GTP) that sets to make irrigated land area a six-fold increase and to quadruple hydropower generation capacity by 2015 (ODI, 2015, p. 3). Specifically regarding water policies, there are the Ethiopian Water Resources Management Policy (2001) and the 2002 Water Sector Strategy, which has integrated principles of Integrated Water Resources Management (IWRM) and basin planning. The provisions of the water policies include basin planning, stakeholder participation and the user plays principles. It further stated the need to balance social, economic and environmental objectives (ODI, 2015). Another important document is the Water Sector Development Programme (WSDP 2002-2016) that provides a strategy for Ethiopia for water resources management and development. The last important document is the 2007 Proclamation on establishing River Basin Authorities (RBAs) to “promote and monitor the integrated resources management process in the river basins falling under their jurisdictions [...]”.

Table 1 highlights these policies. From this three basin councils were established, including the Rift Valley Lakes Basin Authority (No. 235/2011) (Ibid.). There are also Master Plans for various water basins in Ethiopia, among which the Master Plan of Rift Valley Lakes Basin. Description of the regulatory framework is important to highlight the fact that water basins, especially the Rift Valley Basin, are managed by law in Ethiopia. These regulations further show that the government take into account stakeholder participation and IWRM, of which are analysed in the later section.

Table 1 Summary of water policies and directives regarding the Rift Valley Basin

No.	Policy document	Year	Content
1	Constitution of the Federal Democratic Republic of Ethiopia	1995	Article 44: All natural resources (including water) are the common property of the Ethiopian people
2	Growth and Transformation Plan	Quinquennial (currently	Sets to make irrigated land area a six-fold increase and a quadrupling

		2010-2015)	of hydropower generation capacity until 2015
3	Water Resources Management Policy	2001	Included the principles of IWRM and basin planning
4	Water Sector and Basin Planning	2002	Included the principles of IWRM and basin planning
5	Water Sector Development Program	2002-2016	Provides strategy for Ethiopian water resources management and development
6	Proclamation on Establishing River Basin Authorities (RBAs)	2007	Promotion and monitoring of the integrated resources management process in the river basins falling under their jurisdictions
7	Master plan of Rift Valley Lakes Basin	2010	Containing water use, allocation and rights of the Basin
8	Proclamation 235/2011	2011	The creation of Rift Valley Lakes Basin Authority (RVLBA)

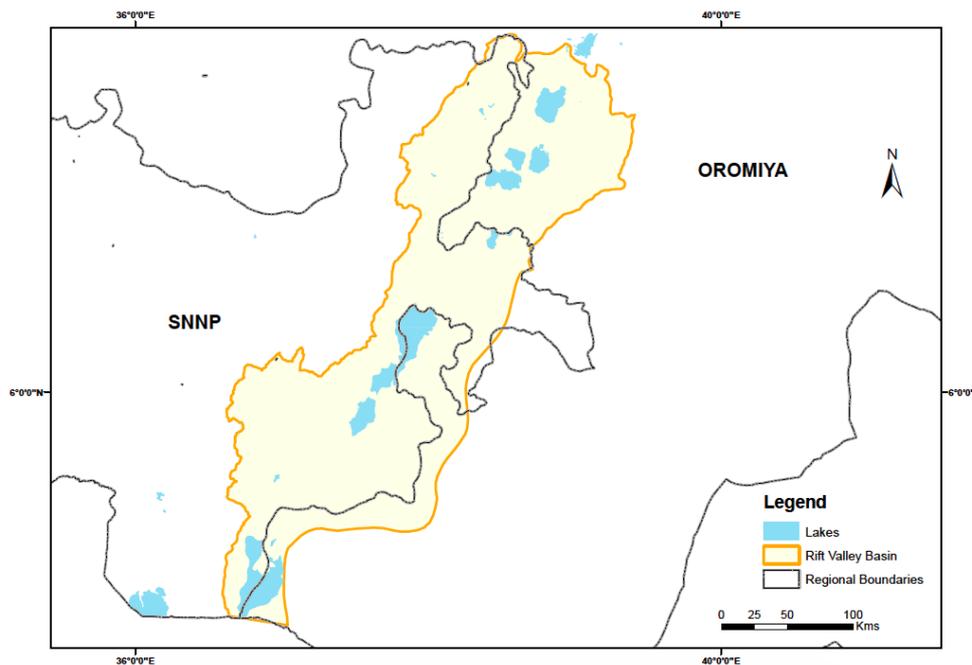
Source: GIRDC (2010a); ODI (2015)

2.2. Rift Valley Basin

This section provides description of the specific Basin, as well as the two districts on which the research is based. Ethiopia's Rift Valley Basin (henceforth called the RV-Basin) is located along the East African Rift that spans from the north of Ethiopia to Mozambique in the south. In Ethiopia, it is shared administratively by two regions: Oromiya and the Southern Nations, Nationalities and Peoples (SNNP) Region as can be seen in Figure 2 below. The RV-Basin is dominated by rain-fed, mixed crop-livestock agriculture. The RV-Basin is characterized by arid and semiarid climatic conditions and a rapidly growing population (Tesfaye, 2008). The centre of the RV-Basin is located 120 km south of Addis Ababa, Ethiopia's capital city, and it is characterized by an alternating topography between 1500–1700 m above sea level (a.s.l.) in the central valley floor and at 4000 m a.s.l. in its western and eastern escarpments (Jansen et al., 2007). Its annual rainfall distribution is a bi-modal pattern.

Crop production, mainly rainfed cereal-based production systems (teff, maize and wheat) and modest livestock rearing are the mainstays of livelihoods for households in the Basin (Kassie et al., 2013, p. 59). Presentation of these characteristics is important to highlight how social and biophysical traits of the case study area are similar to whole RV-Basin.

Figure 2 Map of the Rift Valley Basin spanning between Oromiya and SNNP regions

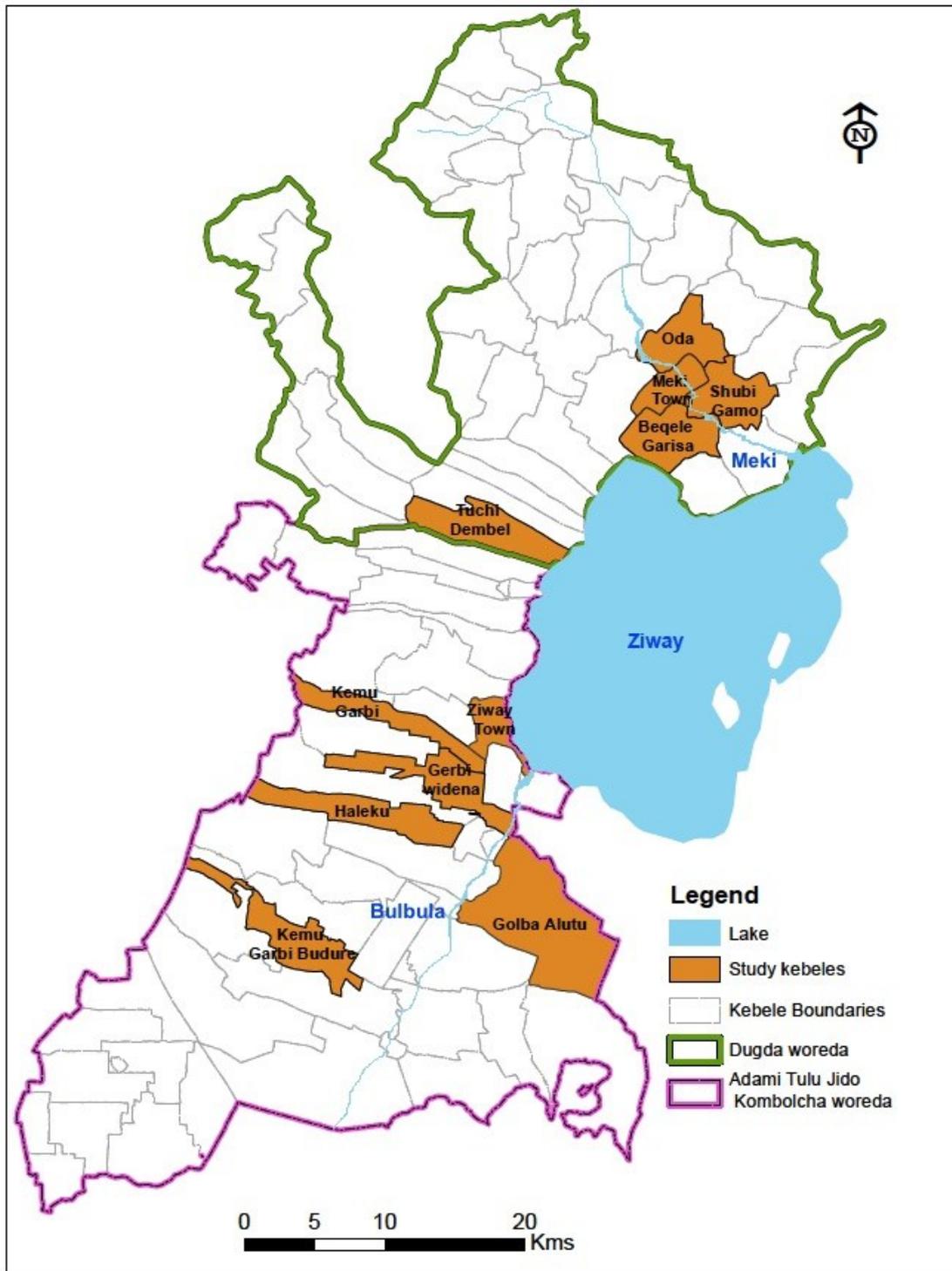


Source: Gandhi (2015b)

Lake Zeway and the surrounding area form the centre of the Basin. For this study, I look at two district-level towns called Adami Tulu Jido Kombolcha (ATJK) and Dugda, and their surface water source: the river of Meki, Lake Zeway and Bulbula river. The map below shows the study sites: five *kebeles*⁵ in Dugda *woreda* and six *kebeles* in ATJK, as well as where the rivers and lake are located within the localities.

⁵ Districts or *woreda* are the third-level administrative divisions of Ethiopia. They are composed of a number of wards (*kebele*) or neighborhood associations, which are the smallest unit of local government in Ethiopia.

Figure 3 Map of study sites/kebeles in the woredas of Dugda and Adami Tulu Jido Kombolcha⁶



Source: Gandhi (2015c)

⁶ Please note that the coordinates for Meki and Bulbula rivers are approximation combined from several existing maps

Dugda *woreda* has a surface area of 1468 km² (Beshir, 2004). In this *woreda* flows the Meki river and also the Zeway lake. Every farmer there has very small portion of land, which covers only 0.25 ha. They grow cabbage, onion, tomatoes, green beans, maize, papaya and fruits (i.e. high value crops) (Interview GO1, 2015). The *woreda* irrigation potential is substantial; from the lake 33%, the river 22% and 45% for groundwater (Ibid.).

ATJK *woreda* is an adjacent district and has a similar demography and geography. It has 1403.25 km² of surface area (Beshir, 2004). It is dominated by the Oromo ethnic group. The topography of the *woreda* is relatively flat ranging from 1500-2300 m a.s.l. It is characterized by low annual rainfall (750 mm). The farming system is entirely cereal-based and most farmers are food insecure (Adimassu, 2012). Usually farmers in this *woreda* also have irrigated plots along with mostly rain-fed system. The *woreda* consists of 38 *kebeles* (Tesfaye, 2008).

Based on the Population projection from the May 2007 National Population and Housing Census of Ethiopia, total population in 2015 for Dugda *woreda* is 185,534, whereas ATJK counts 177,390 (CSA, 2012). The urban-rural ratio are 1:2.5 and 1:4.8 respectively, denoting a largely rural population (CSA, 2013). Population density in 2012 is calculated as 183,6 and 150.1 respectively, which can be said relatively low (CSA, 2012). From the descriptions above, we can see that the two *woredas* are quite similar in their demography and topography to the rest of the RV-Basin, as described in earlier paragraphs.

The Rift Valley lakes and rivers constitute as one of the most biodiverse areas in Ethiopia (GIRDC, 2010a). The water resources are used for water supply, irrigation (both for small-scale farmers and large investors), wildlife habitat, and ecotourism. For example, there are currently 7807 irrigation beneficiaries out of 26,190 farmers in the ATJK *woreda* using Lake Zeway, Bulbula river and ground water (Interview GO3, 2014). This area combines high investment, high population use, big irrigation potential, combined with poverty and difficulties in basic services (e.g. electricity and drinking water supply). For all investments related to irrigation surface water use in the two *woredas*, please see Appendix 4.

Various authors have mentioned the complexity of environmental and socioeconomic interrelationships in the region that make it highly vulnerable to both food security and natural resource point of view. For example, the region faces problems of drought, weak institutions, resource degradation and low agricultural productivity (Ayenew, 2007; Biazin & Sterk, 2013, p. 101; Tesfaye, 2008). In the Rift Valley Basin specifically, poor management is illustrated by the fact that water withdrawals remain unchecked, lack planning, regulation and monitoring, as well as unclear authority and enforcement between three organisations: the Basin Authority, regional administrations or the Ministries (ODI, 2015). The region also increasingly uses irrigated agriculture to rectify its over-reliance on rainfed system (Tefaye, 2008). Interview participants thus conveyed that environmental problems are aggravated (e.g. water level decrease, increased saltation, high turbidity, pollution) (Interview GO2, GO3 and GO4, 2015). This is due to the fact that water is a resource that is of direct interest to the entire population, as well as to government at all levels, the private sector and civil society.

2.3. Typology of actors

This study aims to investigate the power relations and influences amongst actors concerning surface irrigation use in the RV-Basin. Therefore it is imperative to inclusively map the different actors and their characteristics, presented in a typology in Table 2 below. Within these actors there are variations, for example gender, education level, locality, age groups, ethnicity. Even farmer categories would have different perceptions and mind-sets depending on if they are organised in a cooperative group or if they are individual, as seen in the analysis section later. The heterogeneity between different state bodies was also be taken into account when the state's role is considered, as they can have conflicting perceptions (Akbulut & Soylu, 2012, pp. 1147-1148). The complexity of mapping stakeholders' interests is exacerbated due to the multiplicity of levels. Multiplicity of levels brings about different capacity (e.g. international or national NGOs would have more resource than local NGOs), leverage (e.g. national level government have more power and leeway than local government), which is important to see how power is being exercised.

Table 2 Typology of actors in the Basin

No.	Actors	Levels/types	Characteristics
1	Smallholder farmers	Individual farmers	Mostly impoverished, cereal – producing farmers (e.g. wheat, teff, and maize)
		Irrigation cooperatives	Groups of farmers sharing resources such as irrigation canals and irrigation pumps
2	Government agencies	<i>Dugda and ATJK woreda</i> offices	The lowest administrative unit. Examples of departments include Irrigation, Agriculture, Land and Environmental Protection, Water Supply, Investment, and <i>Woreda</i> Administration. They provide direct support to the people and report to zone offices
		East Shewa ⁷ zone offices	This office level supervises the two <i>woredas</i> in the case study, and are also obligated to report to the State offices
		Oromiya state offices	The state offices create policies that are in line with the Ethiopian Constitution
		Rift Valley Lakes Basin Authority (RVLBA)	A federal level Basin Authority mandated to manage the Rift Valley Basin
		Federal offices	For example, an office is Ministry of Water, Irrigation and Energy resources of the Federal Government. They assist (not supervise) the state level departments in terms of budget aid and capacity building

⁷ Dugda and ATJK districts are located in East Shewa zone. Shewa is the name of an old province in Ethiopia consisting of three modern zonal administrative regions: East, West and North that are located in the Oromiya region. ‘Shewa’ can also be spelled ‘Shoa’ in other literatures.

		Cooperative unions	Semi-autonomous bodies located at the <i>woreda</i> level that are created to support cooperatives' work
3	Civil societies	Local NGOs	Does implementation in the areas of sustainable development, livelihoods, gender, conservation and poverty reduction
		National/international NGOs	Works on less specific topics, partner with local offices on projects, usually have direct contact with donors
4	Private sectors	Ethiopian private companies	Smaller, less technologically advanced horticulture producers
		Foreign companies	Bigger floriculture and horticulture farms
		Mixed Ethiopian state and private companies	Horticulture production
5	Academics/researchers	Local government research centres	Produce studies mainly regarding water quality, fishery, and soil condition in the Basin
		National universities	Produce studies, mainly through projects and Msc/Phd students, regarding the Basin
		Foreign universities	Contracted to undertake physical and social studies in the RV-Basin
6	Foreign donors	Development cooperation agencies	Several agencies focus their work in the Basin, especially regarding natural resource management

Source: Author, from interview and literature

Various institutional efforts to better the condition of Basin are also present. Apart from development projects, there are formal institutions such as the creation of the Rift Valley Lakes Basin Authority, the creation of a Basin Master Plan, and a multi-

stakeholder platforms called the Steering Committee and the Working Group, as listed below.

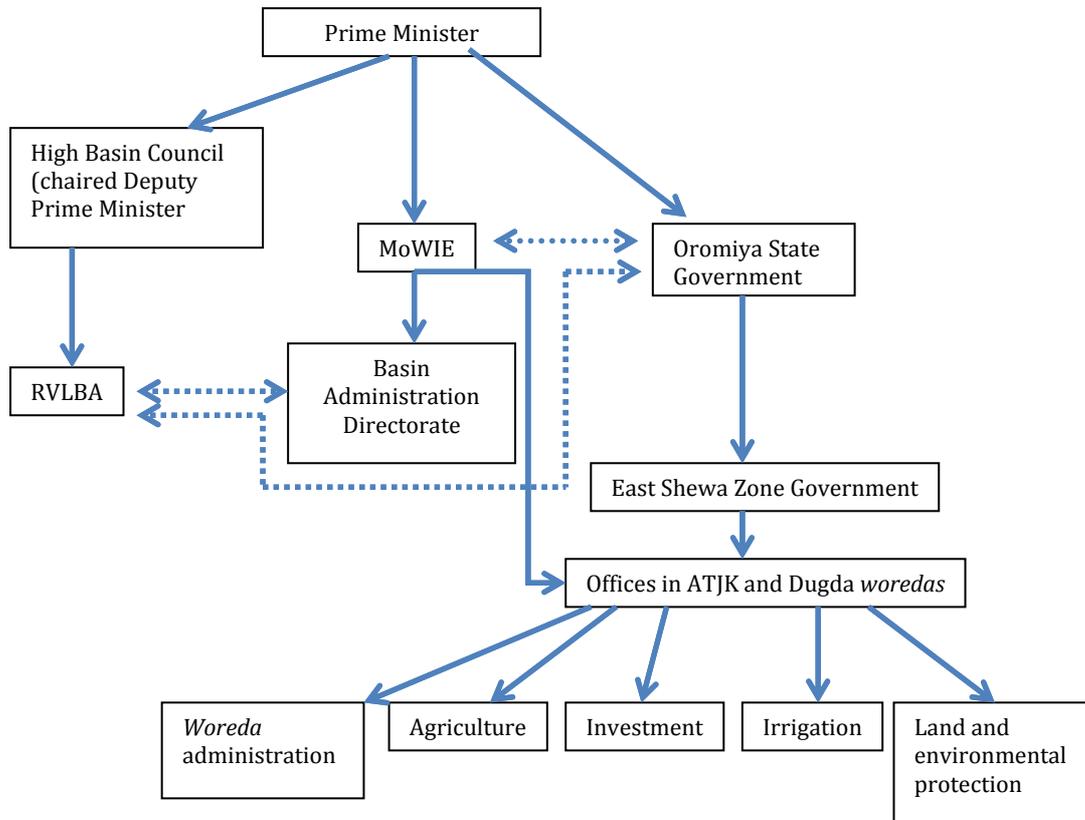
Table 3 Typology of efforts of formal management in the Basin

No	Action	Initiator
1	Creation of Basin Authority	Federal government (Prime Minister's Office)
2	Creation of Basin Master Plan	Ministry of Water, Irrigation and Energy Resources
3	Creation of Basin Steering Committee and Working Group	NGO 1

Source: interview and literature

The government represents the de jure manager of the RV-Basin. As the public agencies dealing with the Basin span from the Federal down to the district level and also deal with a variety of issues, it is useful to visualise the situation through a flow chart (Figure 4). The administrative bureaucracy chart below further shows the relationships between government agencies at different levels. Dotted lines show coordination mechanisms, whereas full lines show a top-down chain of command. They are all in relation to my research area, i.e. regarding surface water irrigation and agriculture use and presenting the two selected districts in the Oromiya State. The offices in the *woreda* level not related to the study are excluded, such as water supply and wildlife. The flowchart ultimately shows the complexity of the government network that manages the Basin.

Figure 4 Administrative flow chart of the water management in Rift Valley Basin in the two *woredas*



Source: Author, based on interviews

The administrative map shows the five different *woreda* offices that deal with water use for irrigation and livestock in both Dugda and ATJK *woredas*. The government offices in the *woreda* level are mostly waiting for directives from the Oromiya state government (through the East Shewa zonal government), whereas the other line from the Ministry of Water, Irrigation and Energy (MoWIE) denotes that they receive training and capacity building. In turn, the MoWIE does not supervise the state government as they only assist in budget aid and capacity building (Interview GO6, 2015). The Basin Administration Directorate is reporting to the Ministry of Water, Irrigation and Energy offices in regards to management of all the river basins, which in turn reports to the Prime Minister, whom holds the executive power in Ethiopia. The Basin Administration Directorate in conjunction with the Ministry oversaw the creation of the Rift Valley Master Plan, as well as working closely with the autonomous, federal-level body Rift Valley Lakes Basin Authority (RVLBA). RVLBA also works with the two state governments, Oromiya and SNNP. It reports to

the also newly established High Basin Council, which is chaired by the Deputy Prime Minister.

3. LITERATURE REVIEW

This section presents existing and on-going discussions regarding, first, the complexity of managing and studying water resources as also encountered in this research. Second, it also looks at popular concepts investigated for its power relations in this research, namely the participatory concepts of Integrated Water Resources Management (IWRM) and Multi-Stakeholder Platforms (MSPs). Third, literature has highlighted the need to identify power relations that are possessed differently by stakeholders, e.g. smallholders vis-à-vis donors, which are often neglected in studies.

3.1. Complexity of studying water and challenges of managing water basins

Water as a resource is challenging to manage. First of all, by nature water transcends borders, unlike for example, land. Guo (2012) stipulates that even within borders there are differences in administration, topographies, demographics and culture. Looking at physical science perspective point of view, geological formation and/or geographical distribution of water is not consistent with said administrative/political boundaries. However, amongst most water management principles, the widely accepted basic principle is that water should be managed on the basis of its natural hydrological boundaries (river basin or catchment). It has now become the foundation of, for example the European Framework Directive (EC, 2000), although there are also different authors mentioning the difficulty of this approach (Tortajada, 2001; Swallow, Johnson and Meinzen-Dick, 2001 Cleaver & Franks, 2005). As is the case, Wang, Otto, and Yu (2013) stress the importance of looking at both physical and social settings in analysing water use, especially for irrigation. They also explain that surface water differs from groundwater in terms of monitoring and management.

Authors have argued that policy makers, water managers and researchers should recognize the interdependencies of physical and social characteristics, and understand that different populations possess different understandings of terminologies such as ‘catchments’ or ‘watersheds’ (Ison et al., 2007; von Korff et al., 2012). This can help in the times of scarcity problems and conflicts amongst water users became increased.

Politically, cross-cultural, cross-border area management is always a more difficult task as it is more likely that there are people with different perspectives that are unable to assess options for appropriate responses to resource management needs (Guo, 2012, p. 69).

The different actors involved in water management would add complexity, as stipulated by authors such as Ostrom (1990), Dinar, Kemper, Blomquist, and Kurukulasuriya (2007) and Meinzen-Dick (2007). Furthermore, management comprises of many layers of social, political and economic institutions. Even then, at the sub-basin level there are various types of users with their distinct allocations of water resources. There are moreover a variety of institutions of which use and management rights are exercised, and the overlaps of national, regional and local regulatory frameworks (Berger et al., 2006). This is exemplified by Ostrom (1990) who posits that there is no single set of rules defined for all irrigation systems, hence the difficulty in water appropriation issues. Local water user associations, meanwhile, are increasingly becoming more important as their role has been strengthened in recent years by decentralization and devolution (Katon, Knox, & Meinzen-Dick, 2001).

From the discussion above we can see that authors perceive that most cross-border water planning and management and studies are riddled with high levels of complexity, uncertainty, and conflict (Ackoff 1979, Rittel and Webber 1973 as cited in von Korff et al., 2012). There is a need to consider a wide variety of values, knowledge, and perspectives in a collaborative decision-making process and participatory forms of modelling, planning, and decision-aiding processes in water management (von Korff et al., 2012, p. 1). The popularity of participatory, inclusive approaches in such a complex system is thus reflected in various institutional arrangements and mechanisms as elaborated below.

3.2. Popular concepts in water management and stakeholder participation

Integrated Water Resources Management (IWRM) is a widely accepted set of approaches, that emerged as a result of a search for a new water management paradigm (Cleaver & Franks, 2005; Hassing, Ipsen, Clausen, Larsen, & Lindgaard-

Jørgensen, 2009). It involves a multi-stakeholder conception that encompasses the views of water users and other interest groups in the conversation through a participatory approach, along with civil society and NGOs for dialogues at the national, basin, and local level. This set of ‘common-sense suggestions’ stipulated that when scarcity kicks in, the value of water would rise and thus makes it difficult for a bottom-up, local management. In such situation (and also in the case where there is a large-scale use), it is advised that centrality and consolidation of authority are preferable (Hassing et al., 2009, p. 7). The concept has been critiqued for its lack of success evidences, for having a reductionist and prescriptive views and for not reflecting the world in its heterogeneous ways (Biswas, 2004; Jeffrey & Gearey, 2006; Medema, McIntosh, & Jeffrey, 2008).

On a different level, multi-stakeholder platforms (MSPs) as envisaged by Warner (2006a, 2006b, n.d.) - whom in turn is inspired by the 2000 European Water Framework Directive - bring about IWRM at the catchment level to accommodate the complexity of uses, the diversity of users, and the dynamics of uncertainty and change. The MSP itself is based on the New Public Management thinking according to which citizens are critical and judgmental of the public sector for its outputs (Osbourne, 1992, as cited in Warner, n.d., p. 10). The citizens are also expected to take greater role in co-managing the resources in a new governance arrangement. However, the government is still the leading actor, though it is not always decisive in making decisions (Warner, n.d.). Warner (n.d.) warns that although MSPs are a seemingly exciting and popular idea, it is not a panacea. It has been documented that their implementation has fallen short of expectations (Komakech & van der Zaag, 2013). Such non-authoritarian co-management practices are widely questioned with regard to their incentive structures and the general power structure that could lead to further marginalization of the interests of some and thus actually hinder the effective participation by all (Akbulut & Soylu, 2012, p. 1144).

Other scholars have confirmed that power is usually spread unevenly between stakeholders, and at the bottom of the chain are the smallholder farmers. Small farmers are a large, spatially dispersed group with heterogeneous interests and limited means to education and to communication and transportation infrastructure (IFPRI, 2005). It makes those in developing countries face numerous obstacles to engage in

collective action and defend their interests (IFPRI, 2005). The scarce resource that they have made it difficult to engage in long term planning and more risk-taking behaviour and thus provide limited engagement in political action, as opposed to large farmers and other members of the rural elite (IFPRI, 2005). This Marxist and Neoclassical Public choice approach suggests that small-scale farmers in the food crop sector face particular difficulties in influencing agricultural policies, since food crop dominate production in poorer and more remote areas where capacity to influence policy is low (IFPRI, 2005).

IFPRI (2005) paper notes that in contrast to the smallholders, donor agencies are implicitly influential. Donor agencies, especially international financial institutions, have also influenced political choices directly through conditionalities - in the structural adjustment period, and less so in the country ownership period. The paper also mentions that aid often undermines the institutional capacity of the recipient country by encouraging corruption, reducing governments' accountability to their citizens, and boosting administrative complexity in response to donors' reporting requirements (IFPRI, 2005). IFPRI (2005) mentions that in the literature on politics of agricultural policies in developing countries, the topic of donor agencies role in shaping changes to development thinking has received less attention. Future research would benefit, the paper argues, from more examination of the impact of donors, aid and political regimes on agricultural policies, not only broad economic policies. This thesis has then provided a deeper look onto how a donor could have shaped government policies in the Basin management.

3.3. The need to study power and institutional bricolage

This thesis looks in depth into the power relations amongst actors in water management. Scholars show that power relations are important but often missed in the studies of natural resource management. In a critical study looking at how commons are 'managed' and 'clarified' by mostly 'Northern common experts', Goldman (1997, p. 3) argues that significant artefacts (e.g. institutions of power) are left behind by most development practitioners, which undermines commoners' rights to control the knowledge produced, and ultimately the realm of what is defined as the commons. He further contends that it is even more detrimental as this knowledge helps to determine

the role of capital, the state, and development institutions on that site (Ibid.). More specifically, Goldman (1997, p. 27) insists upon the necessity to understand the context, politics and content of struggles over the commons and develop a critical and self-reflexive analysis of the institutional practices of development, modernity and imperialism and the way powerful agents (e.g. IFIs, developers, NGOs and scholars) discursively reduce and rationalize human behaviour to a common metaphor. There is a need to look at a more historical, reflective, critical outlook on the relationship between the governance of common pool resources and the needs of the marginal, poor and often disadvantaged populations that depend on them (Agrawal, 2014). Akbulut and Soylu (2012, p. 1145) posit that neglecting power relations in the implementation of participatory mechanisms will favour the production, or perpetuation of inequities. Garcia-Lopez (2009) also contends that incorporating power analysis into institutional analysis provides a much richer explanation. This thesis therefore attempted to fill this gap by studying power relations within actors in a water basin management.

An approach that integrates the concept of power and actors in institutional arrangement is called institutional bricolage. It also studies uneven participation of stakeholders in institutions. Institutional bricolage is a post-institutionalist approach with their starting point being a wider understanding of the interactions between the natural and social worlds, rather than a narrower concern with predicting (and improving) the outcomes of particular institutional processes (Clever & Franks, 2005, p. 16; Ribot, Agrawal, & Larson, 2006). Studies have used this concept in looking at factors that shape environmental policy-making decisions in the European Union (EU), how local actors reshape meanings institutional logics in Post-Soviet water governance, how local actors shape the institutional arrangements in a community forest in Bolivia and Ecuador and in a communal irrigation in Ethiopia, even how global politics can be shaped top-down and bottom up by bricolage (Cartel, Boxenbaum, & Aggeri, 2014; Cerny, 2010; De Koning & Cleaver, 2012; Gutu, Wong, & Kinati, 2014; Sehring, 2009).

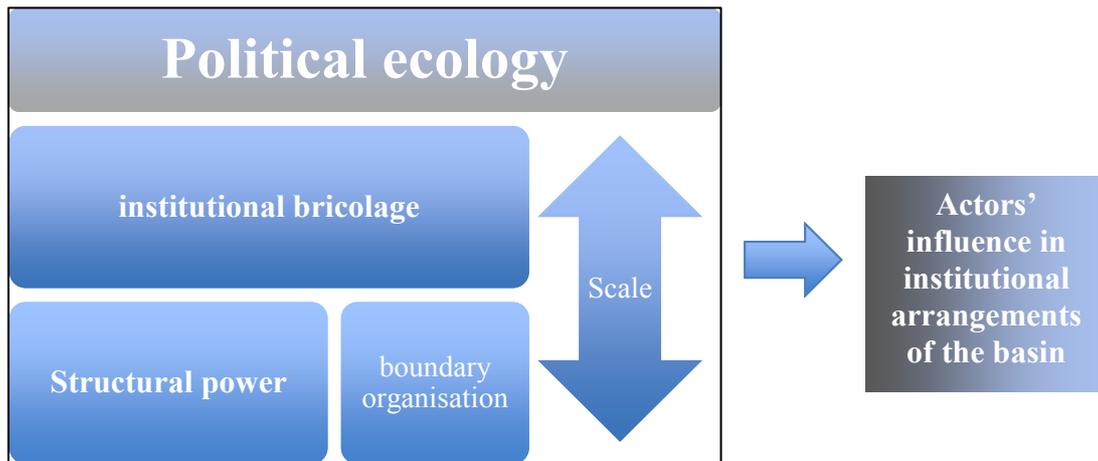
4. FRAMEWORK

Subsequent chapter explores the roles of stakeholders in the Basin management, and ultimately aim to answer how all the different actors influence the management of the Rift Valley Basin. I did that by utilising the conceptual framework that consists of political ecology as an umbrella of the study, institutional bricolage, structural power and boundary organisations.

Political ecology is a study that originates politically and intellectually in the 1970s in the context of a growing environmental movement and can currently be defined by various interdisciplinary and transdisciplinary approaches, and by core disciplines such as geography, technology and science, political science, anthropology, resource economics, and conservation biology IFPRI (2005). I am aware of the intensive debate surrounding its definition and operationalization (Paulson, Gezon, & Watts, 2003, p. 206; Zimmerer & Bassett, 2003). Yet recent modifications of political ecology has developed a richer sense of “political” in relationship to the environment and thus make it more comprehensive to use in this thesis (Vayda & Walters, 1999, p. 168).

The relationships within the framework take into account political ecology’s conception. As we can see, political ecology serves as an umbrella of the study. It encompasses multiple and conflicting forms of rationality, meanings, identities, attention to cultural politics and micropolitics, as opposed to the rational, utility-maximizing institutionalists (Paulson et al., 2003). Operational concepts used are derived from institutional bricolage, of which structural power and boundary organisations are located within. Structural power deserves a bigger box as it is used more generally throughout the analysis, whereas boundary organization is specifically for knowledge production aspect. Lastly, throughout the analysis the question of scale is addressed thus its position along the right side

Figure 5 Relationships within the conceptual framework



Source: Author

The sections below elaborate on individual parts of the conceptual framework.

4.1. Institutional bricolage

The concept of institutional bricolage is used to explore how the idea of power relations, differences, scales, multi-actors and management of natural resource all fit together. This provides a broader framework in which I analyse characteristics within institutions and other contextual factors. Institutional bricolage is *a process in which contestation and negotiation between actors are embedded in a social structure, whereby it is a 'messy' process of piecing together shaped by individuals acting within the bounds of circumstantial constraint* (McCarthy, 2012, p. 620). Institutions are shaped by historic factors, by the power relations that prevail in social life and by worldviews, which incorporate the roles of the human and natural resources (Cleaver, 2002; Lecoutere, 2011).

Institutions are engineered by multi-actors and individuals (Cleaver & Franks, 2005, p. 4). Individuals are not always rational and only economic resource appropriators, and instead they are 'conscious and unconscious social agents, deeply embedded in their cultural milieu but nonetheless capable of analysing and acting upon the circumstances that confront them' (Cleaver, 2002). This is inline with political ecology's notion to look at multiple and conflicting identities and rationality (Giddens, 1984; Douglas, 1987 as cited in Cleaver, 2002). People's identities for

institutional purposes should reflect complex social, livelihood identities, multiple motivations, and changing priorities over their life courses. It should not only look at just whether a person is just an ‘irrigator’ or ‘pastoralist’ (productive identities), but also whether that person is a ‘leader’ or a ‘woman’ (social roles) (Paulson et al., 2003). Not only that every person has multiple identities, it needs to be recognized that and ‘bricoleurs’ – actors shaping the process of institutions - are likely to possess more authoritative resources than others. Overlapping social identities mean that people may call on a variety of attributes (e.g. economic wealth, specialist knowledge or official position, to kinship and marriage, or personal characteristics such as eloquence, strength and honesty) to justify institutional position or influence. Looking at the complexity of actors in this study is imperative to see if the formal institutionalism created had emphasised particular identities and roles. Emphasizing particular identities in turn could have reproduced and also reinforced or amplified social divisions amongst actors (Cleaver, 2002).

A basin, particularly the Rift Valley, encompasses a large area with diverse kinds of water users. The study thus looks at the *importance of scale*. Larger scales of interactions and linkages have been proven to be more difficult to manage (Cleaver, 2002). For example, the size of the basin makes it difficult for local level institutions to engage actors/water users in further away place to participate, and not to mention that different users engage with water differently. Even at a small scale, great variations can exist in local perceptions and judgments on what is considered good and/or bad (Cleaver & Franks, 2005). This is a physical scale problem. As also denoted in political ecology questions of access, it is important to address the problem in physical scale. Scale problem can lead to problem of access in which water users are not able to access and reach out to other parts of the Basin. The problem of scale and access thus leads to exclusion to the management (Penna-Firme, 2012). As also mentioned in political ecology, multiple levels of analysis are therefore needed to look at a complex resource such as the Basin.

4.2. Structural power

As mentioned in the elaboration of institutional bricolage concept, power relations are laden in the human interactions that engineer institutions. To investigate the power

relations within the RV-Basin management, I thus used the concept of structural power, as there was no direct, individual coercion. Power is conceptualized as social relations that are built on the asymmetrical distribution of resources and risks. *Structural view understands power as forces above and external to the individual (e.g. beyond a person's race, gender, class) that operate unacknowledged to influence people and their behaviour* (Clever & Franks, 2005, p. 14). Power is located in the interactions among, and the processes that constitute, people, places, and resources (Raik, Wilson, & Decker, 2008, p. 734). Politics, then, are found in the practices and mechanisms through which such power is circulated, and as individuals negotiate power relations (Paulson et al., 2003, p. 1). As we look specifically into power of water users in the RV-Basin, it fits into political ecology's notion to look at political ramifications of environmental alterations (Paulson et al., 2003; Raik et al., 2008). Issues of power and politics in natural resource management include access, control, rights, ownership and use (Franklin, n.d.).

This concept is useful to explain the implicit social-structural production of consent and norms in the Basin. This means that a status quo is maintained, but not through the actions of individuals rather the practices and rituals of groups and institutions (Raik et al., 2008). These rituals and practices are comprised as societal forces that shape individual preferences, and this shaping process works to justify and maintain current systems of power (Ibid.). The maintenance of current systems of power thus makes a social control that make individuals 'only strive for those things that the "defenders of status quo" want them to strive for, thus there is no conflict or rebellion' (Ibid.). A clear example of this view is its use in the justification for encouraging local participation of 'disadvantaged local people' based on their social position (Dryzek, 1997; Bryant, 1998; Brechin et al., 2003 as cited in Raik et al., 2008). However, social stratifications show that government officials and non-governmental organization (NGO) staffs are more 'powerful' than local, resource-dependent people, thus the emphasis for more participatory approaches to natural resource management (Ibid.).

4.3. Boundary organisations

The last concept used in this thesis is boundary organisations, which look at the practices of institutions of groups pertaining knowledge creation as a form of structural power. *Boundary organisations are institutions or organizations that can control the coproduction of environmental science by forming linkages between science and policy networks* (Raik et al., 2008). It allows us to see how, where, and by whom common norms are established in networks of science and policy. Using this concept, I have shown how knowledge, science-policy networks and management efforts in the RV-Basin are defined and enforced through the actions of specific organizations or political actors (Forsyth, 2003, p. 136). This is especially relevant as previously said in the Introduction section; literature on the management of the Basin is scarce.

In boundary organizations, knowledge about the biophysical world cannot be separated from social influences, and particularly from how society is clustered and organized (Forsyth, 2003, p. 141). It is an important backcloth to the influence of political action on the generation and legitimization of scientific knowledge (Forsyth, 2003, p. 132). When scientific statements are seen to be politically neutral and authoritative, they may reinforce the original concerns and framings, and imply these are universally applicable to all people. To see such things it is imperative to identify and analyse both ‘actors’ that influence environmental science, and the ‘structures’ and institutions that constitute environmental science (Ibid.). ‘Actors’ within environmental science are therefore conditioned by existing structures such as overriding discourses or accepted rules about what constitutes environmental science (Ibid.).

To conclude this chapter, I have therefore used: First, institutional bricolage to study institutions through scale, power relations, and individuals that ‘engineer’ them. Going more specific, I used structural power to see individuals’ interactions within the institution and how they influence one another, and third, the concept of boundary organisation to see how production of knowledge is crucial in shaping the overall

discourse. The three concepts above are furthermore bounded and reasoned by political ecology.

5. METHODOLOGY

The methods elaborated below are chosen as part of the whole methodology that uses constructivism, in which the world is constantly produced and reinterpreted by social research subjects. In accordance to the constructionist view, I am more concerned with the processes through which discourses depict reality rather than with whether they contain true or false statements (Forsyth, 2003). As an outsider with a pre-understanding of the concept I moreover tried to have an objective analysis of what people constituted as ‘truths’.

For this purpose of this research, I used a qualitative case study method (multiple data collection method), i.e. overt observation, interviews (primary data) and document review (secondary data) (Creswell, 2014, p. 200). As such, a case study is generalizable to propositions in the theory, not to the populations (Yin, 2009). Thus, the amount of interviews collected cannot be justified in terms of statistical generalization, yet it suffices for capturing the perceptions to analyse with the theory. Most of the primary data were obtained through an overt fieldwork that spans on and off between the months of November 2014 – January 2015. I collected 27 interviews, with 52 participants - some of the activities were group interviews.

I ‘entered’ the field through the help of a partner organisation (as I was doing a separate internship in an organisation at that time), and got introduced to local actors, i.e. government officials, civil societies, private sector and smallholders through them. I used the service of a known gatekeeper-translator from the area. As I was introduced to the field by a partner organization which themselves provided some suggestions, I am aware of my own background, positionality and reflexivity, and the fact that I could have indirectly shaped the research and discussion tilting possibly in favour to a certain side. This awareness is thus crucial in a constructivist view in which impartial materials and analysis were sought and done as much as possible. Due to the political climate in Ethiopia, I have also decided to present my respondents and country names

in pseudonyms - without omitting their characteristics and institutions – all of which can be seen in Appendix 2 and 3.

5.1. Data collection methods

I used several techniques in order to uncover the power dynamics of the communities surrounding the Basin, dynamics of knowledge production and characteristics of relations amongst actors. The utilisation of multiple tools is also beneficial for triangulating the data. The semi-structured interviews and group interviews served to answer the issues that I intend to investigate in, reconfirm/contradict the theory and also to uncover previously unthought-of topics. All of the interviews were semi-structured, as it opened greater flexibility in allowing asking other questions and receiving other types of response. In this study I utilised several maps, which serve the purpose of analysing and understanding in more depth the relations of natural resources location to social perceptions. The map has allowed me to explore different dimensions of the phenomenon under study: For example, through the help of the study *kebele* map (Figure 3), I uncovered that the more remote and geographically far smallholders are from government offices and the surface water source, the less likely they will be involved in the management of the RV-Basin. This finding also includes the private sector to some extent, unless the company has considerably larger economic means.

To study the relations of difference and power within the myriad of local actors, I inserted intersectionality in a broad sense in my questions list: class (richer more prominent farmers are more involved in the governance of the water?), ethnicity (some ethnic groups might be more privileged than others), gender, position in institution, and religious dynamics. As Forsyth (2003, p. 104) mentions, it helps to identify and study multiple spheres and social axes of power. Political ecology recognizes the plurality of positions, interests and rationalities in relation to the environment (Paulson et al., 2003, p. 210), and to explore that aspect I also created a typology of actors involved in the water governance of the Basin as presented in the Background section. Several minor issues and ethical dilemmas ensued, i.e. taking smallholder's time off during post-harvest season, concern whether to give them monetary or in-kind compensation for their time, and defending my interview criteria

from an otherwise a ‘ready-made’, ‘model’⁸ farmers’ answers. The last part is critical to note especially in power relations study, in which it was the opposite of what I want to look at. The list of questions is presented in the Appendix section.

Purposive sampling is used, as some issues need the knowledge that possibly lies within specific people (Paulson et al., 2003). I especially used maximum variation sampling in which I tried to capture a wide range of perspectives to see the phenomenon from all the different angles, regarding water management in the basin amongst different actors, places and levels. The three largest groups had been the smallholder farmers, the government officials and the private sector. I started with the most obvious, ‘suitable’ cases, which are the farmers’ associations that are located in the same *kebeles* as the large-scale plantations, as well as local government officials. This is in order to test whether the geographical proximity affects their level of interactions and power dynamics. This was contrasted with the ones that are geographically far, and/or less endowed. Overall I interviewed 29 smallholders through two focus group discussions and four group interviews. For government officials, I interviewed eight people. I made sure to look at multiple levels of officials (district, regional and national) who are one way or another involved in negotiating the water governance in order to provide contrast. I interviewed four NGO workers and six private sectors. The criteria for them were that they needed to be in the geographical boundary of the research, and worked on issues and/or extract water from the lake and rivers for their business. Furthermore I also interviewed known stakeholders such as universities and research centres, business associations, a foreign embassy/donor all that work(ed) or have interest in the RV-Basin. To avoid potential bias, purposive sampling was based on the theoretical framework concepts that I utilised (multi-level, multi-actors, and geographically different), information from similar studies, as well as through elicitation from experts in the field.

5.2. Data analysis

After data collection, I start the process of coding as part of the analytical tactic. I first made sense of the text and image data. Coding is a method to organise and group

⁸ Model farmers or model cooperatives are those that are more successful financially than the rest. They appear in various literatures on the Rift Valley Basin. They were also the ones being offered as samples as seemingly being chosen to portray positive things.

similarly coded data (or called Nodes in the NVIVO software) into categories or ‘families’ because they share some characteristic (Ragin & Amoroso, 2011). They are arranged under several categories, which included some more detailed sub-categories. For example, data coded as “Data about the natural resources” were categorized under the major heading ‘Means of acquiring knowledge’, which in turn had several more refined sub-categories called ‘Conduct own study’, ‘Observation’, ‘Reading articles’, ‘Talk in town’ and ‘Workshops’. These are all part of a hierarchal coding scheme (Bryman, 2012, p. 418). I looked for patterns that correspond to one of these: similarity, difference, frequency, sequence, and/or correspondence (Saldana, 2009). After these, the major categories were compared with each other and consolidated in various ways that progresses towards the thematic, conceptual, and theoretical (Saldana, 2009). The coding went hand-in-hand with data collection and the write-up of findings. Between this going back and forth, I also ‘winnowed’ the data, focusing on some of the data and disregarding other parts of it (Saldana, 2009). This part is to aggregate data into small numbers, and using computer is an easy way to quickly locate passages. Since I used a case study approach I also inserted a detailed description of the people, places and event in a setting (Creswell, 2014; Saldana, 2009). Themes emerged from the categories serve as the major findings of the study, as well as the complex connections between themes that were also formed (Creswell, 2014, p. 195). Generalizations about the patterns were analysed, as well as how they compared and contrasted with existing literature, especially for a case study like mine. Lastly I had presented the results through both text and visuals like tables and figures to make it easier to read.

I used an iterative process using deduction (identified a phenomenon, suggested aspect to study and connected to previous existing research) and induction (find patterns in the data collected and test preliminary explanations) in my analysis. My analysis is multi-level. I feel this is the most appropriate type of analysis due to the nature and topic of my research, which is Basin management. This entails looking at representations of the people from the two *woredas* (which includes the private sector, civil societies, small holders, and government officials), regional and national level, as well as national organisations (e.g. government officials, university, research centre). Aligned to the political ecology concept, the governance problem is not only ‘local’ and need to be contextualized in a region or even nation-wide level. Forces

driving environmental and institutional change operate on multiple levels and they interact in multidirectional causality (Creswell, 2014, p. 200).

5.3. Reliability and validity

It is important to ensure reliability and validity in a qualitative research such as this to eliminate bias and increase my ‘truthfulness of a proposition about some social phenomenon’ (Golafshani, 2003, p. 604). Efforts on ensuring reliability and validity of this research have been motivated by the constructivist approach. The constructivist view that reality is changing whether the observer wishes it or not indicates the potential existence of multiple construction of realities (Golafshani, 2003). Accordingly a constructivist study values multiple realities (Ibid.). Therefore, to check the accuracy of findings I employed several procedures as suggested by Creswell (2014): First, I triangulated different sources of data (e.g. document reviews and seeing ‘facts’ from different people). I also used different methods of gathering data to acquire the diverse and multiple realities (e.g. interviews, focus groups, observation and desk reviews). Second, I used more description so that the result becomes realistic and rich. Third, as I have elaborated on the personal reflection above, I am aware of my biases that could skew the result of analysis. Fourth, I also inserted discrepant views that could differ from the general views. Likewise to be reliable, I had also documented the procedures from entering the field, data collection until analysis, as well as double-checking transcription and coding so that the meanings do not differ Creswell (2014, p. 202).

6. ANALYSIS

This section analyses the power relations amongst actors in the management of the RV-Basin. It is structured through exploring the roles of the three biggest actors 1) private sector, 2) smallholders, and 3) government officials in influencing the water management of the Rift Valley Basin. Each part is answered using the concepts of institutional bricolage, structural power and boundary organisations. As mentioned in the preceding chapter, I use pseudonyms of participants when presenting citations to protect their identity.

6.1. How do private sector play a role in the RV-Basin management?

Investigating the role of the private sector in the RV-Basin for water management is imperative as they represent the side with vital economic interest in the water (and land) use. I argue that in the water management of the Basin, the private sector varies in participation, knowledge, interaction and opinions. Furthermore, I argue that as an institution, partnership between an international company and a donor play a key role in knowledge production and shaping the environmental discourse of the Basin. This is complemented by the fact that economic interests have taken over the Basin, causing the bricolage appear 'smooth'. This in turn managed to create a status quo between strategic partners, making potential conflict amongst actor non-existent.

I argue that the private sector is not a homogenous entity and that interactions among stakeholders depend upon authoritative resources possessed, i.e. specialist knowledge and economic wealth. This is evident through interviews with the private sector, in which first, interactions amongst themselves about water use and management in the RV-Basin were uniformly not existent, as well as with smallholders and NGOs (Interview PS3, PS4, PS5 and PS6, 2014). Meanwhile, their interactions with government officials vary, in which an international company that possessed their own lab testing and drip irrigation technology claimed that government officials visit not only to collect revenue but also ask for sponsorship and training (Interview PS5, 2014). A businesswoman (located in the upper-stream of Lake Zeway) also received extra visits especially as the government encouraged female entrepreneurs (Interview PS6, 2015). A local company located furthest from the government office in Zeway Town explained that conflicts between them and smallholders usually occur during dry seasons and that only then the government would come (and solve the problem). (Interview PS4, 2014). From the discussion above, it can be seen that interactions with the government, the de-jure manager of the Basin, also grow less with larger scale and distance. This will prove to have an implication in the management of the RV-Basin in general, in the sense that private sector involvement and participation are also less.

Though the private sector as a whole might not seem to have much stake or interest in water management based on the above, one is arguably different. As institutional

bricolage concept mentions, an actor could call on its variety of attributes to justify institutional influence or position (Cleaver, 2002). One company, incidentally one of the biggest land leaser in the region, is a case of that notion. PSA Company, a floriculture company hailing from Country A,⁹ was notoriously blamed as being one of the causes of the environmental degradation in the RV-Basin (Interview D1, 2015). The negative reputation prompted Embassy A to intervene through development projects:

The Central Rift Valley in specific has a huge environmental problem... It is pretty clear that it was because of them [PSA Company] also, because the pollution exists after the plants were established.... There was a real need for this [project in the CRV Basin]... A study was commissioned two years ago. 98% pollutants seem to come from there [PSA Company] (Interview D1, 2015).

Thus concerns that the company might be blamed for the deteriorating water condition in Lake Zeway, and that it could affect negatively the business had prompted the project. A researcher from Country A also confirmed this by mentioning that his university was chosen to ‘provide knowledge and fact to the anticipated multi stakeholder platform or policy dialogue’, ‘improve poverty condition’ and also more importantly for ‘water management related issues especially in regards to investors from Country A’ (Interview A3, 2015). The researchers, in turn, were chosen by Embassy A in Ethiopia due to close ties with Ministry of Agriculture of Country A. The outcomes of the (research) projects were publications, ‘more informed decision-making’, and ‘capacity improvement of local stakeholders through training on specific topics’, and the creation of a multi-stakeholder platform for the management of the Basin (which is organised by NGO 1) (Interview A3, 2015). Parallel to the research project, Embassy A also established NGO 1 (Interview D1, 2015). NGO1 at that time was tasked to conduct, among many, Country A-funded development projects in the RV-Basin based on the research project outcome. NGO 1 in turn funded various local NGOs in the area as local partners, as well as disseminating information from the research project (Interview NGO1, NGO2, NGO3 and NGO4, 2014).

⁹ There are a limited number of foreign companies in the RV-Basin. I have chosen to provide anonymity to avoid shaming a particular country. Here the code ‘A’ represents one particular country, which is the same country in the subsequent use of Embassy ‘A’.

We can see from the illustration above that protection of economic interests drove the creation of knowledge through boundary organisations. Actors that became involved were the seemingly politically neutral researcher from Country A, and NGO 1, whom disseminated the knowledge. It further confirms boundary organisation's notion that scientific statements when seen to be politically neutral and authoritative, may reinforce the original concerns and framings, and imply these are universally applicable to all people (Clever, 2002). It is even crucial as capacity, management and knowledge are scarce in the area, and that there was a real need.¹⁰ Moreover, literatures have addressed that donor could also influence political choices of government (Forsyth, 2003). It is confirmed by my findings that the donor did exert some power as they fund projects, and the view that they could give strategic suggestions regarding private sector engagement and collaboration to higher-level government officials (Interview D1, 2015). The implication of this is that certain actors that are more equipped knowledge-wise, financially and in networks are closer to the de-jure manager of the RV-Basin, the government.

Coming back to the result of the research project, it did not confirm directly that contamination was from PSA Company, however it does prescribe measures such as implementing the widely accepted IWRM and multi-stakeholder platforms (MSPs) (Interview A3, 2015). At the same time, the government are already shaped by existing discourses on water management such as the Integrated Water Resource Management (IWRM) and Multi-Stakeholder Platforms (MSPs) as elaborated in the regulatory framework in the Background section earlier (please see Table 1). From all these Country A-funded projects, the outcomes have been a land use map that is utilized by the local government, a plan to construct of a wetland near the farms, and last but not least organizing the multi-stakeholder platform that purports to include all relevant stakeholders engaged in water use and planning in the Basin (Interview NGO1 and DO1, 2015). This further shows a high uptake and close engagement with the local NGOs and the government, denoting a successful boundary organisation.

¹⁰ A local government research institute located in Zeway Town that was interviewed mentioned that, apart from basic physical parameter and water quality studies (that are also assisted in part by civil society CSD), they do not really conduct in depth studies. The regional government needs to approve their research proposal, only then they could go ahead with research. Respondent further said that government officials (especially local ones) never ask them to do research, and that the country is "not demand-driven type" (Interview A1, 2015).

Circumvention of knowledge, meanwhile, has helped to create a status quo. This is exemplified by the fact that the government for its part has not been able to shed light on the contamination problem. A *woreda* official elaborated on the situation:

Contamination from PSA Company is guessed, but no real scientific proof. When the water sample is taken to Addis Ababa University, they say there is a diffusion or eutrophication of the water. But when we ask from who, they did not say the name of the toxic and if it is from PSA Company. It might be that because it is politically sensitive, because it is a huge investment. Around 60,000 people are employed and it brings foreign currency (Interview GO2, 2014).

This shows that structural power lies in mutual economic interests between an important company and the government, which were exercised through both the production and circumvention of knowledge.

In this section we have seen how the private sector in the RV-Basin vary in scale, distance and authoritative measures. As a result, their influences vary to the water management of the RV-Basin from none to very influential. One company, aided by a donor, in particular had called upon a variety of authoritative resources such as knowledge creation and economic wealth to justify its institutional position in the Basin management more than others. During the power exercise, the academics and NGOs also became involved, the former as knowledge creator and NGOs to disseminate knowledge. The acceptance of this politics is easier as government officials (i.e. de-jure manager of the Basin) were already shaped by popular discourses that exist in boundary organisation such as the IWRM and MSPs. The acceptance such uncontested knowledge (and the subsequent development projects) in such a crucial part of institutional arrangement of the Basin is so embedded that people would find it difficult to be consciously and discursively (IFPRI, 2005). This confirms the structural power concept in which the production of social-structural consent and norms work to justify and maintain current systems of power favouring to a certain side (i.e. one private sector) and open conflict among actors non-existent (Douglas, 1987 as cited in Cleaver, 2002). Lastly, it is shown that both production of knowledge (engineered by Embassy A) and the circumvention of knowledge by the government confirms boundary organisation concept that stipulates knowledge especially about biophysical world cannot be separated from social influences (Raik et al., 2008).

6.2. How do smallholders play a role in the RV-Basin management?

To answer how actors influence the management of the RV-Basin based on their respective power, it is imperative to look at a group of actors that represent the majority water user group that directly depend upon the surface water of the RV-Basin for their livelihoods, the smallholders. I argue here that some, though embedded in a cultural milieu, could still analyse though not act upon the circumstance that confront them (Forsyth, 2003). This is due to the physical scale problem that they confront, which is shaped by rituals and practices of groups that make them only strive for those things that the ‘defenders of status quo’ want them to strive for.

I argue that smallholders did not influence the water management in general as they do not participate much in any complain mechanism, nor possess consistent interaction about the management with especially the government officials. In the sample *woredas* and *kebeles* that I have taken, smallholders did not interact much with other actors, except from the occasional visit by officials or NGO workers (Interview SH1, SH2, SH3, SH4, SH5, and SH6, 2014). As a group of people directly handling the water resource and thus having more immediate physical knowledge of the water resource, based on the interviews, the farmers claimed that they were never asked about what they think on how to better manage the RV-Basin (Interview SH3 and SH5, 2014). This is significantly different if the farmers are included in an irrigation cooperative group, especially if the group is a ‘model’ cooperative (Interview SH2 and SH6, 2014). The model cooperatives feel that not only they are given more attention by the government and the cooperative union, but also feel that they would be taken into account whenever they try to give suggestions (Interview SH2 and SH6, 2014).

Though smallholders recognise the environmental degradation happening in the RV-Basin condition, their knowledge were based on observations and/or word-of-mouth alone (Interview SH2, SH3, SH5, and SH6, 2014). This is difficult to prove due to the lack of up-to-date impartial research in the area, and due to the limitations of my own observations.¹¹ Most farmers, in turn, admit to not initiate many complains to the

¹¹ During the short fieldwork, my observations have shown the contrary, that wildlife thrives normally in the Lake and it is still able to be a source of livelihood (e.g. fishing). Having said that, indeed the color of the lake is brown, indicating a high sedimentation and that being nearer to the floriculture farm, the water has a tint of green algae-

government (except when it is very vital such as competition of water during the dry season), as they feel it is rather useless (Interview S1, SH3 and SH5, 2015). Therefore, they only could complain about technical issues, e.g. water quantity, and not management issues per se. One group of smallholders even conveyed that as they did not use surface water and the fact that their village is located further from government offices, they did not have interaction at all with some government offices (Interview SH1, 2015). It confirms the physical scale problem that exists in the RV-Basin in which it is difficult for local level institutions to engage actors/water users in further away place to participate, and which eventually leads to problem of inclusion in the management (Cleaver, 2002). The example above then confirms the findings by (Cleaver & Franks, 2005, p. 14) which mentioned that small farmers are a large, spatially dispersed group with heterogeneous interests and limited access to education and to communication, and that makes their influence to policy minimal.

In the paragraph above we have seen the disconnect that exists between farmers and public agencies created a sort of unfamiliarity and a reticent situation from the former. Furthermore, the prevailing view amongst all interview participants is that the government should be the one initiating and taking charge of the water management, making the government indeed ‘powerful’ in their eyes (Interview SH1, SH2, SH3, SH4, SH5 and SH6, 2015). In general the norm is to accept government policies and practices without much questions. This indicates that the current management is not very participatory, and that potentially important views from the largest water user group in the RV-Basin is neglected. Therefore, it confirms structural power’s view that status quo is maintained by shaping individual preferences so that there is no conflict or rebellion (Raik et al., 2008) .

Although the norm is not to question or give a lot of suggestions, or otherwise act upon anything, evidences presented above have proved that closer-connected smallholders (i.e. the model cooperatives) were able to critically analyse the situation and power play at hand (especially between the government and the private sector) as stipulated in institutional bricolage’s conception of individuals (Cleaver, 2002). Another powerful actor in the model cooperatives’ eyes is the international private

like layer, which I am not able to identify what.

sector. The two cooperatives interviewed perceived that the private sector perhaps also influenced the government in some ways as the government supports them (Interview SH2 and SH6, 2014). For example, they knew the bigger ones like PSA Company did not report to local governments, but directly to the federal government (Interview SH2, 2014). One cooperative even went as far as saying that the private sector did not like cooperatives especially because they have large land (Interview SH2, 2014). The cooperatives said that at the moment there is no problem but perhaps in the future water conflict could arise due to new water demand from a new branch of PSA Company being established in a nearby downstream location (Interview SH2 and SH6, 2014). It is important to note that the two cooperatives are located in the same village as PSA Company, thus the added awareness to the company's activities. Despite being aware of the situations, given that the 'power' does not reside within their hands, there seems very little that small holders can do to influence the water management in the RV-Basin, due to the nature of governance and structural hierarchy in the country.

Looking at heterogeneity and complexity of actors under institutional bricolage is imperative to see if the formal institutionalism (i.e. management) had emphasised particular identities or roles, which may have amplified social divisions (Clever, 2002). Heterogeneity was difficult to find within the groups of smallholders in the selected *kebeles*: Female farmers were rarely participating (as well as entrepreneurs, academics, NGO workers and government officials) hindering a clear gendered perspective, even though women consists of a little less than 50% of the population in the two *woredas* (Clever, 2002). The ones that participated in my interview sessions did not convey much knowledge about water and its management (Interview SH1, SH4 and SH5, 2014). Clear differences exist on the area of management and knowledge, in which those that belong to 'model' cooperatives would be able to state more regulations and management issues (Interview SH2 and SH6, 2014), whereas normal cooperatives would have limited knowledge (Interview SH3 and SH5, 2014), and farmers without cooperatives would have the least knowledge and exposure (Interview SH1, 2014). Ethnicity is a sensitive topic in Ethiopia in general for some due to historical reasons, but at least in the *woredas* there were no identified ethnic clashes. Age did not seem to be biased as participants were ranging from young adult to elderly age (19-63 years old). From this illustration I argue that social divisions

exist and could potentially be amplified in the RV-Basin, as knowledge and participation seem to circulate only amongst men and those involved in cooperatives. This confirms institutional bricolage: that participation of actors such as the smallholders in the RV-Basin is shaped by power relations and institutions. They are moreover legitimized through a variety of processes including the use of symbolic resources, multiple authority structures (i.e. cooperatives and several level of governance) and devices borrowed from the state (Clever & Franks, 2005).

The main findings in this section are that smallholders are not a homogenous entity and that their knowledge on the management varies. Physical scale problem as stipulated in the model under institutional bricolage exists. Furthermore, smallholders were mostly not included in the management and it created a reticent situation, but still felt that the government is the key ‘powerful’ actor. Their knowledge is limited to observations and word-of-mouth, and claimed to never having any session of information sharing with the government. I argue then that status quo is maintained by shaping the group’s knowledge and preferences so that there is no conflict or rebellion, as stipulated in structural power concept. Another ‘powerful’ actor in some of their views was the private sector and their activities. This indicates awareness to the exercise of private sector’s structural power, in which there were powers that operate unacknowledged visibly to them. Though smallholders are clearly not a homogenous entity, providing clarity on their complexity was not an easy task. Therefore, I argue that despite their being the largest number of water user, the smallholders have not been influencing the water management of the RV-Basin, much due to their own unorganised complexity.

6.3. How do government officials play a role in the RV-Basin management?

The RV-Basin is, by convention, managed by the government spanning from the *woreda* level, up until the federal level. In order to meet the overall aim of the paper of seeing how each actors influence the management of the Basin, it is thus imperative to look at how the government play a role. I argue here that, first, it needs to be established that there was no prior institution formally governing the Basin other than the newly established Rift Valley Lakes Basin Authority (RVLBA), making the new management still unsteady and complex. Second, there were variations in

opinions depending on the scale and level of governance (i.e. between the *woreda* and higher levels). Third, it is found that what some government officials constitute as participatory is different from actual participation from all relevant stakeholders, thereby constituting a form of effort on its maintenance of power. Fourth, it is evident as stipulated by boundary organisation concept; the government's importance of knowledge-creation in the RV-Basin was shaped by 'structures' namely its economic interests.

Looking at previous examples of efforts on basin management in Ethiopia is important to see how institutions have shaped RV-Basin management. Prior to the RVLBA, the federal government created two other Basin Authorities which are also located in economically and politically important areas (CSA, 2012).¹² They were created as a 'tool to implement and manage economic sector's need for IWRM' (Abebe, 2014). However, both my interview and literature have indicated that they have not been working properly, and cannot be set as an example for the newly established RVLBA (Interview GO7, 2015; ODI, 2015). The RVLBA and its supervisory body, also the newly created River Basin High Council, also lacked capacity thus hindering effective work (ODI, 2015, p. 11). Therefore here we can see that government's effort of managing the RV-Basin has been unprecedented with best practices and by itself also plagued with problems, making this new formal institution unsteady and complex.

I argue next that a clear exercise of structural power is evident in RVLBA's strong emphasis on 'collaborative and participatory' mechanisms for its work (Interview GO8, 2015). Upon review of an official document - apart from various government institutions in the local, regional and federal level - it seems that opinions of smallholders and water user associations and the private sectors have been gathered (Interview GO8, 2015; GIRDC, 2010b; ODI, 2015). However, the prevailing discourse in my interviews with key officials are that the focus of the RVLBA is to collect water fees from the private sector operating in the RV-Basin, gain knowledge

¹² First, Abay Basin Authority is managing Abay River Basin, located within three regional states. It has almost 50% of the country's runoff, and contributes to 62% of the water inflow to the Aswan Dam in Egypt (Awulachew et al., 2007; EC, 2000). Second, Awash Basin Authority manages Awash River Basin that is located within five regional states and two administrative councils. It is one of the most utilised rivers in the country for source of drinking water, hydropower, industrial consumption, irrigation and disposal of wastewater (Authority, 2012).

from the academic sector and financial resource from NGOs (Interview GO7 and GO8, 2015). It can be seen then that what constitutes as real participatory in the Basin planning is the inclusion of selective strategic stakeholders, and in turn does not include other large group of water users such as the smallholders, or the pastoralists. In fact previous studies have highlighted the fact that the term participatory might very much be driven by the need to meet donor's requirements (Keeley Scoones, 2000; Harrison, 2002 as cited in ODI, 2015; Warner, n.d.). Norms such as IWRM and multi-stakeholder platform in water management planning is very embedded that people find it almost impossible to be conscious and discursively critical of them. It seems that IWRM in Ethiopia to have become 'an end in itself' (Komakech & van der Zaag, 2013). Therefore we can see that such 'participatory mechanism' an actually an exercise of structural power that attempts to create maintenance of power and control (Raik et al., 2008). In the end, this participatory processes then seems to only make/change individuals to "only strive for those things that 'defenders of the status quo' want them to strive for so that there is no conflict or rebellion" (Raik et al., 2008).

To understand how governments could influence the water management of the RV-Basin, it is important to understand the variations within their perceptions shaped by differences in scale and level. I have confirmed a study by Penna-Firme (2012) that also show that even at a small scale, great variations can exist in local perceptions and judgments, in this case amongst the *woreda* officials and also between them and the federal officials. *Woreda* officials can be said are more practical and implementation-oriented. One government official in the *woreda* level believed that they are merely facilitating, implementing and providing info downward and upwards (Interview GO4, 2015). He further said, "our problem is not planning, but implementation. We have to put all these things [i.e. regulations and plans] to the ground, and then betterment perhaps can happen" (Interview GO4, 2015). However, the same official also said that initiative should come top-down, denoting pessimism of his own capability to create change (Interview GO4, 2015). It is likely due to persistent hindrance from higher levels, as illustrated from the quote below:

In principle the key role lies with the *woreda* level but there is no empowerment. When they try to do something, there is interference from the central government. They do not have full power. *Woreda* level actually sees

all the mess, not the Authority and the central government (Interview PS5, 2014).

One government official thought that they have some power to influence, especially if backed by scientific knowledge (Interview GO2, 2015). Whereas the offices that directly relate to irrigation in the *woreda* level thought that they are the government officials that are in power to decide, at least small-scale irrigation, private sector water use, production, and their relationship with farmers (Interview GO3 and GO1, 2015). However, the similarity is that local government officials did not know or hear about initiatives such as the new Basin Authority, the RVLBA (Interview GO1, GO2, GO3, and GO4, 2015).

In the federal level, meanwhile, the RV-Basin is both lucrative and that it is very political as it spans between two regional states, Oromiya and SNNP. Competition for water and tax fees from the private sector is potential reasons. For example, in the creation of the RVLBA, decision was made in the Prime Minister's office, denoting a highly political matter (Interview GO8, 2015). Appointment of its head was also done through political affiliations (Interview GO8, 2015). In general government officials in the federal level were more confident about their complains and suggestions being heard (Interview GO7 and GO8, 2015). They also had more strategic and political thinking, as they conduct assessments of the basin-wide sectors, planning for short, medium and long terms, and assigned roles for every stakeholder they deem relevant in the management of the Basin (Interview GO7 and GO8, 2015). Earlier the *woreda* official complained about not enough implementation, whereas in the federal level they blamed it on lack of financial resources and at the same time put importance in creating more up-to-date plans, studies on the RV-Basin condition, and gain knowledge in general from academic forums and workshops (Interview GO7 and GO8, 2015).

The two paragraphs above thus illustrated the different perceptions amongst levels of government officials regarding the management due to the influence of scale, which make institutional bricolage within government officials a 'messy' process. This indicates that there is no uniformity on perception on how to solve issues. Not only that, it is known that water resources planning and management are done in a fragmented way across governance levels and sectors in the Basin Authority (Clever,

2002). For example, water management is inseparable from land, however land is a regional responsibility, while Basin Authorities are established as a federal structure, and their mandate only covers water management (ODI, 2015). Moreover, regional governments such as the Oromiya government, have their own agendas and may develop water resources without the knowledge of the RVLBA and without following the Master Plan (ODI, 2015).¹³ Looking back at the government flowchart in the Background section (Figure 4), it can be seen that there are a lot of duplicities and unclear reporting schemes within just one regional state. The complexity of the management is illustrated by a quote from an academic:

In the federal level, implementations of the regulations are not so good. Decisions are being made in the higher level are especially for investment issues. They say they do not have evaluation guidelines. Environmental impact assessments are just recently being looked at. There is also the question of investment vs. regulatory office. Basin authority [like the RVLBA] can give regulations but so can the Oromiya government, and the watershed agency located in the ministry (Interview A2, 2014).

Thus we can concur that the condition was, and still is, categorized as a social vacuum where power relations are defined by who has the more authority.

To conclude, the main findings of this section are that, first: historically there were no best practices that the government could take as an example for the RVLBA. Second, I have also shown that the government's 'participatory mechanism' is an actually an exercise of structural power that attempts to create maintenance of power and control. Finally, the different perceptions amongst government officials of the management shaped by the different scales make institutional bricolage within government officials themselves a 'messy' process. Complexities and intricacies within the reporting systems also posed problems for the management.

¹³ There seems to be an outdated policy (i.e. 1999 Policy) that is not aligned with current development strategies (i.e. GTP). No discussion has been made to update the soon expired WSDP in 2016. In theory, the allocation of water for different uses and users are mentioned in Master Plans, however they are also outdated and do not reflect the actual needs and demands from various sectors and levels (Hemel & Loijenga, 203).

7. CONCLUSION

The purpose of this research has been to explore and contribute to knowledge regarding power relations between the different actors (i.e. smallholders, private sector, the public sector, academia, donor, and civil societies) and institutional arrangements, that are involved in the surface water management of a common pool resource located in the Rift Valley Basin (RV-Basin). I specifically studied the districts of Dugda and Adami Tulu Jido Kombolcha located in the regional state of Oromiya in Ethiopia.

The thesis utilised concepts that operate under the umbrella of a political ecology study, namely institutional bricolage, structural power and boundary organisations. Moulded within political ecology's ideas of multiple and conflicting forms of meanings and identities, institutional bricolage looked at processes in which contestation and negotiation between different actors operating in institutions within the RV-Basin are shaped by power relations and social structure. Structural power, meanwhile, looked at how power relations are between the different actors in the RV-Basin water management. Lastly, boundary organisations looked at a specific exercise of structural power by certain actors in the management, namely knowledge-creation. I used multiple data collection method, i.e. individual interview, group interviews, focus group discussion, desk reviews of documents and observation.

The main findings were as follows. Based on elaboration of actors' perceptions, it can be seen that there are varying worldviews, knowledge and interactions amongst themselves. Actor's multiple identities present complexity in worldviews, and each is not homogenous. Though the research has successfully explored heterogeneity amongst actors, it has not been taken into account in the actual water management of the RV-Basin. This presents a situation of 'false' smoothness of the institutional bricolage processes by not incorporating plurality of actors' point of views. There was not much of a process of negotiation and contestation between actors, resulting in an arguably inadequate institutional solution as it fails to recognise the depth of social and cultural fabric of decision-making and co-operative relations. Local concerns are not (yet) balanced with those in the larger scale. Elaborating further using structural power concept, we can see almost predictably that yes, smallholders in these districts still feel less influential and just 'accept' the situation. However, my findings have

also shown that most of the other local actors feel the same as exemplified by some government officials, local Ethiopian companies, local NGOs and research centre. Regarding participation, management process has not been very participatory, and even if they did, it was more ad hoc basis (e.g. from a foreign funded project). Limitations to engage women and other marginalized groups (i.e. pastoralists) existed.

Regarding the use of knowledge in the management of the Basin, boundary organization has played a key role, not only about private sector operation, but especially in institutionalising participatory approaches in the form of Integrated Water Resource Management (IWRM) and multi-stakeholder platforms (MSPs) for the Basin. These widely accepted concepts were not difficult to adopt by the government as they are also shaped by existing discourses to use IWRM and MSPs. It is aptly written by Foucault's position on power and knowledge: "the exercise of power perpetually creates knowledge, and conversely, knowledge constantly induces effects of power" (1980, p. 52). The lack of knowledge and communication, and exclusion in general, regarding the new initiatives would even further them away from being involved in the management. By not recognising plurality on identities, knowledge and participation, formal institutionalism has also reinforced social divisions and emphasise particular identities and roles, making distance amongst actors even more prominent.

As mentioned in the Introduction section, I aimed to provide answer as to how power dynamics of the various actors influence the management of water of the Rift Valley Basin. Situating my findings, a previous study has looked at institutional problems within basin authorities and watershed management in Ethiopia, yet limited in power dynamics within actors in the local level (ODI, 2015). This thesis has also attempted to merge previously stand-alone concepts under a political ecology umbrella. Through the analysis and findings, therefore my original contribution to this field of knowledge has been to fill a gap in the empirical and theoretical literature; through this institutional study that addresses power relations amongst actors at various level; focusing on the dynamics in an economically, environmentally, and politically sensitive river basin.

The power dynamics of the various actors in influencing the management of the RV-Basin are as follows: the smallholders are a heterogeneous entity that do not have much influence on the RV-Basin water management as they lack authoritative resources and face issue of scale, therefore they mostly wait for initiatives from the government. Second, the local NGOs also do not have much influence on the Basin except when they are equipped with specialist knowledge and financial resources from donors, as in the case of NGO 1 who work closely in shaping both the environmental policy and knowledge. Third, it has been identified that the academics play a significant role, especially paired with NGOs and the private sector in shaping the knowledge discourse. Fourth, the private sector is another heterogeneous entity that do influence how the RV-Basin is managed, depending on how much authoritative resource like how much tax they pay and specialist knowledge that they have. Fifth, the most influential actor is the government, as even though they are also heterogeneous, they play a key role in decision-making and implementation through their authoritative resource, and they are however influenced a lot by economic benefits offered by the private sector, which often seem to overshadow best water management of the RV-Basin.

Power relations within surface water use and management in the RV-Basin are intricate and extensive. To be able to generalise my findings to the whole Basin, a further study covering and comparing the situation with the other regional state is recommendable. A further, more comprehensive study is necessary to capture power relations amongst actors with different ethnicities and administrative boundaries. Not only that, it is essential to couple it with an impartial biophysical study on the RV-Basin whose results can be taken up to construct proper measures against further degradation of the lakes and rivers. This is especially relevant to prevent a complete dry up of lakes and watersheds as is the case of Lake Haromaya in the Harar region of Ethiopia, and many other cases of drying up lakes in Africa. As an Ethiopian proverb says, “you think of water when the well is empty.” It is time to respond to the water management challenges of our time through inter-disciplinary applied research that emerged as a result of the intertwining of biophysical studies and analysis in the social realm.

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Appendix

Appendix 1. List of interview questions

Company

Date: ...	Place of interview: ...	Date/time: ...
<i>Information about the Interviewee</i>		
Name:		
Gender:		
Age:		
Ethnicity:		
Occupation/organisation:		
Location/village of organisation:		

Organisation's information

- What is your business (what do you produce)?
- How many staff?
- What is your capital?
- Why do you choose this place for business?
- How was the process of being granted business permit (especially regarding land)?

Water use

- Where is your water source, Meki river or Lake Zeway or...?
- How much water do you withdraw (in m³ or liter, per day/week/month)?
- When do you withdraw water?
- What method do you use to withdraw the water (motor pump or...)?
- What system do you use for irrigation?
 - Furrow/flood
 - Drip
 - Sprinkler

Regulation

- Do you pay for using water?

Conflict

- Is there any water use conflict so far? For example, with surrounding farmers
- Is there any mechanism to resolve conflict?

Interactions, participations and perceptions

- What organisations/individuals do you interact with usually for, in general and specifically for water use?
 - How is the relation of this organisation with the local government (kebele and woreda)? And with the zonal or regional level?

- How is the relation of this organisation to the private sectors?
- How is the relation of this organisation to the civil societies? Do you know or acquainted with any?
- What is the purpose of the interaction? How often?
- What are usually the results of the interaction (positive or negative)?
- How important do you think the interaction with these organisations/individuals?
- Do you have any conflict of interest with other organisations (e.g. rivalry?)

- Do you participate in any forum/platform/network/institution/training regarding the water management (of Lake Zeway or Meki)?
- What is the purpose of the forum?
- How did the participation start (were you invited or you initiated yourself)?
- What is the frequency of the participation?
- Is important to participate here?
- Why do you participate?
- Do you think that you achieved your personal/organisational objective in joining this forum?

- Do you know any projects from foreign donor that do interventions for the betterment of the water in Meki river and/or Lake Zeway?
 - If yes what are they?
- What do you think about these projects?
- What do you think about the operation of the private sectors?
- What do you think about the operation of the civil societies?
- Since you can remember, do you think there have been improvements since they come and operate?

Knowledge about the Basin

- What do you know about the present condition of the Meki river and/or Lake Zeway?
- Where do you get information about the Basin (or the Lake or the River)?
 - Government
 - Research centres
 - Academic publications (which university?)
 - TV/radio
 - Observations
- Do you need to know more information about the Basin (or the Lake or the River)?
- Do you think there is a water management the Basin?
 - If yes, how is it being managed
 - If not, how do you think it should be managed?

Power

- Whom do you convey complains about the water conditions to?
- Do you think your complains are being heard?

- Do you think you have enough influence or voice to give suggestion regarding the management of the Basin?
- Do you think you have power overall in the community?
- Who do you consider has the key role in influencing the water management?
- How do you think the government (kebele and woreda level) is influencing the use of water resources in this woreda/region?
- How do you think the private sectors are influencing the use of water resources in this woreda/region?
- How do you think the civil societies are influencing the use of water resources in this woreda/municipality?
- In what issues regarding water do you think is possible to bring about change in this municipality?
- What needs to be done? Who is supposed to do so?

Government Office

Date: ...	Place of interview: ...	Date/time: ...
<i>Information about the Interviewee</i>		
Name:		
Gender:		
Age:		
Ethnicity:		
Occupation/organisation:		
Location/village of organisation:		

Organisation's information

- What is the objective of the office?
- How many farmers in the woreda, and how many irrigation beneficiaries do you have?

Water use

- What is the irrigation potential in Dugda woreda?
- How much is for investment?
- Which water source (Meki river or Zeway lake)?
- What method to withdraw the water?
- What system do farmers use for irrigation?
 - Furrow/flood
 - Drip
 - Sprinkler

Regulation

- Are there any water extraction regulations?
- If yes, what are the regulations?
- Are they enforced?

Capacity and issues affecting the Office

- What is your organisation's main achievement?
- What is your organisation's main difficulty?
- What can be improved to increase your capacity?
 - More resources
 - More training
 - More involvement in the water management

Conflict

- Is there any upstream-downstream conflict?
- Is there any mechanism to resolve conflict?

Interactions, participations and perceptions

- What organisations/individuals do you interact with usually for, in general and specifically for water use?

- How is the relation of this organisation with the local government (kebele and woreda)? And with the zonal or regional level?
- How is the relation of this organisation to the private sectors?
- How is the relation of this organisation to the civil societies? Do you know or acquainted with any?
- What is the purpose of the interaction? How often?
- What are usually the results of the interaction (positive or negative)?
- How important do you think the interaction with these organisations/individuals?
- Do you have any conflict of interest with other organisations (e.g. rivalry?)

- Do you participate in any forum/platform/network/institution/training regarding the water management (of Lake Zeway or Meki)?
- What is the purpose of the forum?
- How did the participation start (were you invited or you initiated yourself)?
- What is the frequency of the participation?
- Is important to participate here?
- Why do you participate?
- Do you think that you achieved your personal/organisational objective in joining this forum?

- Do you know any projects from foreign donor that do interventions for the betterment of the water in Meki river and/or Lake Zeway?
 - If yes what are they?
- What do you think about these projects?
- What do you think about the operation of the private?
- What do you think about the operation of the civil societies?
- Since you can remember, do you think there have been improvements since they come and operate?

Knowledge about the Basin

- What do you know about the present condition of the Meki river and/or Lake Zeway?
- Where do you get information about the Basin (or the Lake or the River)?
 - Government
 - Research centres
 - Academic publications (which university?)
 - TV/radio
 - Observations
- Do you need to know more information about the Basin (or the Lake or the River)?
- Do you think there is a water management the Basin?
 - If yes, how is it being managed
 - If not, how do you think it should be managed?

Power

- Whom do you convey complains about the water conditions to?
- Do you think your complains are being heard?
- Do you think you have enough influence or voice to give suggestion regarding the management of the Basin?
- Do you think you have power overall in the community?
- Who do you consider has the key role in influencing the water management?
- How do you think the government (kebele and woreda level) is influencing the use of water resources in this woreda/region?
- How do you think the private sectors are influencing the use of water resources in this woreda/region?
- How do you think the NGOs are influencing the use of water resources in this woreda/municipality?
- In what issues regarding water do you think is possible to bring about change in this municipality?
- What needs to be done? Who is supposed to do so?

Water User Associations/Irrigation Cooperatives/Farmers

Date: ...

Place of interview: ...

Date/time: ...

Information about the Interviewee

Name:

Gender:

Age:

Ethnicity:

Occupation/organisation:

Location/village of organisation:

Organisation's information

- What is the objective of the Cooperative?
- How many members does it have? What are the characteristics of the members (crop production, level of capitalisation, household number, etc.)?
- Why do farmers become a member of your Cooperative?

Water use

- How much water do you withdraw?
- When do you withdraw water?
- What method do you use to withdraw the water?
- What system do you use for irrigation?
 - Furrow/flood
 - Drip
 - Sprinkler

Regulation

- Do you regulate water extraction activities?
- If yes, what are the regulations?
- If a member breaks the rule, is there any sanctions?
- Are they enforced?

Capacity and issues affecting the Irrigation Cooperative

- What is your organisation's main achievement?
- What is your organisation's main difficulty?
- What can be improved to increase your capacity?
 - More resources
 - More training
 - More involvement in the water management

Conflict

- Are there any upstream-downstream conflict?
- Is there any mechanism to resolve conflict?

Interactions, participations and perceptions

- What organisations/individuals do you interact with usually?

- What type of interaction?
 - Verbal
 - Meeting
 - Written
- What is the purpose of the interaction? How often?
- What are the restrictions/difficulties of the interaction?
- What are the incentives for the interaction?
- What are usually the results of the interaction?
- How important do you think the interaction with these organisations/individuals?
- Do you have any conflict of interest with other organisations (e.g. rivalry?)
- How is the relation of this organisation with the local government (kebele and woreda)? And with the zonal or regional level?
- How is the relation of this organisation to the private sectors?
- How is the relation of this organisation to the civil societies? Do you know or acquainted with any?

- Do you participate in any forum/platform/network/institution regarding the water management (of Lake Zeway or Meki)?
- What is the purpose of the forum?
- What is the purpose of the participation?
- How did the participation start (were you invited or you initiate yourself)?
- What is the frequency of the participation?
- Is important to participate here?
- Why do you participate?
- Are there any difficulties?
- Are there any commonalities in terms of the values that you share with this forum?
- Do you think that you achieved your personal/organisational objective in joining this forum?
- Have you agreed or disagreed with the forum/platform/network/institution?
- How was the disagreement settled?

- Do you know any projects from foreign donor that do interventions for the betterment of the water basin/resources?
 - If yes what are they?
- What do you think about these projects?
- What do you think about the operation of the private sectors?
- What do you think about the operation of the civil?
- Since you can remember, do you think there have been improvements since they come and operate?

Knowledge about the Basin

- What do you think is the state of the condition of the Basin (or the Lake or the River)?
- Where do you get information about the Basin (or the Lake or the River)?
- In what form is the information?
 - Verbal

- Poster
- Meeting
- Do you need to know more information about the Basin (or the Lake or the River)?
- Do you think you know enough about the Basin condition (or the Lake or the River)?
- Do you think there is a water management the Basin?
 - If yes, how is it being managed
 - If not, how do you think it should be managed?

Power

- Whom do you convey complains about the water conditions to?
- Do you think your complains are being heard?
- Do you think you have enough influence or voice to give suggestion regarding the management of the Basin?
- Do you think you have power overall in the community?
- Who do you consider has the key role in influencing the water management?
- How do you think the government (kebele and woreda level) is influencing the use of water resources in this woreda/region?
- How do you think the private sectors are influencing the use of water resources in this woreda/region?
- How do you think the civil societies are influencing the use of water resources in this woreda/municipality?
- In what issues regarding water do you think is possible to bring about change in this municipality?
- What needs to be done? Who is supposed to do so?

Appendix 2. List of individual interviewees

No	Itv Code	Pseudonym	Age	Gender	Organisation	Sector	Domain	Ethnicity
1	GO1	Government official 1	29	M	Irrigation Office Development Authority	Government official	Local	Oromo
2	GO2	Government official 2	27	M	Land and Environmental protection office	Government official	Local	-
3	GO3	Government official 3	29	M	Irrigation office	Government official	Local	Ethiopian
4	GO4	Government official 4	41	M	Team of natural resource management	Government official	Local	-
5	GO5	Government official 5	40	M	Oromiya Investment Commission	Government official	Regional	Oromo
6	GO6	Government official 6	53	M	Human Resources Directorate, MoWIE	Government official	Federal	Tigray
7	GO7	Government official 7	52	M	Basin Administration Directorate, MoWIE	Government official	Federal	Amhara and Oromo
8	GO8	Government official 8	44	M	Rift Valley Lakes Basin Authority	Government official	Federal	SNNP
9	NGO1	NGO worker 1	41	M	NGO1	Civil society	Multinational	Foreigner
10	NGO2	NGO worker 2	60	M	NGO2	Civil society	National	Not important
11	NGO3	NGO worker 3	43	M	NGO3	Civil society	Local	Oromo
12	NGO4	NGO worker 4	38	M	NGO4	Civil society	Local	Oromo
13	A1	Academic 1	39	M	Researcher and director	Academic	Local	-
14	A2	Academic 2	-	M	Addis Ababa University	Academic	National	-
15	A3	Academic 3	52	M	Agronomist and former project leader	Academic	Foreign	Foreigner - A
16	PS1	Company 1	40	M	ENBLA	Private sector	National	Foreigner - A
17	PS2	Company 2	41	M	ENBLA	Private sector	National	Foreigner - A
18	PS3	Company 3	36	F	Owner	Private sector	Local	Oromo
19	PS4	Company 4	32	M	Farm Manager	Private sector	Local	Oromo

20	PS5	Company 5	30	M	Production manager,	Private sector	Foreign	-
21	PS6	Company 6	30	F	Plant scientist	Private sector	Local	Ethiopian
22	D1	Donor 1	-	M	Food security, Development Cooperation Association, Embassy A	Donor	National	Foreigner - A

Appendix 3. List of group interviews

Itv code	Name	Village	Age	Gender	Position	Crops
SH1	Farmer 1	Kemu Garbi	29	M	Farmer	maize, wheat, harcot beans and sorghum
	Farmer 2		37	M	Farmer	maize and wheat
	Farmer 3		26	F	Farmer	Maize and wheat
	Farmer 4		25	F		Maize, sorghum, and wheat
	Farmer 5		28	F	Farmer	Maize and wheat
	Farmer 6		27	M	Farmer	Maize and wheat
	Farmer 7		30	M	Farmer/security guard at PSA	Maize and wheat
	Farmer 8		20	F	Farmer	
	Development agent		30	M	Development agent	
SH2	Farmer 9	Haleku	32	M	Farmer/Cooperative	
	Farmer 10		36	M	Farmer/Cooperative	
	Farmer 11		-	M	Farmer/Cooperative	
SH3	Farmer 12	Tuchi	63	M	Farmer/Cooperative	
	Farmer 13	Dembel	63	M	Farmer/Cooperative	
SH4	Farmer 14	Shubi Gamo	27	M	Farmer	Cabbage, papaya and maize
	Farmer 15		55	M	Farmer	Maize
	Horticulture specialist		27	F	Horticulture specialist	
	Farmer 16		35	M	Farmer	Papaya, cabbage, green beans
	Farmer 17		25	M	Farmer	Papaya, green

						beans, wheat and maize
	Farmer 18		28	M	Farmer	Green beans, cabbage, papaya, onion, maize and wheat
	Farmer 19		26	F	Farmer	Maize
	Farmer 20		20	F	Farmer	Maize
	Farmer 21		19	F	Farmer	Papaya and cabbage
SH5	Farmer 22	Oda	35	F	Farmer/Cooperative	Tomato, onion and cabbage
	Farmer 23		35	F	Farmer/Cooperative	Tomato, onion, and cabbage
	Farmer 24		50	F	Farmer/Cooperative	Tomato, onion and cabbage
SH6	Farmer 25	Golba	32	M	Farmer/Cooperative	
	Farmer 26		24	M	Farmer/Cooperative	
	Farmer 27		55	M	Farmer/Cooperative	
	Farmer 28		37	M	Farmer/Cooperative	
	Farmer 29		27	M	Farmer/Cooperative	

Appendix 4. List of private sector utilising surface water irrigation in Dugda and ATJK woredas

No.	Company	Year est.	Hectares	Woreda	Source	Production
1	La Salle Agro Industry	2003	60 ha	Dugda	Lake Zeway	Teff, cereal, vegetables, fruits
2	Makia Private	2003	10 ha	Dugda	Lake Zeway	Vegetables and cattle fattening
3	BGI Ethiopia	2000	450 ha	ATJK	Bulbula river	Winery
4	Sher Ethiopia	1998	550 ha	ATJK	Lake Zeway	Cut flowers
5	Segel	1998	975 ha	ATJK	Bulbula river	Banana papaya
6	ETCO	1998	93 ha	ATJK	Bulbula river	Papaya onion
7	Mustafa	-	100 ha	ATJK	Bulbula river	Crops
8	Federal Prison	-	128 ha	ATJK	Lake Zeway	Fruits, corns and onions

Source: Interview GO1 and GO2 (2014)