

WORKING PAPER / 2015.07

Institutional Context, Household Access to Resources and Sustainability of River Basin Resources in Tanzania

Towards an Analytical
Framework

Christina Mwivei **Shitima**



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WORKING PAPER / 2015.07

ISSN 2294-8643

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ABSTRACT

River basin resources contribute in diverse ways in the livelihoods of rural people in Tanzania. People living around these areas depend on small scale agriculture, subsistence forestry, artisanal fishing, livestock keepings, artisanal mining and small-scale trade as sources of livelihoods. While it was expected that these important livelihood assets would be used in sustainable ways, the destructive practices behaviour related to the use of basins resources are increasing. Increase of population, declining of agricultural productivity without increase of employment in industrial sector are among the factors that lead to competition for the use of river basin resources. This paper aims at providing an analytical framework that elaborates the relationship between people's access to and control over resources and sustainability of River basin resources in Tanzania. It uses the concept of livelihood framework, together with institutional theories to build the analytical framework that elaborates multiplicity of factors that affect sustainability of river basin resources in Tanzania. The livelihood framework is modified to include the concept of Ostrom's polycentric governance system to study how different institutions interact in the governance of river basin resources in Tanzania to affect the sustainability of River basin resources. This is the first paper to link the concept of polycentric governance system with the livelihood framework. This paper is part of the literature review that will feed into the PhD research on household development strategies and their linkage to RBR degradation in Tanzania.

ACKNOWLEDGEMENT

This PhD work is part of the ongoing project that is done in collaboration between Mzumbe University and Antwerp University. The project is aimed at promoting good governance through integrated community-based activities in Tanzania and it is sponsored by Belgian government through the VLIR-UOS under the Governance and Entrepreneurship through Education, Research, Access and Technology for Tanzania (Gre@t) programme. Special thanks to my promoters Prof. Dr. Nathalie Holvoet and Dr. Romanus Dimoso.

1. INTRODUCTION

1.1. River basin resources Degradation in Tanzania

Tanzania river basins contain a wide range of natural resources including water, arable and irrigable land, mineral deposits, fish, wetlands, natural forests and a number of tourist attractions, which contribute in a diverse ways to the livelihood of people. As a result, many people living around these areas depend on small-scale agriculture, subsistence forestry, artisanal fishing, livestock keepings, artisanal mining and small-scale trade as the sources of livelihoods. The intensity of these activities varies from one place to another depending on the size, climatic and soil conditions, technology available, infrastructure network, market access and population pressure in a particular area.

Tanzania has observed unprecedented decline of its river basins natural resources base due to competition for the use of river basin resources (RBR). The nature of competition over RBR use is explained within four main areas of concern (IUNC, 2003), which are farming, pastoralists, urban uses and industrial concerns. What is evident is that, the differing concerns and interests over the use of basin resources have not only brought about depletion of the available resources, but have at times led to conflicts among the users¹. As many users are vying for the same limited resources, competition coupled with the desire to increase income has increasingly led to destructive practices. These destructive practices have led to other problems such as water shortages, poor water quality and environmental degradation, which limit the efforts of achieving poverty alleviation, improving local people's health, food security, economic development and protection of natural resources (TCMP, 1999).

Tanzania adopted an integrated water resources management (IWRM) approach in early 1990s so as (among other factors) to counteract the problem of RBR degradation. This approach was meant to promote efficient and equitable use and access of water² for all stakeholders (Mutayoba, 2002; Van Koppen and Tarimo, 2014). The new approach was supposed to address the threats on water resources (including RBR) that are caused by land and water use, by bringing together different stakeholders in the management of those resources (URT, 2002). The approach was followed by the formulation of the new water policy (URT, 2002) and water resources management act (URT, 2009), which set the guidelines for the management of river basins in Tanzania. The past policies failed to manage effectively the basins resources, as they focused on the development of water resources rather than their protections or management (URT, 2002: 14). Citing URT (1995), Maganga (2003: 995) stressed that the past policies were characterised by “fragmented planning and management; a lack of integrated approaches and conflicting sectoral policies which have contributed to increasing conflicts over water use”, and other degradation practices such as water pollution and over exploitation by different water users. Since then, the institutions for the management of water resources management were established. In river basins, the term is commonly referred to as an integrated river basin management (IRBM) whereby different river basin bodies responsible for the management of river basins were established.

[1] For example, the incidents of drying up of wetlands and reduced levels in hydroelectric reservoirs have been assumed by authorities to be results of ‘wastage’ of water by irrigation and therefore they seek to restrict the flows to agriculture during the dry season (Merrey et al., 2005). These oversimplified perspectives on agricultural water use in the context of river basin water management can lead to serious harm to the productivity and wellbeing of people (Merrey et al., 2005).

[2] River basins are termed as water resources in Tanzania. For administrative purposes, the basins are divided under nine river basins (URT, 2002).

Despite the presence of institutions for water resources management, the 2013's rapid assessment report by the United Nations shows that RBR are still under stress. The problem of water scarcity in river basins still exists and other water resources are still degraded (UN, 2013). Different factors are highlighted as reasons behind this degradation. The rapid population growth triggers competition over resources use (Mbonile, 2005; IUNC, 2003). Poor management practices by formal organizations were also reported to be among reasons for overexploitation of RBR (Rajab and Mahoo, 2008; Rugemalila and Gibbs, 2015). For instance, Rajab and Mahoo (2008) found that in some cases where formal water rights are used, large quantities of water are abstracted compared to actual requirements. Government intervention with top-down approaches is also blamed to erode the traditional or local system on land use arrangements and patterns (Miller and Doyle, 2014). In addition, the presence of market failures causes high rates of natural resource depletions because the poor tend to harvest the resources in order to meet current consumptions (Perrings, 1989) rather than long term benefits (Pender, 1996)³. Inequity in access to RBR and flow of benefits from conservation may also contribute to unsustainable use of RBR.

The degradation of RBRs presents a considerable challenge in poverty alleviation and sustainable management of the basins resources because the two phenomenon seem to be interlinked. This is because, like many other households in the world, Tanzanians' households utilize natural resources with the desire of improving their livelihood situations. The fall of employment rate in agricultural activities, with no increase of employment in off-farm activities⁴ have caused more people to depend on natural resources (including RBR) for their survival. As a result, natural resources degradation, declining agricultural productivity and poverty are inter-related in a vicious cycle among households in rural Tanzania.

1.2. Forming a Research Problem

The ways people make decisions on the use of natural resources are affected by institutional contexts that surround them. Institutions in terms of rules and regulations (North, 1990; Ostrom 2008), informal practices and social relations (Cleaver, 2001; Mehta et al., 2001; Leach et al., 1999), market, infrastructural development and presence of organizations that provide social services to the community (North, 1990), technological innovation (de Janvry, et al., 1989), and government policies (Ellis, 2003) govern the natural resources uses in a particular society by determining or affecting the way people interact with their natural environment. The institutional contexts in the governance of river basins is a complex one as the river basins consist of diverse resources that are used by diverse stakeholders (with different interests on the uses of natural resources) in a large and a dispersed geographical area. This may result to the presence of different governance structures on the management of RBR, that is, different institutions for the management of RBR may exist, with different rules, behaviours and decision making processes (KUZDAS et al., 2015). All these institutions (formal and informal) may operate together to determine things such as who has the rights to use, when and how to use a certain resource, etc. (Meinzen-Dick, 2014; Meinzen Dick and Pradhan, 2002; Bandaragoda, 2000). They both create the rules and determine the behaviour that is expected in the society on the use of

[3] However, some researchers have found different resource consumption pattern among the poor. For instance, because land is the only asset available for the poor, the poor may have strong incentives to manage their land well (Pender et al., 2004).

[4] The share of agriculture in total GDP and its proportion in total employment have been declining relative to other sectors even as the majority of Tanzanians still depend on agriculture for their livelihoods (URT, 2010).

resources. This is also the case in Tanzania, where human activities and actions are regulated and influenced not only by the formal system of laws but also by informal customary systems and norms (see for example Maganga, 2003). These institutions may work together either to support or to contradict each other. For instance, while formal institutions may determine the legal rights on resource uses, informal institutions, in terms of socially constructed practices such as gender and age, may create social differences that favour some groups and put others in disadvantageous situations. These socially constructed practices may determine things such as distribution of roles related to RBR uses among different groups in the society (the roles of elders vs. youths, men vs. women). All these may affect the ways through which RBR are used and the ways through which different groups benefit from the use of resources. People who are mostly favoured by the customary systems may decide to capitalize on the use of informal institutions to gain more access and benefits from resources.

Recognizing that most river basins are governed by multiple institutions with different actors on the use of RBR, this paper aims at providing an analytical framework that help to understand the governance (institutions) of RBR and its linkage to the degradation of RBR base in Tanzania. We use Ostrom's (1990) concept of polycentric governance system to elaborate the governance of RBR in Tanzania. The term Polycentric refers to as "many centres of decision-making which are formally independent of each other" (Ostrom et al., 1961: 831). The polycentric governance system is used to show how different institutions interact in the governance of river basin resources in Tanzania to affect the sustainability of those resources. However, since rural people's decision to use natural resources is partly driven by the desire to improve their livelihood conditions, the concept of polycentric governance is linked with the people's behaviour on the RBRs' use and the sustainability of RBR.

This paper is part of the literature review that will feed into the research on household development strategies and their linkage to RBR degradation in Tanzania. The paper adds to the existing literature of governance of RBR in Tanzania by applying the concept of polycentric governance system as an attempt to understand the governance of complex natural resources such as river basins⁵. Thus, the application of the analytical framework in my future research will help in suggesting the policies for sustainable river basins management that take into account the presence of multiple institutions and their impact on behaviour of diverse stakeholders, who are the primary users of the resources.

This paper also captures the information on intra-household differences in terms of gender in access to and control over RBR and the resulted gendered outcomes in terms of sustainability of RBR. This is important for recommending policies that will promote development initiatives that take into account the different roles played by men and women on the management of RBR.

1.3. Study Questions

The following questions guide this paper:

1. Which forms of governance structures exist in the management of RBR and how do they interact to affect sustainability of RBR?
2. How are resources accessed by individuals in the households and how does access to resources affect their choices of development strategies?

[5] Available literatures on institutional context of RBR in Tanzania have not applied this concept (for example studies by Franks et al., 2013; Lankford, 2010; Cleaver, 2002).

3. Are the development strategies that individuals choose in the household and their wellbeing and RBR degradation interlinked?
4. Does the improved wellbeing lead to more or less investment to protect RBR?

1.4. Organisation of the Study

The remainder of this paper is organized as follows: the next chapter (chapter two) presents the review of the institutional theories on management of natural resources and theories that explain access to natural resources and the concept of wellbeing as the ways to address the criticisms of the livelihood framework. Chapter three presents the concept of livelihoods and livelihood framework. Chapter four provides the proposed analytical framework, relationships of the variables in the proposed framework and the hypotheses that are expected to be tested. Conclusions and the way forward are set out in the last chapter.

2. INSTITUTIONAL THEORIES ON NATURAL RESOURCES MANAGEMENT

This chapter aims at providing different theoretical views on institutional context in management of natural resources. It starts by presenting a theoretical debate on institutions of natural resources management, whereby different perspectives on natural resources management are discussed. Recognizing that RBR are governed by multiple institutions, section two presents the concept of polycentric governance system. The summative overview of the theories that are discussed in this chapter is given at the end of the chapter.

2.1. Theoretical Debate on Institutions of Natural Resources Management

2.1.1. Neoclassical Theories

Under the assumptions of zero transaction costs and perfect information to all resource users, neoclassical theories associated the problem of unsustainable use of natural resources with the market failure to allocate resources efficiently (Sang-Hoon, 2007). Natural resources degradation problems are considered to be social costs (externalities) created by individuals when pursuing their consumption and/ or production decisions. These social costs can be a source of economic inefficiencies if they are not reflected in market prices. Thus, government intervention into price structure is needed to internalize the social cost to be part of private costs of consumption or production (Lenka, 2010). The government can internalize environmental costs either by introducing taxes and penalties on the degradation of natural resources or by requiring the part that creates the costs to compensate those who are affected by the damage (Pigou, 1920; Coase, 1960). Neoclassical theories were useful to explain how market failures can be sources of environmental resources degradation and how the government can intervene to correct these market failures. However, the theories did not include the analysis of institutional arrangements on their models. Institutions were not regarded as the factors that affect people behaviour on natural resources use decisions (Cosmin, 2014); they were included in the models as the exogenous variables that only capture the impact of a certain institution on a certain analysis.

2.1.2. New Institutional Economists Theories

The new institutional economists (NIE) recognize the role of institutional arrangements in governing human behaviour when interacting with natural environment. When people are left to pursue their interests on the use of resources, the result is the degradation of resources, thus institutions are there to constrain human behaviour on the use of natural resources (North, 1990). Institutions in terms of rules, regulations and organizations affect people's choices, negotiations and agreements in the society, thus they help to reduce transaction costs associated with governing human behaviour (Coase, 1960; North and Davis, 1971). For instance, while the establishment of property rights can help to identify parts that have the rights to use resources, rules can specify how and when the resources should be used and sanctions can be used to punish those people who violate the rules. Coase (1960) showed that market could not yield to efficient outcomes in the natural resources when institutions are not well established. He argued that if the initial delimitation of rights is not established, transactions in the markets are impossible, as it may be difficult to identify the part with the right to the use of resource. The literatures on the property rights in natural resources management shows that property rights can be held as the private property rights, public/ state property rights, and/ or common property rights (FAO, 2002). Private and public/ state property rights show the property rights that can be claimed by individual people/ organisations and the public, respectively. The common property rights can be claimed by individuals/ group of individuals who use shared resources/ common pool resources (CPR) such as water for irrigation, fisheries etc. In his well-known publication, 'The Tragedy of the Commons', Hardin (1968) shows that if the rights over the use of common pool resources (CPR) are not claimed by the state or individual part/ organization, CPR are overexploited and turn into open access.

2.1.3. Mainstream Institutionalism and Critical Institutionalism Perspectives

From the literature of institutional theories of CPR two schools of thought emerged, namely; mainstream institutionalism (MI) and critical institutionalism (CI). The MI is probably the most influential approach on policy formulations and applications on management of natural resources as their ideas have been translated into the policy documents and used in the governance of CPR (Patel et al., 2014). Their ideas are drawn partly from NIE, which among other things, assert that, "the role of institutions is to provide information and assurance about the behaviour of others, to offer incentives to behave in the collective good, and to monitor and sanction opportunistic behaviour" (Cleaver, 2012:8). In this perspective, natural resources are considered to be effectively managed by community through creating their own institutions. Communal management of natural resources is regarded to result into sustainable management of resources since its practice is highly participatory and it transfers responsibility to the people who are mostly affected by environment degradation (see for example Ostrom, 1990; Mutamba, 2004). People in communal ownership are expected to manage the resources in a more cooperative (rather than competitive) way because of their dependency on the resources as the source of livelihoods. Collectively, community can identify their natural resources goal, establish strategies to achieve their goal, impose rules and regulations, and monitor people behaviour through the use of sanctions. Ostrom (1992:60) suggested that robust and ideal institutions can be "crafted" by resource users and policymakers in order to attain a specific goal. She proposed eight institutions design principles⁶ that can be used as a guideline to build institu-

[6] These design principles are (1) clearly defined boundaries, (2) congruence between appropriation and provision rules and local conditions, (3) collective choice arrangements, (4) monitoring, (5) graduated sanctions in case of non-compliance, (6) conflict resolution mechanisms, (7) external recognition of the right to organise and (8) nested enterprise (taking into account different levels of relevant decision-making) (Ostrom, 1990).

tions for the long-term effective management of common pool resources. Through application of the principles, institutions can be framed and shaped to suit a certain natural resources goal. However, some studies have proved that not all communities are successfully in governing natural resources they use (Bray et al., 2003; Nagendra et al., 2005).

Critical institutionalism applies historical, sociological and anthropological views to construct their approach towards the management of natural resources. CI ideas are partly built through questioning MI assumptions on management of CPR. While in MI view institutions can be designed to attain a certain natural resources management objective, in CI perspective, local institutions cannot be designed or predicted as the factors that affect them are dynamic, unpredictable and they differ from day to day, and from one society to another. CI emphasize on “(i) the complexity of institutions entwined in everyday social life; (ii) their historical formation; and (iii) the interplay between the traditional and the modern, formal and informal arrangements” (Hall et al., 2014: 73), which altogether affect the way local institutions are formed. In CI perspective, local institutions are shaped by everyday actions of people’s lives, which are also affected by their cultural norms, taboos and values, histories, and the mix between formal and informal practices. Like MI, CI agrees that rules are important on shaping institutions but they view rules in a complex way. Rules are not given; they are constantly made and remade through people’s practices that are also affected by culture and norms (Leach et al., 1999).

While in MI communities are assumed to have certain attributes that bind them together and give them common interest in resources use, the CI perspective recognizes the importance of social differences that exist between individuals in the community. Diversity in social relations such as differences in wealth, knowledge, gender, social or political affiliation creates differences in power relations among actors in society. Some actors may use their power to benefit more from resources than the others (Clever, 2001; Mehta et al., 2001; Cleaver and Toner, 2006). For instance, people who possess certain skills and/ or other forms of resources may have substantial capacities to negotiate and/ or manoeuvre and shape collective actions to their advantage and thus accrue more benefits from collective outcomes. Furthermore, some groups of actors with power may deny some other groups the rights to access important resources for the livelihoods. De Haan and Zoomers (2005: 33) have referred to it as social exclusion, i.e. “a process in which groups try to monopolize specific opportunities to their own advantages”.

Unlike the MI approach which views institutions as a static mechanism (Rocheleau, 2001), designed to address a specific resources problem, in CI perspective, institutions are considered dynamic i.e. they change as society and its priorities change. The rules and the structures that govern resources use are formed and reformed by changes in informal institutions surrounding them. The changes in institutions may be brought by changes in factors such as population, technology and global policies (Mehta et al., 2001), changes in people’s ways of doing things through the process of social interactions, social and political practices (Berry, 1997), etc. Because of these changes, individuals have found themselves changing their strategies and adopting new ways of livings, which also results in changes in their norms and rules, and the changes of the routines ways of dealing with environment management issues, which in turn affect their institutions.

The ecological, global, economic and social processes are also taken to be static (stable and balance) in the MI approach (Mehta et al., 2001). Global factors, for instance, may affect the design and functioning of local institutions through setting of the agenda for the gov-

ernance of natural resources. Bandaragoda (2000) gave an example that, a country's adherence to international water management treaties affects a country's water policy, which further affects the water management practices at the lower levels and the structures of organizations that manage water resources. The countries' regimes that govern natural resources may also change because of the changing of global agendas (Mehta et al., 2001), which also may affect the way resources are governed at the local levels. Furthermore, changes in macroeconomic factors such as global capital flows or economic deterioration that affect economies at the macro level may also have an impact on the people at the local level through variables such as price levels and exchange rates, which affect the markets for local people's products.

One of the major contributions to the CI perspective is the institutional bricolage theory developed by Frances Cleaver. Institutional bricolage is defined as "a process by which people consciously and unconsciously draw on existing social and cultural arrangements to shape institutions in response to changing situations" (Cleaver, 2001: 26). The resulting institutions are considered dynamic and hybrid, which combine both modern and traditional and, formal and informal practices (Cleaver et al., 2013; Cleaver, 2001). Such institutions are expected to be accepted by a wide range of stakeholders since their formations are grounded on traditional and socially acceptable way of doing things, which function together with the existing formal rules. These institutions are dynamic and uneven; they differ from community to community.

Like many other approaches, the CI approach has its challenges, especially in terms of the application of its concepts in researches and policy interventions in development. Most of the CI arguments are built through criticising the mainstream approach but they fail to provide "concrete instruments or actions" that can be used by policy makers (del Callejo and Cossío, 2009: 48). This failure is even admitted by the founder of the theory of institutional bricolage who argued that "critical institutionalism perspectives, though growing in academic literature, often lack policy purchase, partly because they fail to offer clear direction for policy maker" (Cleaver, 2012:9). This failure can be partly attributed to the fact that the CI ideas are built on aggregating different roles played by different agencies in natural resources management. The many roles that are played by individuals in their daily lives make the application of the concept difficult, which make the process of institutional change a "messy, unpredictable and a creative process" (Merrey, 2013: 142). The idea of incorporating many everyday contexts, as suggested by Mehta et al. (2001:5) may entail studying of every individual action in their daily lives. The unpredictability of individuals' actions and the individuals' differences in behaviours result in the presence of too many variables with not only interrelated, but also unpredictable relationships. This imposes a challenge on conceptualization of the ideas so as to build frameworks/ develop models that incorporate the need of so many unambiguous and unpredictable social relations variables. The comparisons of the indicators between different social groups become difficult as the definitions of most of their concepts differ between different social groups/ societies/ individuals. Even within the society, they cannot be compared across time as the definitions change from time to time. Furthermore, the presence of many roles played by different individuals in their daily lives may result in bias to some groups/ behaviour that seem of interest to the researchers. This will even impose a challenge in recommending policies that target all social groups in the society.

2.2. Polycentric Governance System

From different discourses on institutional context for natural resources management, different approaches and analytical frameworks were put forward to aid analysis of the governance of common resources. By basing on Tragedy of Common's work (Hardin, 1968) that common resources would turn into open access if the property rights are not assigned to any part, some policy prescriptions on governance of natural resources have been advocated on the use of private property rights (see for example Demsetz, 1967; Raymond, 2003) and state property rights (Lovejoy, 2006; Terborgh, 1999, 2000). These ideas have been applied all over the world and property rights have been assigned to either private parts or to public, and sometimes both private and public property rights were applied to manage the same resources (Ostrom and Cox, 2010). Apart from the private and the state property rights, Ostrom and Cox (2010) argued that some literature have advocated on the use of the community property rights as a solution for natural resources problems. Ostrom and Cox (2010: 452) called all these prescriptions as "panaceas" as they are termed to become "blueprint" solutions to natural resources problems. On the same page, they continue by arguing, "The panacea problem occurs whenever a single presumed solution is applied to a wide range of problems". According to them, natural resources problems are diverse, they differ from one area/ resource context to another, and thus there can never be a single solution to all natural resources problems. The panacea problem can be seen from two dimensions (Ostrom and Cox, 2010). First, panacea is associated with the theories that are very precise and targeted to solve a specific natural resource problem. These theories are taken as blueprints, but in reality, they cannot fit to a range of natural resources problems. The second dimension of panacea can be seen from the theories that are too vague and too general. For example, economic theories that assume heterogeneity in human behaviour or when a certain property right regime is advocated as an ideal solution for the natural resources problems.

By drawing on the Ostrom's and Cox's (2010) idea that there is no ideal property rights regime (governance system) in the management of natural resources, this paper proposes to use the polycentric governance system to study the governance of RBR in Tanzania. A polycentric governance system is likely to include collective actions from multiple stakeholders (resources users, formal organizations and informal customary organizations) to govern the common resources. The stakeholders are supposed to complement each other's actions by filling the gaps that cannot be covered by one part. The term "Polycentric" was first defined as:

"... many centers of decision making that are formally independent of each other. Whether they actually function independently, or instead constitute an interdependent system of relations, is an empirical question.... they may function in a coherent manner with consistent and predictable patterns of interacting behavior. To the extent that this is so, they may be said to function as a system", (Ostrom et al., 1961: 831-32).

This means that instead of using centralized (mono-centric system) with hierarchal structures in decision making, the governance system should be the one that brings together different levels of decision-making units. A multilevel system that is operating in a polycentric way is supposed to be more efficient than a single system (Gibson, et al., 2000) particularly in circumstances where the governance and the use of the resource is subjected to multiple institutions (each with its own rules and regulations). In this situation, it is ideal to have diverse actors (stakeholders), with different interests in the resource, participating in the governance of the resource. The decision making power is distributed among different actors (Ros-Tonen et al.,

2015; Gruby and Basurto, 2014). In polycentric system, different stakeholders have the opportunity for knowledge and experiences sharing, as the actors differ in skills, experiences and in their influences in policy settings (Lemos & Agrawal, 2006).

Ostrom (1990: 101) suggested that governance be “organized in multiple layers of nested enterprises” in order for the collective actions at the lower level to have the support from higher authorities. “The higher level need not be a state level, because polycentrism is possible through nested informal arrangements or through nested private arrangements enforced by state coercion. Yet the state, with its legitimate monopoly of violence, often best provides the supportive functions that make possible lower level solutions” (Mansbridge, 2014: 9-10). The state is expected to play a role of reducing imperfections by providing information to all stakeholders and providing cohesion and resources that enhance collective efforts and negotiations from different stakeholders (Mansbridge, 2014). For instance, the state may conduct capacity building on areas of monitoring and evaluation, enforcement of rules etc. The state also may threaten to impose solutions if stakeholders give the impression of not reaching the agreements.

2.3. Summary

This part has presented different theoretical perspectives on the institutional theories of natural resources management. It is not the aim of this paper to study some of the theories like the neoclassical theory and NIE theory in detail; since they form the important building blocks on development of some of the institutional theories, they are briefly elaborated in this paper to widen our understandings on the evolvement of institutional approaches. The MI and CI approaches are presented to explain the current theoretical debate on the governance of natural resources management.

From these different discourses on institutions, different frameworks were put forward to aid analysis of the governance of complex natural resources such as river basins. In this paper, the governance of RBRs is regarded as a complex one since RBR are used by diverse stakeholders in a large and a dispersed geographical area. Thus, different institutions for the management of RBRs may exist, with different rules, behaviours and decision making processes on the uses of resources (KUZDAS et al., 2015). Lubell (2015: 41) stressed, “complex institutional systems do not address just one resource such as a fishery, but simultaneously address multiple interconnected public goods and common-pool resource dilemmas”. The way people interact with RBR and the outcomes of their interactions may differ between different stakeholders in the community and between communities in which the river basin flows its water. Thus, from the above discussion, it can be deduced that the application of the concept polycentric governance system is appropriate to study the governance structure of river basins. As opposed to communal ownership, which is aimed at building local institutions to solve a single resource problem within a single community, the polycentric system allows the studying of the interaction of the multiple institutions with overlapping roles, but with different decision making systems, each with its jurisdiction in the area where it operates (Ros-Tonen et al. 2015; Bixler, 2014).

Despite the strength of the polycentric governance system approach in elaborations of complex shared natural resources, the approach does not provide a clear link between the governance of natural resources and the sustainable livelihood outcomes. To address this challenge, the next chapter introduce the concept of livelihood framework (Ellis, 2003), which links the governance of natural resources with sustainable livelihood outcomes.

3. LIVELIHOODS AND NATURAL RESOURCES MANAGEMENT

This chapter applies the concept of livelihood framework (LF) to presents the concept of people’s livelihoods and the discussion of how livelihood’s activities undertaken by people affects natural resources conditions. Livelihood has been defined as having enough amount and flow of food and cash for the living or to meet basic needs (Hoogvorst, 2003; Chambers and Conway, 1992). In Scoones (1998), livelihood is defined to comprise the capabilities, assets (tangible and non-tangible) and activities required for a means of living. In development thinking, however, livelihood refers to the way people make a living, and analysing livelihood systems entails examining factors involved in the manner in which people make a living (Kamuzora, 2004). In this paper, the analysis of livelihoods includes the analysis of economic (livelihood) activities pursued by individuals in the households and the factors that affect the choices of those activities, and an analysis of the resulted outcomes.

The following section presents the concept of livelihood framework, together with its criticism.

3.1. Livelihood Framework

A livelihood framework is used to analyse the link between livelihoods and natural resources use (Kiagho et al., 2004). The LF is an illustrative tool that shows the interaction between livelihood resources, livelihood strategies, and their implications on livelihood outcomes.

Figure 1: The Livelihood Framework



Source: Adopted and modified from Ellis (2003)

The above framework (Figure 1 above) shows an example of the LF. The framework shows that people use different livelihood assets to carry out different activities (livelihood strategies) to achieve different livelihood outcomes. Five types of livelihood resources (assets) are identified in the livelihood frameworks, namely human, social, natural, physical, and financial capitals (DFID, 1999). Different livelihood strategies require the use of different resources. Those who are endowed with resources are more likely to perform different activities in order to maximize their livelihood outcomes rather than being forced into any given strategy because it is their only option (DFID, 1999). This means that, no single category of assets on its own is sufficient to achieve varieties of livelihood outcomes. People are assumed to combine several types of assets in order to achieve their livelihood outcomes.

According to Hoogvorst (2003), livelihood strategies may be defined as the actions

[7] These assets are not ends in themselves: other forms of assets that are deemed important in particular areas of study can be identified and added (Scoones, 2009).

undertaken by people with the aim of improving their livelihoods in the long term. However, people may also carry out livelihood strategies in order to cope with uncertainties such as droughts, i.e. coping strategies. Coping strategies are explained by Carver et al. (1989) as specific efforts pursued by households to overcome or to minimise the impacts of stressful events. In this paper, livelihood strategies that are pursued with the aim of improving wellbeing are referred to as development strategies. Development strategies that are pursued in rural areas include both farming and off-farm employments (Ellis, 2000). Households use resources to carry out those strategies; this include the use of natural resources. Therefore, these strategies have implications for the natural resources conditions in the areas where they are being pursued.

Livelihood outcomes from development strategies can range from the increased incomes, increased well-being, reduced vulnerability, improved food security, to the more sustainable use of natural resources (DFID, 1999). According to Chambers and Conway (1992: 6), “livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generations”. Sustainable livelihoods are the ones that develop the assets on which they depend, without destroying the natural resource base.

Access that people have to resources and the choices of development strategies are modified by the institutional context. These factors shape the extent to which people are able to draw on or develop assets in order to sustain their livelihoods. Ellis (2000) categorised institutional context into institutions, organisations and social cultures. Organisations may affect rural livelihoods through policy formulations and implementations (DFID, 1999). Institutions in terms of formal rules and regulations constrain people’s behaviours when interacting with environments (North, 1990). Social relations in terms of gender, class and age, create inequities in the way resources are accessed in the society, which further results in differentiating livelihood outcomes among different social groups (Ellis, 2000).

Vulnerability contexts are factors that are beyond the household’s control for example trends, shocks and stresses. Trends in terms of the changes in demography, technology and international prices may affect the choices of livelihood strategies in a certain community (Ellis, 2000). Environmental changes may create shocks and stresses such as droughts and floods, which may destroy natural resources and the ability of the ecosystem services to provide positive livelihood outcomes to human beings. Due to the lack of other livelihood resources, overexploitation of natural resources may be the immediate strategy to cope with the vulnerability context for the poor people.

3.2. Criticism of the Livelihood Framework

Like many other approaches and frameworks, the LF has faced several criticisms. Some of these criticisms are also addressed in this paper. The framework has been criticised for its failure to conceptualize the issues of access to resources (de Haan and Zoomers, 2005). It is argued that access to resources is gained not only through the physical ownerships of resources, but also by the ability of people to benefits from those resources (Ribot and Peluso, 2003; Leach et al., 1999). Section 2.3 addressed this criticism by presenting the theories or perspectives that explain how access to natural resources is gained. Section 4.1 explains how access is defined in this study.

The LF is criticised for limiting itself to the economic indicators of wellbeing as the main measures of livelihood outcomes (de Herdt and Bastiaensen, 2008; de Haan and Zoomers, 2005). People do not only care about the income and material things in their lives, but also about

other non-material factors that give the meanings to the lives. Freedom to make individual or collective decisions, ability and the opportunity of people to live the kinds of lives they value, and the ability of people to make their own choices are some of these factors (UN, 2007). Section 3.6 presents the concept of the wellbeing from different perspectives, and section 4.1 address conceptualize the term wellbeing by combining material and nonmaterial indicators of wellbeing.

The LF is also criticised for its inadequacy to consider impacts of social relations issues in livelihood outcomes (de Haan and Zoomers, 2005). However, there are different views on this criticism. Some authors (for example de Haan, 2012; Scoones 2009) have argued that social relations issues were incorporated in various frameworks. Section 4.1 shows how social relations issues are included in this study.

Scoones (2009) has criticised the LF for its lack of dealing with long term changes, particular the dynamics of the sustainability context and shifts in rural economies. He argued that the LF concept focused on analysing livelihood strategies that are pursued at a point in time, and how people cope with the short run shocks and stresses. In long run period, rural livelihoods are transformed because of the factors that change slowly, for example climatic changes, changes in global policies etc. Scoones (2009:172) pointed out that the analysis of the long term effect of different development strategies is important, because from that analysis different terms such as “coping, adaptation, improvement, diversification and transformation” can be identified and emphasized. Section 3.5 presents the theoretical review on long term changes in development strategies, i.e. development pathways. Elaborations of both development strategies and development pathways are included the proposed analytical framework (see section 4.1).

The livelihood framework shows that households combine different assets when pursuing different activities to achieve different outcomes. However, the framework does not elaborate the flexibility in which these capitals can be combined (de Haan and Zoomers, 2005). Some assets have multiple values, i.e. holding of those assets brings other forms of personal satisfactions to the holders. Some assets for example cattle are held as symbols of power in some societies of developing countries. Along these lines, Devereux (2001) argued that there are circumstances in which people would rather starve than selling their assets. This criticism is not addressed in this paper since it is out of our focus.

3-3- Theories on Access to Natural Resources

Different theories were put forward to explain how natural resources are accessed by different individuals/ organizations. The property rights approaches describe that the rights in the use of and control over resources are held by different people/ organizations in terms of property rights. Commons (1968) defines property rights as the authority to carry out particular actions in a specific domain. Property rights are the products of rules that govern use of specific resources. They are “the set of rules, laws and customs that contribute to the establishment of everyone’s rights regarding the appropriation, usage and transfer of goods” (Cosmin, 2014: 473). The rules can be formal i.e. formulated by state/ government authorities (*de jure*), although in practice they may originate from communities themselves/ resources users (*de facto*), backed by social arrangements like religious, cultural values and customs (Cosmin, 2014; Schlager and Ostrom, 1992). Sometimes, both *de jure* and *de facto* rules may exist in one setting at the same time, and they are both important in determinations of people’s rights on the use of natural resources (Gautam et al., 2004).

Different people/ communities/ organisations may possess different property rights in the use of and control over a certain natural resources. These rights are broadly grouped into user rights and control rights (see for example Schlager and Ostrom, 1992; Meinzen Dick and Pradhan, 2002). Individuals/ society may hold more than one form of right in terms of the 'bundle of rights' (Schlager and Ostrom, 1992). These bundles may contain several rights ranging from the rights to use the resource and earn income from it to the right to control the resource (Schlager and Ostrom, 1992). Control rights can be held in a form of, for example, a power to determine who can use resources, when and where the resources can be used and a power to transfer the resource through leasing or selling it.

Property rights theory is useful in explaining how holdings/ possession of rights affects the access that people have to natural resources. However, despite its usefulness, it has been shown that there are other social based (non-right based) mechanisms that also influence the way people access resources. Ribot and Peluso (2003) in their study of a theory of access challenged the property rights theory for conceptualizing access by only looking at the perspective of ownership/ right to use. According to them, access is not only the matter of property rights alone, but also "the ability to benefit" from the resources that one owns/ controls (Ribot and Peluso, 2003:153). Although it is one of the criteria for gaining the benefits, possession of property rights alone does not guarantee the holder the ability to benefit from the resource. According to them, the ability to benefit is influenced by the right based access and structural and relational mechanisms. The right based access is synonymous to property rights; it exists when the ability to benefit from resource is derived from laws, custom, or convention. Property rights can be held formally in terms of title deeds, permits or licences to use a resource or in informal ways through social acceptance or agreements in the community. Those without the rights can gain the rights from the right holder for example through paying for the use of the resource. The structural and relational mechanisms mediate the ability of individuals to utilize access mechanisms and the ability to benefit from the resource. Structural and relational mechanism, such as access to technology, labours, knowledge, authority and social relations facilitate or hinder the ability of individuals to benefit from resource i.e. they shape the extent on which resource benefits are gained, controlled and maintained. For instance, the areas with access to water and fertile soil may have comparative advantages on producing high value perishable goods such as vegetables, however that advantage may be irrelevant if the markets are not accessible or roads to transport the products are poorly developed (Pender et al., 2004). The long distance from production areas to markets together with the lack of the own means to reach markets, may force the rural people to sell their products at the price that is often determined by the merchants. Due to lack of information on prices, merchants may lie to rural producers on the commodities prices that prevail in urban or international markets so as to lower the prices of rural products (Ribot and Peluso, 2003). Government may also detain farmers to sell food crops to international markets that pay high prices so as to be able to meet home demands.

The theory of access by Ribot and Peluso (2003) is useful as it recognizes the fact that people benefit differently from the owned/ shared resources. The theory considers the analysis of benefits by focusing on variations of benefits among individuals in terms of who benefits, the types of benefits, and the circumstances of receiving those benefits etc. Despite its usefulness, the theory does not show the processes of gaining the benefits i.e. how access and rights to resources are transformed to the benefits.

Leach et al. (1999: 233) (in their work of environmental entitlements) defined ac-

cess as the process of gaining endowments, entitlements and capabilities over resources⁸. They defined endowments as both “the rights and resources that actors have, for example, land, labour, skills and so on”. They also defined environmental entitlements as the “alternative sets of utilities derived from environmental goods and services over which social actors have legitimate effective command and which are instrumental in achieving wellbeing”. Unlike Sen who defined entitlements as material things, Leach et al. (1999) consider other forms of utilities that are derived from the resources use like the use of environmental goods for cultural, recreational and religious purposes. They also defined capabilities as “what people can do or be with their entitlements” (Leach et al., 1999: 233). This entails the ability of the entitlements to contribute to people’s wellbeing.

Leach et al. (1999) incorporate the impacts of social relation factors as the determinants of the access to resources. They argued that livelihoods in some societies might be affected not only because the resources are unavailable, but also due to socio cultural factors, which restrict the use of certain resources. For instance, some resources may not be utilised for the improvement of livelihoods due to factors such as religious beliefs or norms and traditions that prohibit the use of those resources.

The work of environmental entitlements has been criticised by de Haan and Zoomers (2005) because it combines many dimensions of institutions (social relations, institutions and organizations) together in one dimension. That is, too many dimensions variables with different impacts are merged and assessed at one level of analysis. It then becomes impossible to clearly see the impact of individual variables. According to de Haan and Zoomers (2005), the institutional context can well be studied when it is broken down into different categories as it is done in the study by Ellis (2000)⁹.

Recognizing the fact that resources are not equally accessed between men and women in some communities, the next section presents a brief discussion on the intra-household differences in access to and control over resources, with the special focus on how social relations derived from institutional contexts affects the way men and women access and control households’ resources.

3.4. Intra-household Differences in Access to and Control over Resources

In the unitary approaches or common preferences models (Haddad et al., 1997), the household is considered as a single unit of analysis, whereby all members are assumed to have the same preferences on resources use (see for example studies by Becker, 1965 and Singh et al., 1986). The studies of intra-household differences were developed as the alternative approaches to unitary models. In the studies of intra-household differences, different household members are assumed to differ in preferences. The intra-household resource allocation refers to

[8] Sen (1984) was the first author to explain that access is gained through endowment and entitlement. While endowment refers to the control that individuals have over productive resources, entitlement are defined as the set of alternative commodity bundles that a person can command in a society using the totality of right and opportunities that he or she faces” (Sen, 1984: 497). Devereux (2001) and Leach et al. (1999) criticised Sen’s approach for not showing the process of gaining endowments and the role of non-market mechanism such as cultural and customary norms in determining the access to resources.

[9] Ellis (2000) categorized institutions into social relations (gender, caste, class, age, ethnicity, and religion); institutions (formal rules and conventions and informal codes of behaviour, including laws, property rights and markets); and organizations (groups of individuals bound by the purpose of achieving certain objectives, such as government agencies, NGOs, associations and private companies). According to de Haan and Zoomers (2005:36), the approach by Ellis is more useful as it moved from “general and abstract to specific and concrete” definitions, however they also criticized it for its failure to include the impact of power relations in his analysis

the processes in which different productive resources are allocated among household members and the resulted outcomes of those processes (see for example Haddad et al., 1997). These processes in allocation of resources may result in inequities in access to resources between household members and the way benefits from resources are used. These processes are affected by “socially constructed” factors, in terms of norms and practices rather than “biological” reasons (Agarwal, 1997:2). Socially constructed practices created intra-household differences in things such as access to and control over resources, distributions of activities, decision making process within households, etc. Jones et al. (2010: 7) pointed out that, these social constructed practices “are not inherently good or bad”, however, when they create “inequality, discrimination and exclusion, they become detrimental to development”. Institutions of cultural norms and practices can be detrimental to development, for example, if they deny women rights to access and control over certain productive activities, and if they limit women’s abilities to use their capabilities to improve their livelihood outcomes as well as the outcomes of their families.

In developing countries, both women and men play major but different roles in the management of natural resources. Women may assume big responsibilities on the management of natural resources, as they are responsible for providing their households with firewood, water, vegetables and food from subsistence farming etc. (UN, 2007). Despite their important roles, women often lack control over the resources. The access that they have to important productive resources like land is limited and is often mediated through their male partners (Ellis, 2000; Agarwal, 1997); in case of divorces or death of the husbands, most women are denied the access they previously had (Agarwal, 1997). In addition, women’s roles in resources management may not be fully recognized as they have subordinate roles in decisions regarding the uses and management of natural resources, both within households and societies. Men often make natural resources management decisions on women’s behalf (Ellis, 2000), and women’s contributions in decision making may be undervalued because of the perception that they are unskilled (Agarwal, 1997). Women are also largely affected by environmental degradation as this affects the time they spend on care taking activities such as fetching of water and firewood. This in turn affects their livelihoods, since less time is left for productive activities.

The next section continues to address the criticism of LF by presenting the concept of development pathways.

3-5- Development Pathways

In the short run, Livelihoods are static, although people may temporarily change their livelihoods when reacting to uncertainties. However, in the long run, livelihoods are dynamic as the drivers that affect them in the long term are also not static, some of them “operating over decades” (Scoones, 2009: 189). These drivers include institutional contexts in terms of long term practices (de Haan and Zoomers, 2005), changes in ecological systems and technology (Leach et al., 2010), comparative advantages in terms of things such as agricultural potential and access to markets (Pender et al., 2004), demographic factors, and changes in global economy and urbanizations (Scoones, 2009). In the long run, these changes in development strategies may reveal common observed patterns, which are also called “development pathway” (Pender et al., 2004: 768). Development pathways are often the results of collective actions or a co-ordination process among actors/ social groups in a society (de Haan and Zoomers, 2005) as most of the factors that drive the changes in pathways affect all individuals at the community at the same time.

Although the pathway may show a common pattern in a particular society, individ-

ual households may take similar/ different trajectories¹⁰. Considering the fact that there could be different trajectories followed by different households, de Haan and Zoomers (2005) argued that in such a situation, the applications of the concept on policy formulation might be difficult as the policy makers may fail to identify which group to support among different trajectories. Different pathways may require different interventions so as to enhance livelihood (Scoones, 2009). De Haan and Zoomers (2005) proposed the studies of livelihoods pathways to be conducted at community level in order to come with recommendations that target a specific group of people who share common characteristics.

3.6. Sustainable Livelihood Outcomes

According to LF, people achieve sustainable livelihood outcomes from the use of livelihood resources allocated to different development strategies. Different literatures have differently defined the concept of sustainability outcomes. According to DFID (1999), sustainable livelihood outcomes can range from the increased income, increased well-being, reduced vulnerability, to the more sustainable use of natural resources. Brundtland (1987: 43) defined the concept of sustainability as the “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs”. According to Chambers and Conway (1992) sustainability livelihoods outcomes are achieved when livelihoods are enhanced without destroying the natural resources base. Leach et al. (2010) warned on the need of giving the static definition of the livelihood, as the concept differ from one resource context to another. They argue that the concept of sustainability differs across societies so as its definition. The conceptualization of sustainability shall depend on the nature of resource that is studied for example its physical condition and how resource users perceive the concept of sustainability in their own context.

Different literatures have differently defined the concept of wellbeing. In most economics models, wellbeing is defined to include income and materials things (wealth) that people possess, for example money and other assets, expenditure on basic needs such as food, healthy, education etc. (OECD, 2013). In this perspective, environmental goods are considered as goods for direct consumption or they can be used as resources to produce other goods, and they can be substituted with other capitals (Solow, 1991). Other studies conceptualize wellbeing by looking at the quality of life, i.e. how individuals perceive their living conditions (Naess, 1999). This may also include their perception on the environment (UN, 2007). Wellbeing is a multidimensional phenomenon, and different people may have different perceptions on what factors define their wellbeing. People’s criteria for wellbeing improvements may include, for example, “whether they can enjoy a long life, escape avoidable morbidity, be well nourished, be able to read, write and communicate, and so forth” (Sen, 1983: 754).

Wellbeing is also defined in terms of capabilities i.e. what people can do in their lives given the entitlements they have (Sen, 1984; Leach et al., 1999). This means that people use endowments and entitlements to achieve personal goals in lives; and by doing so, they are able to achieve their personal wellbeing. Sen considered income as one of the means to achieve desired wellbeing, but it is not the end product in itself. The same level of income may imply the same level of purchasing power but not necessarily the same level of wellbeing (de Herdt and Bastiansen, 2008). Wellbeing may differ among people as they have different goals and needs. In this perspective, what is important to individuals is not only what they have in monetary/

[10] The term livelihood trajectory refers to the pattern or direction of livelihood strategies that is followed by an individual or a household (De haan and Zoomers, 2005). Individual trajectories can be analyzed and aggregated to make development pathways at community level (Scoones, 2009).

material term but also whether they are able (freedom) to use what they have to achieve the kind of life they value.

3-7. Chapter Summary

The Livelihood framework is an important concept in this study as it shows how people can use resources to enhance their livelihoods and maintain their natural environment at the same time. Sustainability in the social context is connected to this because livelihoods have to enhance the local and global assets on which they depend (Hoogvorst, 2003). In river basin areas, the concept may be related to the global and local concerns with degradation of RBR, for instance physical degradation of water resources due to human activities undertaken at the upstream or water catchment areas; overexploitation of water resources due to livelihood activities such as irrigation and livestock keeping; water pollution due to illegal fishing, industrial and human activities, to mention a few.

The chapter has also reviewed different theories that explain access to natural resources. The theories helped us to get insights on questions such as why resources are not equally accessed among different people in the communities. In river basins areas, different individuals/ organisation may possess different forms of rights over the use of the shared resources such as water. While some may hold rights for example to use water for domestic purposes, others may have rights to use water for productive activities such as fishing and irrigation. Furthermore, other resources can be owned as private properties, for example private rights to own and use land. The rights can also be permanent or seasonal for instance when land is rented. Individuals may also hold different rights in terms of the bundle of rights i.e. holding several rights at the same time. All these types of rights affect the way resources are used and managed, and the benefits that are derived from the use of resources.

Another important thing that is noted from the literature is that, legal possession of rights to the use of resources or the physical ownership is not a sufficient condition for household/ individual to benefit from the resource. Institutional factors moderate the whole process of gaining the benefits. For instance, some individuals do not only hold the rights to use a common resource such as an irrigation scheme but they may also hold the rights to decide how, when and where to irrigate. Holdings of those rights may entail some sort of power in the community. Some people who hold power may use them to their advantage i.e. to gain more benefits from the resources than other resource users. In addition to the power that may be derived from formal authority, other forms of power can also be derived from informal social relations such as differences in gender, age and other forms of socially constructed practices.

It was shown in the chapter that, intra-households differences due to socially constructed practices affect the way household's resources are used and the way different household members benefit from those resources. Thus, in this paper, an assumption is made that access to and control over resources differ between men and women, which further results into gendered livelihood outcomes. These gendered differences are shaped by institutional contexts, through their influences on the roles that are expected to be played by men and women in the society.

The chapter also shows that households pursue different development strategies so as to improve their livelihood outcomes or to cope with short term stress and trends. However, there exist other factors that their changes are slow to have significant impact in the livelihoods in the short run period, but they affect rural livelihoods in the long term through their impacts on the changes of the nature of activities that are carried out in the societies. Thus, an

analysis of both development strategies and development pathways is important especially for identifying short term and long term factors for the sustainability of RBR.

The next chapter presents the analytical framework that is developed from the concept of LF together with the theories on access to natural resources and the concepts of institutional theories on management of natural resources.

4. TOWARDS AN ANALYTICAL FRAMEWORK

The chapter aims at building an analytical framework that elaborates how institutional contexts affect households' access to resources and sustainability of RBR in Tanzania. The criticisms of the theories that were presented in chapter 2 and 3 show that single theory may not be sufficient to prescribe solutions for natural resources problems. This means that what seems to work in one resource context may not necessarily work in another resource context. Therefore, this paper argues for the need of integrating concepts from different theories so as to come up with a framework for the analysis of the complex institutional context for RBR in Tanzania. The LF's concept is combined together with the institutional theories and the theories of access to natural resources to build an analytical framework that addresses the multiplicity of factors affecting sustainable use of RBR. The framework is designed to explain how development strategies (natural resources -based and non- natural resources -based activities) that are pursued by rural households depend on households' access to resources, and how these strategies affect households' livelihoods outcomes. The framework also shows how institutional factors mediate both access to resources and achievement of livelihood outcomes.

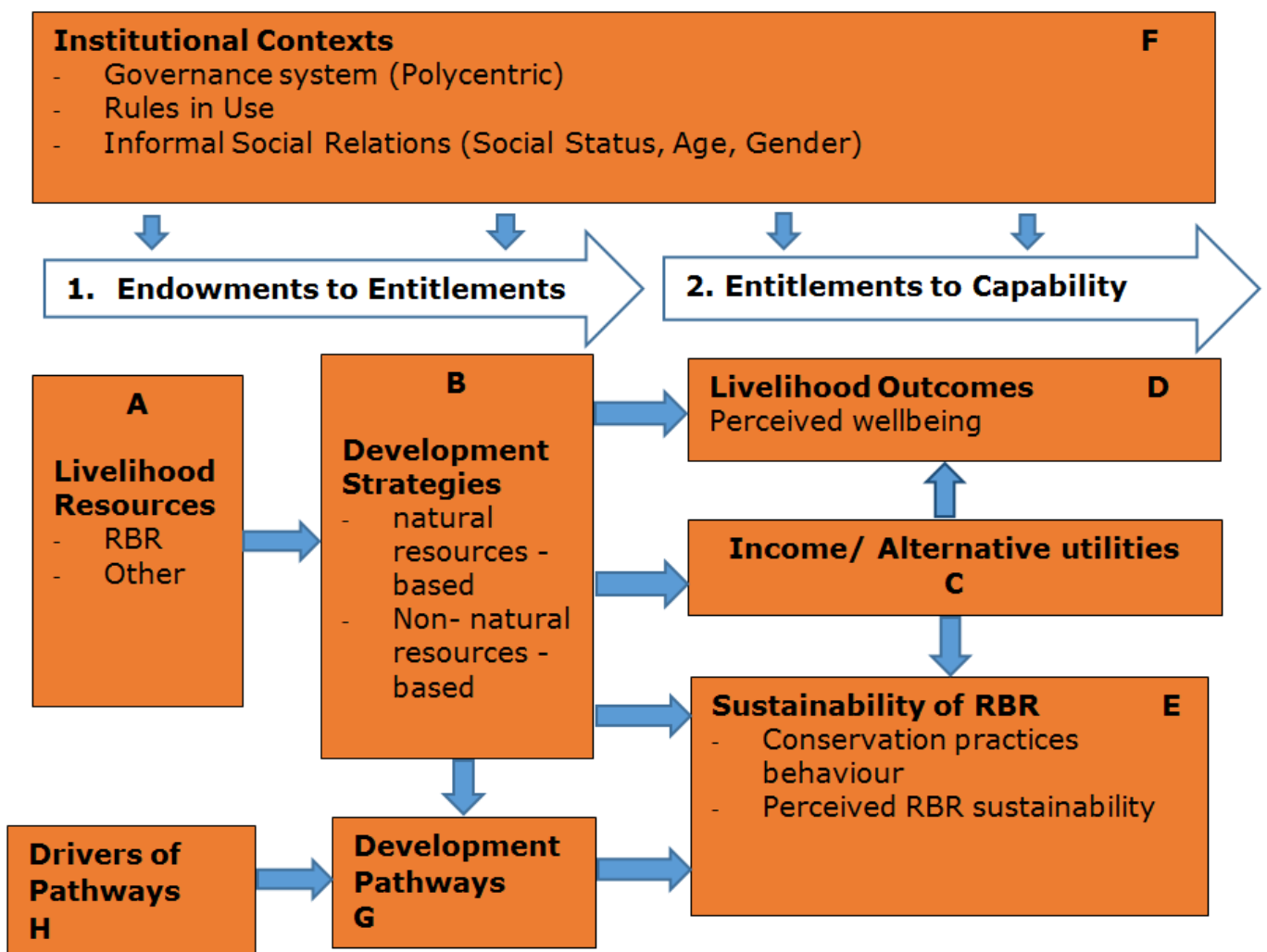
The LF is important in this analysis as it recognizes people's dependencies on different resources as the means of earning the livings and escaping poverty. The framework allows the assessment of livelihood outcomes at different levels of analysis (Scoones, 1998) including the individual level; the level that is also used in this study. It also shows how livelihoods outcomes can be enhanced or hindered by the institutional context. The LF is modified to include the elaboration of the process that shows how access and benefits to resources are gained. This is done by using the concepts of the theories of access to natural resources, in particular the concept of environmental entitlements (Leach et al., 1999), to conceptualize the concept of access to RBR, and to show how the benefits from the activities that use those resources are transformed into desired livelihood outcomes. The ideas from the work of environmental entitlements are used as the work recognizes the impacts of institutional context in terms of rules in use and the social relation factors on access to and control over resources. Moreover, unlike other works which mentioned the need of gaining benefits, the environmental entitlement work went further by showing the processes of gaining benefits, and how institutional context especially the social relation factors affect those processes.

Another addition to the LF is the use of the concept of Ostrom's polycentric governance system to study how governance structures affect livelihood outcomes in river basin areas. Most of the available studies that link institutional context and sustainable livelihood outcomes, have used institutional processes and governance structures (Scoones 1998), institutional analysis and development framework (Rahman et al 2014), Ostrom's design principles (Ming'ate et al, 2014), and/ or property rights (Lambini and Nguyen, 2014; Roy et al 2013, Hara and Backeberg, 2014) to capture the aspect of institutional context in their frameworks. Thus, this paper adds to the available literatures on governance of natural resources by incorporating the elaborations of polycentric governance as the form of institutional context that affect livelihood of people.

The next section presents the proposed analytical framework and the relationships between the concepts used in the framework together with the hypotheses. The summative overview of the chapter is given in the last section.

4.1. Proposed Analytical Framework

Figure 2: Relationships between Institutional Context and Sustainability of RBR



Key: Relationships to be analysed in the empirical study

Source: Adopted and modified from Ellis (2000) and Leach et al. (1999)

Figure 2 above presents an analytical framework that shows how sustainable livelihoods outcomes are related to institutional context. Institutional context in terms of polycentric governance system, rules in use and informal social relations are considered the most influential factors in the determination of livelihood outcomes through their effects on resources endowments that households have, and the transformations of endowments to entitlements and to capabilities. Below is the explanation of the relationships between variables used in the

analytical framework

4.1.1. Institutional Arrangements for the Governance of RBR

The first task in the analytical framework is to elaborate the current institutional arrangements for the governance of RBR in the study area. This helps us to arrive at the answer to our first research question that aims to understand the forms of governance structures that exist in the management of RBR and how they interact to affect men and women's access to RBR and other livelihood resources. The presence of multiple governance systems and the ways those systems interact affect people's access to resources, choices of their development strategies and their livelihood outcomes. Thus, we seek to know how different systems from formal authorities such as government agencies, local governments, resources users associations, professional organizations, projects and the informal social relations associated with religious, customary laws, societal and familial norms cooperate or conflict each other in the governance of RBR. In this aspect, we propose to identify the main actors (individuals or organizations) that are responsible for the governance of RBR at the study area. For each organization, the main activities, actors and objectives are also identified. Thereafter, each organization is studied to find out the rules that govern their everyday activities and decisions regarding the uses of RBR. In addition, each organization is studied to see how it interacts with other organizations (either in a specified system or not) in the governance of RBR¹¹.

The governance system is further assumed to determine the rules that govern RBR and the behaviours that different actors have on the use of RBR. The rules in use (box F) are assumed to determine things such as who has the right to use resources, when the resources should be used and how to use resources (Schlager and Ostrom, 1992). Due to existence of multiple institutions, these rules may not be drawn from a single institution. There may exist different rules from different institutions, which may interact together in a way that they contradict or support each other's roles in the management of RBR. In our paper, rules in use are assumed to be the factors external to households influence, which may not have the direct impact on other variables in the conceptual framework but they moderate the relationships between other variables. For instance, while gender affects access to RBR, rules in use may strengthen the impact that gender has on access to RBR by either strengthening that relationship or weakening it. Thus, rules in use are assumed to shape the extent to which people are able to draw on particular resource when they pursue their development strategies. Rules in use may also shape (moderate) the way in which development strategies (box B) affect the sustainability of RBR (box E).

Furthermore, institutional context in terms of informal social relations (box F) may create differences in social identities and social status in terms of age, gender, wealthy, ethnicity etc.; these may create further differences in access to and control over resources, and the control of benefits from activities that use those resources (Leach et al., 1999; Cleaver et al., 2013). These social identities and status may be used as sources of power in a society, and those who hold that kind of power may use them to gain more benefits from access to common resources than others. This paper includes in the analytical framework the variables, namely social status, age and gender (box F) to explain how social relations affects the access to resources and the benefits that different people accrue from the use of resources. We propose to use different social status variables as they are perceived by the society to be a source of power in access to and control of RBR. These forms of power are expected to vary for example from indicators that

[11] This approach of studying the governance structure by looking at the interactions of activities between different actors was partly borrowed from the ideas of the framework for the analysis of the regional water governance regime developed by Wiek and Larson (2012: 3156).

reveal political power, to how wealthy or knowledgeable the individual is, to indicators that are related to leaderships of strong informal groups such traditional or spiritual groups, pastoralists, irrigators, farmers etc.

4.1.2. Livelihood Resources and the Access to Resources

The second research question seeks to understand how men and women access resources and how the access to resources affects men and women's choices of development strategies. In the analytical framework above, livelihood resources comprise of RBR and livelihood assets (physical, social, financial and human capital). By drawing on the theories of access to natural resources, access is conceptualized to include (i) endowments i.e. ownerships and rights to the use of resource (box A); (ii) entitlements i.e. the ability to use endowments in different development strategies (box B) to produce different sets of commodities and to generate income and/ or to derive alternative sets of utilities (box C); and (iii) capability i.e. ability to use entitlements to achieve livelihood outcomes (boxes D and E). The arrows labelled 1 and 2 on figure 2 above show the process of transforming endowments to entitlements and entitlements to capabilities, respectively.

4.1.3. Livelihoods Wellbeing and Sustainability of RBR

The third research question seeks to find out if the development strategies that men and women choose and their wellbeing and RBR degradation are interlinked. From the analytical framework above, people achieve sustainable livelihood outcomes (boxes C, D and E) from the use of livelihood resources (box A) allocated to different development strategies (box B). In section 2.5, different definitions of the concept of sustainability from different literatures were presented. Since people engage in different activities as the strategies for their livelihoods, in this paper the assumption is made that, livelihoods strategies are expected to lead to positive livelihood outcomes if they are able to attain economic sustainability of improved individual's income and wellbeing while at the same time maintaining environmental sustainability i.e. protecting the natural resources base. Income (box C) is an immediate output that is received from development activities, and it is considered an important means of meeting the basic needs. The failure to achieve the level of income that is sufficient to meet the basic needs might result to negative livelihood outcomes in terms of consumptions. Apart from material things that can be obtained from livelihood strategies, other non-material things like using water resources for recreational purposes are also considered to be part of satisfactions from those livelihood strategies. These are included in the framework as the alternative sets of utilities (box C).

By drawing on Leach et al., (2010) ideas that sustainability context should be defined by looking on the needs of the resource users, the framework considers the things that are perceived by the households themselves to be the indicators of wellbeing (box D), and the indicators of RBR sustainability (box E) and the factors that affect their achievements. In this case, households are expected to give their views on the wellbeing and sustainable RBR indicators and to judge their own wellbeing positions (if they have achieved wellbeing or not) and to judge the sustainability of the RBR of their respective areas.

The framework also wishes to find out if the increased income (Box C) resulting from the development strategies leads to investment in conservation practices (Box E) that seeks to protect the environment and maintain resource productivity. This corresponds to our fourth research question. Current participation and investment in conservation practices is assumed to contribute to the sustainability of RBR in the future.

Lastly, wellbeing is also seen as the process in which people are able to use entitlements to achieve the things they value, (arrow number 2). In this context, the freedom to act defines the wellbeing (UN, 2007; Sen, 1999). This includes freedom to make individual or collective decisions, on resources uses and on the uses of household's income.

4.1.4. Development Pathways

The one time information that is obtained from the development strategies may not be adequate to evaluate the livelihood outcomes. "This kind of analysis may miss out longer-term dynamics and the potential for more radical transformations" (Scoones, 2009: 189). Some factors may lead to long run improvement in livelihoods, even though the changes of those factors are slow to be visible in the short run. For instance when new opportunities emerge, a time lag may be needed for people to adjust their productions either by intensifying the existing ones or by investing in new livelihood activities. The community that is seen to have better livelihoods in a onetime study might have undergone large changes in livelihoods to achieve the improved outcomes. Thus, in addition to the short term analysis of development strategies, the framework includes the analysis of development pathways that have been followed between different groups of people/ community overtime. We assume that different development strategies (box B) that are undertaken by individuals form trajectories, and the aggregation of these trajectories forms the development pathways (box G) in the community. Depending on certain initial conditions of the RBR base, these pathways may contribute to the long term improvement of RBR (box H) at the community. In this paper, development pathways are considered the strategies that have a common defined/ observed pattern.

Based on the discussion of the variables in the conceptual framework and the way they relate, the next section presents the hypotheses to be tested.

4.2. Hypotheses

- i. The access to resources that different members of the households have is determined by institutional contexts that surround them.
- ii. Development strategies are determined or influenced by differences in the households' members' access to RBR and other livelihood assets and by institutional context.
- iii. The development strategies that different members in the households pursue have a significant impact on their wellbeing.
- iv. Development strategies that individuals in the households pursue and the wellbeing determine the RBR status. It is assumed that RBR problems in the area (such as over fishing, deforestation, soil degradation etc.) are primarily determined by the livelihood practices used by individuals in the households and the ability to invest in resource protection. The more the development strategy depends on RBR, the more the likelihood that more investment in sustainable use and conservation of the basin resources will be made.

5. CONCLUSION AND THE WAY FORWARD

As mentioned in chapter one, this paper is part of the literature review feeding into our research on 'development strategies and their linkage to river basins resource degradation in Tanzania'. The next step after this paper is to plan for the methodology that will be used for the data collection activities and data analysis. However, before proceeding with the field research settings, the concepts used in the analytical framework need to be defined and made operational. In addition to the use of the literatures, conceptualizations of some of the variables for example RBR and the sustainability of RBR need to be grasped at the field level¹². In this case, the first field visit will focus on consultation with the government officials and Non-Governmental Organizations (NGO) working with river basin management at the study areas. This will aid us to get background information on the livelihood situations along the river in relations to the RBR uses and dependencies, governance of river basins, and RBR conditions in the study area. The information from the government officials will also help us to identify the areas/villages to be surveyed. Furthermore, the consultation with government and NGOs officials will also help in the validations of the usefulness of the definitions of the concepts that are used in the conceptual framework.

After identification of the study areas/ villages, the next step is the identification of the stakeholders who use RBR to carry out different activities in the selected villages. Stakeholders from different social groups will be consulted to get their views on RBR and factors affecting their sustainability. These stakeholders will include (but not limited to) government officials and Civil Society Organizations (CSO) working with river basins management at the study areas, different social groups such as associations of water users, pastoralists, farmers that exist in the study areas and other stakeholders. This work will be done parallel with the review of different documents (published and unpublished materials such as books, reports, papers, statistical abstracts from government, district authorities, NGOs, donors, etc.) so as to gather data and statistics of RBR management in the study area.

[12] As proposed by Leach et al., (2010), some of the concepts such as resources and sustainability differ across societies, and their definitions should better reflect the situation in the society.

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