A Conflict over Water in Water Abundant Regions: The case of Lake Naivasha in Kenya and Lake Wamala in Uganda

DISSERTATION

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Eidesstattliche Erklärung

Hiermit erkläre ich, dass ich die vorliegende Arbeit ohne fremde Hilfe, selbstständig und lediglich unter Benutzung der aufgeführten Hilfsmittel und Literatur angefertigt habe. Ebenso erkläre ich, dass die vorliegende Promotion nicht kommerziell vermittelt wurde und das keine Organisation eingeschaltet wurde, die gegen Entgelt diese Dissertation verfasst hat.

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Zusammenfassung

Wasser wird auf eine Art und Weise verwendet, als wäre diese unendlich vorhanden. Dürren, erhöhte Niederschlagsmengen oder Überflutungen führen bereits zu Wasserknappheit und entziehen damit ganzen Bevölkerungsgruppen die Lebensgrundlage. Zunehmend wächst die Befürchtung, dass vor allem in ariden Klimazonen Konflikte um Wasser zunehmen werden, da ein Leben ohne Wasser, egal ob für Mensch, Tier oder Pflanzen, nicht möglich ist. Der Klimawandel entwickelt sich zu einem Bedrohungsverstärker für die Wasserverfügbarkeit und stellt damit auch ein Risiko für die menschliche Sicherheit dar. Dieses Risiko ist größer in Regionen, die von natürlichen Ressourcen wie Land und Wasser abhängig sind, aber gleichzeitig eine geringe Anpassungsfähigkeit äußeren Einflüssen, u.a. dem Klimawandel gegenüber haben. Afrika zählt zu diesen Regionen. Mehr als 60 % der afrikanischen Bevölkerung sind auf Land- und Wasservorkommen angewiesen, da sie ihren Lebensunterhalt mit Wanderviehwirtschaft (Pastoralismus), Fischerei und Ackerbau betreiben. Auf Grund der zunehmenden Abnahme der Wasserspiegel von Flüssen und Seen zieht die ländliche Bevölkerung, die direkt von Land und Wasser für ihren Lebensunterhalt abhängig ist, in wasserreichere und feuchtwarme Gebiete. Diese internen Migrationsströme erhöhen den Druck auf die verfügbaren Wasserressourcen einerseits. Angetrieben von dem Wunsch, die wirtschaftliche Entwicklung ihrer Länder zu stärken, richten anderseits afrikanische Regierungen ihre politische Agenda auf die Förderung internationaler und nationaler wirtschaftlicher Großprojekte aus. Da diese Großprojekte Wasser- und Landressourcen benötigen, wird der Druck auf die verfügbaren Ressourcen in derzeit wassereichen Regionen erhöht. Daraus resultiert, dass auch augenscheinlich wasserreiche Gebiete kurz- und mittelfristig von Wasserverknappung bedroht sein werden.

Diese Doktorarbeit untersucht die komplexen Zusammenhänge zwischen Wasserverknappung, Regierungsführung (governance), Verwundbarkeit (vulnerability), Anpassung (adaptive capacity) und gewalttätigen und gewaltlosen Konflikten am Naivashasee in Kenia und am Wamalasee in Uganda. Um der Gesamtkomplexität gerecht zu werden, verbindet diese Doktorarbeit verschiedene theoretische und empirische Untersuchungen, in denen eine Vielzahl von Methoden in verschiedenen geographischen Regionen und über disziplinäre, kulturelle und politische Grenzen hinweg zum Einsatz kommen.

Im ersten Teil der Arbeit wird der methodische Ansatz zur Durchführung des Forschungsprojektes angerissen und diskutiert. Da vor allem die lokale Bevölkerung (Bauern, Fischer und Pastoralisten) von der Ressourcenverknappung am stärksten betroffen ist, war es ein Ziel der Arbeit, eine umfassende lokale Perspektive zu gewährleisten. Aus diesem Grund wurden zwei Forschungsaufenthalte nach Kenia und Uganda unternommen. Diese beiden Forschungsreisen stellen den Kern der Doktorarbeit dar. Während der Feldforschungsaufenthalte wurden Interviews mit verschiedenen internationalen, nationalen und lokalen Organisationen und Personen geführt. Beobachtungen und Aufenthalte an den Seen und mit den Menschen vor Ort waren ein wichtiger Bestandteil der Aufenthalte, um Informationen und Eindrücke über das Zusammenspiel von Wasserverknappung und Konflikten an den Seen zu gewinnen.

Im weiteren Verlauf des ersten Teiles wird ein Überblick über die Klimawandel- und Konfliktliteratur, die Verwundbarkeitsliteratur und die Wasserverknappung- und Konfliktliteratur gegeben, um anschließend die zentralen Herausforderungen und Forschungsfragen und -lücken zu identifizieren. Während einige Studien einen Zusammenhang von Klimawandel und Konflikten bzw. Konflikten, die auf Grund von klimatisch bedingter Wasserverknappung finden, verneinten andere Studien diesen. Eine wesentliche Herausforderung bestand darin, einerseits Datenquellen zu erschließen, die in der Lage sind, auch lokale, nichtstaatliche und teilweise gewaltlose Konfliktdynamiken räumlich zu erfassen. Andererseits war es eine Herausforderung, Datenquellen zu erschließen, die Wasserverknappung unabhängig des klimatischen Aspektes zu beurteilen und Konfliktdynamiken an augenscheinlich wassereichen und weniger offensichtlichen „Konflikthotspots“ zu ermitteln und in die Gesamtkomplexität der Thematik einzubauen.

Am Ende des ersten Teils der Arbeit werden die zentralen Theorien, Konzepte und Modelle vorgestellt, die nötig sind, um die Beziehungen zwischen menschlicher Verwundbarkeit und Konflikten zu verstehen. Ein konzeptioneller Rahmen wird als Grundlage entwickelt, mit dessen Hilfe das Zusammenspiel verschiedener Akteurskonstellationen und -einflüsse auf verschiedene Aspekte von Verwundbarkeit erklärt werden kann. Mit dessen Hilfe sollen potentielle Konfliktkonstellationen und Konfliktdynamiken zwischen den lokalen Ressourcennutzern erklärt werden.

Der zweite Teil der Arbeit beschäftigt sich mit der Wassergesetzgebung, den Akteurskonstellationen, der Verwundbarkeit und Anpassungsfähigkeit der Akteure und den daraus resultierenden Konfliktdynamiken. Die Analyse zeigt, dass Kenia und Uganda derzeit über ausreichend Wasserressourcen verfügen, wenngleich es regionale Unterschiede gibt. Aufbauend auf dieser Feststellung wird der politische Rahmen und die Wassergesetzgebung in Kenia und Uganda vorgestellt. Während Kenia bereits die Dezentralisierung der Wassergesetzgebung abgeschlossen hat, ist der Aufbau dezentraler Strukturen in Uganda noch nicht abgeschlossen. Die vergleichende Untersuchung zeigt, dass es zum Teil eine Vielzahl an Ministerien und staatlichen Akteuren gibt, die sich in ihren Aufgaben und Zuständigkeiten in Bezug auf Wasserregulierung und Wassergesetzgebung überschneiden.

In der darauffolgenden Studie werden die beiden Seen und ihre Akteure mit Hilfe der anfangs vorgestellten Konzepte und Theorien genauer vorgestellt und analysiert. Die hydrologische Analyse bestätigt, dass beide Seen saisonalen Schwankungen unterliegen, ihr Wasserspiegel jedoch nicht stark von klimatischen Bedingungen beeinträchtigt ist. Die akteursbasierte Analyse identifiziert neun Interessensgruppen, die einerseits Interesse an den Land- und Wasserressourcen haben und andererseits viel oder wenig Einfluss auf die Wassergesetzgebung nehmen. Während wirtschaftliche und politische Akteure, trotz eines zum Teil geringen Interesses an den Ressourcen, den größten Einfluss auf die Wassergesetzgebung und damit den Ressourcenzugang haben, ist der Einfluss der lokalen Akteure unabhängig ihres großen Interesses am geringsten.

Gestützt auf die Analyse der Akteure werden in der folgenden Studie die Aspekte der Verwundbarkeit und der Anpassungsfähigkeit der neun Akteursgruppen diskutiert. Die Analyse zeigt, dass die wirtschaftliche Ausrichtung, die unzureichende Umsetzung des politischen Systems sowie Korruption und Gönnerschaft die politische und sozioökonomische Marginalisierung der lokalen Akteure verschärft. Da lokale Akteure kaum über Anpassungsmöglichkeiten verfügen, sind diese besonders anfällig, gewalttätige und gewaltlose Konflikte untereinander auszutragen. Ausgehend von der Analyse wird eine Hypothese entwickelt, die den Zusammenhang von menschlicher Verwundbarkeit und Konfliktverhalten unabhängig der klimatischen Bedingungen erklären könnte.

Die Konfliktauswirkungen werden im letzten Teil genauer diskutiert. Es zeigt sich, dass der Naivashasee stärker von gewaltsamen Konflikten betroffen ist als der Wamalasee. Gründe

dafür sind unter anderem das Bevölkerungswachstum, historisch gewachsene ethnische Konflikte, Korruption und die bevorzugte Behandlung von nationalen und internationalen wirtschaftlichen Akteuren. Das „raiding“ (Viehdiebstahl) und die Blockade von Wasserzugängen sind die am häufigsten genutzten Konfliktmittel. Allerdings nehmen auch tödliche Zusammenstöße, die Zerstörung von Eigentum und die Viehabschlachtung zu.

Das abschließende Kapitel fasst die Schlussfolgerungen der empirischen Kapitel in einem komplexen multidimensionalen Modell zusammen. Die unzureichende Umsetzung des politischen Systems und die Priorisierung der wirtschaftlichen Agenda resultiert einerseits in der Kommerzialisierung der Wasserressourcen und führt andererseits zu einem Konflikt zwischen nationalen und regionalen politischen Akteuren. Während Korruption, wirtschaftliche Gefallen und Gönnerschaft diesen politischen Konflikt entschärfen, erschwert dieser Konflikt den Zugang zu Wasser- und Landressourcen für die lokale Bevölkerung. Resultierend daraus, wird die abschließende Hypothese entwickelt, dass die Lokalisierung des politischen Konfliktes die Wassersituation für die lokale Bevölkerung verschärft und dadurch gewalttätige Konflikte um Wasserzugang und Wassernutzung in eigentlich wasserreichen Gebieten begünstigt werden. Klimaprojektionen deuten auf ein wärmeres, insgesamt regenreicheres, aber weniger zuverlässiges Klima in Kenia und Uganda hin. Dies wird es Pastoralisten, Bauern und Fischern wahrscheinlich erschweren, Wasser- und Weideressourcen zu nutzen. Auf Grund der bereits bewaffneten Auseinandersetzungen um Wasser und Land gerät die Lebensgrundlage dieser Akteure zunehmend unter Druck. Nachdem die Konfliktauswirkungen genauer diskutiert wurden sind, schließt die Arbeit mit einem Vorschlag, was getan werden kann, um die Gewalt zu verringern und die Anpassungsfähigkeit der lokalen Akteure zu erhöhen.

Einige Punkte, die von genereller Bedeutung sind, gehen aus der Doktorarbeit hervor. Die komplexen Zusammenhänge von Wasserverknappung, Regierungsführung und Konflikt können nur verstanden werden, wenn zuvor die Fragen der Verwundbarkeit und Anpassungsfähigkeit aller Akteure, die ein Interesse an und einen Einfluss auf die Ressourcen haben, beantwortet werden. Aus diesem Grund macht die Thematik einen interdisziplinären Methoden- und Forschungsansatz nötig. Ebenso ist es wichtig, dass sowohl die internationale Gemeinschaft sowie die nationalen Akteure anerkennen, dass auch in wasserreichen Gebieten Konflikte um Wasser ausbrechen. Wenn nicht rechtzeitig die Bemühungen

verstärkt werden, diese Konfliktursachen zu begrenzen, werden die Konfliktrisiken zunehmen und können zu regionaler Instabilität beitragen.

Abstract

Water is used in a way as if it were available infinitely. Droughts, increased rainfall or flooding already lead to water shortages and, thus, deprive entire population groups of the basis of their livelihoods. There is a growing fear that conflicts over water will increase, especially in arid climate zones, because life without water - whether for humans, animals or plants - is not possible. Climate change decreases water levels and is seemingly becoming a risk to human security. This risk is already greater in regions that are both dependent on natural resources and have a low capacity to adapt to external influences, including climate change, with Africa being one such region. More than 60 % of the African population depend on land and water resources for their livelihoods through pastoralism, fishing and farming. The water levels of rivers and lakes are decreasing. Hence, the rural population which is dependent on land and water move towards water-rich and humid areas. This internal migration increases the pressure on available water resources. Driven by the desire to strengthen the economic development, African governments align their political agendas with the promotion of macro international and national economic projects. As these large-scale projects require huge water and land resources, the pressure on available water and land resources in currently water-rich regions is also increasing because of them. As a result, even apparently water-rich areas will be threatened by water shortages in the short and medium term.

This doctoral thesis examines the complex interrelationships between water shortages, governance, vulnerability, adaptive capacity and violent and non-violent conflicts at Lake Naivasha in Kenya and Lake Wamala in Uganda. In order to satisfy the overall complexity, this doctoral thesis combines various theoretical and empirical aspects in which a variety of methods are applied to different geographical regions, across disciplines, and cultural and political boundaries.

In the first part of the thesis, the methodological approach used is outlined and discussed briefly. One aim was to include the perspective of the local people (farmers, fishermen and pastoralists) as they are the most affected by resource shortages. For this reason, two research visits were conducted to Kenya and Uganda. These two research trips are the core of this doctoral thesis. During the field research, interviews were conducted with various international, national and local organizations and individuals. Observations and stays at

the lakes and with the local people were an important part of the field work to obtain information and in-depth impressions of the interaction between water shortages and conflicts in the lake basins.

The first part of the thesis provides an overview of the climate change and conflict literature, the vulnerability literature, and the water shortage and conflict literature. Thereafter, the research questions and gaps are identified. While some studies find a link between climate change and conflicts or suggest that climate-related water shortages cause violent conflicts, other studies did not find any relationship. Another major challenge that remains is the development of a data-set which is capable of capturing local, non-state and sometimes non-violent conflict dynamics. On the other hand, it is a challenge to develop data sources that are able to assess water shortages independent of the climatic aspect and to identify conflict dynamics at apparently water-rich and less obvious "conflict hotspots" and to integrate them into the overall complexity of the issue.

In the final section of the thesis' first part, the central theories, concepts and models are discussed to better understand the relationship between human vulnerability and conflict. A conceptual framework is developed to explain the interplay between a variety of actors and their influences on vulnerability. This framework will be used to explain possible conflict settings and conflict dynamics between the local resource users.

The second part of the thesis deals with water legislation, the actor composition, the actors' vulnerability and adaptability and conflict dynamics resulting thereof. The analysis shows that Kenya and Uganda have sufficient water resources available currently. However, there are regional differences. Based on these findings, the political frameworks and water legislations of Kenya and Uganda are described. While Kenya has already completed devolution and, therewith, decentralized water governance, decentralization is still to be completed in Uganda. The study shows that there are a large number of ministries and state actors with overlapping tasks and responsibilities in matters related to water regulation and water legislation.

In the following study, the two lake sites and their actors are categorized and analysed using the concepts and theories presented in the first part of this thesis. The hydrological analysis confirms that both lakes are subject to seasonal fluctuations, but that their water levels have not been affected strongly by climatic conditions yet. The actor-based analysis

identified nine stakeholder groups who have an interest in land and water resources on the one hand, but have little to no influence in water legislation on the other. While economic and political actors have the greatest influence in water legislation and, thus, resource access, the influence of local actors is the lowest regardless of their high resource interest.

Based on the actor analysis, the following study discusses the aspects of vulnerability and adaptability of the nine stakeholder groups. The analysis shows that the economic orientation, the inadequate implementation of the political system as well as corruption and patronage aggravate the political and socio-economic marginalization of local actors. Since local actors have little opportunity to adapt to these externalities, they are particularly vulnerable to violent and non-violent conflicts. Based on this analysis, a hypothesis is developed which could explain the interrelation between human vulnerability and conflict behaviour independent of climatic conditions.

The effects of the conflict dynamics are discussed in the last part of this thesis in more detail. It turns out that Lake Naivasha is more affected by violent conflicts than Lake Wamala. Reasons for this include population growth, historically grown ethnic conflicts, corruption and the preferential treatment of national and international economic actors. The most common conflict response tools are raiding and the blockage of water access. However, deathly encounters, destruction of property and cattle slaughtering are increasingly used to gain access to water and land.

The final chapter summarizes the conclusions drawn from the empirical chapters. It develops a complex and multidimensional model. The insufficient implementation of the political system and the governments' prioritization to foster economic development results, on the one hand, in the commercialization of water resources and increases, on the other hand, non-violent conflict between national and sub-national political actors. While corruption, economic favours and patronage defuse this conflict, resource access becomes more difficult for the local population. Resulting thereof, a final hypothesis is developed which states that the localization of the political conflict aggravates the water situation for the local population and, thereby, favours violent conflicts over water access and water use in water-rich areas. Climate projects indicate a warmer and a more rain-laden, but also a more unpredictable weather in Kenya and Uganda. This will put additional pressure on pastoralists, farmers and fishermen's livelihood because the seasonal changes determine farming and grazing. The livelihood of local level actors is under increasing pressure

because of already existing armed conflicts over water and land. Thereafter, the thesis provides some policy recommendations on how to mitigate existing conflicts and, thereby, increase the adaptive capacity of the local actors.

A few points of general conclusions can be drawn from the doctoral thesis. The complex relationships between water shortages, governance and conflict can only be understood if the questions of vulnerability and adaptability of all actors who have interest in resource and influence on resources governance are answered. For this reason, the topic requires an interdisciplinary methodological approach. Lastly, it is equally important that both the international community and national actors recognize that conflicts over water also erupt in water-rich areas. If efforts to limit these causes of conflict are not applied in the short term, the risks that these conflicts contribute to larger regional instability also increase.

CONTENT

Abbreviations

ACLED	Armed Conflict Location & Event Dataset
BWRC	Basin Water Resource Committees
CEWARN	Conflict Early Warning and Response Mechanism
CGoN	County Government of Nakuru
DEA	Directorate of Environmental Affairs
DRC	Democratic Republic of Congo
DWD	Directorate of Water Development
DWRM	Directorate of Water and Environment
DWSCC	District Water and Sanitation Coordination Committees
ES	Environmental Security
EU	European Union
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
GoK	Government of Kenya
ICRC	International Committee of the Red Cross
ICT	Information and Communication Technology
IPCC	International Panel on Climate Change
LNRA	Lake Naivasha Riparian Association
LNRUA	Lake Naivasha Resource Users Association
MTP	Medium Term Plan
MWE	Ministry for Water and Environment

NDP	National Development Plan
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
PE	Political Ecology
PRIO	Peace Research Institute Oslo
SA	Stakeholder Analysis
SCAD	Social Conflict Analysis Database
SES	Socio-Ecological System
UCDP	Uppsala Conflict Data Program, Resource Conflict Institute
UNDESA	United Nations Department for Economic and Social Affairs
UNFCCC	United Nations Framework Convention on Climate Change
WASREB	Water Services Regulatory Board
WHO	World Health Organization
WMZ	Water Management Zones
WRA	Water Resource Authority
WRMA	Water Resource Management Authority
WRUA	Water Resource User Associations
WWDA	Water Works Development Agencies
WSP	Water Service Providers
WWF	World Wildlife Fund

List of Figures

List of Tables

1. Introduction

Water is treated as an infinite resource as it is a prerequisite for livelihood and survival. However, increasing demand and simultaneously decreasing supply are aggravating the pressures on this treasured resource. Additionally, it is also getting warmer. During the last century, the global temperature has increased by 0.85 degrees Celsius (IPCC 2014). In this context, the *IPCC Special Report: Global Warming of 1.5 °C* highlights the risk of increased flooding and prolonged droughts if the effects of climate change are not mitigated (IPCC 2018 a). Across the scientific community, a broad consensus has been reached that socio-economic conditions have a greater impact on the available water resources and associated risk than the changes in climate (Gabzdylova et al. 2011; Ali et al. 2017; Ibid 2018). Anthropogenic activities, especially economic investments and rapid population growth have resulted in land cover changes, deforestations and wetland destructions. Taken together, these actions reduce the water storage capacity of trees and other plants. Plants and trees are responsible for extracting groundwater from soil and returning it into the atmosphere. Thus, this alters the water cycle and leads to higher temperatures, desertification, and lower rainfall, especially during the dry season (Vergopolan/Fisher 2016; Sumila et al. 2017). The international community has acknowledged that climatic and non-climatic drivers can have severe effects on human livelihoods across the globe (IPCC 2018 b).

Considering the population and economic growth rates of many developing countries, it seems unlikely that the continuation of global warming below 2 degrees Celsius above pre-industrial levels can be prevented (UNFCCC 2015). Current trajectories show that if global warming is not constrained to less than 2 °C, 8 per cent of the contemporary population (7.7 billion) is exposed to a severe reduction in water resources till 2040 and 14 per cent of the population by 2071 (Gerten et al. 2013; Schewe et al. 2014). While those are extreme scenarios, it is widely recognized that climate change has the potential to undermine the adaptive capacity of vulnerable populations (IPCC 2014, 2018). Further, concerns have been raised that changes due to climate change will aggravate water-related hazards and water scarcity (UNFCCC 2011). This has the potential to undermine human security (UN-DESA 2014). The underlying assumption is that both raising temperatures and changed precipitation reduces the availability of water resources which in turn intensifies tensions among the resource users. Furthermore, in areas and regions that are particularly

vulnerable and already affected by conflicts, tensions are assumed to intensify over the usage and accessibility of water resources (see e.g. IPCC 2007, 2014, 2018; Kummu et al. 2016; O´Connell 2017; European Commission 2020).

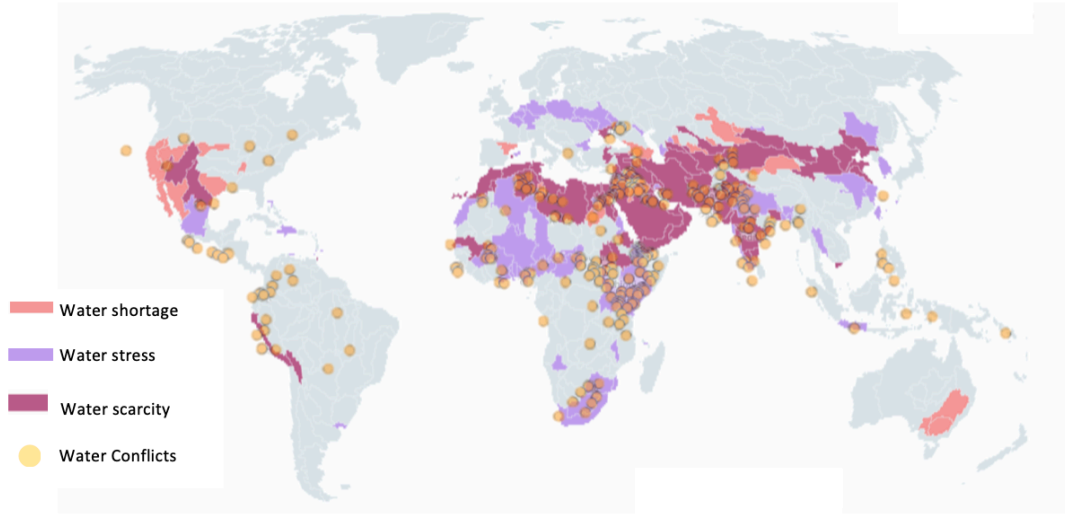

Figure 1.1: Global distribution of areas and regions affected by water shortages, water stress and water scarcity and number of recent conflicts over water (Source: The Author 2020 based on FAO 2020 a, Water Scarcity Atlas 2020 and Pacific Institute 2020)

Figure 1.1. shows that many African states which are either vulnerable to water shortages (East Africa), water stress (South and North-West Africa) or water scarcity (North Africa), have a history of recent conflicts (since 2010) which involve water as a subject or face a double exposure to any form of water shortages and conflict. The causes of the conflict are highly diverse but, generally, the continent's vulnerability to water stress can be attributed to its strong exposure to climate change and its limited adaptive capacity (Busby et al. 2012; IPCC 2014, 2018). Additionally, the African population is sensitive to water shortages because of its dependence on rain-fed agriculture for income and food security (FAO 2020 a). Corruption, poverty and low levels of education put additional stress on the population's adaptive capacity (Transparency International 2020; World Bank Group 2020 a).

A hotspot mapping confirms that most of the reported water conflicts take place in the arid areas of East Africa (e.g. Somalia, Sudan, South Sudan, Ethiopia, Northern Kenya, North-Eastern Uganda) (IPCC 2018, Pacific Institute 2020). This has caught the attention of the scientific community who discussed the relationship between changing climate on water resources and weather, and if so, how this increases the risk of violent conflict (see e.g. Dinar et al. 2012; Gleditsch 2012; Hisang et al. 2013 or Almer 2017). There appears to be

consensus that there is a positive relationship between increases in temperature and increases in human conflict. However, the depletion of natural resources as a result of overexploitation, rapid population growth or economic and social interest in water resources accentuates the need to pay attention to regions and areas which do not seem water stressed or water scarce.

1.1 Research Objective and Questions

Amid the background of intensifying competition over water resources, in addition to and beyond the stressor of climate change, it becomes increasingly important to understand the effects of social, economic, political and cultural factors of the outbreak of conflicts. This includes countries and regions which have not been affected by water shortages as a result of climate change yet. The effects of the aforementioned factors can only be understood if the different aspects of vulnerability and adaptive capacity for a variety of stakeholders is analysed first. The majority of research has concentrated on water stressed and water scarce areas and its interrelation with one or two of the previously mentioned variables, including the aspect of climate change. Additionally, many publications focused on cross border water basins (e.g. Nile River basin) which blurs the variety of interconnected causes for the outbreak of water-related conflicts. Even if the population of Africa doubles by 2050 (UNDESA 2020) and the potential for internal migration rises as a consequence of extreme weather events and the drying up of water bodies, majority of the country's population will move towards internal, still water-rich bodies. Furthermore, the wish of African governments to achieve middle income status by 2050 and the growing complexity of international and powerful national companies will have important implications on the availability of natural resources. Against this backdrop, this thesis seeks to shed light on the causes and dynamics of water-related conflicts at inner state water bodies which are located in humid and wetland areas.

To the researcher's knowledge, it is the first time that the relationship between political, economic and social forms of vulnerability, adaptive capacity and non-violent and violent forms of conflict are discussed and analysed in a doctoral thesis covering two inner state lakes which seem both calm on the surface and well-endowed with water. The research region and sites, Lake Naivasha in Kenya and Lake Wamala in Uganda, were chosen to cover a variety of international, national and local stakeholders. Moreover, the research sites

cover a variety of attributes associated with different levels of economic development, advanced decentralization of political processes, population growth and composition as well as conflict type and behaviour.

The analysed conflict types include both non-violent and violent behaviour without state involvement. At Lake Naivasha, the focus is placed on small-holder farmer and pastoralist conflicts while at Lake Wamala the small-holder farmer and fishermen conflict is analysed in more detail. Both types of conflict have a strong resource component because the actors depend on water and land to secure their daily livelihood. These forms of non-violent and violent behaviour often occur in arid and semi-arid lands which cover around 41 per cent of the world's surface (United Nations 2020). Globally, around 1.5 billion people depend directly on these degrading areas. However, with global climate change, it is expected that arid and semi-arid lands will increase and, therewith, human activities centre on humid and sub-humid areas (Ibid 2020). Hence, the findings of this study are likely to be relevant beyond the chosen lake sites. Consequently, this thesis contributes to the emerging knowledge of the role of political, economic and social factors of vulnerabilities and actors influencing the governance of water resources on non-violent and violent conflicts in water abundant areas. Using the case studies of Lake Naivasha and Lake Wamala, this thesis examines:

How does water management influence inner state low-key conflict intensity in Kenya and Uganda – with a specific focus on Lake Naivasha in Kenya and Lake Wamala in Uganda.

The overall objective of the thesis will be realized through the following set of questions which this thesis attempts to discuss.

- What is water and how is water used, generally?
- How is the water sector governed in respect to the current laws in place in Kenya and Uganda?
- What are the geographical and hydrological characteristics of Lake Naivasha and Lake Wamala?
- Which actors are involved in the water sector and which influences does each group of actors have on the distribution and the accessibility of the water resources?

- What is the relationship between climate change, water shortages and outbreak of conflicts over the resource water?
- How do economic and environmental changes enhance or worsen the social situation of the stakeholders?
- How do these changes cause the eruption of conflicts?
- What is the temporal and local resolution of the conflict?
- What response tools are used to achieve the conflict actor's interest, position and needs in matters related to the conflict issue?
- What are the main motivations of the conflict actors?

All listed questions are related to each other to analyse the interrelationship between the institutional framework and its impact on water-related conflicts on a local level of decision-making. Each research question is in itself highly complex which adds up to a challenging overall complexity. To grasp this complexity, a multitude of research methods needed to be applied at different geographical scales and across cultural and political boundaries (see chapter 2). To satisfy the interdisciplinarity, the thesis combines a political science approaches with perspectives from different disciplines, including peace and security studies, economics and sociology, as well as ecology and agricultural sciences. To ensure a comprehensive local perspective, the author of this thesis conducted field research twice. During this time, the researcher travelled to the lake sites to gain first hand information about the water and conflict nexus. Furthermore, the author lived with the different conflict parties at Lake Naivasha and Lake Wamala, partly under challenging security and climatic conditions.

In the course of the thesis, some main terms are used frequently. Among others, the term natural resources is used to describe both land and water resources if not specified otherwise. The name stakeholder and actor are applied interchangeably to refer to the different groups of actors or individuals who are involved in water-related conflicts. The term community characterizes a group of people who live in a village or landing site, either at the lake or in its closer surroundings, and directly depend on the lake's resources. Water body refers to either lakes in general or the lake sites studied in this thesis. The term conflict is used to describe non-violent and violent tensions which erupt between the different

groups of actors as a result of incompatible interests. Additional terms used will be defined in chapter 3 and 4.

1.2 Research Area – A Brief Introduction

Located in East Africa, Kenya and Uganda are well-endowed with internal and cross-border lakes (see figure 1.2 and 1.3)[1]. In total, there are nine larger lakes in Kenya and 15 in Uganda. For Kenya, 97,7 per cent of the water bodies are permanent whereas for Uganda

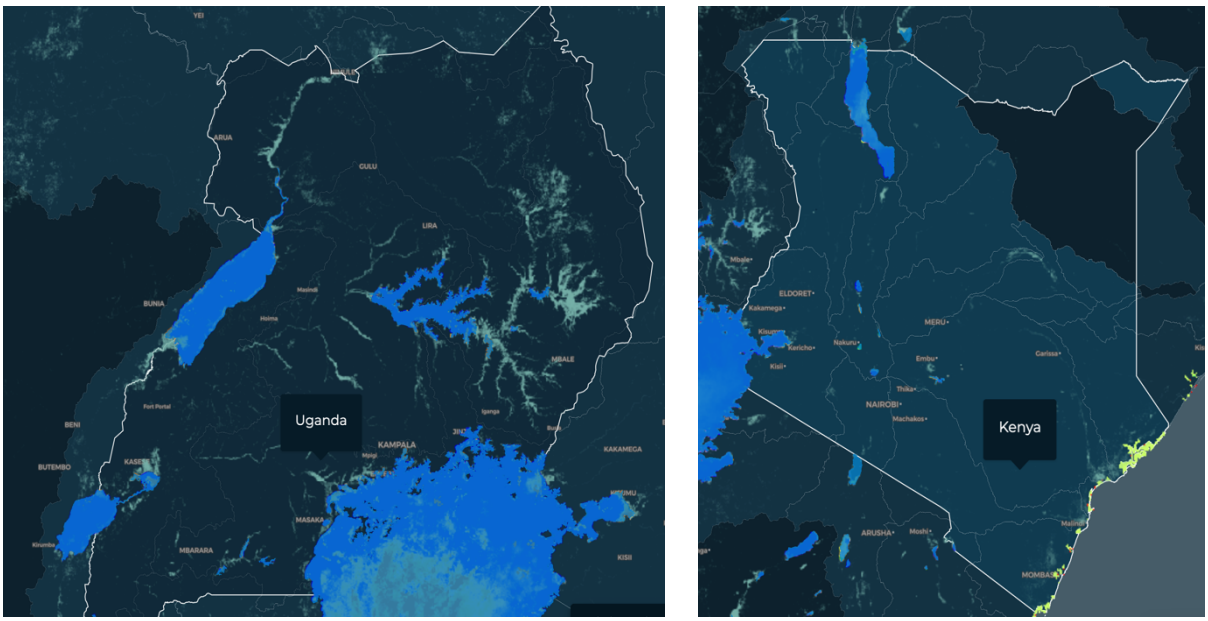

Figure 1.2 and 1.3: Overview lakes in Kenya (Source: Freshwater Ecosystems Explorer 2020)

95,5 per cent per cent the lakes are permanent water bodies. Permanent water is defined as being present for all 12 months a year. Since 2000, the extent of permanent and seasonal surface water has increased by 2,64 per cent for Kenya. Uganda denoted a loss of permanent and seasonal surface water by 2,64 per cent. Furthermore, one out of nine lakes (Lake Turkana in Kenya) and two out of 15 lakes (Lake Victoria and Lake Albert in Uganda) are classified as being in a state of extreme water quality. The observed gains and losses in permanent water levels do not apply to all lakes equally. While the water levels of the lakes which are located in the arid areas reduced in their sizes (i.e. Lake Turkana in Kenya and Lake Opeta and Lake Kyoga in Uganda), lakes in humid and wetland areas increased in their water levels – at least temporarily (European Commission 2020). The water quality for Lake

[1] Ethiopia, Rwanda, South Sudan, Somalia and Tanzania are also part of East Africa. Tanzania, Somalia and South Sudan recorded more severe declines in permanent water bodies compared to Kenya and Uganda. The state of Ethiopia's and Rwanda's water bodies are similar to Kenya and Uganda, however, in terms of accessibility and security aspects, Ethiopia and Rwanda have not been chosen.

Naivasha and Lake Wamala is categorized as normal to low. Beyond the mentioned ecological aspects, Lake Naivasha and Lake Wamala have been accessible also in terms of safety and, consequently, qualified as case studies[2].

1.3 Structure of the Thesis

This thesis consists of 10 chapters. Thematically, the thesis can be divided into two parts. Methodology, background and theoretical concepts (chapter 2 to chapter 4) and the empirical analysis (chapter 4 to 9). Each chapter builds on the prior one(s). Additionally, each empirical chapter pursues a specific objective and, therefore, can also be read independently. **Chapter 2** outlines and discusses the methodological approach employed to conduct the research project. The chapter starts with a discussion of qualitative and interpretive social research, including a section on case study methodology and the selection of cases and source of information. The next section discusses the planning and execution of fieldwork in Kenya and Uganda and the challenges faced in the field. The section is followed by an account of the different phases of data analysis. The final section reflects on the challenges of doing research and on the implications of the challenges for quality and reliability of the findings.

The objective of **chapter 3** is to review the existing literature on the natural resources and conflict nexus with a particular focus on the water and conflict nexus. The chapter starts with a general introduction of the early stages of the natural resources and conflict nexus. In particular, the Environmental Security literature of the 1990s is discussed, including a comparison with the main arguments of Political Ecology. The section traces the main approaches of the natural resources and conflict literature since 2000. It introduces the key debates and results of the qualitative and quantitative studies. The third section discusses the key arguments of the vulnerability and resilience literature. The section is followed by a discussion of the water and conflict nexus. It differentiates along the key debates on drivers for interstate water conflicts and intrastate water conflicts. The review of the existing debates identifies the core research challenges and questions associated with the study of water-related conflicts. The chapter concludes with a summary of the strengths and weaknesses of the presented literature concepts.

[2] See chapter 2 for a detailed discussion of the case selection. See chapter 2 and 6 for a detailed description of the research area.

In **chapter 4** these interactions are discussed and the key theoretical concepts are introduced. The first section presents the key aspects of the vulnerability framework to understand the interaction between social, contextual and governmental vulnerability on a country or individuals' adaptive capacity. Additionally, the section includes a short discussion on the key features of the complementary resilience framework. The second section introduces the stakeholder analysis approach. The third section discusses the main aspects of conflict analysis, conflict assessment and conflict mapping. The chapter concludes with a brief summary of the theoretical frameworks which are used to examine the research objectives studied in this thesis.

Chapter 5 begins with a general description of the main narratives about water, water availability and water accessibility. Thereafter, the chapter is divided into two overall sections. The first section 'maps' the hydrology of Kenya and Uganda, starting with a delineation of the current water status, including its occurrence and distribution. This is followed by a description of the projected rainfall and temperature developments and possible implications of water availability and accessibility. The second section outlines the institutional framework contextualizing water governance and water policies in Kenya and Uganda. This section starts with a description and an analysis of the regulative water frameworks. There then follows a brief discussion of the limitations of the frameworks in matters related to exercising water governance.

Chapter 6 analyses the research areas and their respective stakeholders. The stakeholder analysis framework provides the basis for the discussion of the stakeholder's interaction and interests in the lake's resources. The chapter is divided in two country sections that analyse the research sites and their stakeholders in relation to the same parameters. Each country section starts with an account of the broader geographical and climatic context followed by an overview of the main stakeholder groups and their key interests in the water resource and their influence to integrate water-related policies into the overall management of the lake. More specifically, it traces how the institutional framework and the power of stakeholders in key export and economic markets and domestic regulatory processes influence both water access and water distribution as well as their geographical position in the lake basins.

In **chapter 7** the vulnerability framework is taken as a basis to understand why conflicts over water erupt between the local stakeholders. The chapter first looks into the climatic conditions for both Lake Naivasha and Lake Wamala. Thereafter, the chapter analyses the internal economic and governance dynamics of the three respective aspects of: social, contextual and governmental. Thereby, it identifies the levels of adaptive capacity and sensitivity of the determined stakeholder groups in the previous chapter. Based on the discussion, a first model framework is drafted which might support the subsequent analysis of the pastoralist-farmer and fishermen-farmer conflict. The final part of the analysis reflects on the role of the broader institutional, regulatory, economic and social system in shaping the overall conflict risk within and across the stakeholder groups. The discussion will show that the risk over the outbreak of water-related conflict is the highest within the local stakeholder group.

Chapter 8 addresses various aspects of the pastoralist and small-holder farmer conflict at Lake Naivasha and the fishermen and small-holder farmer conflict at Lake Wamala. The conflicts and their dynamics are closely related and influenced by the institutional framework, governance dynamics and the economic agendas described in chapter 7. Based on the analysis of conflict data and supplemented with qualitative research, a hypothesis is developed which explains the occurrence of non-violent and violent conflicts in water abundant areas which are, furthermore, independent from the climatic conditions. It highlights that the negative effects of the conflicts reach an extent which undermines the adaptive capacity of the local stakeholders and ultimately accelerates violent behavior.

Chapter 9 draws final conclusions of the thesis, starting with a discussion of the main drivers of water-related conflicts. Based on the empirical findings of the research, the second section looks into how the institutional framework and social and economic drivers contextualize and drive water-related conflicts. A final model framework is presented which combines the results of the empirical chapters and links the identified stakeholders to the factors which drive vulnerabilities and, therewith, ultimately lead to the eruption of water-related conflicts. Based on the model framework and the hypothesis developed, policy recommendations are provided to mitigate water-related conflicts.

The last chapter summarizes the key findings of the previous chapter with respect to the research question and its research objectives. Conclusions are drawn to inform about further avenues for research.

2. Methodology

In this chapter, the methodological background which was used to carry out the research is introduced and discussed. The research consists of a combination of key social science research methods, including case study methodology, field research and qualitative data analysis. The chapter starts with a discussion of qualitative and interpretive social research which forms the framework of the overall methodological approach as it combines the other three used approaches as well. These approaches include case study methodology, field research, including structured and semi-structured interviews and observations.

In section 2.2 the selection of cases and sources of information are introduced, including a discussion on case study methodology. This is followed by section 2.4 on the planning and execution of fieldwork in both research sites in Kenya and Uganda. The section further deals with the challenges faced in the field because of the need to work through official channels, the sensitivity of the political as well as economic industry, aggravated travel conditions and language barriers. Section 2.5 describes the different phases of data analysis separately for the two research visits. In the final section, the challenges of the field trips in Kenya and Uganda will be reflected along with the implications of the mentioned challenges for the quality and reliability of findings.

2.1 Qualitative and Interpretive Social Research

The research strategy adopted for this thesis is based on qualitative and interpretive social research. The term interpretive research or interpretive methods was introduced by Thomas Wilson (1970) to make an explicit distinction between normative and interpretive paradigms. He argues that instead of encountering and reacting to the world humans find themselves placed within, they create a social reality through continuous interactions with other human beings (Wilson 1970). The researcher uses open methods including various forms of open, semi-structured and structured interviews, field research consisting of participatory and non-participatory observations, and audio and video recordings of everyday situations, group discussions or community interviews (Rosenthal 2018). The aim is to describe the research object from the perspective of the 'actors in everyday contexts […] and to study complex social actions and practices of everyday situations' (Ibid 2018: 15). Interpretive social research provides information about how people construct their social

reality. Both underlying typical (i.e. regularly occurring) sense structures and latent meanings of behaviour can be reconstructed using an empirical case-by-case analyses (Kleemann et al. 2009). Therefore, in this context, scholars often refer to 'explorative' (i.e. discovering or exploring) procedures or to the 'principle of openness' to the object of investigation (Rosenthal 2018).

Thus, a central basis of interpretive methods is a strictly sequential analysis method, which determines the exact order of the linguistic and non-linguistic activities. Therewith, behaviour and observations are central elements to detect meaning. For interpretive social research, all components of statements have a meaning, including spoken ones, written texts but also mental processes and physical actions. The interpretation of the text and, therewith, the reconstruction of its overall social meaning is key to an implicit knowledge generation (Kleemann et al. 2009; Rosenthal 2018). The phrase *text* is used broadly and 'refer[s] to all expressive configurations produced during a social interaction which have been recorded in some way or [an]other' (Rosenthal 2018: 18). The textual approach analyses the interviews regarding their content which is generated by the answers of interviewees to the prepared questions. The analysis of the text follows a structured process and each sequence is considered a part of the whole text. This differentiation makes it possible to examine not only the manifest content of the text but also its latent meaning. Contrary to most content analysis approaches, qualitative and interpretive social research provides a tool to discover the meaning 'that is hidden between the lines' (Rosenthal 2018: 17). Thus, interpretive methods which seem to be hidden at first are suitable to uncover hidden layers of meanings. This enables to make the different layers from the surface visible 'in a manner that is methodologically controlled and intersubjectively testable' (Hitzler/Honer 1997: 23).

The empirical study begins with a very broad research question, which is concretized and refined across the research process and subdivided into more detailed research questions. Hence, there are no predefined hypotheses (Rosenthal 2018). Instead of merely testing hypotheses empirically in the course of data analysis, researchers should always be open to discovering new connections or other constellations of known factors in interpretive data analysis (Kleemann et al. 2009). Strauss and Corbin (1990) specify the principle of openness and argue that at the beginning of an empirical study open questions 'indicate what the research is to be focused on and what the researcher wants to know about this object' (Strauss and Corbin 1990: 37). The general question of the investigation within the

framework of interpretive social research should therefore be formulated in such a way that it does not contain any content-related assumptions or explanatory hypotheses on the object of investigation. Rather, the researcher uses methods of formal theoretical insight to research empirical cases to obtain knowledge beyond a concrete reference to an object (Kleemann et al. 2009). The aim is not so much to review existing theories as it is to discover new phenomena, from either existing studies or to further develop them either theoretically or empirically. The research question and, therewith, the main subject to investigate was formulated on the basis of a literature review and existing theories. In the course of this process, the research question was subdivided into concrete sub research questions, which provide the foundation to answer the overall research question posed in this thesis (Döring/Bortz 2016). The research question was answered through qualitative structured, semi-structured and open interviews and observations. Accordingly, the study is question based instead of hypotheses based.

The method of interpretive social research has suffered, and to some extent still does suffer from a number of misconceptions about its worth as a scientific research method. Even though this method is particularly suitable for reconstructing latent meanings, there remain some limitations. The difference between intended and objective meanings applies also to a large extent to the undertaken actions and the knowledge of the researcher itself. While this is theoretically possible during the time of action or during the time of reflecting on the conducted interviews and undertaken observations, researchers, however, remain subject to the situation that create this difference respectively. As implicit knowledge is key during the researchers' action in their research process, it can never be fully revealed or reflected on (Rosenthal 2018). Furthermore, certain meanings of every text might not become obvious to the researcher given, on the one hand, the different socializations of the researcher and the research objects within a specific social and historical context and, on the other hand, the discourses and the social circumstances by which these are influenced. This, therefore, might lead to misinterpretations, particularly concerning how historical situations impact the present situation.

2.2 Case Study Methodology

Qualitative and interpretive social research focuses on a small number of cases 'that are expected to provide insight into a causal relationship across a larger population of cases'

(Gerring 2007: 86). Furthermore, this method is used to develop but also to criticize diverse theories based on empirical inquiry. Thus, a case study methodology is a suitable research strategy for this thesis which can be adopted as a subgrouping of qualitative and interpretive social research.

Yin (2013) defines case study as 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident' (Yin 2003: 13). *Case* refers to a 'spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time' (Gerring 2010). A case study attempts to elucidate certain features from nation-states or the behaviour of individuals, for example. Thus, it comprises either single observations or multiple (within-case) observations (Odell 2001). Case study methodology might incorporate one single case study but can apply to several cases in the form of a multiple case study as well. As the number of cases to be investigated increases, so too does the likelihood of intense individual case investigation decrease. Therefore, the fewer cases there are, and 'the more intensively they are studied, the more a work merits the appellation case study' (Gerring 2010: 20).

Another common type of case study analysis aims to illustrate a theory (Odell 2001). Either the development or the testing of already developed theories prior to the empirical data collection, and analysis thereof, is an essential part of case study inquiries. The theory or different theoretical strands put an abstract idea 'in order to help readers see its meaning more clearly, and to convince them that the idea is relevant to at least one significant real-world instance' (Odell 2001: 163). Often, this method relies on multiple sources of evidence to increase the reliability of the findings through, e.g., a triangulation of data (Gerring 2010). Similar to qualitative and interpretive social research, but more precise, the preferred strategy when conducting case studies is to ask *how* and *why* types of research questions concerning contemporary events over which the research has either little or no control (Yin 2003). How and why types of questions allow the interviewee to share their experience in depth, giving them freedom to express their thoughts. Therefore, this method is contrary to surveys, experiments or archival analysis.

The case study methodology as a subcategory of qualitative and interpretive social research was selected to answer the research questions presented in chapter 1 of this thesis.

Since this method is more concrete than qualitative and interpretive social research, case study methodology presents a crucial tool to understand complex social, organizational and political phenomena. These phenomena usually unfold in practice through approaching the real-life situation (Flyvbjerg 2001, 2006; Yin 2003). As already touched upon, this approach relies on several different sources of information, including structured and semi-structured interviews and focus group discussions, documentary information and participatory and non-participatory observations of the research objects. The chosen sources allow the researcher to 'develop converging lines of inquiry' (Yin 2003: 98) in order to triangulate data and strengthen the general quality as well as reliability of the case study findings (Ibid 2003).

Similar to qualitative and interpretive social research, the case study approach has suffered and still does suffer from a number of impartial ideas and misconceptions about its value as a scientific research method. Flyvbjerg (2006) captured some misperceptions in his article *Five Misunderstandings About Case-Study Research*. Among other misunderstandings, he includes the notions that 'general theoretical (context-independent) knowledge is more valuable than concrete practical (context-dependent) knowledge' (Flyvbjerg 2006: 221), that cannot be generalized on the basis of an individual case and that case studies, therefore, tend to confirm the researchers' perceived ideas (Ibid 2006). However, this critique has largely been refuted. Nevertheless, and compared to other methods and strategies, case study research is still criticised for its lack of a consistent systematic approach regarding the implementation and conduction of the case study. This allegation has led to a supposed shortage of rigor case study research (Yin 2003).

A consequence of this lack of rigor is that there is no conclusive evidence that may affect the direction of case study findings (Yin 2003) which might result in the fact that the case study selection seems to come across as being self-evident (Lund 2014). In order to relativize this criticism, Lund (2014) further argues that scholars ''see' things through a lens of *a priory* concepts formed through experience' (Lund 2014: 226). The case study concept is charged for not being objective as they guide the researchers' inquiry by a closer examination of certain dynamics, processes and relations, while occluding others. In case the concept through which the researchers understand the world and orient the inquiry is not called into question, one easily finds oneself in a situation where observations are judged as being (mistakenly) unequivocal and pervasive. To avoid this shortcoming, a detailed

examination of possible frames of inquiry, including the choice of concepts as well as theoretical questions, are indispensable. Moreover, the considered concepts are often quite abstract, even to an extent that these do not seem to have any immediate empirical reference. Therefore, it is necessary to track and explain the movement of any taken step and to be explicit about how these concepts are operationalized into observable, empirical elements (Lund 2014).

Based on Lund's definition, in this thesis, 'things' are looked at through the lens of the IPCC's Vulnerability Concept, Stakeholder Analysis and Conflict Analysis as well as their related concepts as discussed in the previous chapter. As mentioned in the theoretical chapter, Methmann and Oels (2014), Grimble and Wellard (1997) as well as Ogada et al. (2017) ask in these theoretical approaches if the Vulnerability Concept and Stakeholder Analysis are more methodological approaches for an identification and classification of the interests and influences of particular actors in relation to natural resource governance processes rather than a theory. In a similar vein, within his systemic thinking conflict approach, Ropers (2008) distinguishes between a comprehensive conflict analysis, which is heuristic (i.e. it allows for a better description of the conflict's context and its actors) and a conflict mapping, which is more analytical (i.e. it explains why the conflict takes the form, e.g. why there are latent or manifest forms of violence). Hereby, the latter mentioned perspectives constitute an approach for carrying out conflict analysis on a local level of decision-making and linking it to international and national governance processes.

As both Stakeholder Analysis as well as Conflict Analysis are complex and of a heterogeneous nature given the interrelationships between the different actors and the interacting factors influencing water governance and conflict patterns, there is no mechanistic way of applying a Stakeholder or Conflict Analysis methodology. However, the particular selected methods reflect the specific focus of the chosen research project. The overall circumstances which are caused by the filed research are portrayed within the overall chosen methodological framework. These include, inter alia, the resources available to the researcher, their respective skills and the quality to access them during the research. As mentioned earlier, the specific circumstances of the research project, particularly the planning and conduction of field work along with the quality to access information and to deal with challenges, is discussed in further detail below.

2.3 Case Selection

A central aspect in qualitative and interpretive social research as well as in case study methodology is the selection of a case. Ragin and Becker (1992) argue that cases can be understood empirically or theoretically, specifically or generally, or as objects, i.e. they exist in reality or as convictions, as socially constructed entities (Ragin/Becker 1992). While Bennett and George understand case as 'an aspect of a historical episode' (George/Bennett 2004: 5), Gerring (2007) describes case as 'a spatially delimited phenomenon (a unit)' (Gerring 2007: 19). Muno (2009) is making an even more accurate classification by talking about special cases. Special cases are not simply understood as any case, but a case of special interest for the overall research subject (Muno 2009). There is a general agreement that in multiple case studies the selection of cases should be driven by two issues: appropriateness and adequacy (Kuzel 1999; Shakir 2002). Appropriateness demonstrates that the selected case(s) fit to 'both the purpose of research and the phenomenon of inquiry' (Shakir 2002: 193). Adequacy is concerned with the number of chosen cases and deals with the question of how much is enough or how many cases should be selected (Patton 1990; Miles/Huberman 1994).

As already shortly touched upon in the introduction of this thesis, the selection of the research cases followed a four-step approach. Overall, the case selection was based on the theoretical model and the conducted literature review on natural resource conflicts with a particular focus on water and on further information derived from the study of secondary literature. In a first step, the aim was to compile an overview of countries in sub-Saharan Africa and then later in the East African Community. During that step, five general criteria for case selection have been identified and a list of possible water bodies have been prepared: (I) water bodies need to be internal[3], (II) the water body as well as the water body's surroundings are almost homogenous[4], (III) national and international political and economic actors are involved in on-the-ground product processing and there has been,

[3] There is evidence that water shortages at inter-state water bodies provide an impulse for cooperation as riparian states share a complex network of environmental, economic, political and security interdependencies (see e.g. Carius et al. 2004, Dinar et al. 2011; Almer et al. 2017; Transboundary Freshwater Dispute Database 2009). Studying the water shortages- conflict nexus at inner-state water bodies therefore has the potential to be particularly informative.

[4] The term homogenous implies that (a) the inhabitants of the lake's surroundings are mainly pastoralists, farmers, villagers and fishermen and (b) the water levels of the selected water bodies show similar changes of their water levels over a longer period of time.

therefore, a change in the environmental situation as well as population composition; (IV) occurrence of low-level (sometimes violent) inner-state conflicts since the turn of the millennium (ACLED 2019); and (V) water bodies must be accessible in terms of location and safety.

Accordingly, the first step was to compile an overview of countries related to water shortages and local-level conflicts within sub-Saharan Africa. This overview served as a basis for the selection of a sub-region (East Africa) and a selection of countries (Kenya and Uganda) and its water bodies respectively. In a second step, interviews and observations have been conducted during a five-week Scoping Trip to Kenya and Uganda in July and August 2018. The data retrieved from the interviews and observations of the lake sites served as a source of information regarding the potential of the previously chosen lakes and, therewith, more in-depth analysis and to concretise further research. A precise description of the planning and execution of the field work is discussed in further detail below. In a third step, another in-depth literature review of studies from international organisations and donors combined with a review of the academic literature on natural resource governance, water shortages and inner-state conflicts in Kenya and Uganda was conducted. Finally, the previous steps have been combined and Lake Naivasha in Kenya and Lake Wamala in Uganda have been chosen as the case studies. Both research sites conformed in terms of the interaction between international and national actors' engagement of outsourcing and commercializing the lakes' resources. The purpose of this outsourcing is to increase the economic development of the region. Furthermore, both case studies matched in terms of local actors playing a key role in the eruption and continuation of local level conflicts.

Within the wider water shortages-conflict framework, the two cases studied in this thesis - Lake Naivasha in Kenya and Lake Wamala in Uganda- can be considered to constitute typical or representative cases as they form part of a larger group of (background)[5] cases illustrating normal or average features (Shakir 2002). In this study, background cases are integrated into the analysis to detect essential characteristics of the water shortage-conflict nexus. These background cases include information from Karamoja and Fort Portal in Uganda as well as Turkana Lake and the wider Rift Valley in Kenya. The selected case studies predominantly seem to be general. However, both display and reflect features and

[5] Background cases are defined as not being cases per se, instead, they are integrated into the analysis often in an informal manner but play an important role in case study methodology (Seawright/Gerring 2008).

characteristics of extreme and critical cases. As pointed out by Shakir and Flyvbjerg, an extreme case is likely to 'demonstrate […] outstanding success' (Shakir 2002: 193) and 'reveal[s] more information because they activate more actors and more basic mechanisms in the situation studied' (Flybjerg 2006: 229). In addition, critical cases are useful for 'the logic of generalization to other cases' (Shakir 2002: 193) and 'to clarify the deeper causes behind a given problem and its consequences' (Flybjerg 2006: 229) than purely representative cases. Thus, the considered case studies are both general, but at the same time underscore specific features, dynamics and patterns of a water shortage-conflict nexus.

Two selected cases form part of a larger multiple-case study research designs. According to Yin (2003), the main objective is to use the selected cases to develop or predict a larger study design based on similar results (literal replication) using a small sample of cases (Yin 2003). Instead of conducting a 'rigorous, systematic comparative analysis' (Lund 2014: 226), the purpose of a two-case study is to enhance the analytical coherence of a two-case study design, compared to one single case design. Yin furthermore argues that the contexts of the case examples can differ (Yin 2003), which is also partly the case in this dissertation. However, if the researcher arrives at common conclusions from both cases despite the different framework conditions, then the external generalizability of the results can be expanded. Hence, the adopted two-case study design in this thesis serves to strengthen the conclusions obtained by the empirical analysis.

The primary data used during the research process has been obtained through semi-structured and structured interviews with different groups of actors, from experts to representatives of national and sub-national political and economic organisations to local resource users around Lake Naivasha and Lake Wamala. The main group of respondents were local resource users (i.e. farmers, fishermen, pastoralists and villagers), along with information from other actors working within the national water industry, as well as over-sea representatives interested in water but also other natural resources in general. The data collected from within the natural resources and water sector was supplemented or triangulated with sources of information from outside the water industry and included, for example, international organizations, national political and economic companies, public authorities or non-governmental organizations (NGOs). Other crucial data sources covered not only interviews with flower farm, company representatives and researchers but also 'informal interviews' with consultants and development organizations during coffee or dinner

appointments. Lastly, and as discussed in further detail below, direct observations of the Lake sites as well as factory visits were another valuable source of data collection during the different fieldworks. The thesis also relied on the use of secondary data or grey literature such as media articles, water reports, NGO publications as well as working and policy papers. The water sector literature, especially the water governance acts, have been particularly important to the research in terms of keeping abreast with developments of the water sector and the advanced devolution in both countries. The latter has been of importance given the highly dynamic nature of the water sector, shifting political responsibilities and its potential for economic prospects. Therewith, political competencies based on the devolution concept have been changed rapidly over the course of time, leading also to conflicts between national, county/district and sub-county/sub-district responsibilities.

2.4 Planning and Conducting of Field Research

2.4.1 Planning of the Fieldwork

As mentioned earlier, the primary mode of empirical data collection took place over the course of two field visits. Prior to fieldwork, extensive literature reviews on natural resources, water shortages, climate change and conflict as well as on the water sector in general were conducted. As this research project did not form part of a larger research programme, a considerable time was spent on the planning of the research visits as well as to familiarize oneself with the obligations and procedures of conducting research in Kenya and Uganda. Contrary to field visits which are part of a larger research programme, the fieldwork was not organised and executed through host institutions. Even though Scott et al. (2006) and Thøgersen and Heimer (2006) argue that working through, and with host institutions is an invaluable and often necessary prerequisite when accessing communities and information during field research, especially during the first field visit, the researcher need to find other means to get access to interviews and data (Scott et al. 2006; Thøgersen/Heimer 2006).

Prior to the fieldwork, a list of key stakeholders in the water sector was drawn up and contact information of interviewees were researched. Furthermore, a plan for the execution of the field work and a semi-structured interview guide was developed. The fieldwork plans contained a description of the types and numbers of respondents to be interviewed, their positions and working organization. Furthermore, the field plans covered the data

collection methods (semi-structured and structured interviews), topics addressed during the interviews and information on whether the interview was recorded or a detailed interview protocol was created. Upon request, draft interview guides were submitted to interview partners prior to the fieldwork in order to give them the opportunity to be prepared for the interview.

While the main purpose of the Scoping Trip was to confirm the selection of cases and to gain a general overview of the political and economic situation in Kenya and Uganda, the stakeholders on the ground and the feasibility and relevance of the research project, the three-month research stay served to link the three separate theory strands in order to subsequently develop an analytical concept. Thus, the interview guides for the Scoping Trip and the three-month field research were prepared on the basis of these different motivations. The questions in the interview guide for the Scoping Trip in summer 2018 consisted of three parts: (I) institutional framework of the general political and economic situation as well as governance and coordination, (II) water sector (regulation and standards) and general water situation, and (III) violence and conflict in general and the occurrence of violence and conflict over water and natural resources. The interview guide for the three-month field research between July and October 2019 consisted of two parts: (I) Basic information on the water sector and physical aspects of the natural resource sector, and (II) Stakeholder and Conflict Analysis, the level of influence and interests of the stakeholders, and conflict patterns, conflict dynamics as well as forms of violence (see appendix A).

2.4.2 Conducting Fieldwork

As mentioned above, fieldwork was conducted twice. The first research visit was a five-

Figure 2.1: Main site of fieldwork, Kenya (Shah for the Author: World Map Source, Arc GIS, 2019)

week research trip in July and August 2018; in Kenya from July to mid-August and in Uganda from mid-August to the end of August. The second fieldwork was conducted over a three-month period in summer 2019; in Uganda from mid-July to mid-August, in Kenya from mid-August to mid-September and again in Uganda from mid-September to mid-October[6].

Overview Field Research	*Scoping Trip Summer 2018*		*Three-Month Summer 2019*	
	Kenya	Uganda	Kenya	Uganda
When	30.07-16.08.18	16.08-31.08.18	13.08-23.09.19	17.07-12.08 24.09-20.10.19
Where	Nairobi Naivasha	Kampala Mityana/Kikandwa	Nairobi, Naivasha Lodwar	Kampala, Mityana/Kikandwa Sironko
Purpose of the Study	• obtain necessary information to concretize the research project • confirm the case selection • understand national political and institutional structures, and the structure and organisation of the water sector		• understand how especially local resource users who depend on water and land for their everyday livelihood • understand the interplay between political and economic prioritizations, water governance structures and subliminal and local level conflicts • re-evaluate and validate the data acquired throughout the Scoping Trip	

Table 2.1: Overview main aims and locations of the two Field Visits (Source: The Author 2020)

[6] These changes of countries are chosen as it covers the transition from the dry (August and September) to the rainy season (September and October). Staying on the ground during the change of the seasons is necessary to gather sufficient data on the effect of climate change on the water-conflict nexus as well as the nexus between water shortages and conflict levels due to man-made activities.

In Kenya, the main part of the research visits was carried out in Nairobi and around Lake Naivasha in Nakuru county (see table 2.1. and figure 2.1). In addition, a few interviews with NGO representatives, local district officers and local resource users were conducted in Lodwar, in the Turkana district. In Uganda, fieldwork was concentrated in Kampala, around Lake Wamala, in the provinces of Mityana, Mubende and Gomba and in Sironko (see figure 2.2). Although Lake Naivasha and Lake Wamala have been chosen as the primary case studies, field vistits also involved oberservations and interviews outside the selected cases in Turkana County (Kenya) and Sironko/Karamoja (Uganda). This cross-case technique has been used to evaluate and validate the data and evidence retrieved and to 'say whether the general relationship is positive or negative, strong or weak' (Gerring 2007: 93). The research visits and interviews conducted in Turkana and Sironko allowed to differentiate between the influence of climatic conditions on water availability and, therewith, water-related conflicts compared to the two lake sites studied. While Turkana and Sironko receive less water through precipitation due to their geographical location, and thus the conflicts over water have a very pronounced environmental component, the humid areas of Lake Naivasha and Lake Wamala receive sufficient water but the people still suffer from water

Figure 2.2: Main site of fieldwork, Uganda (Shah for the Author: World Map Source, Arc GIS, 2019**)**

shortages. Therefore, the relationship between climatic conditions and water shortages is positive in the arid areas, but negative in the humid areas.

2.4.3 Scoping Trip in Summer 2018

Before arrival in Kenya and Uganda in July and August 2018, the fieldwork strategy was discussed with the supervisors and a detailed movement plan was drawn. The main aim was to conduct about 20 to 25 interviews with actors working at the international, national and local levels of decision-making to get a deeper understanding about the general political and economic situation, the water sector and the relevance of the research topic on the ground. Contrary to an expected 'highly sensitive and politicised climate' (Belton et al. 2011: 568) of the topic of interest as well as less bureaucratic controls and barriers for foreign researchers, the author was able to conduct a total of 47 interviews with representatives from international and national organisations, national ministries, development organisations as well as local resource users. 37 of these interviews were formal and were conducted in English. The remaining 10 interviews were informal and involved community members, farmers and fishermen around Lake Naivasha and Lake Wamala and were arranged via a local contact person. These interviews and group discussions were conducted in Swahili in Kenya and in Luganda in Uganda with the assistance of a male Kenyan and Ugandan research assistant neither affiliated to a national or international organisation, nor affiliated to the author.

The interviews, group discussions and observations of the Lake sites lasted between 35 to 60 minutes. The interviews with representatives from international, national and non-governmental organizations followed a semi-structured interview guideline. These semi-structured and formal interviews were helpful in understanding national political and institutional structures, the structure and organisation of the water sector and the relationship between rural and urban agenda setting as well as the economic orientation of the countries. Only the informal interviews and group discussions which took place in the immediate vicinity of the lake deviated from this pattern. Concerning the focus group and informal interviews, after a short introduction of the main research aim, the floor was opened for discussions without a pre-designed interview guide. This open and explorative method allowed the interviewees to talk about issues they were concerned about and ensured that relevant aspects have not been left out because of a too narrow catalogue of questions

(Rosenthal 2018). Direct and indirect observations have been used to analyse patterns of behaviour but also to understand everyday life routines of the local resource users. Furthermore, the aim of the observations was to better understand the patterns and characteristics of the interactions between the different resource users.

All interviews were organized by the author. The selection of Lake sites and landing beaches at the Lakes were carried out with the help of two research assistants. Even though the selection of this was beyond the researchers' control, the author was able to meet a range of different local resource users, including fishermen, villagers and farmers. Furthermore, the researcher was able to see different landing beaches and gained a better understanding for the local infrastructure and the resulting difficulties thereof when accessing the landing beaches but also the near-by towns. These interviews were conducted in Swahili and Luganda and translated into English simultaneously by the research assistants (see list of interviews in table 2.2).

In summary, the Scoping Trip was useful to obtain necessary information to concretize the research project and to confirm the case selection. All the interviewees were open to the discussion and to the questions posed. They were not reluctant to express criticism of current state structures and policies and also voiced problems regarding the implementation of water policies. Thus, even if questions touched on potentially sensitive issues, including conflict dynamics, the use of violence, or the use of chemicals and forced displacements, the impression remained that respondents were not reluctant to discuss these issues.

Category	*Kenya*	*Uganda*	*Total*
International Organisations	6	2	8
NGOs and Development Organisations	14	10	24
Government and National Organisations	2	2	4
Farmers (group discussions)	1	1	2
Pastoralists (group discussions)	1	0	1
Fishermen (group discussions)	1	1	2
Villagers (group discussions)	1	1	2
Industry Associations	0	0	0
Experts	3	1	4
Total	29	18	47

Table 2.2: Numbers of interviews conducted, by category and country, Scoping Trip summer 2018

2.4.4 Three-Month Fieldwork in Summer 2019

After the completion of the Scoping Trip, the interviews were analysed and based on the evaluation of the data, first preliminary results on the water resource-conflict nexus were

drawn. Based on this evaluation, the three-month field research between July and October 2019 was planned. This field research was the core of this study and served first the review of the preliminary results from the Scoping Trip and second to complement the data collection. Upon arrival in the two countries, the strategy of the research stay was discussed and planned. Given the experiences from the first research visit, aware of the spontaneous nature of most activities in the two countries as well as the longer time frame of the study, a preliminary research and movement plan was drawn. Since the period of field research overlapped with the seasonal change between the dry and wet season, the stay in Kenya and Uganda was adapted to these changes. Therefore, the first weeks of the research trip during the end of July and the middle of August took place in Uganda (dry season). Afterwards the stay continued up to the end of September in Kenya (dry and wet season) and finished in late September up to the middle of October again in Uganda (wet season). In total, the author of this thesis spent 7 weeks in Uganda and 6 weeks in Kenya.

Unlike the Scoping Trip, the three-month field research involved more field visits and community-based interviews and focus group discussions as well interviews with environmentalists and experts and employees from environmental and water based non-governmental organizations. The main aim was to understand how local resource users who depend on water and land for their everyday livelihood, live and work together 'in a specific conjuncture of time and space' (Shah 2017: 50). Time and space refer to 'fully and intimately engage with […] the communities' and 'to understand the context from within which actors understand their own lifeworld and view the interventions of external agencies' during the different seasons and over a longer period of time (Millar 2018:10). Even though the field research primarily served to understand the local resource situation better, interviews with representatives from governmental and international organizations were conducted at the beginning of the research stay in both countries. The goal was to determine whether the general political and economic situation and the policies in the water and environmental sector have changed somewhat compared to the previous year. In total 61 interviews and 11 focus group discussions have been conducted (see list of interviews in table 2.3). Furthermore, the field research involved various visits to the lake sites as well as community visits.

Category	*Kenya*	*Uganda*	*Total*
International Organisations	3	6	9
NGOs and Development Organisations	18	14	32
Government and National Organisations	4	4	8
Farmers (group discussions)	1	4	5
Pastoralists (group discussions)	1	0	1
Fishermen (group discussions)	1	1	2
Villagers (group discussions)	3	5	8
Industry Associations	2	0	2
Experts	4	1	5
Total	37	35	72

Table 2.3: Numbers of interviews conducted, by category and country, three-month Field Research summer 2019

Similar to the Scoping Trip, interviews with representatives from international, governmental and non-governmental organizations lasted between 35 to 60 minutes and followed a structured interview guideline. As the three-month field research also served the purpose to evaluate the data acquired throughout the Scoping Trip as well as to gather specific information on the water sector and physical aspects of the natural resource sector, a structured interview guideline was chosen as the 'responses are coded by the interviewer based on an already established coding scheme' (Baškarada 2014: 11). These interviews were formal and were conducted in English. While the interviews with representatives from international and governmental organizations were recorded with a Dictaphone, representatives from non-governmental organizations were reluctant to conduct the interview using a Dictaphone. This can be explained by the fact that the selected representatives are often highly critical of the national and international political, economic and environmental policy agendas, and therefore did not want to be recorded due to concerns about their anonymity. The information from these interviews was recorded in field note form.

The interviews with individuals and focus group discussions lasted between 30 to 45 minutes and were open. The reason for this was that, on the one hand, opinions and attitudes towards the research problem were the focus of the survey. On the other hand, it enabled the researcher to meet the interviewees at their level of knowledge, especially during interviews in remote and rural areas. The focus group discussions which took place around the lake sites and with the communities at Lake Naivasha, in Turkana County (Kenya), at Lake Wamala and with communities in Kikandwa and Sironko (Uganda) included 3-8 respondents. Focus group discussions are a special form of interview, as several people are interviewed at the same time. Ledermann characterizes focus group discussions as a 'technique involving the use of in-depth group interviews in which participants are selected

because they are a purposive, although not necessarily representative, sampling of a specific population' (Ledermann cited in Rabiee 2004: 655). According to the definition, the participants are selected on the premise that they have either 'something to say on the topic' or they 'have similar socio-characteristics and would be comfortable talking to the interviewer and each other' (Rabiee 2004: 655). Given the dynamic nature of the focus group discussions, feelings and ideas of each participant about a single issue are revealed in perspective to the entire group/community. The questions were translated into Swahili and Luganda with the help of the same local research assistants as during the Scoping Trip. Even though the selection of the communities, as well as the focus group participants was again beyond the researchers' control, the gathered information is useful to better understand the relationship between on-the-ground resource issues and their relationship to political and economic policies.

The three-month field visit proved to be successful in, firstly, re-evaluating and validating the data retrieved from the Scoping Trip and, secondly, better understanding the interplay between political and economic prioritizations, water governance structures and subliminal and local level conflicts. Just like on the Scoping Trip, the impression remained that respondents were not reluctant to discuss critical and sensitive issues. Nevertheless, the majority of the interviewees talked openly because the researcher accepted to keep their information, names and employer (if applicable) confidential. While a few interviewees are quoted directly, the majority of the statements are paraphrased and an indirect reference of the source is given (e.g. a member of an international organization).

2.5 Analysis of Data

2.5.1 Qualitative Data Analysis

The analytical strategy adopted in this thesis, i.e. defining priorities for what to analyse and why, as well as what to do with the data (Yin 2003), was guided by the stakeholder and conflict analysis framework. Referring to the first question of what to analyze[7], this was addressed through the questions in the interview guides, which are centered around the key dimensions of stakeholder and conflict analysis, as mentioned earlier. The purpose of

[7] The aim of the study was to understand the linkage and interplay between the institutional framework, the actor's vulnerabilities to water shortages and, therewith, the eruption of non-violent and violent water-related conflicts.

the interviews during both the Scoping Trip as well as during the Three-Month Field Research was to first identify which stakeholders are relevant with regard to water use and water legislation. The second set of questions aimed to determine the stakeholders' interests with regard to water use, but also the influence on water legislation and its availability. For the empirical analysis, the identified stakeholders were grouped by category (see figure 6.3 and 6.4, chapter 6). The criteria for selecting the stakeholders were as follows: (I) the daily use of water for private and/or commercial purposes and (II) the influence of how water is distributed and made accessible in the region. As discussed in the explanations on Stakeholder Analysis in the theoretical chapter, neither interests nor influence can be measured directly. Therefore, the second set of questions was guided by Krott (2005) and Ogada et al. (2017). Krott suggests that 'interests are based on action orientation, adhered to by individuals or groups, and they designate the benefits that the individual or group can receive from a certain object' (Krott 2005: 8). Similarly, influence was determined based on three aspects: the statutory role in water management, the existing rights to the resource water, and the extent of resources committed in water management (Ogada et al. 2017).

The second issue, what to do with and how to analyse the data, involved several steps or phases based on the progress of work. During the fieldwork, most interviews were recorded using a Dictaphone. Due to language barriers, which are discussed in the following section, not all interviews were audio-recorded because the author considered that it would limit and reduce the quality of the information conveyed. The interviews during the group discussions and during the visits of the landing beaches and lake sites were recorded in note form and typed up, as well as reworked subsequently by the researcher herself. As discussed in chapter 8, it is difficult to gain information on the relationship and conflict dynamics between local resource users and economic actors around the lake from the respective actors due to complex social and power relations which are often linked to kinship ties or to the state. Further, it was sometimes difficult to make sense of the state's involvement in private businesses through joint ventures, cartridge networks or the involvement of officials and civil servants in fishing, flower farming and tourism[8]. Consequently, the researcher decided to supplement the findings from within official 'external' sources of

[8] The duality of interests often pervades the industry and other economic affairs as political officials are often mandated to oversee the working procedures of the businesses but also having political and economic interests due to their personal involvement in processing, exporting or political affairs (Stonich/Bailey 2000).

information, including industry experts, international organizations, development organizations, and NGOs.

The data collection during fieldwork was subjected to a more in-depth analysis after returning from the field. To transcribe the audio-recorded interviews, the software MAXQDA was used. In the first phase after the transcriptions, the author examined the data by going through all interviews as well as detailed field notes of the group discussions and lake site observations to tease out salient themes and issues. In the second phase, the texts were categorized with codes and sub-codes relating to the different groups of questions in the interview guidelines (e.g. conflict dynamics and forms of violence, aspects of the water sector, level of influence and interest of the different stakeholders; see appendix B). The separate analysis of the data retrieved from the Scoping Trip and the Three-Month Fieldwork served as a cross-check of the data received and the conclusions drawn. It further helped to 'test' whether the findings resonate with those of other studies dealing with the water shortage-conflict nexus. In a last phase, as part of writing up the final dissertation, all data was again subjected to a final scrutiny in order to capture details and characteristics that have not been included in the secondary literature.

2.5.2 Quantitative Data Analysis

In addition to the primary data obtained from the interviews, this work is based on the evaluation of quantitative data. The statistical analysis of existing climate, water and conflict data is used as the main source for data analysis. As previously mentioned, this thesis deals in particular with low- and sub-national conflict levels, and therefore, conflict data from ACLED (Armed Conflict Location & Event Data Project) as well as from SCAD (Social Conflict Analysis Database) is considered[9] (ACLED 2019; SCAD 2019). Initially, it was intended for the data to be received directly from the Meteorological Departments of Kenya and Uganda. As the negotiations have failed, data from the Climate Research Unit in East Anglia and the Climate Change Program of the World Bank Group was used (East Anglia 2019; World Bank Group Climate Change 2019 a/b). Hereby, the calculations of the statistical quantities median, arithmetic mean, variance and standard deviation are used to

[9] The author of this thesis is aware of other conflict datasets, governmental (e.g. CEWARN: Conflict Early Warning and Response Mechanism) or non-governmental conflict datasets (e.g. UCDP: Uppsala Conflict Data Program, Resource Conflict Institute) are not taken into consideration given their focus on conflicts with at least 25 battle related deaths per year as well as the involvement of at least one governmental actor.

make a statement about the development of temperature and precipitation and the water levels in the past 50 years as well as to make a prognosis for the coming years. Furthermore, the representation of these calculations in diagrams allow for a better illustration of the mentioned data. Quantitative data analysis is primarily used to answer the question whether there is a link between water shortages related to climate change and conflict on the one hand and the temporal and local resolution of conflicts on the other hand.

Apart from the quantitative data analysis of climate and conflict data, the information obtained from the interviews have been analysed quantitatively as well. The quantitative data analysis was undertaken using the software MAXQDA as well as Microsoft Excel. The transfer of qualitative data into quantitative data took place in several stages. After the successful completion of the coding system and its transfer to the transcribed interviews, a Code-Relation Model (CRM) was drawn. This CRM served to visualize the code system which has been deposited in the documents. From this representation, the amount of used codes across all segments is possible and allows to tease out irrelevant or minor independent variables related to the dependent variable water-related conflict. The main research question of this dissertation tries to understand a cause and effect relationship. Therefore, group comparisons and mixed-method tools were applied. These methods allow to specifically interpret the overlap of the used codes within a single and across multiple documents. Applying this method of analysis, three code groups have been singled out: conflict, stakeholders and conflict reasons. These three groups were considered for further quantitative analysis.

In a second step, the occurring frequencies of the codes have been converted into variables. Thereby, the name of the code was adopted for the variable. In a third step, MAXQDA was used to compare the two case studies regarding the three identified coding groups. The analysis for the respective groups followed the same pattern using Microsoft Excel: (I) the relative frequencies have been calculated for both Kenya and Uganda. The visualization of the data was carried out using a pivot chart. Mean values reflected the value distribution. In a final step, a cross tabulation served to analyse the conflict reason in relation to the case study as well as the analysis of the conflict reason in relation to the variable conflict. As both dependent and independent variables are nominally scaled, the statistical values of Pearson Chi-square and Cramer's V have been calculated. Pearson Chi-square is a non-parametric statistical test to detect a link between two variables. Cramer's V is a number

between 0 and 1 that indicates how strongly two categorical variables are associated, of which one portrays more than two characteristics.

2.6 Reflections on Fieldwork in Kenya and Uganda

Often, fieldwork is said to be a linear and rational process, originating in a research design as well as implemented through data collection and resulting finally in a thesis or dissertation. However, as Sæther (2006) argued, the actual experience of field research is often far from these depictions (Sæther 2006). One of the most important features of doing field research in African countries, such as Kenya and Uganda[10], is the researcher's dependence on local partners and assistants. Research assistant work as translators and gatekeepers because they not only know the research areas but are also respected by the communities. Furthermore, they can reduce the local people's suspicions about the researcher's intentions (Stevano/Deane 2017). As previously mentioned, working through local academic partners as well as local organizations and individuals to access communities and information channels is a prerequisite when conducting field research. However, this relationship is rarely highlighted as the difficulties might undermine the validity of the research in general. Thørgersen and Heimer (2006) mention that this tendency might blur the picture of how fieldwork was actually conducted and conceal how the foreign researcher is dependent on local assistance (Thørgersen/Heimer 2006).

Collaborating with local partners and research assistants has both advantages and disadvantages. On the one hand, it provides grounds for mutual benefits and opportunities including shared learning, the exchange of ideas, research partnerships for both sides and a privileged access to interviews and other sources of information for the foreign researcher (Scott 2006). On the other hand, working through these official channels also restricts the autonomy of the researcher. Working under the mentioned circumstances has led researchers in the past to resort to variants of what Thørgersen and Heimer call guerrilla interviewing. Hereby, they refer to unsupervised and spontaneous yet structured interviews, as well as participant observation which present themselves to the research, as ad hoc opportunities (Thørgersen/Heimer 2006).

[10] Although Uganda was only a British protectorate and never possessed the status of a British colony like Kenya, nevertheless influences and structures of the British were established in the country.

Although it would be an exaggeration to classify the field research in this thesis as guerrilla interviewing, the research was constrained and at the same time made possible by the realities of working within the framework of official channels via local partners and institutions. The latter influenced the selection of respondents during the actual stay and concerned, therefore, primarily the selection of local resource users. Even though some of the interviews were spontaneously arranged at a lake site or after a concluded interview, which is why a structured interview was not always possible to conduct, this method of data collection allowed the researcher of this thesis to conduct independent interviews and observations. These ad hoc arranged interviews enabled the respondents to discuss social and political problems more openly. In addition, and as previously mentioned, alternative sources of information to these channels were used to strengthen the reliability of the research data. As indicated at the beginning of this chapter, the methodology and research design were designed by taking into consideration the theoretical framework, the fieldwork and the analysis of data. Working outside of a larger research program has provided both opportunities and certain constraints. On the one hand, the author was able to select the research assistant/interpreter independent from administrative structures. The skills of the research assistant are crucial for the quality of the research as language barriers can be one of the major sources of insecurity during fieldwork (Sæther 2006). However, having been able to conduct most of the interviews in English served to strengthen the reliability of the primary data. Furthermore, working outside a set frame allowed for enough room for manoeuvre in terms of making important choices, both during the fieldwork and in relation to the selection of the case studies and the theoretical frameworks. On the other hand, working outside a research project made access to research institutions as well as local assistance during the fieldwork more difficult and time consuming.

To sum up, the methodological approach used to conduct research is based on a two-case study methodology within the broader methodological framework of qualitative and interpretive social research. The importance of primary data collection through fieldwork not only highlights the role of political sensitivity by accessing information through official channels and language barriers, but also the importance of supplementing the data with other sources of information. However, most interviews were conducted in English in order to strengthen the reliability of primary data. By applying different strategies, including the use of other information channels, sharpening the observations reflecting upon and being

transparent about the research process and its challenges, it is possible to increase the quality and reliability of the research. The discussion of the methodological background concludes the explanations to the research design and laid the foundation of the empirical analysis of the selected case studies.

3. Literature Review and Research Gaps

A review of the literature on the natural resources – conflict nexus reveals that adequate investigations on the causal path of the nexus have so far been obstructed by theoretical and empirical divides. Starting from the 1990s, numerous studies can be found discussing the link between natural resource stress and violent conflict in poor countries (see e.g. Homer-Dixon 1994, 1999; Gleditsch 1998; Peluso/Watts 2001; Theisen 2008). In these early stages of research on this topic, the assumption that environmental changes ultimately cause misery and conflicts in many parts of the underdeveloped South was frequently taken as axiomatic (Dalby 2008). However, in course of the growing interest in global climate change and its political and societal impacts (since 2000s), the academic debate on the natural resource stress – conflict nexus has been reviewed and revived. Thereby, it was enlarged by taking into consideration the aspect of climate change and its impacts on the vulnerability of natural and social systems (see e.g. IPCC 2007,2012,2014; Scheffran et al. 2012 a; Theisen et al. 2013; Ide/Scheffran 2014; Hsiang, Burke 2014; Ide 2017; Theisen 2017). A lack of unanimity over the impact of both the external stressors and the actors resulted in contrary and overlapping concepts used to describe the complex network of relationships that constitute the resource – conflict debate. The debate on external stressors, primarily including climate change and its impacts on violent conflicts moved the geographical focus to regions and countries that are highly vulnerable and exposed to the effects of climate change[11] (see e.g. IPCC 2007,2014; Ide, Schilling et al. 2014; Seter et al. 2016). In the current decade, attempts have been made to move beyond this debate and to identify other analytically relevant aspects of the resource – conflict nexus, including, e.g., the relationship between international, national and local actors' influence on environmental, political and social decision-making processes and on aspects of international environmental policies (see e.g. Vivekananda et al. 2015; Yembilah, Grant 2014; Okpara et al. 2015) (see table 1). However, even if research has made general progress, the interrelationship between externalities on the eruption of conflicts remains controversial and is inadequately understood.

Instead of playing off of theories, this study regards the combination of the mentioned key literature strands by integrating their strengths and weaknesses in a coherent

[11] e.g. the Middle East, sub-Saharan Africa, Asia and Latin America.

multidimensional framework as the best way to generate more satisfying explanations for the eruption of water-related conflicts between local level actors. This chapter discusses the arguments and limits of the three main controversies dealing with the (I) natural resource, (II) climate change and (III) (violent) conflict nexus to satisfy interdisciplinarity as highlighted in the introduction. First, section 3.1 presents the early stages of the natural resource – conflict literature. While in section 3.2 the literature about the development of the resource shortage and conflict linkages of the mid 2000s and onwards are introduced, section 3.3 focuses on the vulnerability and resilience of individuals, countries and regions to externalities and how this is discussed in the literature respectively. Section 3.4 introduces the key debates discussing water-related conflicts. Taken together, the three literature strands - environmental security, vulnerability and conflict research discuss the nexus of natural resources and conflict as a unified concept. Thereafter, the chapter concludes with a summary of the presented key concepts. Their main weaknesses are discussed and used to examine the contribution of the thesis in the discipline.

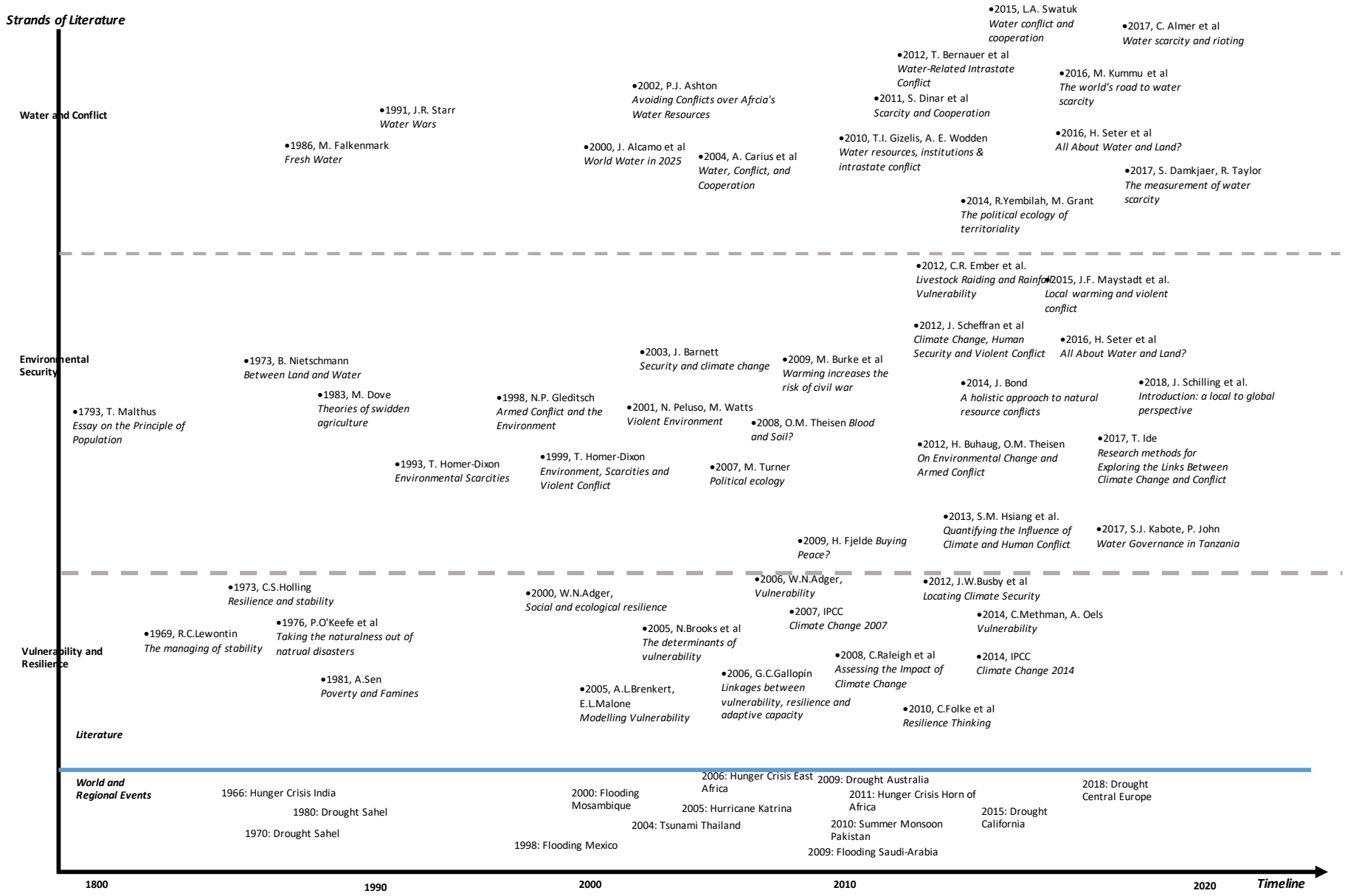

Figure 3.1: Chronological Overview of the Development of the Natural Resource Conflict Literature (Source: The Author 2019)

3.1 The Early Stages of the Natural Resource – Conflict Nexus: The Literature of the 1990s

The Environmental Security (ES) literature of the 1990s links scarcity of renewable resources to its distribution, taking into consideration the political, economic and cultural context at a regional and national level of decision-making (see e.g. Homer-Dixon 1994,1999; Gleditsch 1998; Theisen 2008). Homer-Dixon (1994,1999), in particular, connects environmental changes to resource degradation which finally leads to resource scarcity and violent conflict. The ES state of research indicates that the impact of climate change and population pressure can have devastating effects on human security and political (in)stability especially in countries of the Global South (Dalby 2008; Camill 2010; Davis et al. 2015; O'Brian/Barnett 2013).

Based on the Malthusian hypotheses[12] and the assumption that eco-scarcity problems are serious problems, especially in the underdeveloped South, Homer-Dixon argues that violent conflict is most likely to occur out of resource scarcity, combining factors of unequal resource distribution and population pressure in countries of the global south (Homer-Dixon 1994). To establish the mentioned relationship between population increase and resource scarcity, Homer-Dixon uses a composite variable of environmental scarcity distinguishing between supply-induced and demand-induced scarcity. While supply-induced scarcity is the result of ecological changes (e.g. droughts or resource degradations), demand-induced scarcity is caused by population growth and an unequal distribution of the available resources among its users (Ibid 1999). The decreasing access to resources increases the frustration of its consumers and results in grievances which finally enhances the risk of the resource users turning to violent behaviour to fight for the diminishing resources (Ibid 1999; Gizelis/Wooden 2010).

Likewise, a composite variable is used to distinguish between two principle types of conflict. First, simple scarcity conflict is seen as a zero-sum or negative-sum situation which arises from an experienced or a perceived future resource scarcity. Second, group-identity conflict arises from a large-scale population movement triggered by environmental

[12] With rising population pressure, the planet is going to run out of resources as population is going to increase geometrically and food is going to grow arithmetically (see Malthus in Binningsbo et al. 2007).

changes. Independent from the taken viewpoint, physical violence is a possible result of the combination of resource scarcity and its unequal distribution (Gizelis/Wooden 2010).

Given the core assumption of the environmental scarcity-conflict nexus, the ES school foremost concentrates on population pressure, resources and its impact within one society. Due to the focus on increasing temperatures and conflict, the studies mainly focus on national and sub-national actors, as they are the main ones affected by the political elite's decision-making processes. Sub-national actors channel and manipulate state policies, therefore, the mentioned subsequent level is included in the analysis. Resulting thereof, one is able to discuss how sub-national actors influence resource distribution and, therewith, impact sub-national and local actors' resource access (Homer-Dixon 1999; Peluso/Watts 2001). Hence, the focus of reference concerning the impacts of the environmental scarcity and conflict relationship are national state institutions and their interaction with contextual factors within the political system. These factors include the economic system, level of education, ethnic cleavages, infrastructural capacity and the legitimacy of the political regime itself (see Homer-Dixon/Blitt 1998; Homer-Dixon 1999; Buhaug/Theisen 2012).

These studies are helpful in identifying correlations between climate and conflict at a national level, even though they do not provide insights on how climatic conditions and conflict are casually connected. Due to their focus on national actors, the influences of the climate-conflict nexus remain a black box for both local and supra-national actors. Although ES studies primarily focus on local resources and conflict dynamics, the studies have severe data limitations. Given the fact that mainly case studies have been selected where violence is the outcome, scholars did not allow for any variation in the dependent variable. Thus, generally, this strand overestimates the environmental dimension as the main conflict driver (Martin et al. 2011). The Environmental Security School can be further criticised for ignoring an in-depth analysis of the dynamics and complexities of socio-economic, political and socio-cultural conditions contextualizing the natural resource-conflict nexus (Hartmann 2001; Peluso/Watts 2001; Bond 2014).

The assumption that population growth appears to be the central driver for the outbreak of resource conflicts has been criticized by Political Ecology (PE). Political Ecology draws from anthropology, development studies, geography and political economy. Similar to ES,

PE is also shaped by a Northern Security Studies perspective. Early PE studies emphasise that the environmental problems of the Global South are the result of 'broader political and economic factors associated with the global spread of capitalism' (Blaikie/Brookfield 1987: 17). Peluso and Watts (2001) provide a more explicit understanding of the environmental scarcity - conflict nexus. Although they criticise the simplistic approach that increased environmental scarcity, decreased economic activities and population pressure ultimately cause violent conflict, they do not reject it completely (Homer-Dixon 1994; Peluso/Watts 2001). Instead, PE focuses on historical, political, economic and social transformation processes and how those cause resource shortages (Peluso/Watts 2001). They further focus on the political economy of resources and on the interplay between local resources and the global commercial economy (Ibid 2001). While the Environmental Security School starts from a presumed resource scarcity, PE identifies how resources and environmental processes are 'constituted by, and in part constitute, the political economy of access to and control over resources' (Peluso/Watts 2001: 5). Thus, according to PE, the governance and distribution of resources is more important than their physical availability. The scholars, therefore, include factors of political and economic marginalization in their analysis of resource conflicts. In their framework, they further consider how political and economic actors influence the access to, and control over environmental resources. More so, they critically discuss why certain population groups are excluded from accessing natural resources (Peluso/Watts 2001; Jewitt 2008; Robbins 2012). While ES concentrates on the national level of decision-making, PE emphasizes the dominance of national and international (= global) elites and how they influence processes of dispossession regarding the use of natural resources including, e.g., land, water or timber (Peluso/Watts 2001; Ide/Scheffran 2014). The viewpoint of PE clearly pictures that global processes interrelate with and answer for national vulnerabilities.

Contrary to Homer-Dixon and his viewpoint on the outbreak of violence, for PE scholars conditions of resource scarcity do not have a monopoly on violence (Peluso/Watts 2001). Because of the taken standpoint, conflict and violence are site-specific phenomena which are rooted in local history and in the political, social and institutional context developed over time (Ibid 2001). Therewith, conflicts are considered in terms of the underlying motives of the disputants as the school sheds a light on 'the divergent interests, powers, and vulnerabilities of different social groups' (Turner 2004: 864). Similar to ES, violence is

understood as a practice of men that causes physical harm to other men and can encompass forms of modern war and military activities, sporadic unorganized violence or the deployment of terror by states or other institutional forms of cohesion (Peluso/Watts 2001). Based on this definition of violence and the relation to natural resources respectively, PE is able to explain why violence in general, and some brutal acts of violence in particular occurred in some contexts. Furthermore, it gives insights into why some factors have a stronger significance in the outburst of violence compared to other areas and cases (Ibid 2001). While ES views resource scarcity as the genesis of resource related conflicts, the PE perspective focuses on a socially produced scarcity rooted in institutional failure combined with international (global) historical influences (Turner 2004).

Political Ecologists conclude that competition for resources in the Global South is endangered by the dominant capitalist economic system in the Global North (Okereke/Charlesworth 2014). Even though PE moves the focus beyond the strong causal linkage of climate change, population growth and violent conflict, this strand of literature suggests that enviro-scarcity problems in the underdeveloped South are more or less caused by the Northern Hemispheres' political and economic policy processes within the countries on the ground. Hence, while Political Ecology is very insightful in their critique on global and climate capitalism, PE is less clear about other factors and alternatives addressing the natural resource and conflict linkage. Furthermore, both ES and PE are unable to explain how single resource impact on violence and conflict as the concepts are applied to resources and violent conflict in general.

3.2 The Revival of the Resource-Conflict Debate: The Literature since the mid-2000s

Due to environmental upheavals since the beginning of the 2000s (e.g. The tsunami in Thailand in 2004, hurricane Katrina in the United States in 2005 or the summer monsoon in Pakistan in 2010, among others), academic research as well as political and social actors drew their attention increasingly to the effects of global climate change and its political, social, economic and environmental impacts. Hence, the academic debate of the 1990s has been reviewed, revived and enlarged (see e.g. Hsiang et al. 2013; Ide 2017). Generally, the literature investigating the climate change-conflict nexus can broadly be divided into two strands: qualitative and quantitative studies.

Quantitative Studies

Quantitative studies are mostly based on supranational climate data and their relation to national socio-economic factors and conflict data (see e.g. Detges 2014; Scheffran et al. 2012 a; Maystadt et al. 2015; Ide 2017). For the most part, these studies cover longer time periods and draw on evidence from larger geographic areas or various countries with the aim of gathering a large data base for correlation analysis (Ide 2017). They are particularly useful to show the effects of climatic conditions and changes in temperature and precipitation on whether they have an influence on conflict dynamics. However, they are unable to explain how climatic conditions and conflict are connected. The relationship between environmental changes and local conflict dynamics remains a black box due to the focus on regional and national decision-making processes (Scheffran et al. 2012 b; Ide 2017; Schilling et al. 2018). Most quantitative studies draw on Homer-Dixon's supply-induced scarcity argument, establishing a linkage between rising temperatures and decreasing rainfall resulting in crop failure, income insecurity and violent conflict (Burke et al. 2009; Fjelde/von Uexkull 2012). However, the established correlations in these studies are often assumed rather than empirically tested, and therefore often lead to mixed results.

Hsiang, Burke and Miguel (2013) carried out the first comprehensive quantitative meta-study, testing the relationship between climate change, conflict, violence and political instability since the 1950s (Hsiang et al. 2013). Covering all regions of the world, the study showed that deviations from normal precipitation and slowly increasing temperatures increase the risk of conflict. In some areas, the correlation between population and the magnitude of climate's influence on conflict is highly statistically significant (Ibid 2013). Scheffran et al. (2012 b) compared the results and methodologies applied in quantitative studies since 2004 to disentangle the climate change - conflict nexus. Similar to the results by Hsiang and Burke, the authors found out that quantitative studies provide evidence for a link between climate change and violent conflict over longer historical periods. However, for more recent studies, results are more ambiguous and mixed (Scheffran et al. 2012 b). Even though some studies (see e.g. Miguel et al. 2004 or Burke et al. 2009) found a positive correlation between rainfall variation influenced by climate change and conflict in agriculturally dependent countries in Africa, the results have been questioned by other studies criticizing the lack of robustness checks applying the data to alternative models (Buhaug 2010) as well as of their counterintuitive formalism (Ciccone 2011). Scheffran et al. (2012

a) concluded that more recent quantitative studies lack the power to explain why a correlation between climate change and conflict was observed. Thus, they are unable to explain the causal pathways linking environmental changes to conflictual behaviour (Scheffran et al. 2012 a).

As quantitative studies cover most of the times violent clashes with more than 25 battle-related deaths have taken place and the involvement of at least one state actor, these studies base most of their conflict information on state-based data captured by the Armed Conflict Dataset of, e.g., the Peace Research Institute Oslo (PRIO) or the Uppsala Conflict Data Program (UCDP). However, as it is expected that local actors are primarily affected by climate change (Schaar 2018), the mentioned datasets do not cover local conflicts due to their focus on conflicts with governmental involvement as well as resulting in at least 25 conflict related deaths (PRIO/UCDP 2019). The Social Conflict Analysis Database (SCAD) tries to fill the gap between non-state conflicts, low-level violence and social instability related to geo-referenced spatio-temporal patterns (see e.g. Busby et al. 2012; Raleigh/Kniveton 2012). Hendrix and Salehyan (2012) examined the effects of rainfall variabilities on various conflict types using the mentioned social conflict database (see SCAD) covering small-scale instances of conflict in Africa. They found that deviations in rainfall are positively related to unrest and conflict across Africa (Hendrix/Salehyan 2012). More recently, some quantitative studies investigated the impact of temperature changes on the conflict risk especially for resource-related communities, including farmers and pastoralists (Ember et al. 2012; Schilling et al. 2014). Contrary to the aforementioned mixed findings, the scholars largely agree that the impacts of climate change on rainfall and increasing temperatures are strongly related to conflict dynamics among resource dependent communities (see e.g. Witsenburg/Adano 2009; Ember et al. 2012; Schilling et al. 2014).

Maystadt et al. (2015) investigate how weather shocks implicate on conflict dynamics focussing on local level actors in North and South Sudan between 1997 and 2009 (Maystadt et al. 2015). Their analysis resulted in a positive correlation between the two variables, whereas the risk of a future conflict under the same circumstances is likely to increase between 24 per cent and 31 per cent (Ibid 2015). In another study, Schilling et al. (2014) analysed correlations between climate change and livestock raiding in Turkana, Kenya between 2006 and 2009. Drawing on climate and conflict data, as well as interviews, they concluded that livestock raiding is more likely during sufficient rainy periods as the animals are

healthier and are able to travel longer distances. Even though they also found out that cattle raiding takes place during severe droughts, their cross-method analysis does not allow for conclusions regarding the threshold between resource abundance and resource scarcity and livestock raiding (Schilling et al. 2014).

To sum up, quantitative studies find only 'limited support for viewing climate change as an important influence on armed conflict' (Gleditsch 2012: 3). Nevertheless, there is an overall agreement that 'environmental changes may, under specific circumstances, increase the risk of violent conflict' (Bernauer et al. 2012: 529).

Qualitative Studies

Qualitative studies focus on the degradation of resources and how the environment aggravates existing conflicts at the local level of decision-making (see e.g. Scheffran et al. 2012 a; Schilling et al. 2012; Seter et al. 2016; Ide 2017). Drawing mostly on field experiments, including interviews, focus group discussions and observations, these single-case studies analyse the links between climate change and conflict (Ide 2017). Field-based studies gather and analyse data in a less formalized and more ethnographic way. Therefore, they are able to detect relevant combinations of variables and temporal patterns which are hardly considered by quantitative studies. These studies further focus on the access and distribution of resources, as well as the role national and sub-national institutions play distributing these resources. Moreover, due to their location-specific focus, qualitative studies allow for considerable variation at the micro-level, including power relationships between different local actors and sub-national and national institutions. Therewith, one is able to investigate to what extent these actors and institutions are able to cope with climate variabilities and inter-actor tensions and conflicts (see Ibid 2017).

Vivekananda et al. (2015) show how shrimp farmers in Bangladesh undercut dams to allow saline water into their shrimp farms (Vivekananda et al. 2015). Even though this action increases the resilience of the shrimp farmers, it undermines the environmental security of the entire region because it increases the risk of climate change-related flooding and salinization (Ibid 2014). In a more recent study, Solomon et al. (2017) not only looked at the impacts of conflicts on the environment, but also investigated the role of climate variability and its linkages to conflicts within the Horn of Africa since 1970 (Solomon et al. 2017). Drawing primarily on an extensive literature review, the authors demonstrate that conflict

has negative impacts on the environment, including grievances, government behaviour, resource scarcity or transborder conflicts. Likewise, they examine that climate variability plays a great role in intensifying the conflicts in the region (Ibid 2017). Similar to previous studies, the study by Solomon et al. (2017) draws its conclusion more on assumptions and is less empirically tested. As they account for local complexities, they pay less attention to supra-national factors, global actors and dynamics influencing national decision-making processes. Further, they do not allow for cross-national comparison (see e.g. Scheffran et al. 2012 a; Ide 2017). Critics charged that the focus on the environmental dimension leads to severe data limitations as these studies are unable to provide any insights into the implicit consequences of climate change and its linkages to conflict dynamics (Ibid 2017).

In the last decade, several qualitative studies moved beyond the environmental aspect, taking into consideration the importance of resource governance, as well as access and distribution of resources as factors weakening or exacerbating (violent) conflicts (see e.g. Iwasaki/Shaw 2009; Benjaminsen et al. 2012; Yembilah/Grant 2014). Other studies support the nexus of resource degradation, scarcity and increasing conflict tensions (see e.g. Schilling et al. 2014; Okpara et al. 2015; Ide 2015). Detges (2014) addressed some shortcomings of earlier studies approaching the natural resource - conflict nexus from the perspective of spatial dynamics of armed contest and the involved actors (Detges 2014). Specifically focussing on pastoralist violence in northern Kenya, he concluded that the ecological vulnerability (i.e. drought conditions and extreme weather events) of the region is exacerbated by high levels of poverty and poor access to public services and basic amenities (Ibid 2014). In their study on land-use conflict in the Sahel, Benjaminsen et al. (2012) critically discussed the question whether climate change can be identified as a driving force behind the observed conflicts. Drawing on their case study in Darfur, they argued that even though the Darfur conflict is the best example of a correlation study of the climate and conflict relationship, structural factors still remain the main drivers of the observed conflict patterns (Benjaminsen et al. 2012). They also stressed that resource shortages in especially dry areas foremost lead to conflicts between local actors, including farmers and fishers. The authors of the study critically mention that a lack of systematic data availability of these conflicts 'has prevented a systematic comparison of trends in conflict and climate' due to only single-case studies (Ibid 2012: 102). Contrary to previous studies, Yembilah and Grant (2013) try to understand the farmer-herder conflict setting evolving around natural resources in

Northern Ghana without taking into consideration the aspect of climate change. Drawing on field research, involving interviews and group discussions, they posit that the farmer-herder conflict in Ghana erupts more over the access than the control of an area or territory (Yembilah/Grant 2014).

Contrary to correlation-oriented and inter-regional quantitative studies, qualitative studies are able to disentangle the complex network of conflict factors for local actors. However, qualitative studies are limited to a local level of analysis and thus fails to move beyond case-specific data establishing causality across regions and cases (Scheffran et al. 2012 b).

3.3 Vulnerability and Resilience Literature

In the literature on natural resource scarcity, climate change is often cited as one of the main drivers that makes continents or countries vulnerable to conflict (Busby et al. 2012). But most often, a continent or country's vulnerability is not only driven by climate change, but also by unfortunate geography or low adaptive capacity in the country's political, economic and social system. Therefore, it is not sufficient to argue that a continent or country is vulnerable to be exposed to climate change and natural resource shortages and, therewith, to experience resource related conflicts. To examine the reasons why a continent or a country is particularly vulnerable implies to identify areas of vulnerability and prioritize limited resources. Thus, vulnerability and resilience are an important area of research.

3.3.1 Vulnerability

The concept of vulnerability originates from research on natural disasters (Methmann/Oels 2014) and is nowadays an established, but fragmented field of research (see Adger 2006). There exist a variety of overlapping concepts that have been used and are still being used to describe the complex network of relationships and processes that constitute the adverse effects of natural hazards on people. The origin of the approach is associated with O'Keefe et al.'s (1976) essay *Taking the naturalness out of natural disasters.* Here, they paradigmatically argue that natural disasters are found at the 'interface between an extreme physical phenomenon and a vulnerable human population' (O'Keefe et al. 1976: 566). Analysing natural disasters between 1947 and 1970, they concluded that 'the frequency of natural disasters is increasing especially in underdeveloped countries' (Ibid 1976: 566). Because of the directly observed connection between extreme physical events and their intimate

connection to the population, it is paramount for the authors to evenly weigh the importance of these two elements. Even though their vulnerability approach is superficial and general, they suggest incorporating development planning and disaster risk mitigation, as a rise in living standards reduces the vulnerability of people directly exposed to natural disasters (O'Keefe et al 1976).

Early Political Ecologists (e.g. Blaikie/Brookfield 1987) and Sen (1981) brought attention to the structural causes of people's vulnerability, which is due to their insufficient integration into the world market (Blaikie/Brookfield 1987) or the inability of some sections of the population to access natural resources like food or water (Sen 1981). Hewitt (1983) enlarged the discussion criticizing the aforementioned focus on contextual factors (i.e. declining wages, underemployment or rising food prices) as it resulted, in his view, in a 'technocratic (pre-) disaster management' (Hewitt 1983 in Methmann/Oels 2014: 279). Contrary to Blaikie/Brookfield and Sen (1981), Hewitt (1983) argued that vulnerability is merely due to the economic and social structures people are embedded in. Thus, contextual factors and the contextual knowledge of local population groups serve as 'an antidote against technocratic top-down management that sees populations as somehow deficient' (Hewitt 1983 in Methmann/Oels 2014: 279). In the 1990s, Watts/Bohle (1993) and Blaikie et al. (1994) moved beyond the structural causes of vulnerability and the sole focus on entitlements to natural resources or its access to them. In their later studies they set out to show that vulnerability is the result of the relationship between society and nature. Moreover, the outcome of long-term social developments influenced by the accumulation of power by national regimes results in fixed class structures and, hence, intensifies the people's vulnerability (Watts and Bohle 1993; Blaikie et al. 1994). Thus, whether people suffer from famines or other natural disasters hinges on both the people's positions within the social system and their relationship with the surrounding nature.

In recent years, the vulnerability concept has received significant attention from a wide range of international organisations and academia because of its embeddedness in the assessment reports of the International Panel on Climate Change (IPCC). The IPCC is a United Nations body assessing the science related to Climate Change and contributing to the work of the United Nations Framework Convention on Climate Change (UNFCCC). Across the studies on vulnerability, there does not exist a generally accepted definition of vulnerability, however the tripartite focus on exposure, sensitivity and adaptive capacity finds cross-

study approval. In their *Fifth Assessment Report*, the IPCC defines exposure as 'the presence of people, livelihoods […] and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected' (IPCC 2014: 1765). While sensitivity is understood as 'the degree to which a system or species is affected, either adversely or beneficially, by climate variability or change' (Ibid 2014: 1772), adaptive capacity refers to 'the ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.' (IPCC 2014: 1758). In this regard, whether a population group or a country is vulnerable depends on (I) 'the entity that is vulnerable' (II) 'the stimulus to which it is vulnerable' and (III) 'the preference criteria for evaluating the outcome of the interaction between the entity and the stimulus' (Scheffran et al. 2012 a: 101). Based on these, exposure and sensitivity are first and foremost determined by environmental factors, whereas adaptive capacity is characterized by socio-economic elements, like education, income and health, for example, as well as technology, governance structures and knowledge (IPCC 2007).

Authors who are in agreement with the core concept of vulnerability, as put forward by the IPCC, determined the seriousness of social, economic, demographic or political factors explaining the likelihood of a place or a population group to be exposed to a particular climate-related event (Brooks et al. 2005). Brooks et al. (2005) proposed to first synthesize the variety of sources of a country's vulnerability to be able to generate a state portrait of global vulnerability in a second step. Applying the latter two steps to multiple case-studies, one is able to use generic indicators potentially affecting all countries (Ibid 2005). Focussing on population's vulnerability to mortality from natural disasters, they identified 46 indicators which are potentially relevant to measure vulnerability (Ibid 2005; Busby et al. 2012). They point out the importance of taking into consideration a diverse set of indicators, however, they limit themselves to eleven indicators which serve as proxies for variables from three broader areas: education, health and governance (Brooks et al. 2005). Applying the concept and the indicators to all African countries, their study showed that the majority of the countries are likely to be highly vulnerable to climate change. However, in their correlation analysis, they separate physical hazards from political and social determinants. Thus, they undermine the importance of both geographical and physical aspects on a country's vulnerability as well. Therefore, countries that are identified by other studies to be highly

vulnerable to natural hazards due to their geographical location do not seem worthy of concern (Brooks et al. 2005; Busby et al. 2012).

Brenkert and Malone (2005) inspired by the tripartite focus on exposure, sensitivity and adaptive capacity, group a total of 17 indicators into the three named factors. However, only the sensitivity and adaptive capacity are represented in the indicators. Among others, the following indicators were assigned to the sensitivity basket: food security, water resources and human health. In the adaptive capacity basket, indicators such as environmental capacity, economic capacity or human civic resources can be found (Brenkert/Malone 2005). All assigned indicators are weighed equally when applying the model to measure the vulnerability of the World's countries. While Brooks et al. identified governance as one of the most important indicators to grasp vulnerability, Brenkert and Malone exclude it completely. Furthermore, their model is difficult to apply due to expelling the aspect of exposure and therewith dropping out the aspect that countries are vulnerable to physical hazards (Ibid 2005; Busby et al. 2012). Finally, their data set offers data for 102 countries. More so, 25 out of 54 states in Africa are covered (Brenkert/Malone 2005). This, however, leaves room for questions about potential biases selecting only countries fitting the utility of their model.

Raleigh et al. (2008) capture vulnerability in a straightforward approach without too many indicators. They limit themselves to only three dimensions: Gross Domestic Product (GDP) per capita, population growth by 2050 and historical disaster frequency (Raleigh et al. 2008). Given the simple composition of their model, Raleigh et al. are easily able to compare and capture relative vulnerability across countries (Ibid 2008). However, their model does not cover the full range of influences that might lead to a country's vulnerability. Past extreme weather events have shown that whether such a meteorological event becomes a disaster or not depends on national governance processes. Furthermore, other aspects like inequality, poor health or poor nutrition can intensify the situation and might result in adverse consequences on human welfare (Busby et al. 2012).

Busby et al.'s (2012) vulnerability concept builds on the aforesaid shortcomings. On the one hand they include the geographical location of a country into their concept. Because of their physical location, some countries, as well as, certain areas within the countries, like the coastal regions, are more prone to experience the magnitude of climate-related

hazards (including cyclones, fires, floods or droughts) compared to others. On the other hand, the authors incorporate three non-physical factors when discussing the likelihood of vulnerability. First, they consider population density as important, given the fact that the impact of an extreme weather event on densely populated areas is more severe since the magnitude and outreach of crisis management increases thereof. Thus, more people are in an immediate need to receive food, water, medical care or shelter than it would be the case if such an event hits a remote area. Moreover, in case of climate-related migration, people frequently move to urban areas and therefore contribute to the overpopulation of cities increasing their level of vulnerability[13] (Busby et al. 2012). Second, the vulnerability degree of people depends on the economic resources they have at the household and community level. The higher their resources, including financial reserves, access to health care or other basic amenities, the greater the opportunities to protect themselves from natural disasters (Ibid 2012). Lastly, governmental support and the effectiveness of national policies might not only enable individuals, but also communities to prepare for and adapt to the anticipated consequences of climate-related events. National political elites can provide affected population groups with food, water or shelter or offer their help in case people are left homeless or without other means (Ibid 2012). Combining all four indicators and applying the vulnerability model to the African continent in general, Busby et al. (2005) concluded that Madagascar, coastal West Africa, coastal Nigeria, Ethiopia and parts of the Democratic Republic of Congo (DRC) are the most vulnerable. However, in the application of individual indicators to the African countries, Busby et al. were able to show that vulnerability is not evenly distributed, both across the continent and also within the countries. While the Greater Lakes region[14] and the Mediterranean coastline might be highly vulnerable given their population density, Niger, Somalia, Chad and the DRC are ranked highest given household and community vulnerability. When considering the governance indicator, Busby et al. show that Sudan, Somalia, Côte d'Ivoire and some parts of Nigeria possess areas of high vulnerability (Ibid 2012). While the authors are able to map sub-national vulnerability hot spots by applying individual indicators to the countries, a nation-state analysis of vulnerability is only possible when all indicators are combined. Even though Busby et

[13] Even though urban areas have more resources available, they depend on a complex life support system which does not leach to all parts of cities. Especially in slum and poor settlements, economic poverty, inequality and limited access to essential resources are immediate causes of vulnerability. The higher the population and the influx of the population into the city districts, the greater their vulnerability to externalities.

[14] The Greater Lakes region covers the following countries: Uganda, Rwanda and the eastern parts of the DRC.

al. provide a data set trying to cover also the sub-national level, they used primarily national data for their data collection. Therefore, by applying national data to measure sub-national vulnerability, results might not be precise and should be used with caution when making general statements. Since sub-Saharan Africa is still particularly dependent on agricultural products, the inclusion of an indicator which captures data on agricultural commodities might improve the significance of sub-national vulnerability.

3.3.2 Resilience

The concept of resilience originates from ecology but is also applied to analyse the 'dynamics of an intertwined social-ecological system' (Folke et al. 2010: 21). There exists a variety of competing terms and fields within which the resilience concept is used. The three main resilience concepts which are currently used are engineering resilience, ecological and ecosystem resilience as well as social-ecological resilience (Folke 2006). Given the research focus of this study and the, hereinafter, considered theoretical vulnerability framework, the analysis is limited to socio-ecological resilience and focuses, in particular, on the socio-ecological system (SES). A socio-ecological system is defined 'as a system that includes societal (human) and ecological (biophysical) subsystems in mutual interaction' (Gallopín 2006: 294). Folke et al. (2006) argued that the resilience perspective helps to shift the perspective from 'those that aspire control change in systems assumed to be stable' (Folke at al. 2006: 254) to those that manage a SES 'to cope with, adapt to, and shape change' (Ibid 2006: 254).

Simultaneous to the emergence and development of the vulnerability concept, the resilience framework came into being. The earliest roots trace back to the 1960s and early 1970s (see e.g. Holling 1961; Morris 1963; Lewontin 1969; Rosenzweig 1971; May 1972). This early resilience perspective first emerged from ecology and later, in the 1970s, it was enhanced by studies of interacting populations in relation to ecological stability theory (see Holling 1961; Rosenzweig 1972; May 1972). Holling (1973) understood resilience as a capacity to remain stable in face of change. He further proposed that resilience determines the durability of people's interaction within a country or system and serves as a 'measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist' (Holling 1973: 17). Based on his definition, he proposed two indicators to measure the grade of a system's stability: the size of stability domains and the

amount of disturbances a system can bear. The former two indicators help to the mark the tipping point of the moment a system fails and before the same system control shifts to another domain/type of a system. Before shifting to another domain, a set of interactions and relationships is needed to dominate another stability region (Holling 1973; Folke 2006). Furthermore, he accented the dynamic character and cross-scale interplay between sudden changes and different sources of resilience to show that resilience of complex adaptive systems is more than a simple analysis about a system's resistance to change and its conservation within existing structures (Holling 1973).

At the beginning of the 2000s, Adger (2000) enlarged the debate about the resilience concept especially pronouncing social resilience (Adger 2000). Adger, in particular, focuses on population groups and communities, as opposed to the country related focus of earlier resilience scholars. Social resilience, therefore, is understood as the ability of groups or communities to adapt to outside influences and disturbances as a result of social, political as well as environmental changes (Adger 2000). The ability to withstand external shocks depends on the social infrastructure of the communities and population groups. The wording, social infrastructure, is used as an umbrella term comprising several elements such as environmental variability as well as social, economic and political upheavals (Ibid 2000). Anderies et al. (2004) adopt the robustness concept, understanding it as the maintenance of the characteristics of a desired system despite variabilities in the behaviour of its component parts (Anderies et al. 2004). While Adger (2000) and Anderies et al. (2004) primarily focus on people's persistence or robustness to external disturbances, Berkes et al. (2003) and Smit and Wandel (2006) point out that resilience is also about possibilities that arise from environmental changes. External disturbances open up opportunities to not only restructure grown systems and processes but also to renew a system and, therewith, to strike out in new directions (Berkes et al. 2003; Smit/Wandel 2006). They argue that resilience does not only imply adaptive capacity to respond within the system. Instead, Smit and Wandel (2006) view the system as well as the population groups as being embedded in a continuous dynamic cycle between internal and external factors and between sustaining and developing to change. Berkes et al. (2003) also move beyond the social domain and include the abilities of systems and population groups to shape and respond to environmental dynamics in their resilience concept. However, in both papers it is considered to be important that resilience is not necessarily always a good thing. It might turn out to be

difficult to transform a resilient system from its current state into a more desirable system given its internal self-organization due to, for example, the unwillingness of a small population group to change or the lack of sufficient financial or infrastructural means (Scheffer et al. 2001; Berkes et al. 2003; Smit/Wandel 2004).

Even though the vulnerability and resilience literature has acknowledged the complex interactions between climate change, natural hazards and conflict, none of the concepts pay attention to the underlying motives or interests that might spark cooperative or conflictive behaviour.

3.4 Water and Conflict Literature

The previously mentioned studies and literature discuss resources in general. Le Billion (2012), however, argues 'that some resources are more prone to violence' (Le Billion 2012: 5) because of their relations to human life and natural survival. Simultaneous to the scientific debate about the natural resource - conflict nexus, the assumed link between environmental security and political conflict is subsequently also exemplified in the debate about water. Existing studies can broadly be separated into two groups: studies focussing on water shortages and inter-state conflicts (e.g. Starr 1991; Ashton 2002; Carius et al. 2004; Dinar et al. 2011; Almer et al. 2017) and those concentrating on water shortages and intra-state conflicts (see e.g. Gizelis/Wooden 2010; Kummu et al. 2016; Pekel et al. 2016; Damkjaer/Taylor 2017).

Academic literature on water shortages and inter-state conflicts increasingly finds support for the argument that water scarcity provides the impetus for cooperation when water bodies are shared by at least two countries (Dinar et al. 2011). The Transboundary Freshwater Dispute Database, a scientific program aiming to analyse water conflict transformation processes at a global scale, posits that conflicts over shared water resources are decreasing. Simultaneously, international water agreements have been increasing over the last decade (Transboundary Freshwater Dispute Database 2019). Dinar et al. (2011) describe the relationship between freshwater scarcity and cross-country conflict. Because shared lake and river basins require the riparian states to share a complex network of environmental, economic, political and security interdependencies, the parties attempt to cooperate and negotiate an agreement to utilize the resource jointly rather than to turn to conflictual behaviour (Dinar et al. 2011). Analysing more than 200 international water

treaties, the authors found empirical support that water scarcity 'provides the impetus for cooperation' (Ibid 2011: 828).

Pekel et al. (2016), Kummu et al. (2016) and Damkjaer and Taylor (2017) quantify long-term changes in global water surfaces needing at least a period of 30 years. Encompassing all continental regions, the studies examine the fundamental concepts of water shortages and water stress[15] (Kummu et al. 2016). Key elements measuring possible water scarcity and water stress across these concepts can be identified by the population, the availability of water and how much water is used (Liu et al. 2017). Pekel et al. (2016) as well as Damkjaer and Taylor (2017) analyze how climatic changes as well as human activities affect water shortages. Both find indications for the argument that prolonged droughts and human actions alter surface of the water likewise. While the impacts of climate change and climate oscillations on water levels and occurrence can be measured with data sets, the impacts of socio-economic conditions are so far only quantified subjectively (Pekel et al. 2016; Damkjaer/Taylor 2017). Analysing trends in annual permanent water surface over the last 70 years, Pekel et al. concluded that the highest water losses due to climate change occurred in the Middle East as well as in Central Asia (Pekel et al. 2016). Concentrating on water scarcity in Africa, North Africa and South Africa are especially classified as areas being in a state of physical water scarcity (see Damkjaer/Taylor 2017). Even if quantitative studies are able to cover continental regions, to map water scarcity and water stress at a national level, global water indices seem to be misleading for a local analysis. This is because they measure the inter- and intra-annual variability of water availability but do not allow for a precise description of country-wide differences in rainfall and water availability.

Qualitative studies on water shortages, water governance and intra-state conflicts take up the concepts and frameworks on water scarcity and focus primarily on geographical areas which are classified as being either in a state of water stress or water scarcity due to the climatic conditions (see e.g. Bernauer et al. 2012; Selby/Hoffmann 2014; Swatuk 2015; Seter et al. 2016; Almer et al. 2017). Overall, these studies conclude that '[u]nusually dry conditions trigger small-scale conflict by intensifying the competition for water' (Almer et al. 2017: 202). Hit by a severe drought in 2012, extensive violence over diminishing water

[15] Concepts on water shortages include, e.g. Falkenmark Water Stress Index (Falkenmark 1986), Alcamo et al. (2000) or Vörösmarty et al. Water Scarcity Index (2000, 2005).
Water stress: The average amount of water available per person is below 1000 m^3.

basins was reported in the north of Kenya resulting in the death of more than one hundred people (Gleick/Heberger 2014). Gleick and Heberger's Water Conflict Chronology Database tracks and categorizes events related to water and conflict. However, the impact of other socio-economic factors and dynamics beyond the national level of analysis on the outburst of extensive violence over decreasing water resources remains open to speculation.

Seter et al. (2016) aim to better understand if and how resource scarcity plays a role and might lead to confrontational behaviour in different agro-pastoral case studies in areas prone to be affected by climate change. They found evidence for the argument that in 'poor, rural areas, most social conflicts are very likely to evolve around renewable resources' (Seter et al. 2016: 181) especially between herders and farmers. Even though all examined cases in Western Sahel and East Africa have been reported as violent clashes, the authors showed that the main cause of the individual disputes varied considerably. Thus, they point out that there is variation over the intensification and mitigation of the conflicts, including state policies, exclusionary claims over resources or environmental damages (Ibid 2016). Other studies illustrate how longer droughts resulting from global climate change in combination with other socio-economic activities fuelled violent conflicts over decreasing water levels (e.g. Scheffran et al. 2014; Schilling et al. 2014). The spiral of violence between different pastoralist groups but also between farmers and pastoralists is due to a variety of factors, including environmental degradation, loss of access to land but also due to political infrastructural projects, e.g., the construction of an oil pipeline in the north of Kenya (Scheffran et al. 2014).

Selby and Hoffmann (2014) discuss the links between water and conflict in the states of Sudan and South Sudan. They found evidence for cooperative behaviour over a shared resource (case study Nile) but hardly any evidence for civil war and internal water scarcity (Selby/Hoffmann 2014). However, the water-related conflict behaviour should not be overstated, as water is used by the political and military elites for economic processes. Discussing the case of Sudan, water is primarily used for oil exploitation. While oil is considered substantial to wealth and power, water does not seem central to the conflict. Therefore, gaining access to and control over major oil fields led to major political and military confrontations between the state elites and civil society since 2011 (Salby/Hoffmann 2014). The debate about access to water superposed the actual cause of the resource abundance - conflict nexus in the case of Sudan and South Sudan.

In his advanced review on water resources in southern Africa, Swatuk (2015) reconsiders the literature on water conflict and cooperation since the post-Cold War era. Whereas in the post-Cold War period, his literature review revealed a great deal of cooperation across the water landscape in southern Africa, the second period (since the mid-2000s) draws attention to the impacts of climate change on water resources. Therefore, the literature was on the one hand driven by enviro-scarce scenarios about climate and water wars and on the other hand served as a spur to develop better governance and resource management schemes in areas prone to suffer from the impacts of climate change (Swatuk 2015). He concludes that in the most recent period, scholars should draw more attention to the conditions and pathways constituting the relationships between and among the resource users across their own respective disciplines. Furthermore, it is important to move beyond the notion that it is only either conflict or cooperation that is resulting from water disputes. On the contrary, both can generally be found simultaneously (Ibid 2015).

3.5 Conflict Literature

The above presented literature strands discuss the natural resources and water and conflict nexus as a unified concept. For the further course of this thesis, however, it is important to present and discuss the development of conflict research and its theories and concepts separately.

There exists a diverse range of conflict literature which developed since 1918. Overall, the development of conflict studies as a distinct field can be subcategorised into four generations. These different generations, however, are not watertight regarding the issues concerned like the scholars that are moving across them are. The first generation (1918-1945) scholars were motivated to develop a science of peace which should prevent future wars (Ramsbotham et al. 2011). However, there did not exist a scientific field of peace research of its own until 1945. The first chair in international relations working in the field of anti-war sentiment and peace research was found at Aberystwyth University in Wales. Van den Dungen (1996) described that the first generation was characterised by a variety of proposals and initiatives which preannounced the institutionalization and development of conflict studies and conflict resolution in future generations (van den Dungen 1996). Because peace studies emerged in the aftermath of the First World War, many proponents of the new field of studies shared the view that only a complex and interdisciplinary approach

would be adequate to address the causes of war and to discuss solutions for durable peace. A prominent advocate of this approach was Mary Parker Follett (1942) and her thinking about organizational behaviour and labour-management relations. Other interdisciplinary studies integrated psychology, politics and international studies into peace studies (see e.g. Dollard et al. 1939; Follett 1942; Lewin 1948). Another significant strand discussing political revolutions was introduced by Brinton (1938). He argued that revolutions take place as soon as the gap between the distribution of social power and political power reaches a critical point (Brinton 1938).

The second generation (1945-1965 and beyond), also known as *Foundations*, emerged after the Second World War to counteract the threat of nuclear weapons. Parallel to the development of peace research in Europe, a Peace Research Laboratory was founded at the University of Michigan. However, the main elaboration within the development of peace research studies was concentrated in Europe and most remarkably in the work of Johan Galtung (1969). He introduced the conflict triangle concepts, and its distinction between direct, structural and cultural violence. Added to that, Galtung further made a differentiation between negative and positive peace (Galtung 1969, 1990). While negative peace is associated with the absence of direct violence, positive peace, more so, overcomes structural and cultural forms of violence as well (Galtung 1990). It was central for Galtung to go beyond the aim of war and conflict prevention and to include other conditions leading to peaceful relations between dichotomous groups of dominant and exploited or rulers and ruled into his study. To achieve this goal, it is necessary to reach the state of positive peace, especially by addressing the causes of structural violence (Ibid 1990; Ramsbotham et al. 2011). Another central scholar in the second generation is John Burton. Much of his literature deals with cooperative and competitive behaviour of social organisms, game theory and social psychology and social identity theory (Burton 1968, 1984). Burton's studies examine the dynamics of intergroup behaviour, race and ethnicity and conflict through field-based surveys. While Deutsch (1949, 1973) was the first to apply these various different developments to conflict resolution in particular, Fisher (1990) and Larsen (1993) have been among the first scholars to discuss both the positive and negative aspects of these studies. Among others, they criticised the fact that the studies published up to then had focused too much on prejudice, stereotypes and 'malign perceptions of the 'other'' (Ramsbotham et al. 2011: 47). On a positive note, they argued that these studies take into

consideration changing attitudes, the development of mutual understandings as well as the identification of conditions to create and promote an intergroup identity (Sherif 1966; Deutsch 1973; Fisher 1990; Larsen 1993). Another important contribution to a more in-depth conflict analysis during that time was Burton's differentiation between the conflict actor's interests and needs. On the one hand, he defined interests as material 'goods' which can be traded, negotiated and bargained. Needs are, on the other hand, non-material which cannot be traded or satisfied (Burton 1990). During conflict settlement, it is possible, according to Burton, to satisfy the needs of both conflicting parties because 'the more security and recognition one party to a relationship experiences, the more others are likely to experience' (Burton 1990: 242). Thus, a central concept in the second generation is the idea 'of the paradigm shift in thinking about behaviour and conflict in general […] [as] essential if humankind was to avoid future disaster' (Ramsbotham et al. 2011: 48).

The third generation (1965-1985 and beyond), also known as the *Consolidation* generation, defined itself over three large projects: avoiding nuclear war, removing glaring inequalities and injustices, and achieving ecological balance and control. It was during this generation that, for the first time, the theoretical frameworks tried to understand and analyse conflicts at three levels. At the (I) interstate level, the main task was to translate the tension between the superpowers into win-win agreements to avoid an, at worst, Third World War. The 1963 signed Limited Test Ban Treaty or the Strategic Arms Limitation Talks and Non-Proliferation Treaty negotiations can be cited as examples of how this danger can be avoided (Ibid 2011). At the (II) domestic level of politics, primarily peace institutes and peace research in the United States developed conflict resolution frameworks building up of expertise in family conciliation, community mediation but also tried out alternative conflict resolution strategies (Barber 1984; Susskind 1987; Dukes 1996). Burton (1987), Kriesberg et al. (1989) and Azar (1990) made a significant contribution to define and analyse conflict settings which are described as 'deep-rooted conflicts' (Burton 1987), 'intractable conflicts' (Kriesberg et al. 1989) and 'protracted social conflicts' (Azar 1990). Therewith, all three contributed (III) to a distinction between national and international causes of conflicts. In doing so, they focused on good governance aspects at a constitutional level on how this relates and interacts with intergroup relations at the community level (Burton 1987; Kriesberg et al. 1989; Azar 1990).

While the prominent Harvard School executed problem-solving workshops to develop different tools for negotiations within international conflicts, Adam Curle (1986) designed a theory of mediation. The aim of the Harvard Program of Negotiation was to include a range of academic disciplines, including political science, psychology, anthropology and also sociology and international relations to model an ideal problem-solving process which, however, does not exist. Nevertheless, various approaches emerged which shall help to expand the zone of possible agreements and to find ways to define, individually by each negotiation partner, the best alternatives to a negotiated settlement (Zartmann 2001; Bercovitch/Gartner 2006; Fisher/Ury 2012). Based on his own experiences as an intervenor in conflicts in Pakistan and in Africa, Curle viewed violence, conflicts and processes of social change as linked themes which often could only be brought together by a mediator given the long-term involvement of the actors in the conflict (Curle 1986). During the end of the third generation, Boulding (1990) added the idea of social imagination and social space to the previous developed theoretical concepts in the field of conflict research (Boulding 1990). By that time, conflict research and conflict analysis became an intersubjective framework which is made up of social, political and economic life and aspects.

In the fourth generation (1985-2005 and beyond), after the end of the Cold War, conflict research found itself confronted with more central attempts of how to define, on the one hand, a new world order and, on the other hand, to answer to the challenges that followed the passing of the bipolar world order of the past 50 years (Ramsbotham et al. 2011). During this period, a range of approaches was combined to respond adequately to the new challenges. To do so, they dealt with these challenges 'through application of the principles of 'contingency' (nature of challenge) and 'complementarity' (interconnectedness of responses) (Ibid 2011: 56). Mainly, softer forms of intervention take place when miscommunication and mistrust are high, while harder forms are an appropriate tool to use when substantive clashes of interests are at the forefront (Ibid 2011). Therefore, studies and theoretical frameworks of conflict analysis and conflict resolution tried to combine different levels of conflict in different sectors using different approaches depending on the historical and cultural setting as well as the stage of conflict escalation or de-escalation (see e.g. Stoll 2004; Moaz et al. 2004; Miall 2007; Druckmann 2009). Even though the founders of conflict studies have been aware that conflicts are complex, after the end of the Cold War the question of the systemic complexity of conflicts became even more prominent. Kahane (2007),

for example, defined three types of complexity: (I) dynamic complexity, (II) social complexity, and (III) generative complexity (Kahane 2007). Where dynamic complexity argues that the links between causes of effects of conflicts are non-linear and individually unpredictable, social complexity states that there exist different and often conflictive views about a problem. Generative complexity deals with the fact that former solutions to a conflict are no longer succeeding (Ibid 2007). Ropers (2008) and Poolman et al. (2009) tried to unite the different individual conflict approaches into one (Ropers 2008; Poolman et al. 2009). Ropers, for example, developed a two-step approach consisting of a conflict analysis and a conflict mapping (Ropers 2008).

Furthermore, in the fourth generation, more and more conflicts have been categorized as asymmetric conflicts in which power is unequally distributed among the conflict parties, either quantitatively (state-level) or qualitatively (actor level). Therefore, negotiation and peacebuilding models and tools of the foregoing generations have to be adjusted (Kuutab 1988; Jones 1999). With the global war on terror, and also during the end of the last century, discussions about 'religious wars' or 'global jihad' heated the discussion about a possible 'clash of civilisations' (Huntington 1996) and 'stimulated efforts to dispel, expose or overcome it' (Ramsbotham et al. 2011: 60). Finally, because some conflicts continued to exist over the present generations despite various efforts of conflict transformation and conflict settlement, the issue of conflict intractability was introduced. Faced with intractable conflicts (e.g. the Israel-Palestine conflict), scholars traced the roots of those conflicts back to the communicative sphere. Ramsbotham (2010) argued that linguistic intractability leads to radical disagreement and instead of trying to transform these radical disagreements, as a first step, an agonistic dialogue between the enemies should be explored (Ramsbotham 2010).

3.6 Research Gaps and Contribution of the Thesis

Each of the presented literature strands has its strengths and shortcomings which are reflected in the works in which the scholars favored one approach over another one. While perhaps imperfect in their methods, these studies nonetheless provide an important baseline for comparison and generalization (see table 3.1).

	Environmental Security		**Vulnerability Literature**		**Water-Conflict Literature**	
	Qualitative Studies	Quantitative Studies	Qualitative Studies	Quantitative Studies	Qualitative Studies	Quantitative Studies
Level of Analysis	National and Local Level	National and Supranational Level	National, Sub-national and Local Level	National Level	National. Sub-national and Local Level	National and Supranational Level
Key Messages	Resource degradation and population pressure exacerbates violent conflict Stress the importance of resource governance, resource distribution and access as factors weakening or aggravating conflicts	Ambiguous findings on the relationship between rainfall variation, temperature increases and increased conflict risk in agriculturally dependent countries	There is not a deterministic cause-and-effect relationship between resources and conflict Allows to understand the emergence of disasters	Ambiguous findings on the link between resources, state capacity and conflict There is not a deterministic cause-and-effect relationship between resources and conflict	Unusually dry conditions can trigger small-scale violence over diminishing water resources Especially agro-pastoral regions are prone to be affected from the impacts of climatic changes	Middle East, Central Asia and North Africa are classified as being water scarce/water stressed Data Sets to measure Water Stress globally
Strengths	The location-specific focus allows for considerable variation on the micro-level and how local governance processes are linked to conflict dynamics Focus on the environmental dimension	Identify the correlation between the effects of climate change and conflict on a broader scale	Identifies a variety of intervening variables on the resource -conflict nexus and the duration of violent conflict on different levels	Identifies a variety of intervening variables to explain the correlation of the resource -conflict nexus	The location-specific focus allows for a detailed understanding why and how conflicts over water emerges beyond the aspect of climate change, e.g. governance, motives, economic and social situation Insights into small-scale conflicts	Identify long-term trends of climate change and climate oscillations on water levels on a global scale
Shortcomings	Supra-national and global actors and dynamics remain a black box No insights into indirect consequences of climate change and conflict Do not allow for cross-country-analysis and generalization	Local actors remain a black box Environmental aspect as the main conflict driver is overemphasized Does not explain how climate and conflict are connected	Latent conflict dynamics and other forms of violence remain a black box Do not measure sensations of security and insecurity of individuals	Actors are treated as unitary ones Does not explain how intervening variables impact on conflicts Latent conflict dynamics and remain a black box	Geographical focus limited to water scarce areas Mostly single-case studies	Misleading for local analysis and does not allow for intra-state variation Does not look beyond the aspect of climate change on water shortages

Table 3.1: Overview Key Massages Literature Strands (Source: The Author 2019)

In summary, Environmental Security does not allow for explanations on how climate and conflict are connected. Furthermore, it does not provide insights into indirect consequences of climate change and conflict dynamics on the political or economic situation, for example. Due to Homer-Dixon's strong focus on the environmental dimension and violent conflict, early studies suffer severe data limitations. While local actors remain a black box in quantitative studies, qualitative studies do not pay attention to supra-national factors, global actors and dynamics. Moreover, qualitative studies do not allow for cross-country comparison and generalization as they mostly draw their evidence from single-case studies. The assumed connection between climatic conditions and violent conflict within quantitative studies is rarely empirically tested. Paying attention to conflict and violence, mostly case studies, have been selected indicating at least 25 battle-related deaths per year. Governmental involvement is furthermore a necessary condition for the selected case-studies. Within Political Ecology, current local and national decision-making processes are not taken into consideration because they focus on historical aspects and because of their linkages to the current political, social and economic situation on the ground. Similar to Environmental Security, violence is understood as causing physical harm and, therefore, other conflict types are excluded from the analysis.

While the vulnerability and resilience literature provide useful insights into the complex network of relationships and processes that constitute the effects of natural hazards on national and sub-national level actors, it does not allow for generalizability of the findings across countries or even continents. The various concepts presented try to capture a regional picture of vulnerability. However, the selection of indicators and variables measuring vulnerability of countries and regions leaves room for questions about potential biases, selecting only countries fitting the utility of each presented model. Even though most concepts and models try to relate high levels of vulnerability and low levels of resilience to conflict, these models are unable to measure sensations of security and insecurity of regions and people.

Overall, too much of the current research relies on anecdotal evidence, narrow case studies, or is speculative. The increasing attention of grey literature on the effects of climate change and security has, unfortunately, encouraged such speculation on the 'climate change', 'climate wars' (Welzer 2012) and 'water wars' (Dinar et al. 2011) narrative. While this analysis is informed by 'expert opinion', there is no substitute for systematic data

collection and analysis. Areas that are either considered to be in a state of water stress or water scarcity are almost exclusively centred by studies focusing specifically on the water-conflict nexus. More recent studies on the water-conflict nexus developed datasets to identify long-term trends in climate change and climate oscillations on global water levels. However, these studies are misleading for local analysis and, therewith, intra-state variation. Qualitative studies are mostly single case studies and, therefore, are not suitable for generalization.

3.7 Brief Summary

The presented strands of the literature discussing the natural resource - conflict nexus since the 1990s highlighted that, for a long time the natural resource - security discourse was framed by the effects of climate change, extreme weather events and resource governance by different political actors. The case studies of the more recent past, touched upon in section 3.2, clearly deemphasized the interplay between man-made and 'natural' disasters and global dispersion of on-the-ground natural resources on the security perception of the resource users. One of the most pronounced developments and consistencies over the last decade has been that agro-pastoral societies in the Global South are prone to be most affected by different forms of resource governance. The vulnerability framework conceptualizes why some people are affected by natural or man-made environmental changes compared to others (Methmann/Oels 2014). This framework follows the assumption that the resource situation is intensified by not only temperature increases and changing rainfall variabilities caused by global climate change, but also political, economic and social circumstances at a local as well as sub-national, national and global level of decision-making. The vulnerability concept brings together a diverse constellation of political and economic actors, aspects of global economy, (global) governance and social factors as well as environmental and climate-related events (see e.g. Blaikie et al. 1994; Adger 2006; IPCC 2007,2014; Busby et al. 2012). With regard to the key role ascribed to the central features of the concept for understanding the dynamics of globalisation and international governance on different perceptions of national and local vulnerabilities, it has emerged as a novel tool in the research of natural resources (Adger 2006; Methmann/Oels 2014).

In conclusion, studies on the natural resource nexus posit that temperature increases and changing rainfall patterns are inevitable variables explaining the resource - conflict nexus.

However, taking a more in-depth view, the studies on the water - conflict nexus show that water is a contested economic resource and, therefore, the implications of political, economic and social circumstances intensify the resource situation (Nsubuga et al. 2014). In accordance with this, conflicts over water bodies are not necessarily only caused by a lack of water, but are more so the result of poor water governance structures (Kabote/John 2017). Political corruption (Transparency International 2018), low GDP per capita, population increases (World Bank Group 2018 a) or an unsustainable handling of the resources destabilize countries and increase visible and subliminal conflict dynamics. These potentially destabilizing factors are indicators pointing to a correlation for water-induced contestations also in water abundant areas. From this point of view, these studies and considerations illustrate a useful way forward for research regarding conflict and cooperation over water resources.

This dissertation project is relevant for Peace and Conflict Studies, especially focusing on Natural Resource Governance. The relevance for Peace and Conflict Studies is undermined by, firstly, the current discussion of the state of research about the causes of and dynamics behind water-related conflicts[16] beyond the aspect of climate change. Secondly, the interplay between political and economic preconditions and global and national drivers on the resource situation on the ground in countries located in sub-Saharan Africa are still poorly understood. Thirdly, the role of political and economic factors in mediating the effects of water shortages at water abundant areas for local actors remains unclear. By bringing together different strands of literature from fields of conflict studies, natural resource studies and international relations in a cross-country analysis, this interdisciplinary PhD seeks to address the explained shortcomings. This study shall contribute to fill this scientific gap by developing an analytical framework which transcends the identified scientific gaps and coherently integrates the impact and influences of global dynamics and actors on national and local level-actors and decision-making processes. Through the strong empirical orientation of this study, its results shall provide insights for the design of adequate strategies to counter water-related low-key conflicts in water abundant areas at an early stage and provide recommendations for a more sufficient handling of the available water resources among all stakeholders concerned.

[16]As water also has implications on the cultivation of land, conflicts originating from water shortages include land rights issues as well.

4. Theoretical Framework

Renewable and non-renewable resources are central foci of debates about why and how 'resources become sites and objects of violent and complex struggles' (Watts/Peluso 2014: 184). However, the aforementioned literature strands and, therewith, concepts do not provide detailed information about the reasons for cooperative or conflictive behaviour between different actors and national and international organizations. Moreover, they do not analyse the actors' social actions and structural characteristics by taking into consideration their interests, influences and interactions in a given setting (Ogada et al. 2017). Therefore, a multidimensional theoretical approach is needed to analyse the dynamics and characteristics of a complex water-related conflict nexus.

In section 4.1 the key aspects of the vulnerability framework are discussed along with the complementary resilience framework. The Stakeholder Analysis (SA) approach is introduced in section 4.2. Lastly, in section 4.3, the most crucial concepts of Conflict Analysis with the main features of Conflict Identification, Inventory of Conflict Scale, Conflict Dynamics, Conflict Sources and Forms of Violence and Conflict are introduced and discussed. The chapter concludes with a summary of the theoretical framework which is used to study the water-conflict nexus in this dissertation.

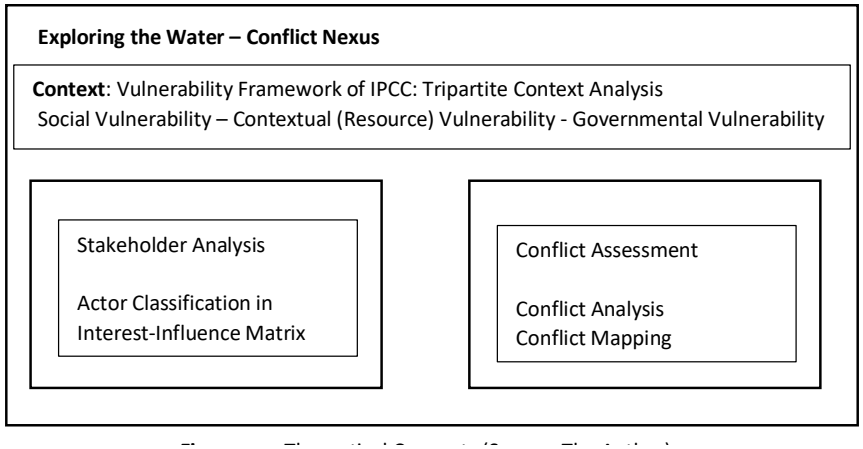

Figure 4.1: Theoretical Concepts (Source: The Author 2019)

By combining the three theories, it is possible to draw conclusions about the vulnerability and resilience of individual actors, communities and nations to, e.g., environmental changes and governance structures. Thus, the conflict perceptions, as well as the stakeholder's vulnerabilities vary according to the actor's goals, their spatial signature, their reliance upon physical geographies and their adaptive capacity to respond to socio-economic

changes in which the actors find themselves placed within. The aim of this dissertation is to develop a multidimensional framework which links global and national decision-making processes and actors to local level actors around the resource water. The combination of three interdisciplinary theoretical frameworks is useful to discover the mentioned interaction and to draw conclusions why and how water-related conflicts erupt between local level actors primarily. The dynamic character of water and water-related issues will be shown in the interrelationship between how water systems are framed (vulnerability concept), the interventions that result (stakeholder analysis) and their outcomes on the local resources users (conflict analysis). While each concept will be discussed hereafter in detail, it is important to bear in mind that all of these three are deeply interconnected (see figure 4.1).

4.1 Vulnerability and Resilience Framework

4.1.1 Vulnerability

The review on the development of the vulnerability concept (see chapter 2) showed that there is a variety of overlapping vulnerability concepts and definitions of it. As there does not exist a generally accepted definition of vulnerability, the definition of the *Fifth Assessment Report* of the IPCC is used[17]. It defines vulnerability as 'the propensity or predisposition to be adversely affected' by externalities (IPCC 2014: 1775). In particular, it focuses on the combination of 'concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt' (Ibid: 1775). Based on the definition and the aforementioned description, vulnerability research demonstrates that adaptive capacity especially needs to be looked at in more detail. It illustrates an interrelationship between environmental risks, the political economy and governance structures. It is, therefore, particularly suitable to identify not only particular vulnerabilities but also allows for a deeper focus into its causes beyond biophysical processes.

On the one hand, adaptive capacity refers to a reduction of a country's vulnerability to environmental changes. On the other hand, it encompasses the capacity to 'deal with [present and] future change[s] or perturbations to a socio-ecological system without

[17] The IPCC prepares comprehensive reports on the state of scientific, technical and socio-economic knowledge on climate change and future risks to come (IPCC 2019). It is widely accepted and combines different vulnerability frameworks (see chapter 3).

undergoing significant changes' (Nelson et al. 2007: 397). Thus, the key to understanding vulnerability lies in the three-folded interaction between social vulnerability, contextual vulnerability (Methmann/Oels 2014) and governmental vulnerability (see figure 4.2). Accordingly, social vulnerability can be seen as the point of departure (Kelly/Adger 2000). Social vulnerability analyses the issue from a socio-economic perspective, instead of classifying vulnerability as a natural phenomenon only. Thus, it analyses the pre-existing state of population and the general state on the ground 'in terms of the ability or inability of individuals and social groupings to respond to […] or adapt to any external stress' (Kelly/Adger 2000: 327). Contextual vulnerability considers the two elements, nature and society, as a coupled human-ecological system. Thereby, the impacts of a natural disaster on a country cannot be explained with changed climatic conditions (e.g. precipitation patterns) only, but in fact also depends on people's interaction with the nature, i.e. how resources are distributed, and the extent to which actors have access to productive resources (Methmann/Oels 2014). From a governmental perspective, the degree of vulnerability includes processes of political, economic and social decision-making. Additionally, it covers the effectiveness of institutional and governance structures. Resulting thereof, vulnerability is an inherent fea-

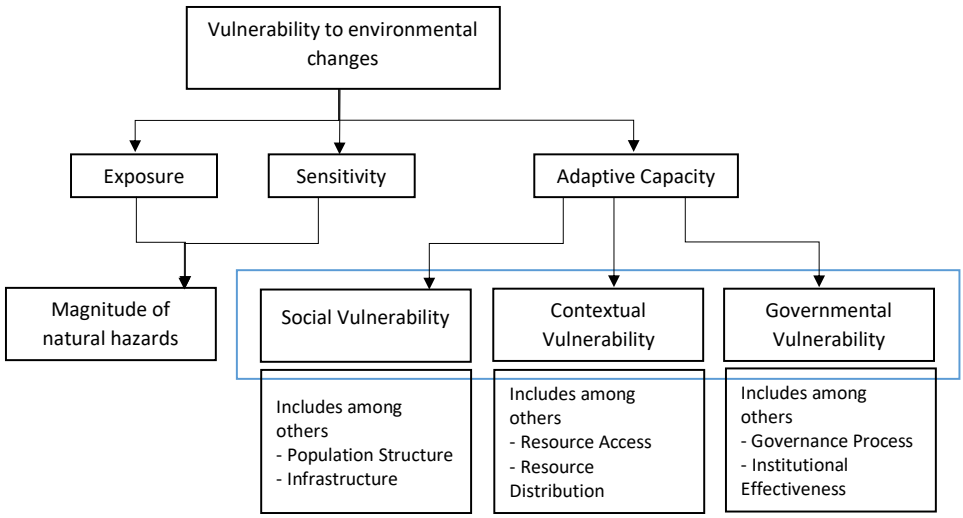

Figure 4.2: Vulnerability Concept (The Author, based on IPCC 2014 and Methmann/Oels 2014)

ture of the socio-economic system and addresses the political, social and economic concerns which constitute human life.

With regard to the three-dimensional orientation, vulnerability appears with at least another element and, therefore, cannot be analysed independently from the other elements. Contrary to the assumption of Political Ecologist scholars (see chapter 2), not only in the developing world but also in developed regions, countries and population groups can be at

risk to bear a disproportionate burden of climate impacts on their everyday livelihood (Methmann/Oels 2014). The likelihood that a country or a population group is vulnerable to be at risk can be summarized in the equation: *risk = vulnerability x natural hazard*. Risk is commonly understood as the outcome of the relationship between the likelihood of an event to happen and its general impact on the society (Scheffran et al. 2012). Taken together, virtually all types of natural hazards in conjunction with social, political and economic upheavals might have impacts on different groups in society. However, their level of adaptive capacity and economic and political resource available differentiates their grades to actually be at risk (Adger 2006). A relevant risk in this study refers to the eruption of conflicts between local actors which develop from institutionally made water shortages. Conflict for the purpose of this study emerges between at least two actors who fail to achieve their goals and to manage their differences to tolerable levels due to incompatible positions and interests.

Lastly, risk groups have a higher probability of mortality or harm in case of environmental changes than other groups (Methmann/Oels 2014). Where population groups are classified as risk groups, they are often at the brink of being discriminated as unfit in the face of environmental changes. More so, they might also face discrimination or even coercive economies of power. There is considerable agreement in the literature that to understand vulnerability of human population and countries it is key to learn about the interaction of social, contextual and governmental vulnerability the one hand. On the other hand, it is important to grasp the severity of environmental hazards and its changes and how their combination influences the people's vulnerability. Therefore, to develop strategies for adaptability to environmental changes and other externalities, it is important to understand the interplay of these factors. Subsequently, approaches to increase the resilience of the country and its different population groups can be formulated.

4.1.2 Resilience

As touched upon, the resilience framework has unquestionably emerged as a concept for environmental change and is closely connected to ecological, political, social and economic processes (Schipper 2016). Similar to the vulnerability framework, current resilience concepts stress, in particular, the importance of adaptability and consider it as an integral part (see e.g. Gallopín 2006; Norberg/Cumming 2006; Nelson et al. 2007). Within the resilience

framework, adaptive processes usually emerge out of the system's self-organization and relate to its capacity to tolerate or deal with changes to the system as a result of external stressors. Hence, the adaptive capacity of a group or system is judged upon its ability to maintain certain procedures despite changing internal demands which result from the impact of external disturbances on the socio-ecological system (Folke et al. 2010). Adaptation research is an actor-oriented research and analyses how vulnerabilities to specific risks can be reduced (Nelson et al. 2007). A common approach to increase adaptation is to learn and memorize how actors behaved during previous processes of change. It therefore might involve the acquisition of knowledge to strengthen the capabilities of institutions and organizations for governance (Folke 2006). It is important to point out that resilience and adaptability are not only actor-centred approaches. For the successful implementation of adaptation processes, the system's institutions and organizations clearly need to be considered as well. Institutions endure and persist throughout the adaptation process and support individuals and communities in times of adjustment and change (Nelson et al. 2007).

To increase a system's adaptive capacity, the domain should not generate knowledge about better coping strategies in the aftermath of a natural hazard. Instead, adaptation should be implemented on the one hand in preparation for, and on the other hand, in response to the impacts resulting from environmental or other external disturbances (Nelson et al. 2007). Measures to improve one's own adaptability in the run-up to suffer from the impacts of an environmental event can include the building of adaptive capacity. The ability of individuals and communities, as well as of groups and organizations is strengthened during this capacity process with the aim of adjusting to upcoming changes and to implement adaptation decisions. The latter can include e.g. transforming capacity into action (Ibid 2007). The described adaptation process takes place within the socio-ecological system (SES). Thus, not only do the population groups living within the SES transform during the adaptation process, the SES also learns, combines experiences and knowledge and 'adjust[s] its responses to changing external drivers and internal processes' (Folke et al. 2010: 21). Thereby, the SES continues to evolve within the current stability domain or basin of attraction (Berkes et al. 2003).

To conclude, including adaptive capacity into the resilience framework is a major extension to analyse and understand natural resource management. Based on the different concepts presented, Folke et al. (2005) summarized that four essential elements comprise adaptive

governance: (I) understanding the SES and its dynamics, (II) developing practices which combine different ecological knowledge systems to interpret and respond to SES feedbacks, (III) building adaptive capacity in order to be able to deal with and respond to uncertainty and surprises, and (IV) supporting institutions, communities and group networks (see Folke et al. 2005). On this basis, adaptation can be defined as 'the decision-making process and the set of actions undertaken to maintain the capacity to deal with future change or perturbations to a socio-ecological system' (Nelson et al. 2007: 397). Thereby, the system changes neither its functions nor its structural identity fundamentally, while at the same time it maintains its option to develop (Ibid 2007).

The key points taken from resilience and vulnerability research is that resilience thinking focusses on three aspects of the SES: strengthening resilience as a practice, adaptability and transformability (Folke et al. 2010). Resilience is understood as the response component to vulnerability and is, therefore, more than only the flip side of it. Moreover, resilience can be leveraged as a proper subset of a system's social component to respond to changes in the SES. In this regard, the capacity to respond includes the 'system's ability to adjust to disturbances, moderate potential damage, take advantage of opportunities, and cope with the consequences of a transformation that occurs' (Gallopín 2006: 296). Prior to being able to adapt, transformation means damage to an aspect of the system or damage to the system in general. This damage can occur in various forms, but mostly it is understood as harm to human beings, its natural components or to the SES itself. While adaptability refers to the capabilities of an SES to respond adequately to changing external drivers and internal processes without significantly changing the current domain, the purpose of resilience is to ensure that people and communities are able to adapt (Gallopín 2006; Schipper 2016). In this view, resilience is defined as 'the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation' (IPCC 2014: 1270).

The vulnerability and its complementary resilience framework consider how environmental drivers interact with and relate to economic, political and social drivers especially on a local and national level of decision-making. The two tripartite frameworks of vulnerability and resilience emerged as novel tools to analyse the causes of why one community or system

is better able to cope with external stressors than another due to their foci on political, economic and social decision-making processes.

As a theoretical framework, the concept of vulnerability is, for the purpose of this dissertation, used as a concept to translate the multi-disciplinarity of the different external impacts into concrete circumstances of life that account for disaster and the respective adjustment options of different stakeholders. The framework further allows understanding of the emergence of disasters within the society in political, social and economic contexts as well as their respective practices and institutions. Lastly, the vulnerability framework is used to identify the most important stressor for social and ecosystem properties on environmental stress and vulnerability assessment to assess the risk of diverse outcomes for a specific unit of concern (e.g. individual stakeholders, communities or regions).

However, the vulnerability and resilience frameworks are unable to measure sensations of security and insecurity and, therefore, fail to classify the actor's perceptions of insecurity that might lead to conflictive behaviour later. Therefore, in a next step, the theoretical concept is extended by Stakeholder Analysis.

4.2 Stakeholder Analysis

Understanding different actors' vulnerabilities and resilience on natural resource decision making requires the relevant knowledge to assess the compatibility of the interests in natural resources and the influences to transform these interests into influences on decision-making. In the 1980s, Ostrom applied the term polycentricity to outline governance[18] structures that 'take each other into account in [a] competitive relationship, [in which] contractual and cooperative undertakings […] have […] central mechanisms to resolve conflicts' (Ostrom et al. 1961: 831). Based on McGinnis and Ostrom, polycentric governance 'requires a complex combination of multiple levels and diverse types of organizations drawn from the public, private, and voluntary sectors that have overlapping realms' (McGinnis/Ostrom 2011: 15). However, in her concept, Ostrom focusses on a micro to macro-level action building and thus, does not fully grasp the importance of macro-level actors in the decision-making processes. This is, nonetheless, an important issue to consider when analysing governance structures in developing countries because otherwise, stakeholders who have not

[18] The term governance will be defined in chapter 5 in more detail.

been in power to initiate policies in the first place are being blamed for decision-making problems. All the same, Ostrom's concept does not show these power relationships and the connectedness between the different actors.

Accordingly, any decision-making process is not limited to formal governmental bodies anymore. Therefore, additional institutional features beyond the aspects presented in the core concept of Ostrom, as well as key political science theories (e.g. institutionalism or actor-centred institutionalism), need to be integrated. This includes multiple, and often overlapping, actors with different degrees of autonomy to achieve the core attributes of a certain policy. What follows are acts of cooperation, competition, or conflict to achieve a decision-making outcome between the identified overlapping actors. To devise a theoretical insight into the research objectives stated earlier, this part of the chapter moves forward to describe the theoretical considerations of stakeholder analysis (SA).

Stakeholder Analysis is suitable to analyse stakeholder's social actions and structural characteristics taking into consideration their interests and interactions in a given setting (Ogada et al. 2017). The roots of SA lie within political economy, but nowadays it is also an efficient tool to map natural resource policies and governance processes. The Stakeholder Concept emerged as a prominent theme in the management literature during the 1980s. R. Edward Freeman's book *Strategic Management: A Stakeholder Approach* was a landmark publication bringing attention to a better understanding of stakeholder identification and stakeholder salience within the fields of business ethics and management (Freemann 1984; de Bussy and Kelly 2010). Besides its application to economy and governance processes in general since the 2000s, SA is also seen as an accepted framework to better understand environmental and development problems. Within the field of environmental and development studies, SA defines aspects of social and natural phenomena.

SA is a holistic approach to gain a better understanding of a system characterized by different interests and multiple objectives (Grimble/Wellard 1997). Therefore, it is a useful tool to analyse governance processes developed in response to the challenges which can be derived from the various possibilities of policy formulation and policy analysis. In particular, the stakeholder concept within governmental processes proved to be particularly successful in settings that are characterized by multiple stakeholders, multiple objectives and multiple interests (see Grimble/Wellard 1997; Yang 2014; Ogada et al 2017). In this context,

the term stakeholder is used to describe a group of either unorganised or organised people who 'share a common interest or stake in a particular issue or system' (Grimble/Wellard 1997: 175). Therewith, stakeholders are found at different levels of decision-making, ranging from the global via the national to the regional level. It further covers the concerns of the household or intra-household level as well. More so, both individual stakeholders and groups of any size or aggregation are considered by the approach. Within the governance realm, Stakeholder Analysis can usefully be applied to complex situations which are characterised by compatibility problems between objectives and the various stakeholders (Ibid 1997). A recognized method for discussing stakeholder analysis consists of three sub-aspects - to identify the stakeholders, to differentiate between stakeholders, and to investigate the relationship between the stakeholders (Reed et al. 2009). However, before the actors can be identified, the topic and issue in which the stakeholders are involved in have to be defined first (Dougill et al. 2006; Prell et al. 2007).

The theory both identifies different groups of actors affected by environmental change and describes how these actors contribute to environmental change (Reed et al. 2009). Because environmental politics and natural resource governance typically deal with multiple stakeholders and often conflictual interests, Stakeholder Analysis is a useful framework to discuss the interrelationship between natural resources, water shortages and conflict dynamics. Resource governance, furthermore, can be defined as 'a partnership in which government agencies, local communities and resource users, non-governmental and other stakeholders negotiate, as appropriate to each context, the authority and responsibility for the management of a specific area or set of resources' (Ogada et al. 2017: 271). Based on that definition, SA is an integrated approach to get an understanding of a system, and to assess how the system changes by identifying the key actors or stakeholders and critically evaluate their respective interests in that system regarding a certain topic (Grimble/Wellard 1997). Originally, the term *interest* was used in an economic sense to measure a gain or loss towards a specific utility or welfare received (Ibid). However, analysing stakeholders' interests within the setting of natural resource governance, interests are also 'based on action orientation, adhered to by individuals or groups, and they designate the benefits the individual or group can receive from [a] certain object' (Ogada et al 2017: 278). Because interests cannot be measured directly, the way stakeholders behave and what they do regarding

natural resources is used as an indicator to determine their level of interest in the natural resource and the governance process respectively (Ibid).

As SA can usefully be applied to natural resource governance it is not only a matter to de-

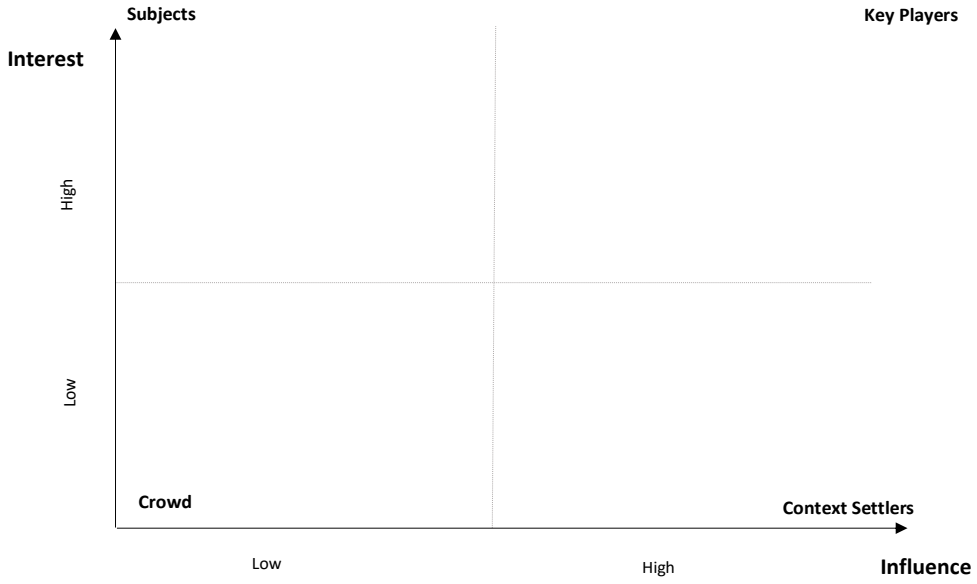

Figure 4.3: Stakeholder Matrix (The Author, based on Grimble/Wellard 1997)

fine the stakeholders and their interests respectively, but also to make a fundamental division between those who affect natural resource governance and those who are affected by a decision or action concerning natural resource management (Reed et al 2009). This essential differentiation into two groups might not be absolute, however, stakeholders can further be categorized according to their relative influence and importance in governance processes. Whereas importance is defined as the needs and interests that are the priorities of aid, influence 'refers to the power certain stakeholders have over the success of a project' (Grimble/Wellard 1997: 176). Similar to interests, the influence of a stakeholder on a governance process cannot be measured directly. Instead, the grade of influence is determined by four indicators: first, the role of individuals or groups within the resource governance process; second, the amount of resources which are available for the management of natural resources; third, the length of time since one stakeholder or a group of stakeholders has been involved in the management of natural resources; and fourth, the rights given to stakeholders concerning the management of but also the access to natural resources (Ogada et al. 2017). Considering the stakeholders involved regarding their interests, influences and importance, they can be classified into four categories: key players, context

settlers, subjects and crowd (see Grimble/Wellard 1997; Eden/Ackermann 1998; De Lopez 2001; figure 4.3).

Key Players have both high interest and high influence and, thus, they play an essential role in natural resource management (Reed et al. 2009; Ogada et al. 2017). Context Settlers are defined as those having low interest despite being highly influential. Because of their importance in governance processes, they cannot be ignored, and hence, they should be monitored and managed (Ibid 2017). Subjects have high interests but lack influence. Mostly, they are key to every process even though they lack the ability to produce an impact. By definition they are supportive. In order to increase their influence, they should form alliances with other stakeholders (Ibid 2017). Actors in the Crowd have neither influence nor interest. Therefore, there is little need to consider them in much detail unless they are changing their interest or influence regarding the topic over time. By then, their impact should be taken into account, too (Ibid 2017).

Due to the focus on natural resource governance, the following section teases out the application of SA to the natural resource sector. The natural resource sector is characterized by a complex web of trade-offs, interests and an entanglement of different actors. Resource management situations are cross-cutting systems given the fact that environmental problems cut across different policy areas, including political, economic, social and administrative units. These different units cover a wide range of stakeholders. Above all, commercial entities and government bodies at a regional and national level can be found throughout economic and political units. Individuals and local community groups are primarily involved within the social level of analysis. Poverty and under-representation are not to be underestimated aspects that influence the classification of stakeholders in the interests and influence matrix. Dealing with environmental problems or the natural resource sector in general, resources such as land, water, pasture and forests are essential to sustain life for the majority of the world's poorest people. Stakeholder Analysis can further highlight the needs and interests of those people who are directly dependent on natural products. This makes it possible to show to what extent these actors are underrepresented in terms of political and economic power to influence local decision-making processes (Grimble/Wellard 1997). Due to these different sets of actor groups and intersecting units, overlapping but also conflictive interests are likely to become visible.

Thus, stakeholders with strong economic and political relationships are therefore highly influential and placed central in the influence-interest matrix (mostly Key Players overlapping with Context Settlers). Stakeholders in this category tend to have and exercise power, and are able to play a bridging role to other stakeholder groups (Hannemann/Riddle 2005; Ogada et al. 2017). Context Settlers and Key Players are those stakeholder groups who are linked very well to each other and increase each other's importance in the process (Hannemann/Riddle 2005; Ogada et al. 2017). Taking into account the matrix and the resulting stakeholder classifications, SA in natural resource management is able to highlight the trade-offs that have to be made by the stakeholders given their different objectives (Grimble/Wellard 1997).

Due to this complex web of interests as well as trade-offs between the different interacting stakeholders within the natural resource management schemes, conflictive interests and, therewith, conflicts are likely to erupt. *Conflicts* and *trade-offs* are interlinked concepts within the Stakeholder Analysis framework. However, a conceptual distinction between the two terms has to be made. While trade-offs relate to a single decision-maker or one decision-making group, conflicts always erupt between at least two individuals or stakeholder groups (Grimble/Wellard 1997). Trade-offs are understood as processes to balance conflictive objectives by one particular stakeholder group. A need to balance conflictive objectives emerges once a stakeholder confronts more than one target towards a resource that cannot be achieved at the same time. The final trade-off has to satisfy all the stakeholders and, therefore, a sacrifice or opportunity cost 'in terms of benefits foregone' (Ibid 1997: 179) has to be applied by all actors involved.

In comparison to trade-offs, conflicts are defined as competitive situations and potential disagreements between at least two but often more actors. Within the natural resource management sector, they usually arise over the use of one or more mostly scarce resources. As mentioned previously, SA discusses the interrelationship between various stakeholders at different levels of decision-making. Therefore, conflict situations are likely to occur at the micro and macro level, as well as between levels. Micro (=local) conflicts erupt between different stakeholders on the ground, e.g. farmers or migrant livestock herders. Moreover, local conflicts may also emerge between on-site and external stakeholders, such as settled farmers and pastoralists. Trade-offs at the micro-level usually evolve around the question of how resources could be distributed more equitably between

the different actors. Macro (=national) conflicts arise between different national stakeholders but can also erupt between national and international level actors. A between-level conflict (micro-macro) occurs if the actions of the local stakeholders are contrary to those of macro-level actors. The tensions between micro and macro actors are likely to intensify where the interests of either group may or may not represent the interests of the greater masses (Ibid 1997).

To conclude, Stakeholder Analysis provides a theoretical framework to better understand environmental and developmental problems by engaging through a comparative analysis between different stakeholders, their interests and perspectives at various levels of analysis. The interest-influence matrix helps to unpack the different interests and objectives and assists to easier understand the heart of the problems by identifying incompatibilities between the involved stakeholders. Hereby, one is able to analyse how people relate to each other in the natural resource sector by splitting actors according to the roles they play in the natural resource field. Further, they are assigned role-specific rights, responsibilities and profit margins or revenues. Based on this, it is possible to conclude on cooperative or conflictual behaviour (Salam/Noguchi 2006; Reed et al. 2009). However, SA in itself does not try to make any changes. Instead, it only reflects the groups and interests of the wider society. In order to achieve change, stakeholders must have both the interest and the influence to change something (Reed et al. 2009). If a stronger participation of poorly linked stakeholders is going to be achieved or if trade-offs shall be negotiated, this is likely to take place outside the direct realm of Stakeholder Analysis.

While the vulnerability framework discusses the likelihood of a region or a community to be exposed to environmental changes in general, SA enables for a better differentiation of the actors living within this context. The classification into the four groups of actors allows for a detailed attribution of the different vulnerability types to the individual actors. It further simplifies the analysis of why certain groups of actors are more vulnerable to external influences than others. As it will be shown, the interpretation of conflictual behaviour is closely linked to SA. The relationship between conflict assessment and SA was introduced by Ramírez (1999). He stated that the initial engagement between these two frameworks is either driven by an actor or driven by an intervener. The actor seeks to understand the dynamics and issues of a particular situation before intervening in a non-conflict situation

(= Stakeholder Analysis). The intervener, by contrast, is faced with a social conflict situation (= Conflict Assessment) (Ramìrez 1999).

4.3 Conflict Assessment Framework

There are various types of conflict. Some conflicts are more intractable and prone to violence compared to others. The literature on conflict analysis is diverse. However, there is some agreement on the core concepts of describing conflicts. Conflicts have different causes and, therefore, can turn out to be social, ethnic, political or within the natural resource sector. They can solely revolve around issues concerning the access to water and land (Fisher et. al. 2000; Ramsbotham et al. 2011). Independent from the conflict type, conflicts always consume resources that otherwise would have been used for economic and infrastructural development. Furthermore, depending on the level of escalation of the conflict, conflicts can worsen the national and regional stability of a region or country (Poolman et al. 2009). This means that conflicts can also lead to undermining poverty reduction efforts, economic stagnations, institutional instability or the hardening of social and ethnic lines (Raleight/Kniveton 2012; Scheffran et al. 2012).

There exists a diverse nature of conflict analysis and conflict resolution traditions (see e.g. Fisher et al. 2000; Mitchell 2002; Kriesberg 2007; Ropers 2008; Ramsbotham et al. 2011; Melin et al. 2013), rooted in different disciplines and encompassing various tools of communication, problem-solving approaches or negotiation and mediation to settle long-term but also short-term conflicts. Across all four generations (see chapter 2), conflict analysis is a supportive tool to understand why some actors turn to cooperative behaviour while others are more conflictive. All these studies use different conflict analysis approaches including the reflection on theoretical underpinnings to reflect the overall effectiveness of peacebuilding and conflict resolution mechanisms. Most studies include a link between micro and macro measures to be able to enhance the impact of the overall conflict assessment (Ramsbotham et al. 2011; Bercovitch et al. 2013). Although all these studies define conflict analysis differently, the Conflict Sensitivity Consortium's (2012) definition summarizes these different approaches well. The Conflict Sensitivity Consortium defines conflict analysis as 'a structured process of analysis to understand conflict, focusing on the conflict profile, the actors involved and their perspectives, the structural and proximate causes and the dynamics of how these elements interact' (Conflict Sensitivity Consortium 2012: 4).

For the purpose of this study, the pragmatic approach introduced by Ropers (2008) and Poolman et al. (2009) during the fourth generation is chosen. The combination of these two approaches enables discovering the range of possible kinds of conflicts related to natural resources. The taken conflict approach of systemic thinking discusses any type of conflict within (I) the social and political context of the person or groups making them and (II) it explains the relationship between environmental phenomena and natural resource conflicts respectively which are 'often complex and of circular character' (Ropers 2008: 4). It, further, assists to highlight potential areas of people's concerns on various levels of decision-making and, therewith, guides and addresses potential sources of conflict but also identifies strategies and opportunities to strengthen conflict resiliency (Conflict Prevention and Reconstruction Unit 2005). Before appropriate strategies can be discussed to amend a conflict, first the type of conflict, its drivers and what feeds the conflict have to be defined. Across the conflict literature, there is considerable agreement on the key aspects of a comprehensive conflict analysis, including the following three main parts which each encompassing sub-categories: in a first step, it must be found out whether there is a conflict. Hereby, the question is asked what kind of conflict exists at present and how visible it is (Poolman et al. 2009; Ramsbotham et al. 2011). Building on this, latent conflict dynamics and the probability of a further outbreak of a conflict must be debated. Lastly, the causes and reasons for the conflict are analysed. Hereby, not only the specific location of the conflict shall be taken into account, also the general geographic region and its interaction to a conflict area provides a reservoir for an assessment (Ibid 2009; Ibid 2011).

After the conflict has been identified, in a second step a detailed conflict analysis is conducted. This step includes four sub-categories: (I) the identification of the stakeholders (= conflict parties), their characteristics and their respective relationship to each other (Ropers 2008). The (II) conflict issues of the identified actors have to be discussed with respect to their positions, interests, values, needs, perceptions, powers and feelings (Galtung 1996; Ropers 2008; Ramsbotham et al. 2011). More so, the (III) history of the conflict, the duration and content of the conflict can explain the genesis and the dynamics of present hostilities (Poolmann et al. 2009). Finally, (IV) one needs to consider to what extent structural and contextual features influence the conflict and determine its dynamics respectively (Ibid 2009; Ramsbotham et al. 2011). As the aim of conflict analysis lies within the resolution of each conflict, the last step of a comprehensive conflict analysis covers the

presentation of possible conflict resolution strategies as well. Hereby, it needs to be discussed what the conflict parties' understanding of the conflict is and whether there is need for conflict settlement. Once the need for conflict resolution has been identified, various conflict resolution preferences are discussed, including whether the conflict can be resolved internally or if external assistance is required and, more so, tolerated by the involved conflict stakeholders (Jackson 2000; Melin/Svensson 2009). In conclusion, the solution has to be sustainable.

After the conflict, as well as its main conflict actors are identified, Fisher et al. (2000) and Wehr (2006) argue that the most widely used tools for identifying the characteristics as well as the conflict issues of the parties is listening to primary, secondary and tertiary parties[19] (Wehr 2006) and the drawing of a conflict map (Fisher et al. 2000). However, while these tools are not themselves as systemic, as the approach would suggest, they are a necessary foundation for a further systemic analysis (Ropers 2008). The classification of actors into the three categories of primary, secondary and tertiary actors reflects how 'various actors are to the conflict and how they are affected by its transformation' (Ropers 2008: 12). While primary actors are those directly involved in a conflict, secondary actors are not actual parties to the ongoing conflict itself, but they are directly supporting the primary actors. Furthermore, they have a high degree of interest in the outcome of a conflict and, therefore, have influence over it, often due to their proximity (Mayers 2005). Sometimes, they might even be the instigators or catalysts of a conflict. During the Rwandan genocide, for example, the governments of Burundi and Uganda had been acting as secondary actors when Tutsi rebels invaded Rwanda from Uganda with permission of the Ugandan elites (Wallensteen 2002; Ramsbotham et al. 2011). Tertiary actors are not directly involved but they have some interest in e.g. a negotiated settlement or a peaceful solution of an ongoing conflict.

[19] The previously performed Stakeholder Analysis provides the basis for this tripartite actor categorization.

To involve third parties as constructive negotiators, they must be perceived by all disputant parties (i.e. primary and secondary actors) as fair and relevant for a peaceful settlement (Kriesberg 2007; Bercovitch et al. 2013). Nelson Mandela[20] or Frederik Willem de Klerk acted as tertiary actors in South Africa during the end of the Apartheid. Due to their deep involvement in the conflict, their respective communities came to trust their leaders enough allowing them to negotiate a peace agreement on their behalf (Wallensteen 2002; Ramsbotham et al. 2011). The described categorisation shows how external actors are involved in a specific conflict. Examples of external actors are neighbouring countries, international organisations, non-regional foreign powers or non-state actors. They can play an important role in supporting conflictive activities e.g. by financial means or providing them with a preferential access to arms. They might further support movements on the ground and shape the environment for civic activism (Mason/Rychard 2005).

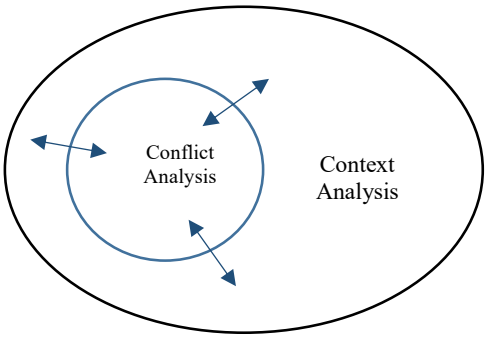

Figure 4.4: Conflict and Context Analysis (The Author, based on Lederach and Moomaw Jenner 2002)

Based on the identification of the relevant internal as well as external actors, it is important to qualify the system and context in which they operate. It is crucial to distinguish between conflict analysis and context analysis. While conflict analysis means the deliberate study of the causes, dynamics and actors of a conflict, context analysis 'seeks to understand the broader situation, including all economic, social and political factors'[21] (Collaborative Learning Project 2012: 1). The conflict, therefore, exists in the context (see figure 4.4). However, it is often said that poverty or corruption, for example, are the main causes of a conflict. Consequently, it is necessary to discuss other issues and dynamics closely related to poverty, including wealth, privilege or other economic factors. Hereby, it becomes visible

[20] After the Apartheid, Nelson Mandela's role shifted to a secondary actor as he gained more influence in the decision-making process in South Africa.

[21] The discussion of the three context factors social, contextual and governmental vulnerability provide the basis for context analysis in which the different actors are placed within.

that the conflict can be based on ethnicity or race, favouritism or the misuse of public funds. As a result, the conflict is less driven by absolute poverty levels, but more by the fact that some people gain while others lose.

This differentiation between conflict analysis and context analysis can take place in various forms (see figure 4.5), including the organisational level, the dimensions where the conflict actors operate and are involved in, the institutional sector, and the degree to which each of these parties are interested in or affected by the development of the conflict sector and its context (Mitchell 2002; Poolman et al. 2009). The organizational level describes where the conflict actor is placed with regard to the issue concerned, i.e. proximate or distant to the conflict issue (Le Billion 2001; Poolmann et al. 2009). One shortcoming of this tool is that the actors' role in the conflict might be overlapping. Furthermore, it should be taken into consideration that there is a difference between sectors and organisations on the one hand and individuals on the other. Nevertheless, it also shows that conflicts are not static and permeate different systems of interactions.

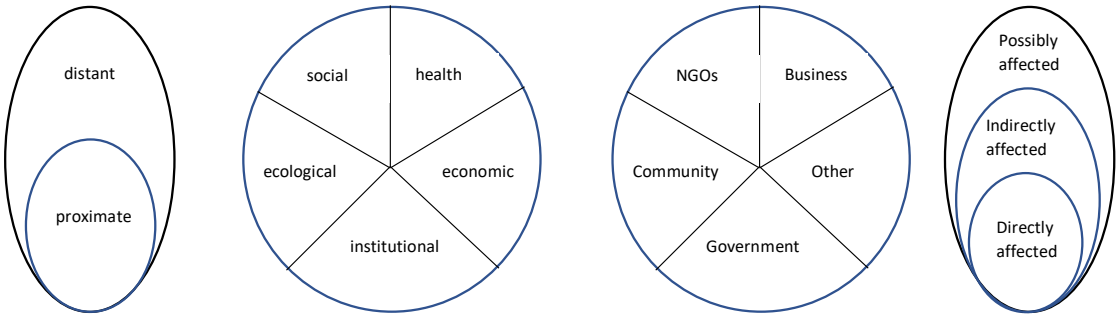

Figure 4.5: Stakeholder Categorization (The Author, based on Poolmann et al. 2009)

Based on Galtung's conflict triangle and Poolmann et al.'s model of actor classification, a systematic distinction between the positions, interests, needs and both powers and emotions of each party is made (Galtung 1969, 1990; Poolman et al. 2009). The theory of position, interests and needs was developed as a supportive tool to better understand the reasons for protracted, and often prolonged conflicts (Lederach 1997; Ramsbotham 2005). Originating from the idea that there are some basic universal needs every person has to satisfy, people pursue specific interests and create positions they believe to be necessary to satisfy their interests and needs respectively. Positions are based on underlying interests which are rooted in core issues defined as needs. Therefore, positions are the stance taken on a specific issue by the conflict party. Furthermore, they define the communication and interaction of complex factors that make up a conflict. Most likely, they are defined by the

underlying universal needs a conflict actor wants to protect and satisfy but they are also determined by the conflict actor's location in a particular conflict setting. The latter is composed of the actor's understanding of the conflict setting, the opportunities this setting presents for the actor and the extent to what it constrains or opens up possibilities to influence the dynamics of the conflicts (Newmann/Richmond 2006). Interests are shaped by the conflict parties' desire to successfully achieve the fulfilment of their needs. Finally, needs are the goals an individual or a group want to pursue to sustain a living. The more a conflict is translated into the language of needs, the more likely that the conflict outcome satisfies all parties (Ramsbotham et al. 2011).

However, it is often difficult to distinguish between both needs and interests, and needs and positions. Often, positions are the expression of an aim or a goal of a conflict party and, therefore, they are always subjective. Hence, there are two situations when needs and positions can be the same thing: Firstly, they are likely to be identical in a situation where the conflict parties are unable to separate personal perceptions of a need from the actuality of a conflict situation. In this case, the situation deals with peoples' perceived needs. Secondly, position and needs are identical if a conflict actor expresses the need clearly within the position (Ibid).

Drawing on the identification of the profile and actors of a conflict, the structural and contextual features, as well as the dynamics driving the present conflict, become visible. Underlying issues and contextual features and structural settings of conflicts are complex and multi-causal, as they can also shaped by past (conflict) events. Therefore, a distinction between different types of causes, influencing factors and outcomes on all relevant levels of decision-making takes place. The most frequent differentiation takes place between structural and proximate causes of a conflict. While structural causes are long-term or strategic causes which are built on norms, structures and policies within a political and social system, proximate causes are more recent ones and change quickly (Berdal/Keen 1998). They can accentuate structural causes and, therefore, lead to an escalation of a violent conflict (Woodward 2007). To sum up, the dynamics of a conflict result from both the description of the conflict history, the actors involved in the conflict setting, as well as their positions, interests and needs regarding the conflict topic. Paying attention to the dynamics helps to understand whether, why and how the conflict is escalating, intensifying, decreasing or spreading.

In order to make the interactions and interrelationships of the conflict actors in a conflict visible, the second part of systemic conflict analysis contains a conflict map (Fisher et al. 2000). Conflict mapping is a technique within conflict studies which is done in a similar way to a geographic map (Ropers 2008). The map represents the conflict geographically by placing the parties in relation to both the conflict issue and to the conflict actors. Mapping the conflict dynamics allows outsiders to the conflict to focus on latent as well as manifest forms of violence. Therewith, one is able to identify potential further outbreaks of violence. Mapping the overall conflict is a method 'of presenting a structured analysis of a particular conflict at a particular moment in time' (Ramsbotham et al. 2011: 89). Based on the previous analysis of the interests and positions of the actors, the map, furthermore, visualizes the power structures of the actors within the overall conflict system (Ropers 2008). Thus, one is able to gain a 'bird's eye view' on the interactions and relationships between the conflict actors. The dynamic setting of the conflict mapping allows reflection on the conflict dynamics also within changing situations. The map and the analysis thereof allow to differentiate structural from actor-oriented factors by synthesizing system and actor approaches (Mason/Rychard 2005; Ramsbotham et al 2011).

The conflict map reduces the complexity of the conflict as it only covers the primary actors in conflict and marginalizes secondary as well as tertiary actors. Therefore, the two parts of systemic conflict analysis should be combined. After merging both parts, there are two ways to elaborate the contentious issues at stake in more detail. On the one hand, it should include a horizontal approach covering policy and decision-making processes in various thematic aspects including governance, security, trade or development. On the other hand, a vertically depicted in depth view of the conflict parties' positions, interests, needs as well as powers and fears reflects how manifestations develop with respect to the named aspects (Ramsbotham et al. 2011; Bercovitch et al. 2013). The advantage of this two-folded systemic conflict approach is that it clarifies the essence of the conflict and explores the deeper-rooted manifestations, especially of needs, fears and power structures (Mitchell 1981; Ropers 2008). It helps to distinguish between root and proxy causes of a conflict issue, and often provokes arguments about who to blame. However, it risks missing correlations that drive the conflict and its dynamics. In order to counteract this weakness, a distinction should be made between contextual and individualistic factors (Daniels et al. 2012).

While the indicators assessing the contextual factors can be applied overall to most conflicts, individualistic factors differ from country to country, from conflict actor to conflict actor and from conflict to conflict (Conflict Prevention and Reconstruction Unit 2002; Daniels et al. 2012). Contextual factors, such as culture, political institution, agency or economic structures and performances are categories of indicators that can be used as guidelines for systemic conflict analysis in most conflict cases. On the contrary, individualistic factors (e.g. actor orientation, cognition, incentives or positions and needs) are designed for a case-specific conflict level analysis. A factor that has a strong influence on the conflict dynamics in one conflict might have only a slight or no influence in another conflict. Therefore, the aim of systemic conflict analysis is to be both comprehensive and flexible within the conflict assessment and to pay attention to unique characteristics driving the dynamics of the conflict but also describing the actors' behaviour within the conflict (Schirch 2013).

A systemic conflict analysis framework is an effective tool 'for the design, implementation and evaluation' of the causes, actors and dynamics of conflict (Collaborative Learning Projects 2012: 1). On the one hand, it helps to develop, implement and evaluate peacebuilding programmes either for the prevention of armed conflict or for discussing strategies to bring war and violence to an end. On the other hand, it is a crucial tool to assist societies to recover in the aftermath of a violent conflict trying to attain greater justice and equality.

4.4 Brief Summary

Gathered from the findings in this chapter, merging Stakeholder and Conflict Analysis provides a structured way to (I) identify which stakeholders are involved in a given context and (II) to explore how potential interactions between these actors affect a certain issue (Poolmann et al. 2009). Taking into consideration the contextual aspects of the mentioned vulnerability framework, it further is a novel tool to describe the eruptions of conflicts as well as to identify how potential interactions between the impact of conflict actors on external stressors might decelerate or accelerate the actors' feasibility to achieve their goals. Thus, very powerful actors are more likely to withstand the impacts of political or socio-economic changes or adverse impacts of other actors 'within the limit of their own capability and sensitivity' (Scheffran et al. 2012: 114).

Given the content of the mentioned concepts, all can be applied not only to ecology or economics but also to environmental-human risks, governance processes and their

interactions respectively (Scheffran et al. 2012). Despite some overlaps between the vulnerability and resilience framework, Stakeholder Analysis and Conflict Analysis, the conclusions drawn from the frameworks differ substantially in three main aspects: (I) the underlying insights on stakeholders' potentials to turn to conflictual or cooperative behaviour, (II) the role and influence of various stakeholders on natural resource management processes, and (III) different roles and weights of internal and external sources of influences or power that shape the overall governance of the water and natural resource sector. To capture the diverse internal as well as external governance processes pursued by different stakeholders at multiple levels of decision-making, this thesis examines the water-conflict nexus along three broad categories: (I) understanding the different power structures regarding facilitating and implementing natural resource processes of international, national, sub-national and local decision-makers and stakeholders; (II) the analysis of different degrees of vulnerability to the identified stakeholders; and (III) to visualize conflict dynamics and understand the factors contributing to the eruptions of conflicts on certain decision-making levels.

In the light of the above reflections, this dissertation adopts a more multi-faced and multi-dimensional approach than much of the three presented frameworks which tend to focus each on their individual components instead of viewing them as complementary ones. More specifically, by drawing attention to the interplay between the different decision-making levels as well as the role of external and internal actors and factors in shaping water governance, this thesis explores how forms of power, influence and interest residing outside of the environmental chain may also interact with natural resource governance. Further, the thesis explores the role of external stakeholders and factors in shaping water governance through responding to economic imperatives/competitive pressures and challenging existing power relations by examining the upgrading trajectories pursued by national elites to maintain or improve their position in the global economy and in the national political realm.

5. The Water Sector in Kenya and Uganda

This chapter centres around two main questions: First, what is water and how is water used generally? Second, how is the water sector or the natural resource sector in Kenya and Uganda governed in respect to the current laws in place? The chapter aims to provide answers to these two questions by understanding what water is, how it is used, who gets water and whether there are universal rules governing access to and the availability of water. The chapter further answers the mentioned questions by tracing how the water sector and the respective laws in Kenya and Uganda have developed since the introduction of a decentralized political system until today.

The use of the world's water resources is increasing. AQUASTAT (2019 a) and UNESCO (2019) estimate that the annual global withdrawal of water has increased by 1 percent since 1980 (AQUASTAT 2019 a; UNESCO 2019). The reasons for this rise are numerous and range from population increase to socio-economic developments and consumption changes (UNESCO 2019). Although there is plenty of water on earth, the supply of water available for our use is limited. The general situation is worsened because water is not always in the right place, at the right time and of the right quality. It is expected that the demand for global water resources is going to rise to a level which represents an increase of 20 to 30 percent of the current water consumption by 2050. This scenario is based on the continuation of today's existing population development and other influential socio-economic aspects, including environmental destructions or economic developments (Ibid 2019). Current climate change forecasts predict an increase in water use for industrial and domestic purposes. It is expected that the quantity of available water sources will decrease noticeably before the year 2050 (Almer et al. 2017).

To understand the different narratives about water, water availability and water accessibility, this chapter focuses on the resource water, the water basins in the selected countries as well as the countries' water policies and water governance structures. In section 5.1, water as a resource will be defined along with its inseparable variables of availability and accessibility. Therewith, a definition of water governance will be given. The chapter continues with a section (5.2) on the hydrology of Kenya and Uganda aiding the overall presentation of the water resource status and the occurrence, distribution, movement and

properties of the water bodies in both countries. In the last section (5.3), the existing water governance structures and water policies of the two countries are introduced.

5.1 Understanding Water, Water Availability and Water Governance

Water is complex. Of all renewable resources, water is of unique importance as it sustains all forms of life, including 'food production, promoting economic development and for general well-being' (Nsubuga et al. 2014: 1297). As described by Nsubuga et al. water does not only encompass the water supply for human consumption but is further linked to water resource management. Accordingly, a distinction is made between 'water for life' and 'water for production' (UNDP 2006). All water use which is considered key for human survival is associated with the water for life terminus. This includes water for drinking and other household purposes. Water for production is understood as water for irrigation schemes, industrial uses, food production for subsistence or other entrepreneurial activities (Metha/Movik 2015). Therefore, both surface as well as groundwater resources are important for sufficient water supply. Whereas 'water for life' plays an important role for domestic water supply, as well as watering livestock and agriculture, water for production is used for industrial operations, hydropower generation, waste discharge, environmental conservation, tourism and also for agriculture and fisheries (Nsubuga et al. 2014).

The World Health Organization (WHO) argues that at least 20 litres of water per capita per day are needed to ensure the minimum essential levels for hygiene and health (WHO 2013). However, the estimated 20 litres only cover basic human requirements for short-term survival and do not include water for personal or clothes washing, cleaning or agricultural activities (Ibid). Thus, 70 to 90 litres per day are necessary to ensure a long lasting personal and public life. Overall, to maintain the status quo, at least 60 litres a day are considered a necessary requirement (Ibid). Therefore, more water is consumed for production than for life because water for production sustains lives and economies. However, to define the basic water requirements for a person is only one aspect. Other aspects include accessibility and water quality. After the right to safe water was recognized by the United Nations General Assembly and the Human Rights Council as a human right in 2010, accessibility to water was defined. The charter defines access to water[22] as 'the right of everyone to

[22] Water sources outside the household can include lakes, rivers and streams, as well as water points, wells, springs or wetlands.

sufficient, safe, acceptable and physically accessible and affordable water' (United Nations Human Rights 2010). Sufficient water supply is understood as having an adequate as well as a continuous water supply for both personal and domestic use. According to WHO estimates, every person should therefore have the right to at least 60 litres of water per day. Furthermore, the standards of safety and acceptability imply that the quality of water should be free from micro-organisms, chemical substances and should be of an acceptable colour, taste and odour. While physical accessibility refers to the time and space within which water is physically accessible at both the household as well as educational institution or workplace, affordability refers to the price to purchase water which should not exceed three per cent of the household income (United Nations Human Rights 2010; WHO 2013; United Nations 2019). Physical accessibility does not include constant household access to water, however, those facilities should be within a 1000 meters distance from the household. Moreover, the walking time should not exceed 30 minutes (United Nations Human Rights 2010).

Due to the growing concern about the effects of global climate change, availability and accessibility of water is becoming less predictable. Increased temperatures and prolonged periods of drought result in the dehydration of water sources and, thus, have direct implications on people's health and their economic productivity (United Nations Water 2019). Furthermore, more variable rainfalls and floods can also destroy water access points and reduce crops yields or contaminate water sources (Ibid 2019). Given the existing climate change scenarios, by 2030, two billion people are expected to live in countries and areas which are going to experience water shortages or face absolute water scarcity (UNESCO 2019; United Nations Water 2019). The term water shortage/stress describes the actual physical amount of water availability per capita per year (Falkenmark 1986; Metha/Movik 2015). Accordingly, many studies assess a countries' water on the basis of two variables: their annual volumetric levels of water resources and a country's population (Falkenmark 1986/1989; Falkenmark/Widstrand 1992; Shiklomanov 2000; UNESCO 2019). The studies conclude that, currently, the average global water stress level stands at only eleven percent (UNESCO 2019). Whereas 31 countries experience water stress[23] at the moment, 22

[23] Water stress is defined as the ratio between the annual water consumption of all sectors of a country and the amount of available fresh-water resources. The ratio is expressed in percentages (0-21 per cent no water stress, 22 to 70 per cent water stress, above 70 per cent serious water stress) (AQUASTAT 2019).

countries are in a situation of serious water stress. The aggregated data by these indices only allow for a categorization at the national level. Nevertheless, enormous differences in water availability and accessibility across the individual countries can be noted and, therefore, levels of water abundance, water stress or serious water stress at the sub-national or local level can vary significantly from the national projections. This is, furthermore, not captured by the mentioned indices (Vörösmarty et al. 2005; Ibid 2019).

Thus, much of the work on water availability and, therefore, water shortages and water scarcity is based on environmental variables and does not take into account political, economic or social aspects of water shortages or water scarcity. While an undisputed aspect of climate change, access to water is, however, not only a function of precipitation quantities. Access, demand, usage and the management of adequate water supply is complex, as it crosses 'multiple boundaries: political, social, jurisdictional as well as physical, ecological and biochemical' (Islam/Madani 2017:82). If, therefore, the price of water is too high or a region lacks adequate water infrastructure 'to collect, transport and treat water for human consumption' (UNESCO 2019: 14), people face restricted access to water and subsequently experience economic water shortages. Water insecurity, albeit through different causes, can be reduced by improving water governance structures.

Decision making on sustainable natural resource management, economic investments and an inclusive water governance requires, on the one hand, the relevant knowledge to integrate environmental impact assessments in regard to the economic developments undertaken. On the other hand, an adequate policy and institutional framework is central to strengthening the country's capacity to shape on the-ground climate policies (Rosenau 1992: 6). Thus, a central aspect of water management is water governance. Just like governance, there are different ways to understand water governance. Araral and Wang (2012) and the Global Water Partnership (2019) understand water governance as the interplay of political, social, economic and administrative systems (Araral/Wang 2012; Global Water Partnership 2019). The presence and interaction of these systems are important to develop and manage water resources, and to ensure 'the delivery of water services [to] different levels of society (Rogers 2006: 16; Kabote/John 2017). Other definitions by Rogers and Hall (2003) or Tortajada (2010) stress the importance of equity and efficiency among the water users in matters related to allocation and distribution (Rogers/Hall 2003;

Tortajada 2010). Akiv Ozer and Yayman (2011) include in their definition of water governance a set of institutions that are drawn from, but that are also beyond the government.

National governments are the first recipients who have to develop and to integrate environmental policies into their national policy processes. The country's political system, furthermore, determines to what extent subnational institutions become an active player in either implementing water policies or considering environmental impact assessments (Andonova et al. 2009). Due to the economic interdependence of many states, non-nation state actors on the one hand and international and national non-governmental and governmental organizations on the other hand influence national legislations increasingly (O'Brien et al. 2000; Dingwerth/Pattberg 2006; Oklereke et al. 2009). Resulting thereof, what and who is involved in water governance is determined by the state's nature of power, the interests of the numerous actors and the relationship of the actors (Hasenclever et al. 1997; Oklereke et al. 2009). Traditionally, power derives either 'from military might or economic clout and is held by state actors' (Oklereke et al. 2009: 62). This understanding suggests that power is territorially bounded with the nation state (Betsill/Bulkeley 2004). Subnational actors, therefore, often act as executive bodies and seem to be responsible for a better inclusion of, e.g., environmental impact assessments or climate change adaptation in regard to the economic developments undertaken.

However, the complexity of water and environmental systems and economic dependencies, in developing countries especially, opens space for other external actors and their ideas and rationalities 'to compete for leverage in the process of […] governance at both domestic and international levels' (Oklereke et al. 2009: 63). Thus, power is distributed among both national and international political and non-political actors according to multiple socio-economic and socio-political factors and dynamics (Okereke 2008). Consequently, these different factors and dynamics shape the interests of the different actors in regard to water governance. This can explain why some actors become authoritative in exercising water governance. In conclusion, water governance happens both with and without the nation state and can consequently be defined as a 'form of […] political order […] for a given political community on whatever level' (Risse 2004: 504). Taken together, water governance involves multiple actors and sectors, with divergent interests and roles. This, in return, determines the interests that are more likely to be disaggregated around narrowly defined water-related issues (Andonova et al. 2009). While these institutions are

interdependent due to joint action, they should, however, have the capacity to get things done independently from the power of the governmental institutions or other governmental agencies (Akiv Ozer/Yayman 2011; Mugumya/Asingwire 2015).

These theories and understandings of water governance share a number of key features. All definitions capture many aspects, from policy processes to politics and economics, up to regulation and management processes (Kabote/John 2017). They further recognize that all systems relate and link to each other through political processes and they suggest 'a range of outcomes which go far beyond the management functions of individual organizations and groups' (Mugumya/Asingwire 2015: 138). As it will be shown in more detail, both Kenya and Uganda have embraced a decentralized institutional framework for water resource development and management that emphasizes multi-stakeholder participation. Following Kabote and John, water governance for the purpose of this study is defined by how water structures operate and 'how institutions influence decisions made by policy makers and implementers to practically manage water resources' (Kabote/John 2017: 16).

5.2 Hydrology of Kenya and Uganda

5.2.1 Kenya

Situated on the East African Coast, Kenya draws water from national as well as international water bodies. Kenya's national water coverage amounts to 11.230 km^2 with the largest amount of water in the transboundary lakes Victoria and Turkana (FAO 2015). Most of the country's water originates from five 'water towers': Mau Forest Complex, Aberdare Range, Mount Kenya, Mount Elgon and the Cherengani Hills. These water towers are the largest montane forests and form the upper catchments of Kenya's main rivers. In addition to the waters already mentioned, Kenya draws a large part of its water from six catchments (NEMA 2010; WRMA 2013; FAO 2015). The distribution of water in the country is uneven. Most of Kenya's water bodies contain saline water and this means it is unsuitable for domestic use. However, the lakes Victoria, Naivasha and Baringo are different as those are freshwater lakes. Located both along the coast as well as on the equator, Kenya is characterized by different climate zones. While both the western and central parts, as well as the coast, are located in semi-arid and humid lands (wetlands), the eastern and northern parts of the country experience arid climate. The semi-arid and humid parts of the country record

sufficient rainfall over the course of the year. On the contrary, the arid and dry areas of the north have low rainfall, high temperatures and long dry seasons (FAO 2015).

As Kenya is located in different climate zones, the temperatures and rainfall vary considerably between the individual zones (World Bank Climate Change Knowledge Portal 2019 a). Due to the different climatic conditions, land-wide precipitation and temperature developments, therefore, provide only a general country-wide mean value (see figure 5.1) For this

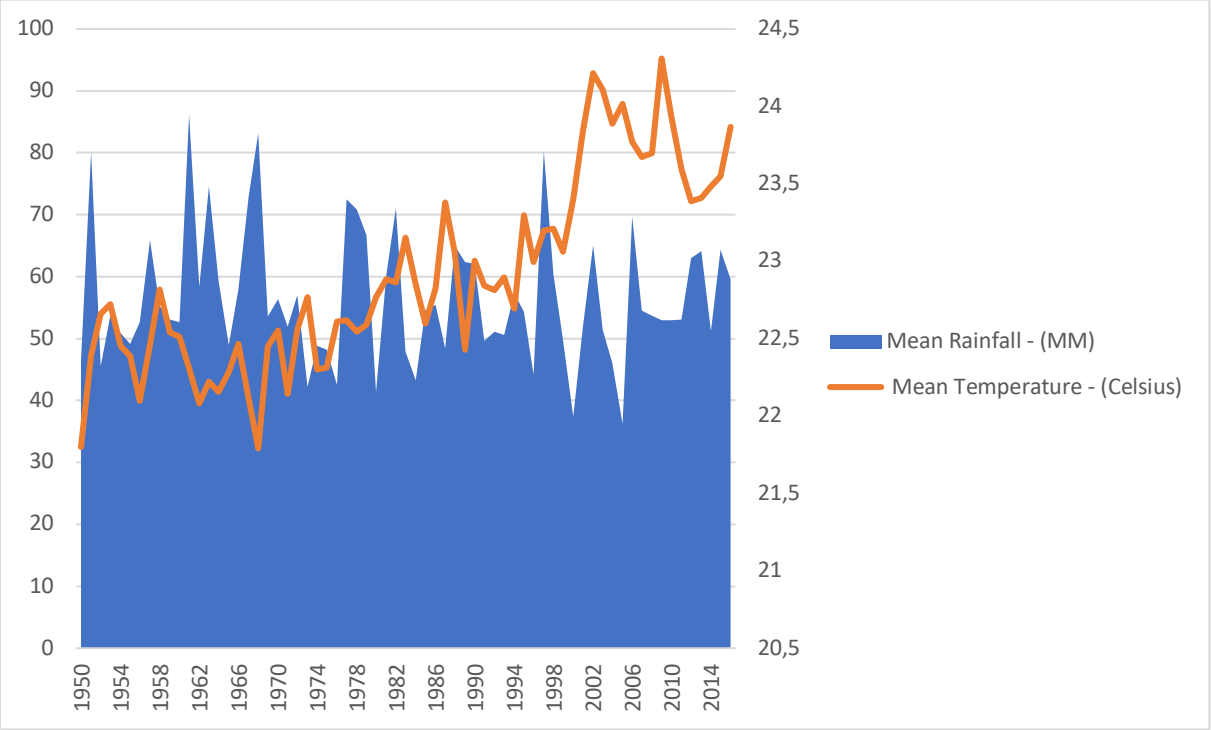

Figure 5.1: Rainfall and Temperature Projections Kenya 1950 to 2016 (Source: The Author based on World Bank Climate Change Knowledge Portal 2019 a**)**

reason, the weather in the western and central parts fluctuates between dry and rainy seasons. Between April and June and again from November to December these areas experience heavy and light rains. The arid areas in the northern and eastern parts of the countrx also experience two rainy periods. However, the rainfalls are sporadic and highly irregular compared to the ones in other parts of the country (Ibid 2019 a). Water in Kenya accounts for twelve percent of domestic water supply (water for life) and for almost eighty-eight percent of water for production (AQUASTAT 2019b). The Kenyan economy depends largely on agriculture. Around seventy percent of the active population is employed in this sector. Thus, water for production is mostly used for agriculture and irrigation schemes (eighty percent) (Ibid). The remaining eight percent of water for production is consumed by

industrial activities. These industrial activities include water for the construction industry, Hydro-Electric Power and most importantly the tourism sector (WRMA 2013; FAO 2015).

Concluding from the aforementioned, the availability of water resources varies across Kenya. Furthermore, the availability of and the access to suitable sanitation and water facilities remains limited (World Bank Group 2019 b/c). Over the last ten years, water access rates have stagnated. According to latest data from 2015, the percentage of the population with access to improved sanitation stood at thirty percent (World Bank Group 2019 b/c). At sixty-three percent, Kenya is located among the least developed countries with access to adequate water sources (World Bank Group 2019 c). According to the latest data from 2015, clean and safe drinking water is delivered to urban areas (eighty-one percent), but not to rural areas (fifty-six percent) (AQUASTAT 2019 b). However, these figures do not represent the percentages of the population which have access to clean water as defined by the United Nations regulations. According to data from the World Bank, only thirty percent of Kenyans have access to improved sanitation as well as clean water (Ndungu 2018). Information further obtained from interviews and participating observation alludes to the fact that in rural areas and in the north and east of the country, many parts of the population have to walk up to 20 kilometres to find a water source (Ekitela 2019; Kimeli 2019; Villager FCD 2019 a).

Similar to other countries in the East African Community, surface water is the main source of water withdrawal (AQUASTAT 2019 b). However, the supply of water through surface resources is affected by weather and climate directly. Therefore, surface water is prone to reduce as a result of world-wide climate changes. Thus, groundwater resources will become more important over the course of the next years. Population growth and an average annual growth rate of 2.52 percent (UNDESA 2019 a) will put additional stress on surface and groundwater resources. Till 2050, projections indicate an increase in precipitation and in temperature (see figure 5.2). These projections are likely to deplete water resources and lead to natural resource scarcity (World Bank Climate Change Knowledge Portal Kenya 2019 a) because of longer and more frequent dry spells. Moreover, there will be intense and unpredictable periods of rainfall which will increase the pressure on the water

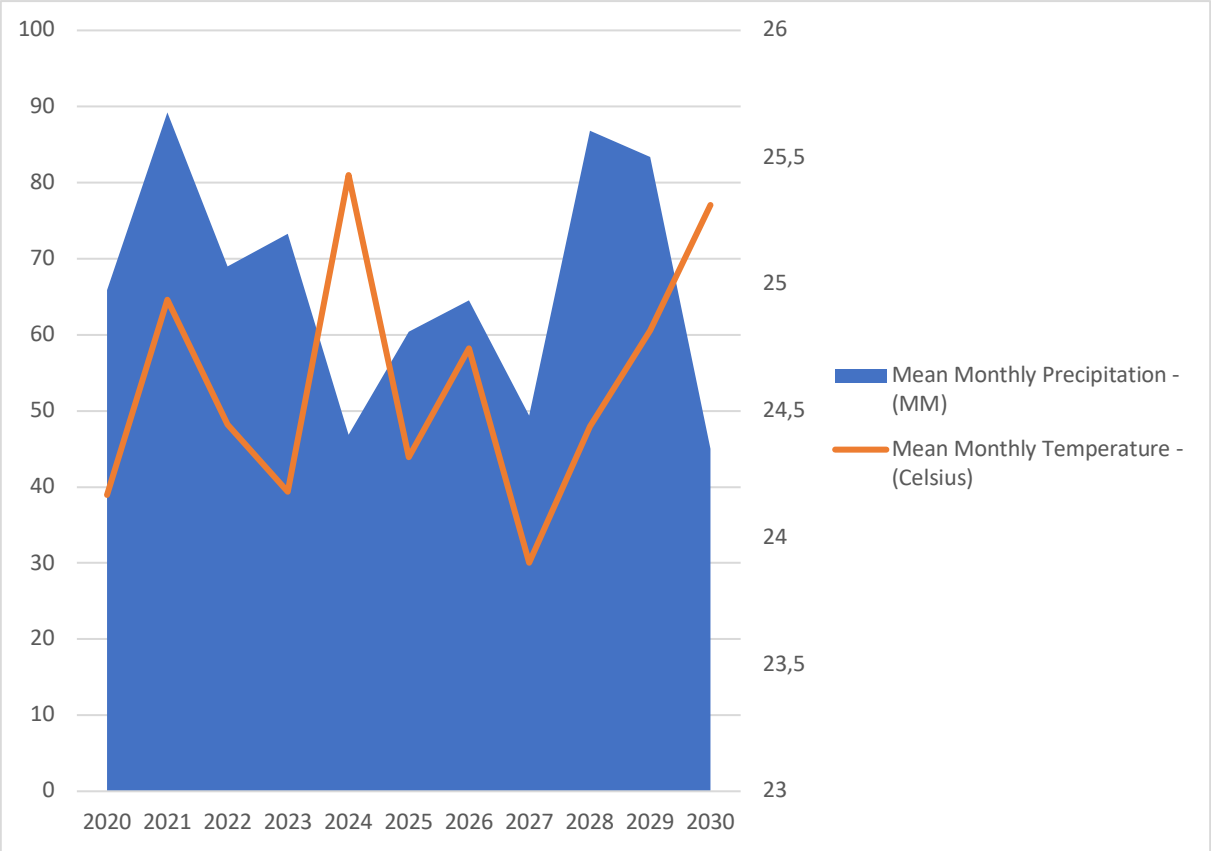

Figure 5.2: Projection Rainfall and Temperature Development Kenya 2020-2030 (Source: The Author based on World Bank Climate Change Knowledge Portal 2019 a).

resources. Thus, the amount of total renewable water resources per capita is likely to decrease from 692 m^3/year in 2014 to below 500 m^3 in 2030. This implies that the per capita value is projected to fall under the absolute water scarcity threshold (FAO 2015).

5.2.2 Uganda

Uganda is a landlocked country and, therefore, only draws water from internal water bodies as well as from precipitation. In general, Uganda is well endowed with water resources. Thirty-eight percent of Uganda's surface is covered by wetlands which are both permanent (lakes) and seasonal ones (streams and rivers) (Rugumayo et al. 2015). Furthermore, the country has adequate groundwater resources and records sufficient rainfall[24] over the course of the year (see figure 5.3) (AQUASTAT 2019 c; World Bank Climate Change Knowledge Portal 2019 b). There are six major lakes which account for 84 per cent of all existing water bodies in the country. Moreover, the country retrieves its water from six main rivers and Sango Bay swamp which is shared with Tanzania (Republic of Uganda 2009;

[24] Groundwater produced internally 29^9m^3/year and 285^9 m^3/year rainfall. Latest figures from 2017.

Nsubuga et al. 2014). Whereas all lakes are shared with neighbouring countries, two of the six major lakes are located entirely within the country.

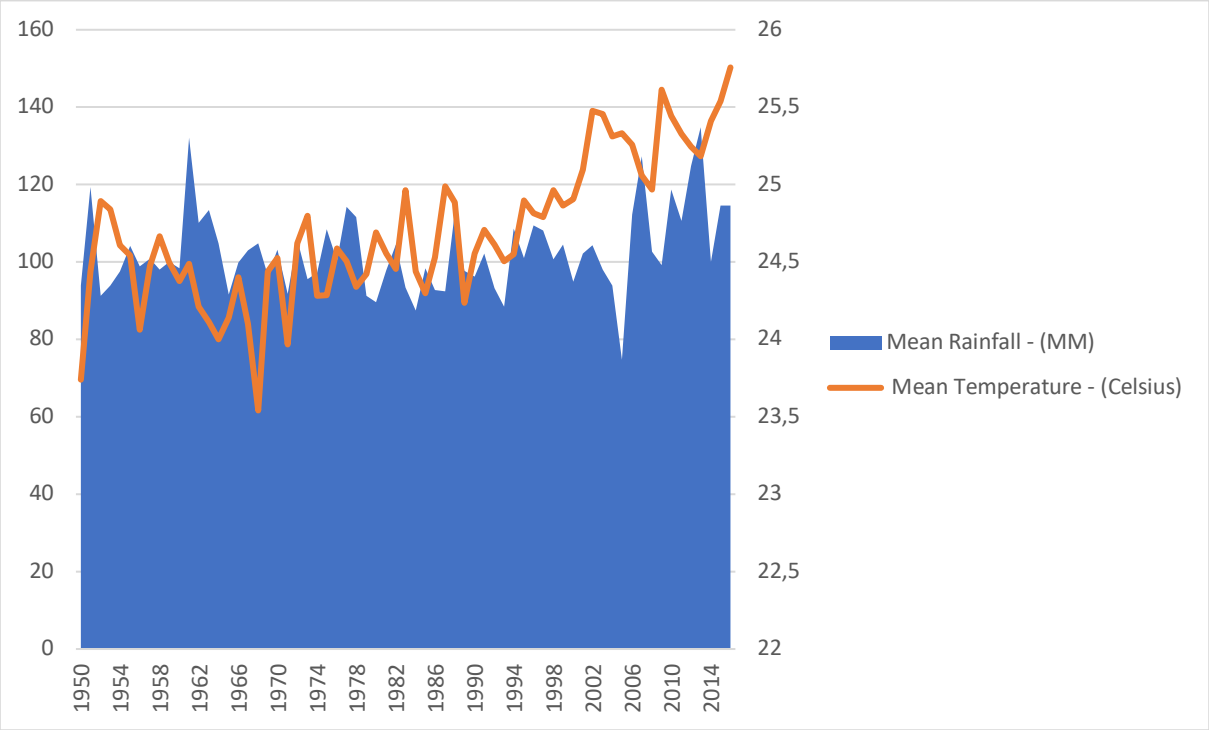

Figure 5.3: Rainfall and Temperature Projections Uganda 1950 to 2016 (Source: The Author based on World Bank Climate Change Knowledge Portal 2019 b**)**

As a country located along the equatorial zone, Uganda's climate can be described in two words: wet and dry. For this reason, the weather is characterized by cloudiness and precipitation from March to May (heavy rains) and again from late September to December (light rains). However, the arid areas in the north of the country and especially the districts of Karamoja and the eastern parts of Teso experience only one rainy season lasting from May to July (Ministry of Water and Environment 2013). Therefore, it can be concluded that water resources in Uganda are conserved and maintained through a dynamic balance of rain, evaporation and evapotranspiration from open water, swamps and land in general (Republic of Uganda 2009). Water in Uganda accounts for 51 percent of domestic water supply (water for life) and for 49 percent for water for production (AQUASTAT 2019 c). With almost 73 percent of the population and the economy of Uganda depending on rain-fed agriculture, 41 percent of the water is used for agricultural and irrigation activities (Ibid 2019 c). The remaining eight percent of water for production is consumed by industrial uses. Water utilization in the industrial sector is split between different sectors. On the one hand, water is needed within the construction industry because the country is undergoing

infrastructural development projects. The water amount of this sector increases. Whereas water amounted to 24.2 per cent of the total GDP in 2008/9, it rose up to 35 per cent in 2016 (World Bank Group 2015; Strzepek et al. 2016). On the other hand, water is used to generate Hydro-Electric Power to light homes and to run factories. Other areas of water consumption include water for transport, the development of tourism as well as water for supply. In this sector, water is mainly used for the manufacturing industry, power generation, mining and agriculture. Thus, water for supply sustains the natural environment of the country (Republic of Uganda 2009; Nsubuga et al. 2015; AQUASTAT 2019 c).

To conclude, Uganda seems to be well endowed with water resources. However, the availability of and the access to suitable sanitation and water facilities remains limited (World Bank Group 2019 b/c). Over the last ten years water access rates have stagnated. According to the most recent data from 2015, the percentage of the population with access to improved sanitation stood at only 19 per cent (World Bank Group 2019 b). Access to adequate water sources stood at 79 per cent and is, therefore, close to the international average of 85 per cent (World Bank Group 2019 c). With the latest data from 2015, the availability of adequate and safe drinking water is more developed in the urban areas (95 per cent) than the water supply in the rural areas (75 per cent) (AQUASTAT 2019 a). However, this does not imply that the majority of the population is able to access this water. There do not exist exact figures which capture the percentages of the population that has access to clean water as defined by the United Nations regulations. With information obtained from grey literature, interviews and participating observations, illustrates that especially in rural areas in the north and east of the country the population has to walk up to 6 kilometres to find a water source (Bbira 2018; O'Hara 2018; Mooya 2019).

Water withdrawal from surface water accounts for almost 61 per cent, groundwater, however, becomes more important (AQUASTAT 2019c). The reasons for this are manifold and include a steadily increasing population (annual birth rate at 3.2 per cent) (UNDESA 2019 b) and changed rainfall patterns and prolonged droughts due to climatic changes (see figure 5.4) (Nsubuga et al. 2014; World Bank Climate Change Knowledge Portal 2019 b). Over the course of the next three decades, it is expected that the rainfall periods will get more in-

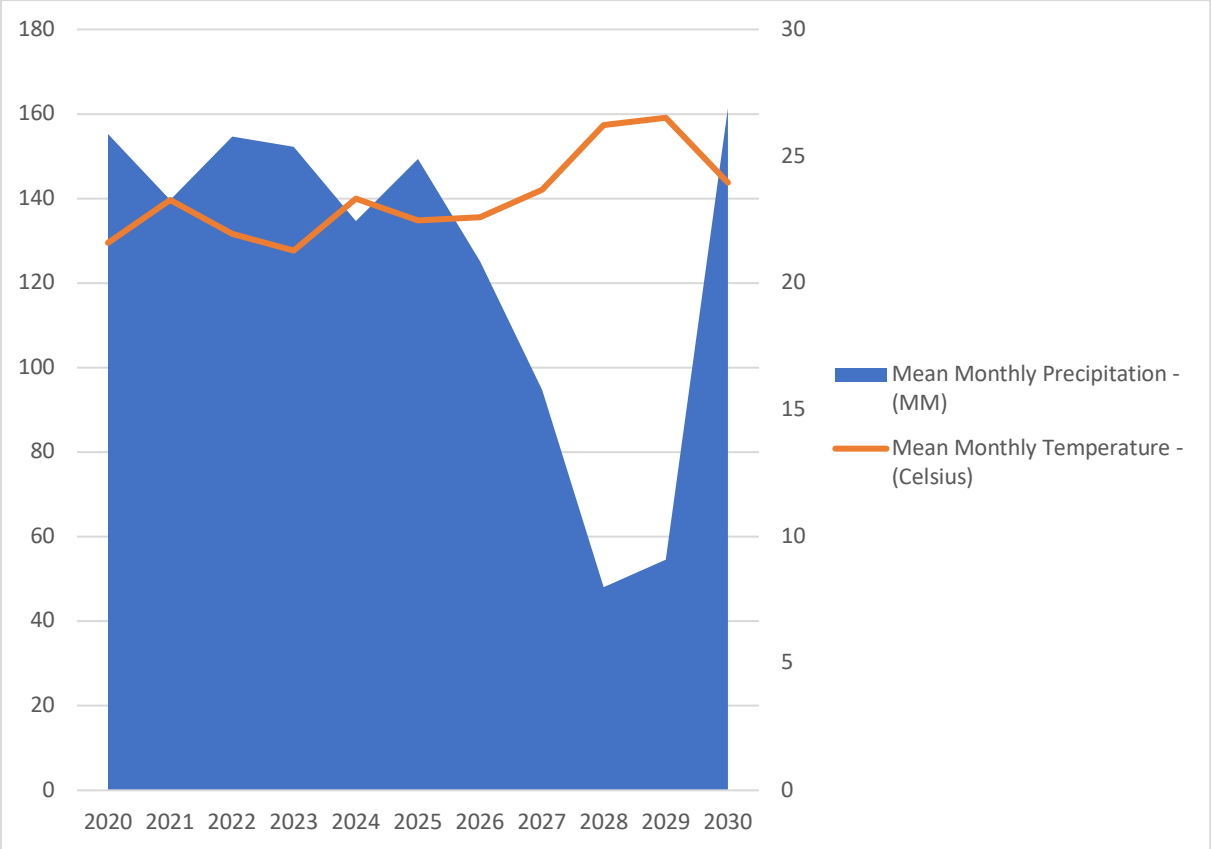

Figure 5.4: Projection Rainfall and Temperature Development Uganda 2020-2030 (Source: The Author based on World Bank Climate Change Knowledge Portal 2019 b)

tense. The mean temperatures are predicted to remain with the status quo. However, dry seasons will last longer and, therefore, the country will experience frequent heat waves. The temperatures during the rainy season are likely to fall (World Bank Climate Change Knowledge Portal 2019 b). Hence, water withdrawal from groundwater sources including springs and boreholes will increase, especially in the rural arid and semi-arid areas over the course of the next years (Ibid 2019 b; Ministry of Water 2019). Being endowed with abundant water resources in most parts of the country, Uganda is not yet classified as a water

stressed country[25]. Even though projections predict an increase in rainfall with temperatures remaining almost constant, the demand for water is projected to rise from 1.266 million m^3 in 2020 to 2.113 million m^3 in 2035. Therefore, due to the very high population growth, the total renewable water resources of the country are expected to drop from 1.402 m^3 of total renewable water resources per capita in 2017 down to 948 m^3 of total renewable water resources per capita in 2030 (FAO 2014, 2017).

5.3 Water Management and Policy Structures

5.3.1 Kenya

The Constitution of Kenya encompasses a wide set of implications for the water sector. Kenya's constitution from 2010 acknowledges in chapter Two, Article 43 (1d) the right to 'clean and safe water in adequate quantities' as a right to every person (The Constitution of Kenya 2010). It, furthermore, recognizes in Article 56 (e) that it is the state's responsibility to ensure that everyone has 'reasonable access to water, health services and infrastructure' (Ibid 2010). Finally, it affirms in the Fourth Schedule of the Constitution the responsibility of the counties to manage water supply and sanitation service provision independently (Ibid 2010, Article 10). Additionally, the Constitution refers to a parliamentarian act whose purpose is to align the water-related functions in the Constitution to the primary objectives of devolution. The most recent Water Act came into force in 2016 (Water Act 2016).

The Water Act's purpose is to (I) provide 'the regulation, management and development of water resources and water and sewerage services in line with the Constitution' (Water Act 2016, Article 3). It (II) recognizes water-related functions as a shared responsibility between the national government and the 47[26] county governments. The Act gives (III) priority to the use of abstracted water for primarily household uses over irrigation and other uses. Other responsibilities both the Constitution as well as the Water Act mention include ensuring access to water for marginalized groups, the responsibility of the national government to provide the use and management of international waters and water bodies, and the demarcation of national and county responsibilities with regard to public works (The

[25] The district of Karamoja as well as the eastern part of Teso district can be classified as being in a state of water stress due to the climatic conditions described.
[26] The number of districts has increased over the years in Kenya. At the time of writing, the number of districts was 47 as of the 2013 general elections.

Constitution of Kenya 2010; Water Act 2016). The Water Act distinguishes between two pillars: Water Management Agencies and Water Supply and Sewerage Services (Water Act 2016). The Water Act was developed continuously. Over time, national and sub-national (county) agencies in both sectors have been established with different tasks and responsibilities. In the following, only the most influential national and sub-national agencies responsible for water management and water supply and sewerage services will be explained in more detail.

Devolution was completed in 2013. Both the planning and the implementation of water sector-related policies devolved to the counties (see figure 5.5). Therefore, the counties founded ministries which shall be responsible for the development, maintenance and management of the county's water resources. However, the overall responsibility for water management still lies with the Ministry of Water and Sanitation as every water resource 'is vested in and held by the national government in trust for the people of Kenya' (Water Act 2016, Article 5). Whereas the national government and the Ministry of Water and Sanitation is the owner of the water resources respectively, the regulation, the management and the use of water resources is provided through an authority which serves as an agent on behalf of the national government (Water Act 2016, Article 6). As a governmental agency, the Water Resource Authority (WRA) has, among other tasks, four main duties: (I) to formulate and enforce standards, procedures and regulations for the management and use of water resources; (II) to receive and to issue permits for water abstraction; (III) to set and to collect fees for water usage, and (IV) to formulate policies on the development of water resources (Water Act 2016, Article 12). Due to the decentralized structures, the regional Basin Water Resource Committees (BWRC) have been designed to manage the water resources within a specific basin area (Water Act 2016, Article 25). There are five main drainage basins. The primary task of each committee is to achieve a wider stakeholder participation and to act as an advisory to sub-national and local Water Resource User Associations (WRUA). However, each of them shall operate under the regulations made by the WRA (Water Act 2016, Article 26, 27 and 29). At the sub-national (sub-basin) and local level, WRUAs are established which are community-based associations to collaboratively manage water resources and resolve conflicts concerning the use of a water resource jointly. If needed, BWRC are advised to contract WRUAs as their agents to perform certain duties in

water resource management (Water Act 2016, Article 29). However, the Water Act does not specify which duties the Water User Associations shall implement.

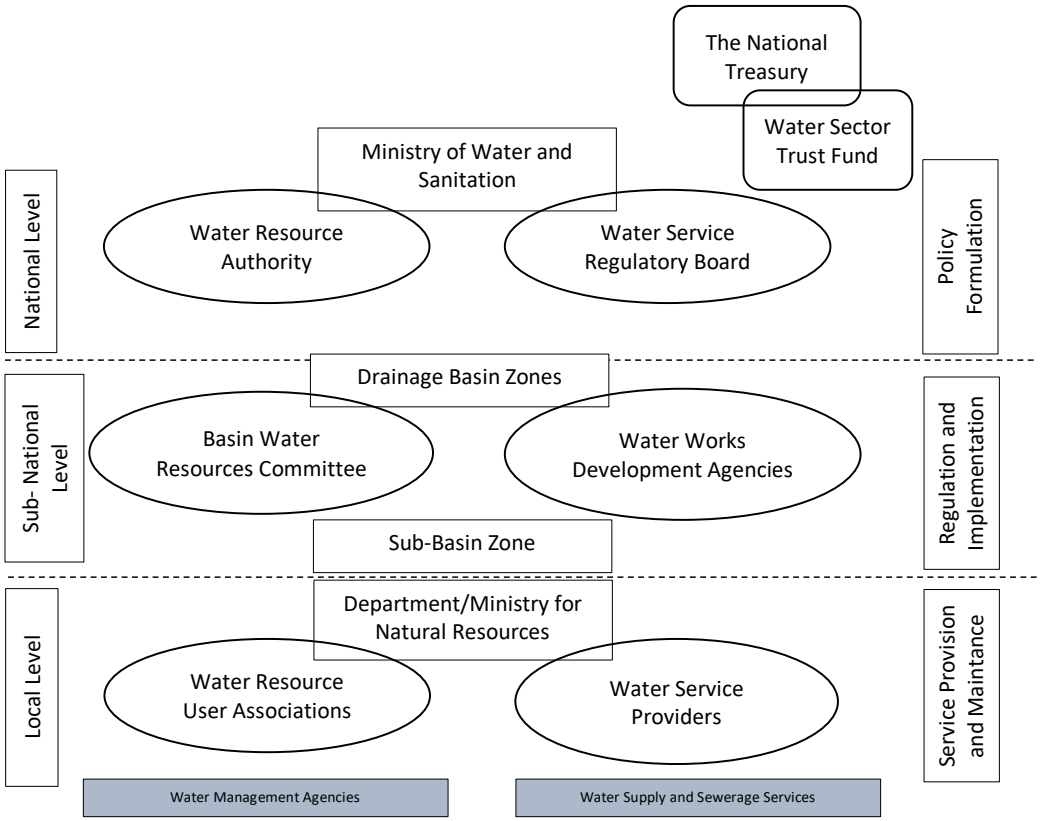

Figure 5.5: Roles and Responsibilities under Kenya's Water Act (2016) (Source: The Author)

The second pillar of the Water System, Water Supply and Sewerage Services, is similarly organized. At the national level, the Water Services Regulatory Board's (WASREB) task is to 'protect the interests and rights of consumers in the provision of water services' (Water Act 2016, Article 70). The WASREB is a critical service provider because it should protect the rights of consumers from any kind of exploitation and to set minimum national water standards. Therefore, it holds the mandate to approve tariffs and to monitor and enforce water service standards (Ibid). At the county level, Water Works Development Agencies (WWDAs) are established service providers which support the national government and its respective agencies to perform their duties. The WWDAs main tasks are summarized in Article 68 of the 2016 Water Act. The Water Work Development Agencies should develop, maintain and manage the national public works. Furthermore, they shall operate the national public waterworks and provide water services. Finally, the agencies are responsible for providing technical services and capacity building to the county governments and other water service providers in their jurisdiction (Water Act 2016, Article 68). With the 2016 Water Act, local level Water Service Providers (WSPs) have been established which are

under the supervision of county governments. Their main task is to provide water services and regulate water licenses to the local water users (Water Act 2016, Article 83).

Even though the Water Act delegates extensive authority to sub-national and local level water service providers, these are unable to function without adequate financial support from The National Treasury[27]. In the last Budget Statement for the Fiscal Year 2018-19, The National Treasury allocated 3,01 per cent of the total governmental budget to the environmental, water and natural resource sector (The National Treasury 2018). In 2018, 51 Million people lived in Kenya (World Bank IBnet 2020 a). The expenses for water resources amounted to 13 USD per capita[28]. The Water Sector Trust Fund is mandated by the Water Act to 'provide [based on funds from the national budget] conditional and unconditional grants to counties' (Water Act 2016, Article 114). In addition, it is on the Water Sector Trust Fund 'to assist in financing the development and management of water services in marginalized areas' (Ibid).

5.3.2 Uganda

Since 1993, Uganda is undergoing a decentralization which is shifting national governmental responsibilities to the district government level. At the beginning of the 2000s, the Ugandan Ministry for Water and Environment mandated a governmental agency to undertake a reform study of how to improve the national water sector management. This study advised the Ministry to decentralize the natural resource sector. Therefore, the districts became the main implementers for natural resource governance issues after 2009 (Nsubuga et al 2014). However, the legal framework is still guided by the 1997 Water Act and the 1999 developed National Water Policy. The laws came into force when the institutional framework for water resources was centralized.

This overlap of the institutional frameworks is exemplified in the Article about the ownership over the country's water bodies. All rights to water in Uganda are 'controll[ed], protect[ed] and manage[d]' by the government and 'exercised by the Minister and the director in accordance with this Part of the Act' (Water Act 1997, Article 5). In the National Water Policy, the Ugandan government defines that the overall objective of the water policy is 'to

[27] The National Treasury is the official name for the Kenyan Ministry of Finance.
[28] For comparison, in 2018, Germany allocated to the water and environmental sector 36 USD per capita (BMF 2019; D_Statis Wasserwirtschaft 2018).

manage the water resources in ways that are sustainable and most beneficial to the people of Uganda' (MWLE 1999: 1). The Water Act's purpose, furthermore, is to introduce and apply 'appropriate standards and techniques for the […] use, control, protection and management […] of water resources' (Water Act 1997, Article 4 (i)). Furthermore, the Act's objective is to delegate the water responsibilities among the Ministers and public authorities, as well as to 'promote the provision of a clean, safe and sufficient supply of water for domestic purposes to all persons' (Water Act 1997; Article 4 a (iii) and b).

Despite the decentralized structures (see figure 5.6), the key player in water governance is the central government through the Ministry of Water and Environment (MWE). The Ministry is responsible for defining the national directives and standards, for setting water development priorities and for managing water resources. It, furthermore, monitors and evaluates the development programs and to keep track of the water sectors' efficiency and effectiveness (MWE 2013). It is mandated to ensure that all regulatory controls are in place to support and to govern the actions of all actors engaged in safe water delivery. Finally, it is expected that the Ministry takes on specific roles and responsibilities which shall augment those of the sub-national and local level actors (Mugumya/Asingwire 2015). Under the Ministry, there are three main Directorates serving as the implementers for the Ministry's responsibilities within the water sector. The Directorate for Water Resources Management (DWRM) is, among other things, in charge of the development of national water laws, to manage water resources and to issue water permits. The Directorate of Water Development (DWD) supervises the delivery of urban and rural water and sanitation services and provides technical oversight. The Directorate for Environmental Affairs (DEA) regulates, supervises and monitors the country's environmental and natural resources (AQUASTAT 2014).

In line with the 2009 introduced water sector reform, four sub-national Water Management Zones (WMZ) have been established which perform water management functions which have been previously exercised by the DWRM. These four WMZ are Lake Kyoga, Lake Victoria, Lake Albert and Upper Nile. Each of these four WMZ are composed of respective Catchment Management Organizations which shall develop detailed catchment management plans for the sub-catchments under their jurisdiction. In addition, each WMZ is subdivided into sub-catchments in order to ensure a better implementation of the mentioned policies down to the local level. On average, three to four districts form a sub- catchment

(Egaru 2019). Compared to the pre-reform state, this structure is much more differentiated because it demonstrates an improvement in terms of policy performance, the issuing of water permits, monitoring and the enforcement of laws, compliance and regulations (MWE 2013). Each WMZ consists of several sub-catchments which, furthermore, form micro-catchments. District Water Offices are responsible for managing micro-catchments at the district level.

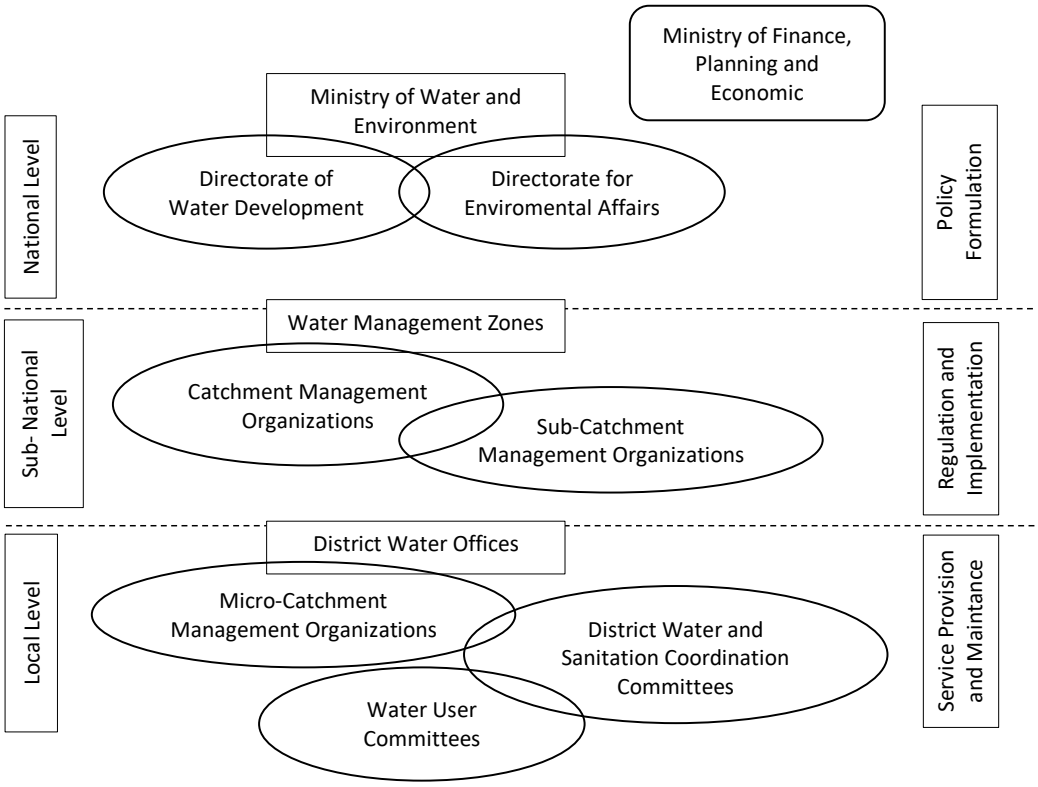

Figure 5.6: Roles and Responsibilities under Uganda's Water Act (1997) and the 2009 Sector Reform (Source: The Author)

They are responsible for the micro-catchments' water and sanitation services and they shall oversee the operation and maintenance of the existing water infrastructure. Lastly, at the parish and community level, District Water and Sanitation Coordination Committees (DWS-CCs) have been established. Their responsibility is it to strengthen the cooperation between the different sectors dealing with natural resources and between the different stakeholders affected by natural resources and water policies. The DWSCC is further in charge to supervise the water user committees which should ideally be set in place at every water point (MWE 2013). Since 2000, the number of water user committees are constantly increasing, from 711 to 1.230 in 2018. These water user committees are divided among

121 districts[29]. Out of these 1.230 committees, there are 363 water for production facilities. In 2018, 305 (84 per cent) water points/water user committees were actively functioning (MWE 2018).

Similar to Kenya, the WMZ, the sub-catchments as well as the districts cannot perform their respective duties without sufficient financial support. In the last Budget Statement for the Fiscal Year 2018-19, the Ministry of Finance, Planning and Economic Development allocated 5,04 per cent of the total governmental budget to the water and environmental sector (Ministry of Finance, Planning and Economic Development 2019). As of 2019, 42 Million people lived in Uganda (World Bank IBNet 2020b). As a result, the government allocated to the water and environmental sector 8 USD per capita.

5.4 Brief Summary

This chapter discussed the importance and the role of water as a resource in both private and public spaces. The hydrology of the East African countries Kenya and Uganda was charted and discussed. The respective water-related institutional frameworks of both countries were introduced to provide the necessary context to analyse water-related conflicts around the selected water bodies in the following chapters.

Water is a multi-faceted resource. It is an indispensable element for life and social development. Water availability and accessibility for life and production is highly segmented based on being sufficient, safe, acceptable as well as being physically accessible and affordable. The main segment of a broader understanding of the availability of water within public and scientific debates centre on the aspect of climate change. Because of increased temperatures and prolonged periods of drought, water bodies dehydrate and this results in such cases as agricultural losses. In addition, access to and the provision of safe water is not only determined by environmental and climate issues, but is clearly governed by overarching political, economic or social differentials. Furthermore, due to the dependence of the water sector on institutional structures, water governance is a political issue and is often exercised as a top down approach.

[29] In 2019, 13 new districts have been created. However, there do not exist official numbers regarding water user committees in 2019 yet, the latest numbers from 2018 is used. By that time, Uganda had 121 districts.

Kenya and Uganda are both well-endowed with water bodies. Whereas in Kenya most water is used for production, in Uganda water for life and water for production are used almost equally. The main reason for this unequal distribution in Kenya is that most water bodies contain saline water and are, therefore, unsuitable for domestic use. Both countries are located along the equatorial zone and experience, over the course of the year, two seasons: a dry and a rainy season. According to current and predicted precipitation and temperature values, Kenya and Uganda are not yet counted as countries that will soon be affected by acute water scarcity due to environmental changes. However, projections predict that the demand for water is going to rise due to a tremendous population increase and inadequate water access in rural areas. Therefore, Kenya might be already in a state of water stress. It is predicated that Uganda will be in a state of water stress by 2030.

The institutional framework contextualizing the character of the water sector in both countries comprises a wide range of factors and actors with varying responsibilities in the environmental and natural resource landscape. In both countries, decentralized institutions of water management have been established. This led to the foundation of sub-national and local level governance structures. The institutions are responsible for the implementation and the oversight of sub-national and local level activities in all areas related to natural resources and water under their jurisdiction. Furthermore, their task is to engender participation of local people in water development processes and to serve as focal administrative points where different stakeholders can meet and discuss water and natural resource related issues. Although the environmental sector has been decentralized, the financial sector is still governed from Nairobi and Kampala. Therefore, the counties and districts receive their annual financial contributions from the annual budget presented by The National Treasury and Ministry of Finance, Planning and Economic Development. Given the limited financial support, sub-national and local water management is curtailed by limited institutional and human capacity skills, weak policy, regulatory and legal framework, weak enforcement of laws and policies (Republic of Uganda 2010).

6. Lake Naivasha and Lake Wamala: Analysing the Actors

This chapter centres on two central questions: First, what are the geographical and hydrological characteristics of Lake Naivasha and Lake Wamala. Second, which actors are involved in the water sector and which influences the identified actors have to integrate natural resource policies in the institutional framework especially on matters related to the distribution and the accessibility of the water resources. The chapter provides answers to these two guiding questions, focussing on the economic importance of the lakes and tracing how the institutional framework changed both the population composition and the number of public and private stakeholders which are located in the lake basins. As discussed in the theoretical framework, it draws on Stakeholder Analysis to identify the interests and influences of the stakeholders. Based on the aforementioned analysis, the stakeholder interactions will be related to their location at the lake sites. Structured interviews have been used to assess the interests and influences of the stakeholders.

The first section of the chapter focusses firstly on Lake Naivasha, and secondly on Lake Wamala. It describes the geographical position of the lakes, the hydrology, its climate and the historical development of the lake sites. The second section moves on to the stakeholder composition. It takes the overall political and economic context into account. Moreover, it discusses how the political and economic context changed the actor set-up and their location. It centres on the interests each group of stakeholders have with respect to the water resources. As interests in water involves interests in land resources as well, interests in the lake's resources implies interests in water and land resources. In the third section the influences of the identified stakeholders are discussed in reference to their opportunities to integrate environmental policies in the institutional framework. It shows that the influences of the stakeholders shift the location of the actors within the lake basin. The final section summarises and links the findings of the sections and provides answers to the two guiding questions above.

6.1 Lake Naivasha

Lake Naivasha in central Kenya (see chapter 2, figure 2.1) is situated 100 kilometres northeast of Nairobi. It is located in the East African Rift Valley at an altitude of 1890 m above the sea level and it is surrounded by Game Parks in the North and two National Parks in the

South. It lies at latitude 00 46’ N and longitude 36 22’ E. It is one out of two freshwater lakes in the Rift Valley and is fed by the main input Malewa river which accounts for 80 per cent of the lake’s discharge and Gilgil river which accounts for approximately 10 per cent of the total discharge into the lake (Higgins 2005). It is a small, shallow freshwater lake and covers a surface area of roughly 160 km^2 (Kundu et al. 2010). The lake consists of three lakes. The main lake is shallow and has a maximum depth of 8 meters. The second part, Crescent Lake, is directly connected to the main lake and is the deepest of the three lakes with a maximum depth of 18 meters. Lake Oloidon is a small lake located in the south-west of the main lake. In the earlier days, it formed part of Lake Naivasha. Nowadays, it is distinct from the lake and receives water only through rainfall. Unlike the other two, Lake Oloidon is not a freshwater lake[30] (Becht et al. 2006).

The climate is humid to sub-humid in the Highlands and semi-arid in the Rift Valley. The mean monthly maximum temperature ranges between 24.6 °C to 28.3 °C, and a mean monthly minimum temperature between 6.8 °C and 8.0 °C. The average annual rainfall ranges from about 800 mm in Kinangop plateau to about 300 mm in the rift floor. The region experiences bimodal rainfall patterns. However, its frequency and duration vary due to the effects of climate variability and change considerably, resulting in substantial

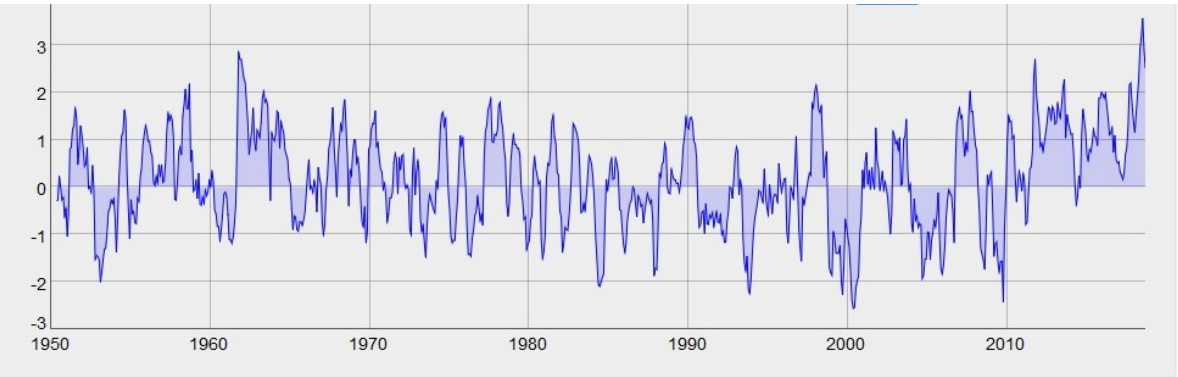

Figure 6.1: Rainfall Distribution Lake Naivasha 1950 to 2018 (Source: SPEI 2019 a)

changes of Lake Naivasha’s water levels over the last 50 years (see figure 6.1; SPEI 2019 a). The area was affected by a major drought in 2009. This reduced the lake by one third of its size. However, in 2018 the lake’s water levels were higher than ever before (Ibid 2019 a; European Commission 2020).

[30] The distinction between fresh water and non-fresh water has an impact on the economic activities and the formation of the population around the lake (see part xxx of this chapter).

Lake Naivasha is located in the Rift Valley Province, in Nakuru County. The lake is furthermore covered by Naivasha District. Historically, Lake Naivasha basin was a Maasai grazing region and the main industry were fishing and farming till 30 years ago. However, after colonization, the basin became part of the British 'white highlands', an area where only British and European settlers were allowed to settle and to own land. After independence, former white settlers and their descendants (northern shorelines) received land use rights for 99 years through a passed law. This law was renewed at the beginning of 2010 allowing them another 99 years of residency. Similarly, members of the Kikuyu tribe[31] were settled around the lake after 1963. Kikuyus were mainly located along the western and south-eastern parts of the lake as those receive the highest amounts of rainfall and therefore, these parts are most suitable for rain-fed agriculture. By that time, roughly 90 per cent of Kenya's economy depended on rain fed agriculture. Nowadays, rain-fed agriculture accounts stand at 75 per cent (Becht et al. 2006). The lake is of international importance, having been declared a Ramsar site in 1995, and is thus protected under the International Convention on Wetlands (Ramsar 2011). Nowadays, it is a significant economic resource due to its social and economic importance, including horticultural production, geothermal power generation and tourism (Becht et al. 2006; Van Oel et al. 2013; Willy et al. 2014; Mulatu et al. 2015).

6.2 Stakeholder Composition and Interests

As highlighted in the previous section, Lake Naivasha is at a short distance from Nairobi and, therefore, close to Kenya's major international airport. This geographical proximity came to be appreciated in colonial times when British settlers used the lake and its surroundings as a tourist destination as well as retirement areas. After independence, the national government promoted Lake Naivasha's picturesque setting and advertised the lake's aquatic bird diversity as well as wildlife density and, therefore, the lake also became popular for residents of Nairobi as a weekend escape (Ogada et al. 2017). Furthermore, the national political elite made use of the permeable and fertile soils found around the lake's shorelines and sold or rented land to entrepreneurs and international commercial flower companies. Since the late 1980s, national and international business companies moved in

[31] The tribe Kikuyu is the biggest tribe in Kenya. After independence, the first president of Kenya, Jomo Kenyatta belonged to the tribe of Kikuyu and strategically located members of this own tribe across the country to secure ownership over the land.

which mainly cultivated flowers for export. Later, at the beginning of the new century, other economic companies rented or bought land to set up geo-thermal and hydro-power companies (Harper et al. 1990, 2002; Becht/Harper 2002). The horticulture developments, tourism and industrial activities caused a tremendous shift in the landownership and population composition around the lake. Since the early 2000s, these factors resulted in a sharp population increase in Naivasha town and its surroundings. The promise of labour opportunities has drawn many unskilled workers to the horticulture farms, the hotel industry and the power generation companies. At the beginning of the new century, the population of Naivasha and its surroundings stood at around 300.000 (UNESCO 1999). However, according to recent estimates, the area inhabits between 1 Million and 1.5 Million people[32] (Becht et al. 2006; International Alert 2015; Kimeta 2019; Peter 2019).

As was briefly touched upon in the previous section and according to Carolina (2002), Lake Naivasha basin is nowadays of high economic and political importance. The basin presents a wide variety of economic activities which are based on the water sources. Additionally, there are many different stakeholders with competing interests in the resources (Carolina 2002). The following part of this thesis moves on to describe in greater detail the different stakeholders engaged in political, economic and social activities within Naivasha basin. Using Stakeholder Analysis, this part identifies and classifies the stakeholders as well as their interests in the water and land resources and their power to influence natural resource policies and governance processes (see table 6.1). The Stakeholder Analysis will show that international, national, county and local political and economic stakeholders are, above all, involved in water use and governance respectively (see table 6.1).

Altogether, the Stakeholder Analysis identified 45 stakeholders from public, private and civil society actors. The selected actors were categorized into nine groups (see table 6.1). The political actors were divided into the separate groups of agencies and ministries. Even though both groups represent government units, the analysis of the water governance structures revealed different mandates and foci of the institutions working within resource management. The governmental ministries and agencies have the highest number of stakeholders given the inclusion of vertical multi-level interactions at the national, sub-national

[32] The last census took place in 2019. However, official figures are not expected before the end of 2020. For this reason, the figures are based on statements by public authorities in Nairobi and local organizations and authorities in Naivasha.

and local level. Another notable category is international and national economic actors. Over the past 20 years, economic actors have contributed to ecological changes, thereby causing a shift in the landownership and population around the lake (Becht et al. 2006).

Political Actors (national)
Governmental Agencies

1. National Environmental Management Authority
2. Water Resource Authority
3. Water Tribunal
4. National Water Storage Authority

Governmental Ministries and Departments

5. Government of Kenya
6. Ministry of Water and Sanitation
7. Department for Defense
8. The National Treasury
9. Ministry of Energy
10. Ministry of Devolution and the Arid and Semi-Arid Lands
11. Ministry of Lands and Physical Planning
12. Ministry of Agriculture, Livestock, Fishery and Irrigation

Political Actors (sub-nation/county-level)

Governmental Agencies

13. Basin Water Resource Committee
14 Water Harvesting and Storage Authority
15. Water Storage Board
16. Lake Naivasha Resource Authority
17. Water Sector Trust Fund
18. Naivasha Water and Sewage Cooperation
19. Water Services Regulatory Board
20. The National Water Conservation and Pipeline Corporation
21. Regional Water Services Boards
22. Water Works Development Agencies
23. Water Basin Committee

Governmental Ministries and Departments

24. County Government Nakuru
25. Ministry for Environment of Nakuru County
26. Department for Water within the County Ministry for Environment

Economic Actors (International)

27. International Flower Farms (Dutch and British)
28. International Investors (e.g. Chinese and Japanese)

Economic Actors (national)

29. Hotels
30. Geo-thermal industries
31. Power Plants
32. KenGen

Resource Users (local)

33. Pastoralist Groups
34. Fishing Community
35. Farming Community
36. Villagers at Lake Naivasha and in the upper catchments

NGOs and community-based organizations (local)

37. Lake Naivasha Riparian Association
38. Lake Naivasha Resource Users Association
39. Community Forest Association
40. Imarisha
41. Lake Naivasha Flower Council
42. Kenyan Wildlife Service
43. Beach Management Unit

I(N)GOs/Agencies (International)

44. World Wildlife Fund
45. World Bank

Table 6.1: Stakeholder Classification Lake Naivasha (Source: The Author 2019)

National political actors can be divided into two subgroups. National governmental agencies are interested in not only managing the water resources in a way such that each

stakeholder has access to sufficient water, but also in formulating policies for a better water development on the other hand. More so, they are interested and concerned about improving the urban and rural water provision. They are, furthermore, interested in the distribution of water to different public and private areas as well as sewage management (Bakari 2018; Mbaisi 2018). The Governmental ministries' and departments' actions are driven foremost by economic interests. Since the beginning of the 2000s, their main focus is on the economic development of the area by promoting the tourism sector as well as the export of flowers to increase the Kenyan GDP. Respondents reported that the government is not directly interested in the land and water resources. The analysis of the interviews, observations and literature review showed that the government, through its ministries, leases the land directly to national and international investors which is located at the shorelines. The leasing agreements last for 99 years. However, the investors have the option to extend the agreements (Ran 2018; Schäfer 2018; Peter 2019). As indicated in the previous chapter, the government holds land and water resources 'in trust for the people of Kenya' (Water Act 2016, Article 5). Therewith, the government, as the owner of the land, is allowed to convert public land into private land if they consider it to be in the best interest of and for its population. Thus, the land is used to increase economic investments. The government's interest in the land and water resources are guided by monetary incentives. Those are received through the performance of national and international businesses which take place in Lake Naivasha basin.

During the last decade, the Ministry of Energy increasingly gained interest in the land and water resources around Lake Naivasha. To harness the country's geo-thermal capabilities, the government and the ministry pushed hard to provide more households in Kenya with electricity (World Bank Group 2018 b). Nevertheless in the case of Lake Naivasha, electricity, especially reliable energy, is needed for economic growth. Employees and members of the flower companies mentioned that the geothermal stem not only warms the greenhouses and generates electricity for the companies, but also for the hotels located at the lake. Due to the rapid set-up of flower farms and hotels, the land around the lake became scarce. Therefore, the Ministry of Energy used the land within near-by Hell's Gate National Park to set up two major geo-thermal companies. Following the population increase around the lake, big efforts are underway to achieve better energy supply coverage. As a result, another geothermal field is already under development north of Hell's Gate. The

power plants inside Hell's Gate helped to generate almost 50 per cent of Kenya's electricity in 2015, with an increasing tendency. Furthermore, these plants also generate roughly 35 per cent of the country's hydropower (USAID 2016; World Bank Group 2018 b).

Sub-national governmental ministries, departments and agencies are foremost concerned about a better regulation and management of the lake basins' natural resources. The rise in human population and economic undertakings put considerable constraints on the land and water resources. Accordingly, and resulting from devolution, county-level departments and ministries developed integrated management plans for Lake Naivasha (Harper et al. 2011). The plans emerge from the interests of the stakeholders around the lake regarding the resources. And so, sub-national political stakeholders are interested in improved conservation and sustainable usage of the resource to limit the environmental vulnerability of the area. County and sub-county officers are also interested in an economic development of the area. Economic growth attracts international and national businesses, strengthens locally produced goods, services and derives income. Employees from sub-national agencies report that their interests primarily concern the sustainable development and management of natural resources.

International and national economic actors are interested in a preferential access to the lake's land and water resources to pursue their economic businesses. On average, the flower farms cultivate roses on almost 2000 hectares of arable land (Kenya Flower Council 2020). When cultivating flowers, roughly 60 m^3 water is necessary to ensure good conditions for flower growing. Reports indicate that the water footprint for one flower is estimated to be 7 to 13 liters (Mekonnen et al. 2012). Fertile agricultural land and sufficient water levels at Lake Naivasha provide ideal conditions for the companies to grow roses cheaply and quickly. The British and Dutch flower companies indicated that outsourcing their industrial sites overseas is, for them, the only way to compete on their home market and to sell high-quality imports (Flower Farm 2019).

National companies' interest in the land and water resources is guided by different motives. National hotel owners are keen to set up their hotel sites at the lakes' shorelines to attract international tourists. They advertise 'face-to-face' interactions with the lake's wildlife and ensure the availability of sufficient water in the hotels by using the lake's water resources partly. Geo-thermal industries are not interested in setting up their sites directly

at the lake's shorelines. Tapping geothermal energy is a long and expansive process, therefore, finding suitable spots for drilling steam wells is considered top priority. Underground water and high amounts of volcanic rocks are necessary to tap the full potential of geothermal production. The Kenyan rift valley is characterized by extinct volcanic activities (National Geographic 2020) and high ground water levels. Consequently, the National Parks surrounding Lake Naivasha provide high potential for geo-thermal businesses. Overall, geothermal companies use water as a fluid to prevent the industrial sites from running dry. It is also partly used for cooling, dust suppression or drilling fluid (Clark et al. 2011).

The group of local resource users can be divided into four groups of actors which determine their interests in the water and land resources. These four groups of local actors are pastoralists, fishermen, small-holder farmers, and villagers. Villagers live in Naivasha town and in one of the informal settlements in the lake's closer surroundings. Pastoralists need direct access to the lake and its resources for watering and grazing their cattle. Fishermen are especially interested in free access routes to the lake's shorelines and its landing sites. Small-holder farmers are interested in land which is in close proximity to the lake to pursue their agricultural business and to water the fields. As these three groups of actors also live in Naivasha or the near-by informal settlements, in addition, they need water for everyday activities, e.g., cooking, drinking, or washing. The informal settlements still lack basic sanitation and water infrastructure owing to the rapid increase in human population. As a consequence, local resource users also rely on the lake's water to cover basic amenities (Community Members Karagita Landing Site 2018).

Generally, international (development) organizations are hardly found at the lake as it is believed that Naivasha is not among the poorest and most conflictual areas in Kenya (Muigai 2019). There is only one major international organization and one international non-governmental institution at Lake Naivasha. The World Wildlife Fund (WWF) is interested in the sustainable management of the resources to decrease the pressures on the lakeshores and, therewith, to limit the effects of already undertaken economic investments, ecological and climate changes (WWF Employee 2018). Employees from the WWF reported that the improvement of the local resource users' livelihood is also in their interest (Muigai 2019) to limit the tensions of conflict as 'they use the resources of the other' (WWF Employee 2018). Over the course of the last three years, the World Bank Group increased their interest in the basin. On the one hand, their interest is in supporting the

national government to develop affordable housing and to provide technical assistance (World Bank Group 2019 a). On the other hand, they focus on the development of the infrastructure network. An employee of a Nairobi-based German development organization indicated that the World Bank Group is interested in funding a 2000 ha large industrial dry cargo site in the south-west of Hell's Gate National Park. Accordingly, their interest in water and land is guided by the improvement of sanitation in the field of development cooperation as well as supporting the national government in managing their capital and ensuring maximum value for money.

National NGOs and other community-based organizations are interested in the use and management of the resources in a way to preserve the environmental stability and to foster the socio-economic development within Lake Naivasha basin. Furthermore, they try to make sure that economic and political infrastructure projects comply with the laws governing the natural resource sector. For example, Lake Naivasha Riparian Association (LNRA) or Lake Naivasha Resource Users Association (LNRUA) initiates community meetings to raise the local people's awareness about their rights and duties they have in relation to the land and water (Peter 2018). As a consequence of the used chemicals in the flower farms and the inefficiency of Naivasha's sewage companies, LNRUA is keen to mobilize the population to take action against water pollution. Likewise, community-based organizations are interested to mobilize people to demonstrate against the closing of the public corridors leading to the lake. Overall, their interest is in the sensitization about the sustainable use and the conservation of water and land resources (Kimeta 2018; Peter 2018).

6.3 Lake Wamala

Lake Wamala is located 95 kilometre west of Kampala (see chapter 2, figure 2.2). It is situated 1290 m above the sea level. It lies at latitude 00 19' N and 31 50'E (Baker et al. 2019). It is among Uganda's freshwater lakes and is fed by four rivers: Nyansi-Kitenga, Kabasuma, Mpamujugu and Bimbye (Kaganga 2018). It is a small shallow lake, covering an area of originally 250 km^2 (Vianny et al. 2016). Lake Wamala is dotted by many islands, which include, among others, Lwanju Island, Mabo Island or Bagwe Island. Lake Wamala has a mean depth of 4,5 meters (Ibid 2016).

The climate is humid to semi-arid. The mean monthly maximum temperature varies between 22.1 °C and 23.1 °C. Especially between January and March, the mean monthly minimum temperature ranges between 13 °C and 15 °C (Baker et al. 2019). The region experiences bimodal rainfall patterns. The average annual rainfall ranges from 1.600 mm to 900 mm (Musinguzi et. al 2015). The IPCC indicates that rainfall patterns are going to increase

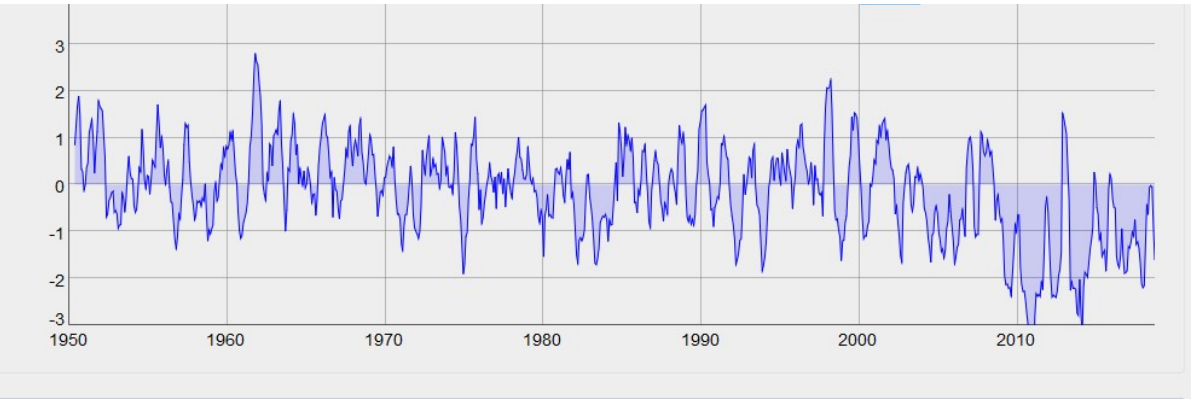

Figure 6.2: Rainfall Distribution Lake Wamala 1950 to 2018 (Source: SPEI 2019 b)

across East Africa. The SPEI values illustrate that the average rainfall for Lake Wamala are consistent with this general trend (IPCC 2007; SPEI 2019 b). However, the severity of drought is progressively increasing within the basin and resulted in tremendous changes of Lake Wamala's water levels. Between 1984 and 1995, the water levels of the lake shrunk to about half its size. Since the turn of the millennium, the lake's water levels increased, nevertheless, it did not fully recover to its original size. In 2013, the mean depth stood at only 3.8 m (UNEP 2009; Natugonza 2015). Additionally, the severity of drought is more extreme. This assumption is based on the probability of the observed total annual rainfall. Thus, it is assumed that the mean depth of the lake stands nowadays below 3.5 m, and that the lake covers an area of approximately 180 km^2 (Kitzio 2019).

Lake Wamala is located in the Central Region and is shared by the three districts of Mubende, Gomba and Mityana. Historically, Lake Wamala basin was an artisanal fishing area. In addition to fishing, farming is the main industry for the people residing in one of the four fishing villages, around Lake Wamala or in Mityana town. Before and after independence, the lake was of importance for a number of livelihoods located directly around the lake, directly or indirectly benefiting from the lake's wetland resources and the lake itself (Baker et al. 2019). Compared to other lakes in Uganda, Lake Wamala is relatively small and was, thus, neglected and ignored by national authorities (Kaganga 2019). Over the last 30 years, however, national authorities gained interest in the lake as a result of the growth in human

population[33]. Nowadays, the lake is of national importance and a significant economic resource, including agricultural and industrial uses.

6.4 Stakeholder Composition and Interests

Lake Wamala's geographical proximity to Kampala and Uganda's main international airport in Entebbe came to be appreciated by political authorities in a similar way as in the case of Lake Naivasha. In contrast to Lake Naivasha, stakeholders picked up interest in Lake Wamala since the turn of the millennium. After 2000, national and international business companies and NGOs moved in, which carried out deforestation in order to acquire land. Later, national and a few international companies obtained land titles to set up their businesses (Mucunguzi 2019). There are two significant differences between the research objects. Unlike Lake Naivasha, the central government of Uganda did not promote Lake Wamala as a tourist destination (Bbira 2018). Additionally, the central government did not promote the basin as a work destination for unskilled workers in particular. Instead, people residing in one of the small fishing villages have been displaced to create space for economic activities (Twesigye 2019). Therefore, the lake did not experience a sharp population increase as Lake Naivasha did. By contrast, the number of residents at the lake directly. decreased. Because of the general population increase and the unavailability of sufficient surface water within a 60 km radius to the lake, the amount of people which depend on the lake's resources, however, increased. It is estimated that 1.5 Million people are dependent on the lake's resources currently (Kitzio 2019).

In the section that follows, a more detailed account of the different stakeholders, their interests in the water and land resources and their influences regarding decision-making processes is going to be explained (see figure 6.3 and 6.4). In all, the Stakeholder Analysis identified 46 actors from public, private and civil society actors (see table 6.2). The named actors were organized into the same nine groups as in the case of Lake Naivasha. The governmental ministries and agencies have the highest number of stakeholders. Similar to Lake Naivasha, the inclusion of vertical multi-level interactions between the national via the subnational to the local level of decision-making can be cited as the reason for this high number of actors. However, governmental agencies are not represented at the district level.

[33] Since 1990, the population of Uganda almost doubled from 20 Million people to 40 Million in 2019 (UNDESA 2020).

Political Actors (national)

Governmental Agencies

1. National Environmental Management Authority
2. National Water and Sewage Cooperation
3. Umbrella Organizations for Water Provision
4. Petroleum Authority Uganda
5. Investment Authority

Governmental Ministries and Departments

6. Government of Uganda
7. Ministry of Finance
8. Ministry of Energy and Mineral Development
9. Ministry of Water and Environment
10. Ministry of Land, Housing and Urban Development
11. Ministry of Works and Transport
12. Ministry of Agriculture
13. Parliament
14. Natural Resources Management Group of Parliament

Political Actors (sub-nation/county-level)

Governmental Agencies

Governmental Ministries and Departments

15. Environmental Officer Mityana County
16. Environmental Officer Mubende County
17. Environmental Officer Gomba County (
18. Lake Albert Water Management Zone Officer
19. Forestry District Officer
20. Local District Officer

Economic Actors (International)

21. Coca-Cola
22. Total
23. Chinese Companies/Investors

Economic Actors (national)

24. Ugandan Breweries
25. Sand Miners
26. Gold and Mineral Miners

Resource Users (local)

27. Villagers/Community
28. Farmers
29. Fishermen
30 Pastoralists

NGOs and community-based organizations (local)

31. Kikandwa Environmental Association
32. Rural Development Media and Communication
33. Uganda Coalition for Sustainable Development
34. National Association of Professional Environmentalists
35. Wetland International
36. Ecological Christian Association
37. Civic Response on Environment and Development

I(N)GOs/Agencies (International)

38. Gesellschaft für Internationale Zusammenarbeit (GIZ)
39. Kreditanstalt für Wiederaufbau (KfW)
40. French Development Agency
41. Italian Agency for Development Cooperation
42. European Union
43. World Bank
44. World Wildlife Fund for Nature
45. International Committee of the Red Cross
46. Oxfam

Table 6.2: Stakeholder Classification Lake Wamala (Source: The Author 2019)

As highlighted in the previous chapter, Uganda is in the process of decentralizing the natural resource sector. Consequently, the creation of institutional arrangements and water management zones was the top priority (Kitamirike 2019). Another noteworthy difference is the vast amount of international non-governmental and development organizations. The

international development organizations support the Ugandan water sector institutions in strengthening 'climate resilience of water supply systems' or promoting 'the institutionalization of catchment-based planning structures' (GIZ 2018).

The interests of the Ugandan governmental departments and ministries are complementary to the Kenyan ones. Consequently, the national authorities' interest in the water and land resources is driven by economic incentives. Villagers and the natural resource officer from Mityana reported that the government's interest is with production for industrial and agricultural uses (Bbira 2018; Kikandwa Community Member 2019). In Kenya, while the horticulture and geo-thermal industry contributes to the economic development of Lake Naivasha, the Ugandan Ministry of Energy and Mineral Development is interested in sand and gold mining[34] in particular. One representative of an NGO commented that when it comes to the extraction of minerals, areas are prioritized which have more water available than others (Twesigye 2019). Both the Ministry of Energy and Mineral Development and the Ministry of Land, Housing and Urban Development are interested in timber and sand for construction purposes. However, the national ministries and departments are, furthermore, interested in using governmental agencies as intermediaries which delegate land to extractors (Anthony 2019). The Investment Authority and the Petroleum Authority are interested in enabling investors to access the wetlands around Lake Wamala for sand and gold mining, rice growing, underground explorations or as transit-routes for pipelines. Both authorities are keen to secure higher dividends through the undertaken investments in the country (Ibid 2019).

Sub-national ministries' and departments' interests are akin to the ones of Lake Naivasha's county representatives. The Lake Albert Water Management Zone officer is interested to secure enough funding from the Ministry of Finance to set up the institutional arrangements for the management of the 42 districts that the zone is covering (Kitamirike 2019). Furthermore, the interests of both the catchment officer and the environmental officers from the three districts focus on the improvement of the water quality and the compliance with the law, especially of the local resource users (Bbira 2018; Ibid 2019). In this regard,

[34] Artisanal gold miners across Uganda have long been operating without licenses. In 2016, the country government acknowledged the potential of gold exports to increase the country's GDP (see chapter 7, Uganda National Development Agenda). According to official data, gold worth $514m was shipped out of Uganda in 2018 - over 50 times what the country was exporting a decade ago (The Economist 2019).

the natural resource officer in Mityana stated that the environmental law 'provides a buffer zone of 200 m from the water mark of the lake' to the shoreline (Bbira 2018). Nevertheless, the villagers encroach with their agricultural activities into these buffer zones and contribute to the deterioration of both the quality and quantity of the lake's wetland cover (Ibid 2018; Kitamirike 2019).

International and national economic actors are interested in pursuing their businesses by using the land and water resources. In particular, international companies are keen to collaborate with national companies. Chinese investors, especially, operate behind the national economic face as it shields them away from the public and private spotting (Moses 2019). Companies like Coca-Cola or Ugandan Breweries hold two interests. First, the private companies go along with all that brings the return of investment as fast as possible and, therefore, they use resources inconsiderately. Second, because these companies are known world-wide, they try to preserve the environment and ensure the marketing of an eco-environmental site through eco-friendly measures (Nakaggwa 2019). Therewith, the aim is to protect the company's name.

Similar to Lake Naivasha, the group of local resource users is split into four groups of actors. Fishermen are foremost interested in staying in one of the four fishing villages which are located around the lake. As already mentioned, fishermen are displaced to areas more distant from the lake as the land is repurposed by the Ministry of Land and the Government. Small-holder farmers rely on the water from the lake to water their cropland. Furthermore, villagers and small-holder farmers need the lake's water for everyday activities, including, washing, cooking and drinking. Neither the fishing villages nor the communities in the broader environment have access to water infrastructure and, therefore, rely on the lake's water directly or through pumping stations indirectly. Hardly any pastoralists pass Lake Wamala and, therefore, are not considered in much detail (Mutambukah 2019).

In contrast to the stakeholder composition at Lake Naivasha, there are considerably more international (development) organizations around Lake Wamala. Not only German, but also Italian and French Development Organizations support the national authorities to enhance water security and sanitation in Uganda. In particular, they are interested to strengthen climate resilience of water supply systems, to develop a sustainable faecal sludge management strategy in both urban and rural areas and to support the training of

water supply and sanitation experts (Nakaggwa 2019; Namukose 2019). More so, international development organizations are keen to support the country's water sector institutions to develop Catchment Management Plans. In doing so, they support the deconcentrating process in catchment-based water resource management and promote a better institutionalization of catchment-based planning structures. Likewise, international development organizations develop water resource protection plans to prevent further depletion of the water bodies and to increase their sustainable management (Anders 2018; Namukose 2019). Additionally, the International Committee of the Red Cross (ICRC) is involved in the maintenance of the existing water infrastructure and the set-up of water access points, especially for small-holder farmers and villagers in remote areas (Vergin 2019). The World Bank Group, the European Union (EU) or Development Banks are interested in enabling and supporting state authorities in advancing urban and rural water supply financially (Juenger 2018; Fauvel 2019; Liebig 2020).

National NGOs and community-based organizations are, foremost, interested to promote the conservation of public lands and to raise awareness about the effects of deforestation or unsustainable farming activities on the lake's ecosystem. Their aim is to minimize crop and animal raiding (Olupot 2018). Furthermore, there are incentives to capitalize fruit market products. Other environmental and sustainability organizations are actively engaged to limit the impacts of climate change on agricultural productivity. They are also engaged in contamination control, biodiversity protection and sustainable water use management in the lake's basin (Kimbowa 2018). As a result of increased degradation and deforestation activities, community-based organizations are keen to mobilize local communities to not only take action against water pollution, and also hold trainings for and with the communities. A respondent reported that their aim is to train small-holder farmers in sustainable agricultural techniques to avoid further water contamination and siltation or wetland degradations (Ibid 2018). Other participants indicated that they also try to raise the community's awareness about law enforcement and political responsibilities in the natural resource sector during these meetings (Kamese 2018). Overall, the interviews demonstrated that they are interested in the sensitization of sustainable agricultural activities, the conservation of land and water resources and better law enforcement to protect the basin area and to sustain its biodiversity.

To sum up, the analysis has shown that Kenyan national political actors are foremost interested in an economic development of the area by promoting the tourism sector and the export of flowers. The Ugandan government promotes the exploration of sand and other minerals as well as agricultural products like rice. International and national economic actors are primarily interested in a preferential access to the lake's resources to pursue their economic businesses. Local resource users have different interests regarding the land and water resources around the lakes. On the one hand, pastoralists use land and water for watering and grazing their cattle. Farmers, on the other hand, need land to pursue their agricultural business and to water the fields. Fishermen are interested in free access routes to the Lake's shorelines and villagers need water and land for everyday activities, including cooking, drinking, or washing. Sub-national governmental ministries, departments and agencies are foremost concerned about better regulation and the management of the natural resources. Lastly, NGOs and international development organizations hold interest in the sustainability of the basin's resources, the improvement of the local resource users' livelihood and the empowerment of local resource users. Moreover, some community-based organizations are also interested in using and managing the resources in a way to preserve environmental stability as well as to foster the socio-economic development of the area.

The purpose of Stakeholder Analysis is 'to gain an understanding of multi-stakeholder dynamics in participatory resource management through identification of stakeholders in a particular aspect of the system, and […] their involvement in decisions on aspects of the system' (Ogada et. al 2017: 275). Consequently, the next part of the analysis turns to the assessment of the different stakeholders' influences in decision-making processes and thereby classifying the actors into the four different stakeholder categories (see figure 6.3 and 6.4).

6.5 Stakeholder Matrix – Interests and Influences

As can be seen from figure 6.3 and figure 6.4, the majority of stakeholders are in between subjects and crowd. The majority of stakeholders, however, are leaning towards crowd, with low interest and little or no influence over the water governance and resource management processes. From the figures it can be seen that there are six national actors classified as Key Players. The national political actors, in particular the Governments of Kenya

and Uganda, the Ministry of Water and Sanitation, the Ministry of Water and Environment

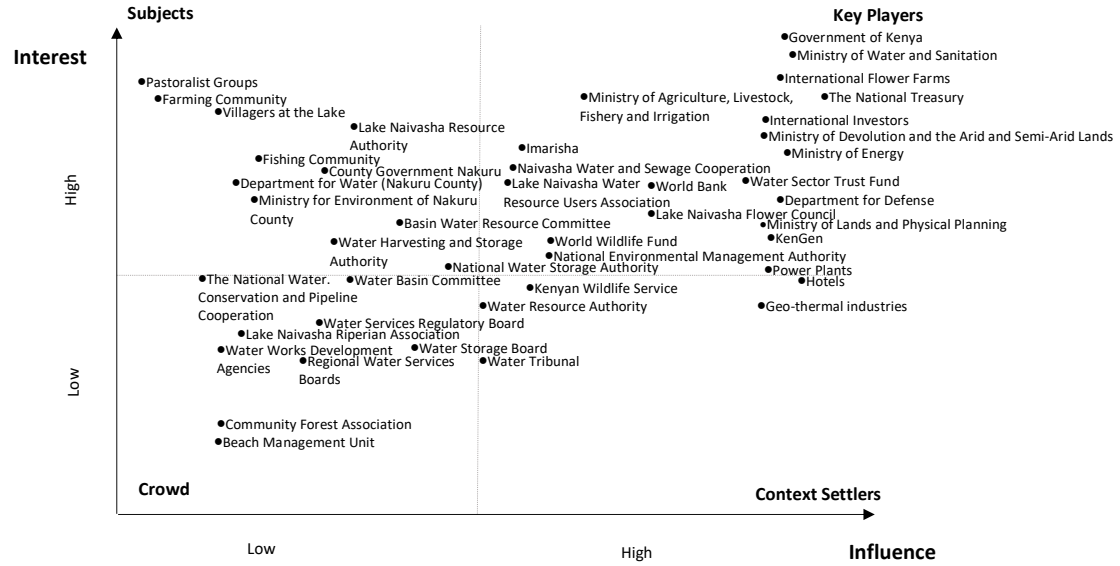

Figure 6.3: Influence-Interest Matrix Lake Naivasha (The Author, based on Grimble and Wellard 1997)

and The National Treasury as well as the Ministry of Finance have the highest influence on the basin's natural resource management. This is understandable since the Governments and the Ministries of Water have the regulatory power and authority which they exercise in managing the basin and in allocating land and water resources. The Ministries and Departments are charged with the supervision and coordination of all matters related to environmental and natural resource governance. This mandate gives them greater influence in the management of the basin and its respective resources. It is apparent from figure 6.3 and figure 6.4 that two international economic actors are also highly influential in the area. This stems from not only their contribution to the economic development within Lake Naivasha and Lake Wamala basin, but also in Kenya and Uganda in general. Furthermore, they are in control of the resources. In the case of Lake Naivasha, they improve the livelihood of the local resource users because they offer labour to the villagers. In particular, the flower farms offer labour to the local population and attract people from western Kenya to work in the farms (Kapila 2018). Interestingly, energy and geo-thermal companies can be classified as Context Settlers, with low interest and high influence. This result seems counterintuitive, as they rely on land and water to produce geo-thermal energy. The government's focus on economic upgrading processes, however, grants economic companies a preferential treatment and supply with the needed resources. Accordingly, this results in

the economic actors' low interest in resource management. Likewise, they are highly influential because the national government depends on their generosity to be able to meet their national economic goals (see chapter 7). In Uganda, both the Petroleum und Investment Authority are classified as Context Settlers. The Government of Uganda, as well as the ministries, authorize the Investment and Petroleum Authority to allocate the resources to international investors. Thus, their low interest is owing to the national governments specifications of land and water uses. Most of the time, the instructions come directly from the President's office. However, both authorities are highly influential as they are responsible for securing higher dividends through the allocation of investments within the country (Anthony 2019).

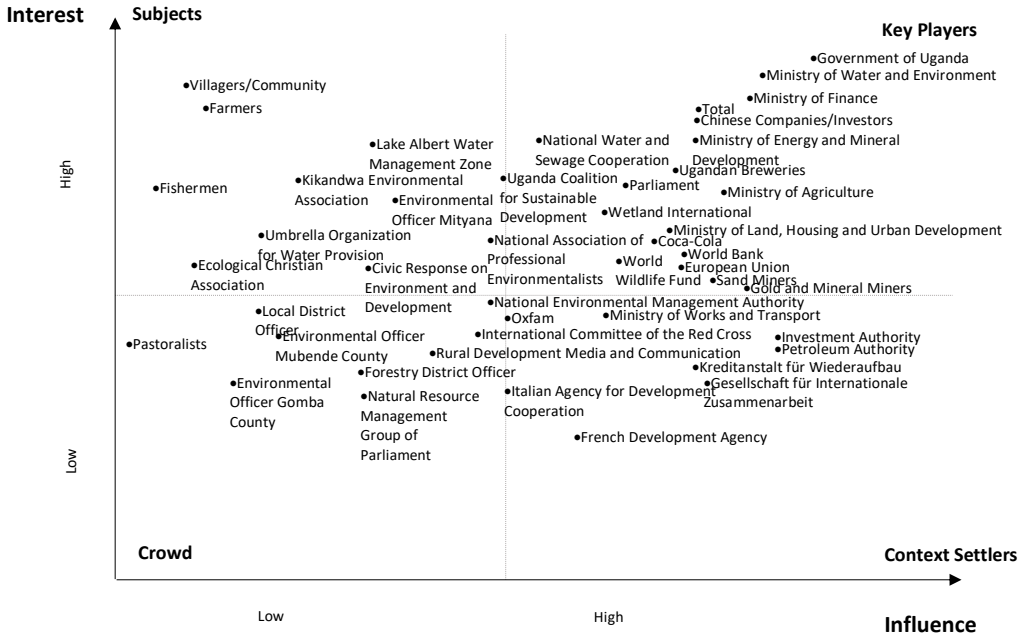

Figure 6.4: Influence-Interest Matrix Lake Wamala (The Author, based on Grimble and Wellard 1997)

Sub-national agencies and departments are foremost located at the edge between Subject and Crowd with low influence and low interest. Their low interest derives from their minimal operational capacities, as both Lake basins still continue to experience environmental and resource quality degradations. Even though the Kenyan Water Act of 2016 provides county agencies and departments with more responsibilities (Water Act 2016), sub-national governments and agencies still lack the necessary structures and strategies for sustainable resource management (Bokokamau 2018). Uganda is still in the process of decentralizing its natural resource governance structures. Consequently, neither the Lake Albert Water Management Officer nor the three district officers of Mityana, Mubende and Gomba

have influences over decision-making processes. Additionally, the set-up of three districts and another Water Management institution has become another resource in a broader struggle over authority between centre and district because all are responsible for natural resource management. Resulting thereof, the influences of each sub-national department is decreasing.

Across the interviews, the interviewees reported that local non-governmental organizations have low influence over governance processes. The inspection of the above figures shows that community-based and local non-governmental organizations are classified as in between Subjects and Crowd with low influence and low interest. As pointed out, their interest springs from the mandate to supervise and coordinate matters related to the environment and to oversee the implementation of policies relating to the ecosystem (Anguparu 2019; Mooya 2019). The attempts of these local political actors and NGOs to acquire control over political actions concerning environmental management processes have, however, failed. Thus, this results in their low interest in the water and land resources currently. Local stakeholders expressed concerns that the decline of the community-based organizations' engagement results in a low interest to initiate their own natural resource processes and programs. When asked whether some of the initiatives have been successful, the majority of the respondents highlighted that the basins still experience environmental and water quality degradations despite their efforts to counteract the pollution of the lake's water (Kagagna 2018; Kiwazi 2019; Muigai 2019). Added to that, their attempts to fulfil an adequate natural resource management process also failed, even though the number of NGOs dealing with natural resources is very high. The analysis identified that community-based organizations weaken their level of influence as they do not coordinate themselves or accelerate a closer integration of their working agendas. Hence, concerns can be expressed about their future influence regarding a more sustainable natural resource governance within Lake Naivasha or Lake Wamala basin.

There are two outstanding community-based organizations for Lake Naivasha and Lake Wamala which are Imarisha and Lake Naivasha Flower Council for Lake Naivasha and Wetland International and Uganda Coalition for Sustainable Development for Lake Wamala. From the figures it can be seen that, combined, they have the highest level of interest and influence. Thus, they are outliers due to their high influences compared to the other community-based and non-governmental organizations. Both have been actively involved in

the basins for over 15 years. Imarisha is focusing on catchment protection and the improvement of the resource users' livelihood (Bokokamau 2018). Imarisha has further been successful to get parliamentarian groups and the county government involved in its work and to set environmental issues on the political agenda (Bokokamau 2018). Wetland International is working closely with the Natural Resource Management Group of Parliament concerning wetland protection and strengthening the basin's climate change resilience, albeit, so far without success on a parliamentarian hearing or even a legislative resolution (Kobusingye 2019). Lake Naivasha Flower Council's high influence results from the region's significant role in the international trade of cut flowers and ornamentals. The Flower Council supports the national government in facilitating trade through the provision of incentives to mostly European flower companies (Kenyan Flower Council 2020). Some interviewees argued that flower farms receive zero or reduced duties on water recycling and zero or reduced taxes on imported inputs crucial to the sector (Kapila 2018).

Overall, the participants demonstrated that local resource users' influence regarding natural resources governance processes is close to zero (AGEH 2018; Kapila 2018; Peter 2018; Yakub 2019). The pastoralists, especially the Maasai, perceive themselves as having the least influence while being the most affected (Vivekananda 2015). A former pastoralist reported that small-holder farmers, especially, limit their influence, accusing them to only know about herding, forcefully destroying the small-holder farmers land and that they are without other skills necessary for the regular job market (Balama 2019). '[Pastoralists] are not welcomed' he commented, even though pastoralists move their cattle down to the lakeshores via one of the four remaining public access sites 'only [to] get water [for] one or two days' (Ibid 2019). Small-scale farmers indicated that their farmland is reduced due to the set-up of economic sites. Even though most residents around the lake still depend on agricultural activities to pursue a living, agriculturalists and others reported that they are excluded from decision-making processes despite their efforts to demonstrate against the closing of farmland and access routes to the lake (Peter 2018; Kimita 2019). Villagers, especially flower pickers in the flower farms, report that 'they will lose their jobs' (Peter 2018) in the farms if they stand up or raise their voices against the inhuman working conditions, low wages and sexual harassments. Compared to the other local resource users, fishermen have the highest influence over decision-making processes. Most fishermen unified in fishing coalitions to increase their sales market by also selling fish to supermarkets in Naivasha

or in Nairobi and other businessmen. As there is currently still enough water in the lake, they use their influence as a fishing association to keep the four landing sites open. These landing sites further serve as marketplaces. However, it was reported that the fishermen do not have influence to limit the discharge of chemicals into the lake directly. These chemicals negatively affect the fish population and result in smaller fish and reduced fish population (Fishing Community Karagita Landing Site 2019). In the case of Lake Wamala, informants agreed that the local population, which is living at the lake's shorelines directly, is decreasing. International and national companies purchase land titles from governmental officials to set up their industrial sites close to the resources. Consequently, these companies take over land which was used by the fishermen, small-holder farmers and villagers previously. Some interviewees demonstrated that local resource users have been compensated for the loss of their land financially (Muhindo 2019), while others argued that relocations are commonly used to compensate the local population (Anthony 2019; Kobsuingye 2019). All the same, the number of local resource users decreased. Furthermore, local resource users are living in outlying regions without access to water bodies. Whereas small-holder farms are still able to do farming in these new areas, fishermen are no longer able to fish. Relocations took place without taking into consideration 'alternative sources of water for those communities' to pursue a living (Twesigye 2019).

In summary, the Stakeholder Analysis demonstrated that there is a big discrepancy between the influence actors should have given the institutional framework and the actual influence on natural resource management. Together, these results also provide important insights into the geographical arrangement of the actors around the lake. Based on the observations, the interviews and the analysis, a mapping of both lake basins was created portraying the location of the various stakeholders (see figure 6.5).

Mapping Lake Naivasha, it can be seen that the international and national economic actors

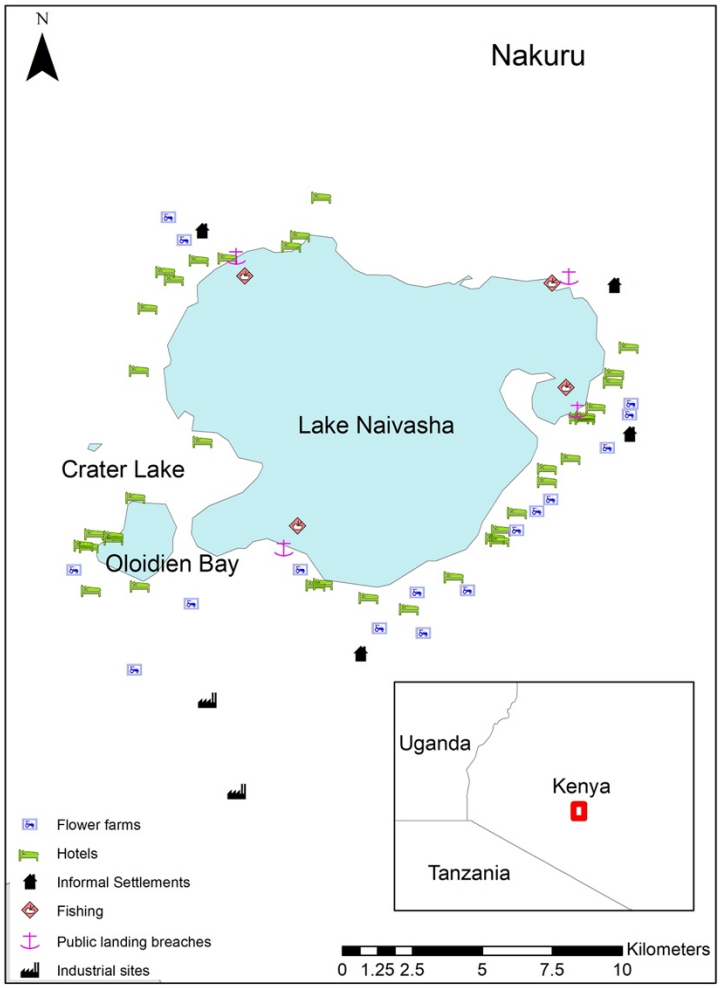

Figure 6.5: Geographical Location of the Stakeholders around Lake Naivasha (Shah for the Author 2019)

(flower farms and hotels) are mainly located directly at the lake's shorelines. Furthermore, the industrial and geo-thermal sites are placed slightly above the lake as they rely on the volcanic rocks to pursue their businesses. It is apparent from the map that the northern and north-western shorelines are sparsely inhabited by flower farms. As indicated at the beginning of this chapter, descendants of former white settlers reside there. Furthermore, the ground is more fertile in the southern and south-eastern parts of the lake and, thus, better suitable for agriculture and horticulture. A closer inspection of the map shows that flower farms and informal settlements cannot be found around Lake Oloidien. As pointed out at the beginning of this chapter, Lake Oloidien is not a freshwater lake. It is, consequently, unsuitable for agricultural and horticultural activities. Due to the decreasing availability of land around Lake Naivasha, hotel companies set up their premises around Lake Oloidien. The lake is advertised as a flamingo viewing hotspot by hotels and tourist

companies (Peter 2019). Lastly, local resource users live in one of the four informal settlements which are located outside the landing sites. From the map of Lake Wamala (see figure 6.6) it can be seen that the group of local resource users is not found at the lake anymore. While there were four local fishing villages in 2018, only three remained open in 2019. The map shows that local resource users are located father away from the lake. Similar to Lake Naivasha, national and international companies set up their sites at the lake's shorelines directly. In contrast, there are less stakeholders found at the lake directly. However, the number of actors in the surrounding region relying on the lake's resources exceeds the number around Lake Naivasha.

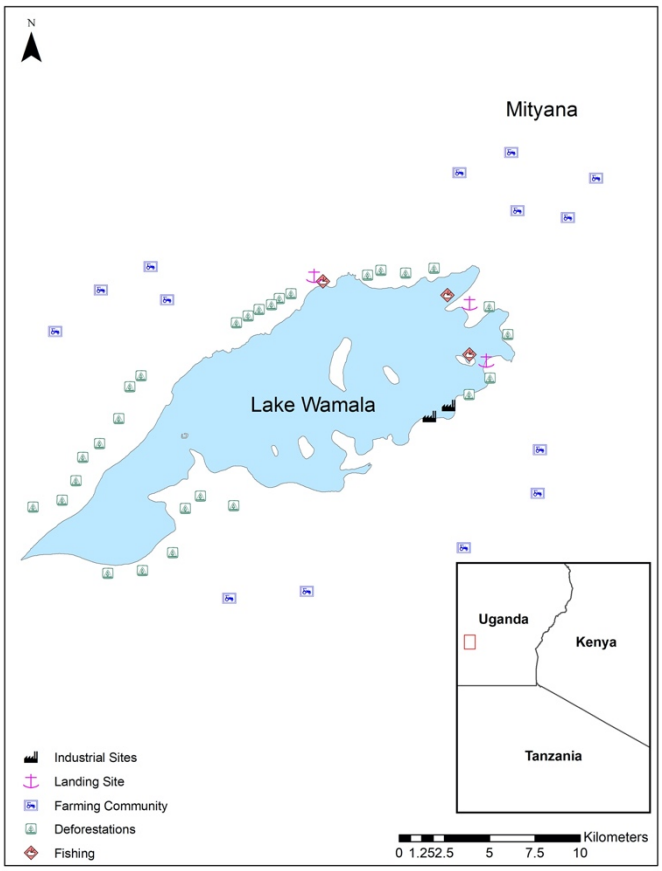

Figure 6.6: Geographical Location of the Stakeholders around Lake Wamala (Shah for the Author 2019)

6.6 Brief Summary

Firstly, this chapter has charted and discussed the location, geographical and hydrological characteristics of both Lake Naivasha and Lake Wamala. Secondly, the chapter analysed the various stakeholders living and working around the two lakes in reference to their interests in the water and land resources. The analysis indicated that both lakes have emerged as economic hotspots. The main segments of the broader economic processes

comprise sand mining, rice growing and oil explorations around Lake Wamala. At Lake Naivasha in particular, horticulture, geo-thermal energy and tourism are dominating the basin's economic activities. At the same time, the amount of people relying either on the lake's resources directly or indirectly has increased over the course of the last 20 years. Whereas the amount of people residing in close proximity to the lake increased in the case of Lake Naivasha, the number of residents at Lake Wamala decreased. Moreover, the total population living further away from Lake Wamala's shorelines increased. As a result of insufficient water resources, they still depend on the lake's resources to pursue a living.

The second part of the chapter discussed the influences on integrating natural resource governance in the institutional framework of the identified actors which are involved in the use of the lake's water and land resources. The section answered the question of which influences each group of actors have on the institutional framework to allow for a better distribution and accessibility of the lake's resources. It critically assessed the linkages between the interests of the various stakeholders and their influences on water management processes. The institutional framework contextualizing water management is not reflected in the influences of the individual stakeholders with reference to their interests. Consequently, decision-making processes with regard to water and land are significantly shaped by national political actors. In addition to regulative measures, national and international economic actors are increasingly influential in using public resources to increase their economic investments. Overall, these results indicate that the different standards and contributions to the political elites' strategic priorities reflect the powerful role of gaining influence over resource access and water management respectively. Those who hold powerful and profitable positions are further reflected in their location and proximity to the lakes and its resources.

The results in this chapter indicate that the competing interests and influences over water management might become another resource in a broader struggle over access to and the distribution of resources between the different stakeholder groups but also within one group of resource users. The next chapter, therefore, moves on to discuss possible reasons for conflicts, including how political, socio-economic and environmental processes increase the competitiveness over the available water resources and the social outcomes thereof.

7. Vulnerability and Conflict

This chapter seeks to answer the question of why conflicts erupt only between local resource users at Lake Naivasha and Lake Wamala. It attempts to explain how political, socio-economic and environmental processes increase the competition over the available water resources, social outcomes and probable conflict dynamics thereof. As argued in chapter 3, a strong bottom-up approach on micro-level features of vulnerability (i.e. social vulnerability, contextual (resource) vulnerability and governmental vulnerability) and adaptive capacity in combination with a macro-level analysis of both the identified institutional and international stakeholders and the institutional framework factors (see chapter 5) can substantiate the characterization of 'overall vulnerability' regarding the outbreak of water-related conflicts.

In the first part of this chapter, the lakes and primarily their actors are analysed according to their social, contextual and governmental vulnerability. Vulnerability in this thesis, as explained in chapter 3, is defined as the exposure of groups or individuals on specific stressors in life. Stressors encompass disruptions in the stakeholders' livelihoods and force adaptation to a changing environment. Therewith, the examination of the vulnerabilities entails: first, the identification of dominant socio-economic agendas prevalent in key stakeholders in the water sector and second, the description of the climatic conditions (e.g. precipitation patterns) and its impact on the stakeholders' interaction with nature (e.g. resource access and resource distribution). Third, it requires the characterisation of the whole political, economic and social decision-making through examining the effectiveness of institutional and water governance structures.

As outlined in the previous chapter, the analysis spans across the different stakeholders and levels of decision-making. To provide an answer to the formulated research question guiding this chapter, two sub-questions are formulated: First, it discusses if climate change causes the outbreak of conflicts because access to water becomes limited. The second section of the chapter focuses on the social implications and the conflict risk within and across the stakeholder groups. The second sub-questions are answered by discussing how economic and environmental changes enhance or worsen the social situation of the stakeholders and, therefore, might drive conflict dynamics. It centres on the changing ownership structure and power dynamics of relevant water and natural resource-related stakeholders

vis-à-vis the governments. It describes the social implications of the social and governmental vulnerability on the stakeholders. Subsequently, it discusses how vulnerability, low adaptive capacity and resulting social implications contribute to an increase in the risk of conflict, especially local level actors. The final section summarises and links the findings of the sections and provides answers to the two guiding questions above.

7.1 Vulnerability and Adaptive Capacity in Lake Naivasha and Lake Wamala basin

As mentioned in chapter 3, an essential feature of the vulnerability model is its relation to climate change and the magnitude of natural hazards. The approach is based on the assumption that human welfare increases environmental changes associated with climate change and increased natural hazards. Therefore, vulnerability encompasses the two elements, nature and society, as a coupled system (Raleigh et al. 2008). Hence, the aspects that affect vulnerability need to be explained using a combination of variables, including social factors and environmental risks (i.e. physical aspects of climate related events). In chapter 4, risk is summarized as the product of the impact of a climatic event and vulnerability (Scheffran et al. 2012).

Vulnerability is defined as the ability or inability of individuals or social groups to adapt to 'any external stress placed in their livelihood and well-being' (Kelly/Adger 2000: 327). In relation to forms of coordination, the existing literature disaggregates vulnerability into the two distinct aspects of individual and collective vulnerability. This distinction allows to clarify the scale issue and the unit of analysis better (Adger 1999). Accordingly, individual vulnerability is determined by the social status of individuals, resource access or the diversity of incomes. On the other hand, collective vulnerability deals with nations, regions or communities. It identifies infrastructure, or institutional and market structures (Ibid 1999).

The existing literature on vulnerability explains social vulnerability as an environmental condition which is fundamentally for adaptive capacity of the economic and institutional context (Methmann/Oels 2014). As a result, the socio-economic context and, in particular, the impact of the economic agenda on individuals and stakeholder groups' poverty levels, resource dependency and inequality are considered. Poverty can be seen as an important aspect of social vulnerability because it is indicated through the quantifiable indicator of income. Income can serve as another proxy for access to resources. According to Blaikie et al. resource access can be defined as 'the ability of an individual […], group or community

to use resources which are directly required to secure a livelihood.' (Blaikie et al. 1994: 48). The dependencies of individuals on resources is constituted by the reliance on a narrow range of resources leading to social and economic stability. Increased stresses and increased external influences on these resources result in higher risks of social and economic instability. Additionally, vulnerability to climate extremes is determined by formal institutional arrangements. Consequently, if institutions fail to plan for changing governmental or climatic conditions, the vulnerability of individuals or groups increases (Adger 2006).

Therewith, access to and the distribution of resources is based on the social and economic agenda and the infrastructural and institutional arrangements to limit the exposure to multi-facetted risks. The following two sub-sections take a closer look at climate data and how the research areas are affected by climate changes. They further focus on how the economic transformation agendas and the institutional effectiveness of both countries influence resource access and resource distribution.

7.2 Temperature and Precipitation Deviations across Kenya and Uganda

Kenya and Uganda's economy still rely heavily on the agricultural sector. On average, agriculture contributes 26 per cent to both countries' GDP. As a mean, the sector employs 65 per cent of the total population (CIA 2020 a/b) and more than 60 per cent of Kenya's and 70 per cent of Uganda's rural people (FAO 2018; FAO 2020 b; World Bank Group 2020 a). The pastoral communities and small-holder farmers especially depend almost exclusively on rain-fed pasture and water for their survival and for their domestic use (Njiru 2012; see table 7.1).

	Water Withdrawals	**Rain-fed**	**Agriculture**	
	% used for agriculture of total water withdrawal	% of total agricultural area	% of gross domestic product	% of labor force
Kenya	80,21 (2016)	75 (2016)	34,5 (2017)	61,1 (2015)
Uganda	40,66 (2008)	80 (2017)	28,2 (2017)	71,0 (2013)

Table 7.1: Sensitivity of population based on the importance of agricultural activities (Source: The Author 2020, based on FAOstat 2017, Aquastat 2020 and CIA 2020).

Therewith, the agricultural sector is extremely vulnerable to climatic changes and the impacts of natural hazards (Ibid 2002). This, in return, increases the contextual vulnerability of local resource users to resource access and, therewith, resource distribution.

As indicated in chapter 5, the temperatures in both Kenya and Uganda have risen by roughly 1 °C over the last 50 years and are expected to increase further. It is projected that they are likely to rise by 1.5 °C over the course of the next 20 years (Mukwaya et al. 2012).

Furthermore, both countries experienced an increase in rainfall activities as a result of global climate change. Especially in the arid areas, the rise in temperatures resulted in the drying up of riverbeds or reduced water levels. A much-debated question in the literature is whether climate change is a major driver of water shortages and conflicts or if other aspects of the socio-economic and political environment drive conflict dynamics (see e.g. Thomas 2008, Schmitz et al. 2013, Scheffran et al. 2019). Thus, studies provide hydrological scenarios on the scale of different ecological zones in Kenya and Uganda (see e.g. International Research Institute for Climate and Society 2020; SPEI 2020, see table 7.1). An objec-

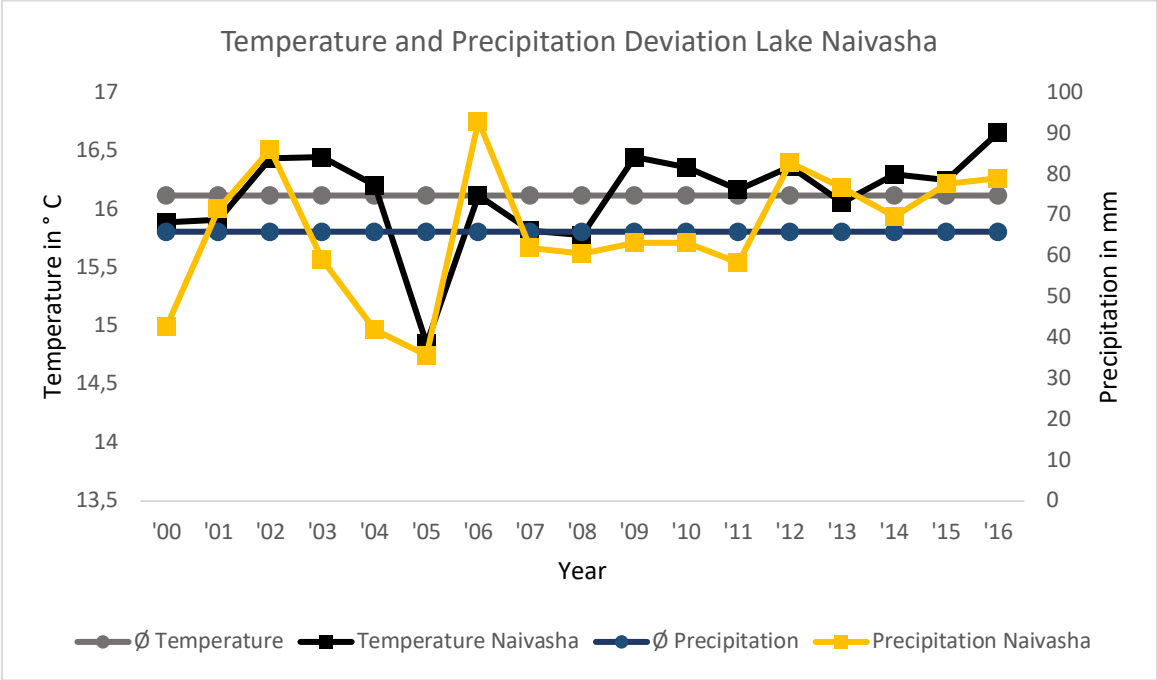

Figure 7.1: Temperature and Precipitation Deviation Lake Naivasha (Source: The Author 2020)

tive of this part of the study was to investigate the temperature and precipitation differences between the research sites and the arid areas of Turkana and Karamoja to determine whether climate change affects resource shortages (see section 2.4.4 in chapter 2). Figures 7.1 and 7.2 are based on climate data received from the University of East Anglia and the World Bank Group. Both figures present the deviations of the annual temperature and precipitation from the arithmetic means over the last 20 years for Lake Naivasha and Lake Wamala. The continuous grey and the blue lines show the mean values of temperature

(grey) and precipitation (blue) over the last 20 years. The other two curves illustrate the annual temperature (black) and precipitation (yellow).

Taking a closer look at the data for Lake Naivasha, the mean annual temperature has been above the last 20 years' average since 2009. The temperature for Lake Naivasha has risen by a mean value of almost 0.4 ° C over the last 10 years. Naivasha has experienced a major

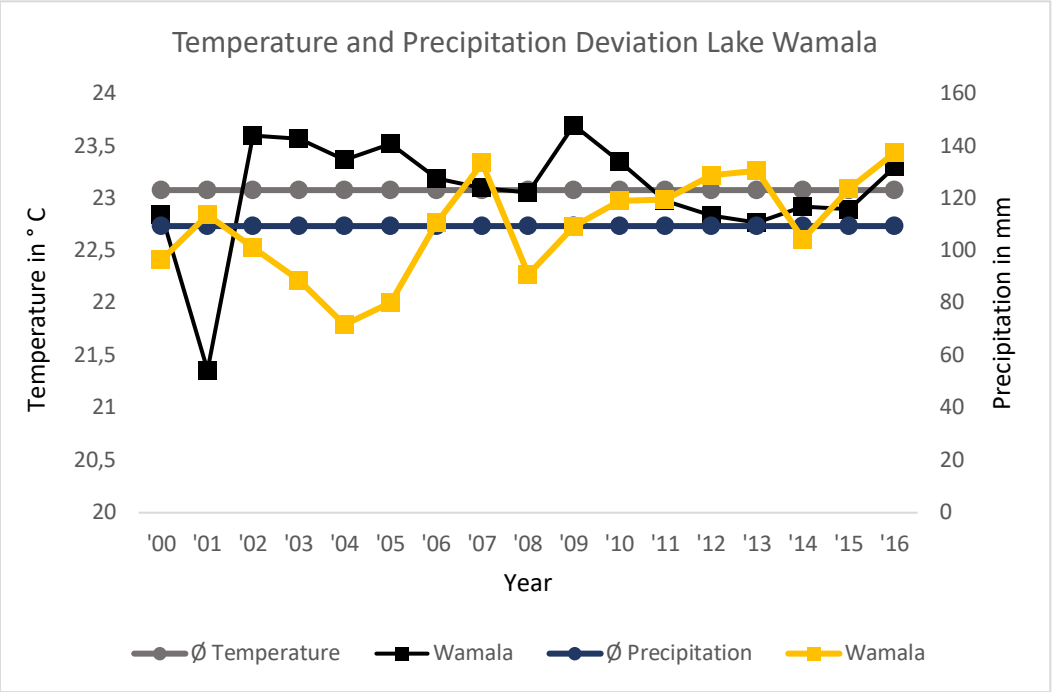

Figure 7.2: Temperature and Precipitation Deviation Lake Wamala (Source: The Author 2020)

drought in 2005. After that, the annual rainfall has recovered to the 20 years' average. Since 2011, the area has experienced more than the average rainfall. However, the main characteristic of the increase in precipitation is an increase in heavy rainfall, which the area experiences over a short period of time, as well as longer and more intense heatwaves. Compared to Lake Naivasha, the mean temperature and mean precipitation are higher for Lake Wamala[35]. Similarly, the temperatures are also increasing for the Lake Wamala area while, at the same time, rainfall has become more intense over the last 18 years.

The results from the field visits to the arid areas indicate an increase of Turkana and Karamoja's mean temperature by 4 °C while the simulations converge toward a decrease in precipitation (Government of Kenya 2018; World Bank Group 2020 b). As a consequence of the decrease in rainfall, the water levels of water bodies decrease. This results in a significant decline in water supply to dams and reservoirs. Furthermore, extreme weather

[35] As there does not exist a climate station at Lake Wamala directly, the climate data for Mityana serves as a reference.

events intensify and put additional stress on the water availability in these areas. The researcher observed that River Kawalasee in Lodwar dries up completely during the dry season as a result of the increasing temperatures. This finding is supported by the research findings of the Turkana Observatory Research Centre that analyses the impacts of climate change on the water availability in Turkana (Ongech 2019).

However, neither Lake Naivasha nor Lake Wamala are located in the mentioned arid areas (see chapter 6). The results from the climate analysis indicate an increase in temperature and heat waves, linked to a rise in shorter but more extreme precipitation for the mentioned areas. Interviewees reported that climate change is affecting the water levels of Lake Naivasha and Lake Wamala, but more moderately than in the case of Turkana and Karamoja (Government of Kenya 2018; World Bank Group 2020 c; see table 7.2).

	Mean temperature	Extreme temperature/heat waves	Mean precipitation	Heavy rainfall	Drought
Lake Naivasha	+	+	-	+	+
Turkana	++	+++	--	++	+++
Lake Wamala	+	++	-	+	++
Karamoja	++	+++	--	++	+++

Table 7.2: Synthesis of temperature and precipitation patterns (Source: The Author 2020 based on Opiyo et al. 2014, Government of Kenya 2018, World Bank Group 2020c, International Research Institute for Climate and Society 2020, SPEI 2020).
Semiquantitative evaluation of mean temperature and mean precipitation in absolute terms of ecological zone 5 (Turkana and Karamoja) and ecological zone 3 (Lake Naivasha and Lake Wamala). + < 2 °C; ++ > 2 °C to < 4 °C; +++ > 4 °C compared to the 20th century. Precipitation and extreme weather events (heat waves, heavy rainfall and drought) are shown in relative terms: + indicates an increase by 10 per cent compared to the 20th century; ++ indicates an increase by 20 per cent and; +++ by < 20 per cent. - indicates a reduction in rainfall by 10 per cent compared to the 20th century; -- indicates a reduction in rainfall by 20 per cent; --- by < 20 per cent. However, a reduction does not necessarily entail.

Respondents underlined that the decline in surface runoff at Lake Naivasha and Lake Wamala is not due to climate change (Opiyo 2018; Kiboye 2018; Kamese 2018). Instead, they argued that economic infrastructural projects increase the pressure on the lakes' water resources. Thus, economic and environmental projects accelerate the climate effects on the lake's water and land resources (Gumba 2018; Kamese 2018; Lorna 2019). These include deforestations, soil degradations or wetland destructions. As mentioned, both Lake Naivasha and Lake Wamala experienced an increase in economic infrastructural projects. Therefore, the following section discusses the economic development agendas of Kenya and Uganda and how those impact the lakes and their stakeholder vulnerabilities.

7.3 Economic Development Agendas of Kenya and Uganda

In its national economic development agenda, Kenya has committed itself to become a middle-income country by 2030. In order to achieve this aim, the government of Kenya created the Kenya Vision 2030 to create 'a globally competitive and prosperous country with high quality of life by 2030' (Kenya Vision 2020). To realize this vision, Kenya has set up the Big 4 development agenda covering four sectors. The four sectors include the economic and macro pillar, the social pillar, the political pillar and the foundations for the pillars[36] (Ibid). To achieve the status of a middle-income country, the government of Kenya, furthermore, has set up Medium Term Plans (MTP) which shall guide the roadmap to achieve the aims of Kenya Vision 2030. The first five-year plan (2008-2012) aimed to implement Flagship Projects, key policies and programs as defined by the Vision 2030. The flagship projects aimed to achieve higher and sustainable growth of the economy, accompanied by an increase in employment opportunities (Ministry of Finance 2015). During the first five years, the Kenyan government concentrated foremost on the economic and macro pillar. The government intended to raise the ratio of investments to GDP by 10 per cent points[37], coinciding with a rise of the medium-term domestic product growth per capita to 6 per cent by 2020[38] (Ibid 2015; World Bank Group 2019 a).

The second MTP (2013-2017) targeted both the economic and political pillar. With reference to the economic pillar, the vision aimed to steer the GDP growth rate by an average of 10 per cent by 2017 annually. Moreover, the second MTP gave priority to increase the scale and pace of economic transformation through infrastructural development (Ministry of Finance 2015). Under the political pillar, the government gave priority to the implementation of devolution, as spelt out in the constitution (Constitution of Kenya 2010). The third MTP (2018-2022) prioritizes the continuation of the achievements of the first and second MTP. It outlines the concentration on the main policies, as well as legal and institutional reforms. The president, furthermore, focuses on the implementation of, what he calls, the 'Big Four' initiative. The Big Four agenda centres on manufacturing, universal healthcare,

[36] The Foundations for the Pillars include disaster risk reduction and ending drought emergencies. While disaster risk reduction is an environmental risk and can lead to an increase of people's vulnerability, respondents did not mention this aspect in the case of Lake Naivasha. Therefore, it is not assessed in detail.
[37] In 2008, the ratio of investment stood at 19,61 per cent. In 2012, it stood at 21,48 per cent (World Bank Group 2020 d).
[38] In 2018, Kenya's GDP growth per capita stood at 3,9 per cent (World Bank Group 2020 e)

affordable housing and food security. It intends to increase the manufacturing share of GDP from 7,7 per cent in 2018[39] to 15 per cent by 2030 (World Bank Group 2020 f). In terms of food security, Kenya aims to achieve at least 50 per cent of total agriculture output through agro-processing. Finally, it plans to provide 500.000 units of affordable housings until 2022 and to achieve 100 per cent universal health coverage by 2030. The aims of the economic development agendas and the MTPs are very ambitious. However, interim results suggest that these aims are unrealistic and that the country is unable to achieve the set targets.

To achieve the previously mentioned targets, Kenya, together with international donors, invested more than 7 Billion USD in infrastructural projects, more than 176,8 million USD in manufacturing, agro-businesses and services and around 250 million USD in affordable housing and social projects, like reducing poverty or increasing the level of education, for example (World Bank Group 2019 b). As of the end of December 2017, Kenya shifted the focus of its economic agenda. It concentrates on two major projects in the energy sector. The largest of these two projects is the construction of an oil pipeline from Turkana to Mombasa (Ibid 2019). The construction of a cargo centre within Hell's Gate National Park is the other large infrastructural project (Ran 2018; Kimeta 2019). Hell's Gate National Park is located at the outskirts of Lake Naivasha. Whereas the oil pipeline is supported by Chinese investors financially, the World Bank Group is the main financial contributor to the cargo centre at Lake Naivasha (World Wildlife Fund 2018; Kimeta 2019; Peter 2019).

Uganda's national economic development strives to reach upper middle-income status by 2040. The Vision 2040 is conceptualized around strengthening the fundamentals of the national economic system 'to harness the opportunities around the country' (LDPG 2020). The Vision 2040, furthermore, identifies nine key areas, including oil and gas, minerals, ICT[40] business, abundant labour force, trade, water resources, industrialization and agriculture (National Planning Authority 2020). Similarly, the government will implement six National Development Plans (NDP) to achieve the set targets. Two of them have already been formulated. The National Development Plan I (2010/11-2014/15) means to transform the Ugandan society from a 'peasant-based economy' to a peaceful and prosperous middle-income country (Republic of Uganda 2010). Accordingly, the government seeks to improve development indicators closely associated with transformation, including an increase in

[39] The manufacturing share of GDP is constantly decreasing from its all-time high in 2007 (12,79 per cent)
[40] Information and Communication Technology.

GDP per capita, raising the human development indicators or improving the level of competitiveness (Ibid 2010). NDP I wants to accelerate socio-economic transformation and to decrease the poverty levels by one third. The plan outlines the improvement of stock and the quality of economic infrastructure. Additionally, NDP I shall strengthen political, economic and corporate governance as well as to promote science, technology and ICT. Among others, NDP I argues that the impacts of macro-economic projects on environmental and climate aspects need to be integrated into the development plans. The plan acknowledges that, without climate awareness a successful socio-economic transformation is impossible (Ibid 2010). However, the plan does not provide any detailed information how any economic transformation can be realised.

The NDP II (2015/16-2019/20) is based on the foundations laid out in the NDP I. The second NDP wants to strengthen the country's competitiveness for sustainable wealth creation, employment and inclusive growth. In line with the president's strategic priorities for 2016 to 2021 (State House 2016), the plan stresses the importance to focus on macroeconomic infrastructural projects, human capital development, minerals, oil and gas as well as agriculture and tourism (Republic of Uganda 2015). In his strategic priorities for 2016-2021, the president announced an increase in the investments in health and education, as well as strategic agricultural land, urbanization and transportation (State House 2016). To achieve these targets by the end of the second five-year plan, four core elements have been formulated which include an increase in sustainable production and productivity, an increase in strategic infrastructure to accelerate Uganda's competition, to enhance human capital development, as well as to strengthen mechanisms for quality, effective and efficient service delivery (Republic of Uganda 2015). Contrary to NDP I, NDP II quantifies its targets. After the successful implementation of the NDP II, the growth rate is expected to stand at 6,3 per cent[41] and the GDP per capita income should be at 1.039 USD by the end of 2020[42]. Furthermore, the president's strategic priorities focus on adding value to raw materials through investments in major oil and gas infrastructures, including the construction of refineries and pipelines. Finally, the Statehouse emphasizes aggressive investments in the tourism sector through marketing, diversification of products and supporting infrastructure

[41] In 2018, the growth rate speeded up compared to the previous years (4 per cent in 2017 and 4,6 per cent in 2016) and stood at 6,1 per cent in 2018 (World Bank Group 2020 g)

[42] In 2018, the GDP per capita income slowed down to 642,777 USD, compared to 739,374 USD in 2015 (World Bank Group 2020 h).

and services. The aim is to increase the contribution of tourism to 15 per cent of GDP in 2020, rising by six per cent points since 2013 (Republic of Uganda 2015; Statehouse 2016). Contrary to the first plan, climate change and the environmental impact of undertaken infrastructural projects is not acknowledged as a priority anymore (Ibid 2016). Adding to that, the upcoming NDP III (2020/21-2024/25) will most likely concentrate on growth[43] opportunities in both the oil and gas, and tourism sector. Furthermore, it aims to strengthen the stock and quality of productive infrastructure. This shall coincide with an increase in the inclusiveness and wellbeing of the population, as well as strengthening of the private sector to drive growth and to create jobs (Ministry of Finance, Planning and Economic Development 2020). Overall, both economic development plans are vague and do not provide any clear information on the countries' strategic economic developments. Therefore, it is difficult to quantify if the economic development has been successful or not, so far. Nevertheless, the analysis of the economic development plans showed that macro-economic projects (e.g. infrastructure, transportation and the set-up of industrial sites) are prioritized by both governments regardless of the current economic and social situation.

7.4 Economic Development and Social, Contextual and Governmental Vulnerability

The implementation of Vision 2030 and Vision 2040 is greatly affecting both Lake Naivasha and Lake Wamala. Figure 7.3 summaries identified preliminary effects of the economic processes on the people's vulnerability to economic, social and environmental change at both lakes. The chart shows the effects of the economic agenda on the water and land resources at the two case study locations on the one hand, and the vulnerability of the people living around the lakes to the impacts of the economic agenda on the other hand. It further summarizes how governmental structures catalyse the adaptive capacity of the local resource users. Each element of the economic agenda, the effects of the agenda on the social and contextual vulnerability and adaptive capacity is worded to have the same sign as its category. Major current and future effects are shown in bold. Likely future effects to increase vulnerability are shown dashed and factors reducing vulnerability are presented dotted.

[43] Up to date, drafts of the NDP III exist only. Therefore, the mentioned strategic priorities are preliminary only and are subject to change.

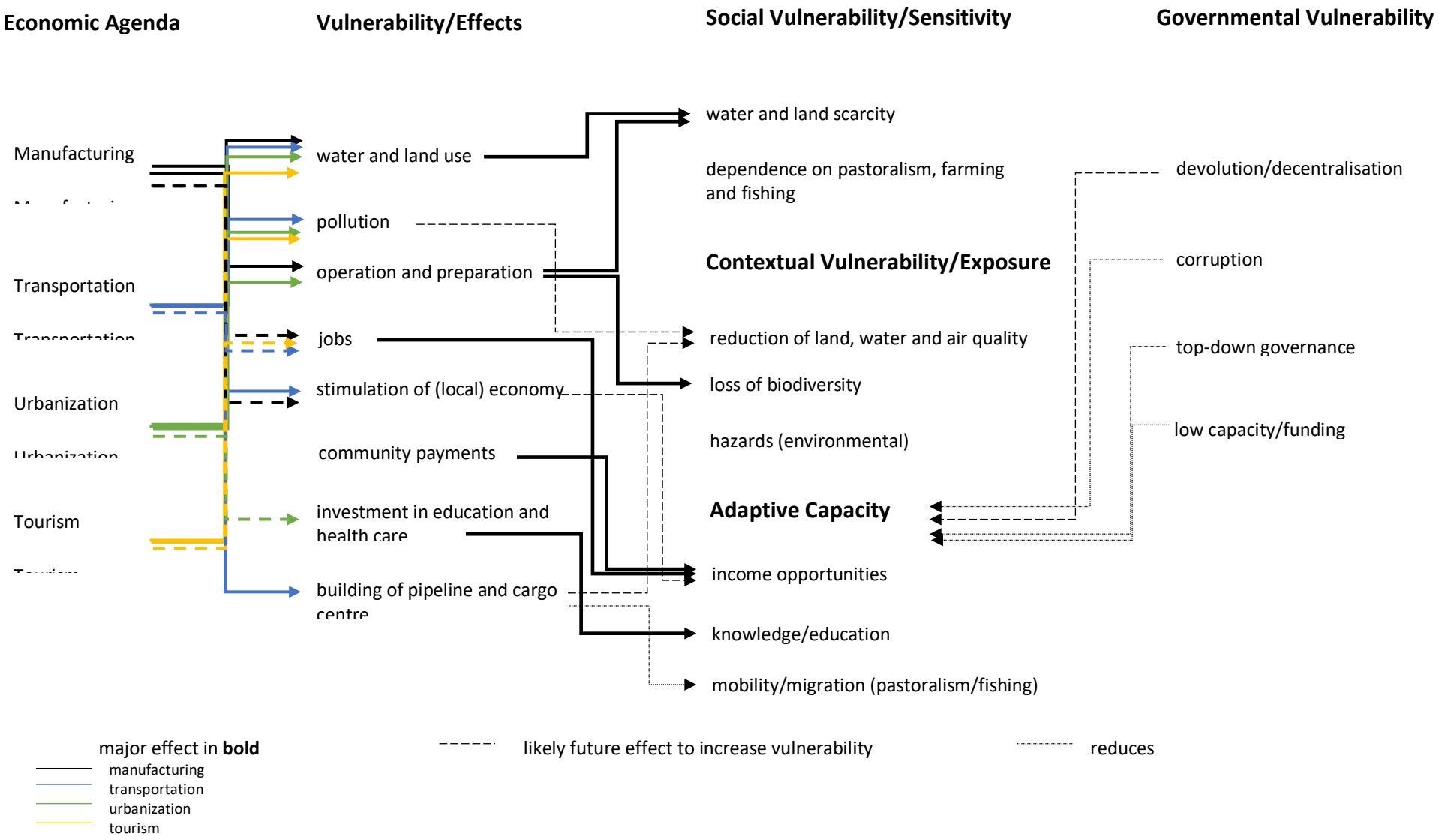

Figure 7.3: Effects of the economic agenda on the vulnerability and adaptability of local resource users (Source: The Author 2020)

7.4.1 Sensitivity

Around Lake Naivasha, the national government allocated land to national and international businesses to increase infrastructural development through horticulture, energy sites and the construction of a cargo centre. The main industry in Naivasha is agriculture, especially horticulture, making Naivasha the centre of a multibillion-dollar flower industry in Kenya[44] (Nyangene/te Velde 2012). Around Lake Wamala, the government allocated land to national and international companies to increase the share of rice growing, minerals and oil explorations to the country's GDP[45]. The main industry around Lake Wamala is fishing. However, rice growing and the exploration of minerals is constantly increasing. As mentioned in chapter 6, Lake Naivasha is advertised as a tourist destination for both national and international visitors. Accordingly, the government promoted the set-up of hotel sites along the lake's shorelines.

Independent from the macro-economic projects, the majority of the people living at Lake Naivasha and Lake Wamala still depend on agriculture, fishing and pastoralism to purse a living (see Table 7.1). Hence, the higher the water and land shortages and dependence on those resources, the higher the sensitivity of the stakeholders. Land (including pasture) is already a scarce resource at Lake Naivasha. While the water levels of Lake Naivasha are sufficient, local resource users report serious water shortages because of reduced access routes to the lake's landing sites (Kapila 2018; Community Members Karagita 2018; Community Members Central Landing Site 2019). Land and water around Lake Wamala is fairly available despite surface runoff due to rapidly changing and erratic weather patterns. However, limited access routes to the lake and an inadequate transportation network resulted in land and water shortages for the local communities (Community Members Lubajja and Lusaalira 2018, 2019; Kitizo 2019). Nowadays, through increasing deforestation, agricultural and grazing land should become more available, however, community members report on enclosed lands and declines in wetland and water levels.

Macro-economic and infrastructural projects aggravate water scarcity, as significant amounts of water are needed in every step of activities like flower growing or energy

[44] Cut flowers from Lake Naivasha account for more than 70 per cent of the country's cut flower exports. Cut flowers generate 11 per cent of Kenya's total foreign exchange revenue (roughly 830 Million USD) in 2012 (Nyangene/te Velde 2012).

[45] According to a study carried out by UKAID et al. (2018), the extraction of minerals is estimated to generate a value of 500 Million USD (roughly 3,5 per cent of the country's GDP) in 2010 (UKAID et al. 2018).

production, including drilling, watering and bathing of flowers, completion and fracturing of energy sites, and cooling. Studies show, for instance, that 7 to 13 l of water are needed to harvest one flower[46] (Mekonnen et al. 2012). The Kenyan national government aims to increase the share of flower exports to the country's GDP[47]. Therefore, water is pumped from the lake into the flower farms directly, resulting in the decline of the lake's water levels. Additionally, the farms use chemicals and pesticides to boost the production of flowers. Inefficient and non-existent waste regulations resulted in the release of the used chemicals into the lake directly. The use of the aquifers to operate the geo-thermal sites could become a potential game changer to limit the pressure on Lake Naivasha's surface water. Studies show that if an aquifer is used to exchange heat with the earth, the used water returns to the same aquifer. Thus, when geothermal systems are operated commercially, they can eliminate millions of gallons of water (National Geographic 2013). However, Lake Naivasha faces challenges to implement its full potential. The lack of funding, technical expertise and corruption complicate and delay such projects (Vivekananda 2015; Kapila 2018).

Around Lake Wamala, infrastructural projects increased at the beginning of 2010. Beforehand, long-term poor agricultural methods, uncontrolled bush-burning to increase the available land for agriculture, overgrazing and brick making put stress on the land and water resources (Kamese 2018; Kimbowa 2018). Given that Mityana's municipal waste collection does not include the fishing villages around the lake, the local actors burn or discharge their domestic waste into the lake. Similarly, these activities resulted in water quality deteriorations, a decline in fish stock and water-borne diseases. Industrial projects accelerated soil formation, wetland destructions and land and water shortages. The setting up of rice-growing fields and mining sites as well as deforestation resulted in the closing of fishing villages and the relocation of the people in the close surroundings of the lake.

Since the beginning of 2010, the impacts of the aforementioned behaviour were felt because the water quality of both lakes deteriorated significantly. Respondents reported the use of fertilizers, pesticides and other chemicals to increase the productivity rates in rice growing, agriculture and horticulture. Up to now, community members highlighted that the release of used chemicals and fertilisers in the lakes affect both the water quality and

[46] Compared to one flower, a villager in one of the four informal settlements has 3 to 5 l of fresh water available on average a day.
[47] In 2017, the flower industry contributed 1,3 per cent to the country's GDP (Deutsche Welle 2017).

the fish stock (Community Members Karagita; Central Landing Site 2018). Besides, villagers reported serious health problems after they consumed the water (Community Members Karagita 2018; Peter 2018; Muigai 2019). This resulted in income reductions and serious health constraints on the communities. Therefore, the flower farms and Naivasha Water and Sewage Cooperation improved the communal access to clean water. They installed water tanks along the main road to fetch clean water. Community members and villagers reported that these tanks are filled by Naivasha Water with water trucks. Whereas initially the tanks were loaded up daily, interviewees reported that the tanks are filled less often nowadays. The large distances between the communities and Lake Wamala led to the drilling of boreholes and the construction of pumping stations. However, the process of providing an area-wide coverage has been slow. Some community members argued that neither the local nor the national government maintains the pumps or repairs them in case they break down. Therefore, this effort had a limited effect on providing sufficient amounts of water to the local communities.

Studies highlight that most pollution in the lake is not from fertilisers from the flower farms, but from soaps and detergents used by the village people in washing as well as untreated effluent from villages flowing into the lake (Harper et al. 2002). Further analysis showed that small-holder farmers and pastoralists push into the catchment areas[48] for agriculture and cattle grazing nowadays. More so, their agricultural techniques have become more aggressive as they use pesticides to boost their farming productivity. Accordingly, they contribute to soil degradations and the reduction of the lake's water quality. Observations and further studies showed that the small-holder farmers in the upper catchment of Malewa river and downstream villagers are also responsible for the lake pollution due to nutrient load, the wiping of oil and polluted cars and motorbikes or the release of waste into the lake (Harper et al. 2002; Mekonnen et al. 2012; Bokokamau 2018). In future, the issues of nitrogen, saline, mercuries or phosphorus are likely to become more prominent, reducing the quality and quantity of rice and other agricultural products.

The Kenyan MTP I aimed to increase employment opportunities. Consequently, the labour-dependent horticulture and tourism industry attracts people from all parts of the country, including Nairobi. The majority of migrants come from Central, Western, Nyanza and

[48] According to the law, catchments are protected areas located at the lake's shorelines directly. According to the law, catchments cover 50 to 100 meters.

Eastern provinces, and are predominantly from poor backgrounds. They are coming to Lake Naivasha in search of unskilled work in the flower farms and the hotels. On the other hand, the industrial activities around Lake Wamala do not attract unskilled workers from the country. The majority of the rural population moves towards Kampala in search of labour opportunities as Uganda Vision 2040 prioritizes non-agricultural job creation. As mentioned, the horticultural farms and hotel sites have the potential to offer direct and indirect employment opportunities to the local population and, therewith, might be able to stimulate the local economy. According to the respondents, Lake Naivasha has around 70 flower farms that employ over 150.000 people directly and over 500.000 indirectly (Vivekananda 2015; Peter 2018; Kimeta 2019). Whereas geothermal companies demand skilled workers, flower farms and hotel sites offer employment also to unskilled workers, for example as flower pickers or waiters. To a certain extent, both could decrease the communities' dependence on agriculture or pastoralism. However, a former employee from one of the biggest flower farms indicated that the labour conditions and wages in the flower farms are low[49]. Employees do not receive mouth or respiratory passage protection. Resulting thereof, they are exposed to the chemicals and pesticides directly (Leipold/Morgante 2012; Peter 2018). Health constraints will likely be felt in the mid to long run, but remain subject to speculation at the moment. Lastly, female employees mentioned sexual abuse and gender-based violence by senior employees.

Consequently, the demand for affordable housing is increasing in the lake's basins. However, most of the labour migrants reside in one of the four informal settlements around the lake. In contrast, neither urbanization nor employment opportunities have revealed themselves for the people living around Lake Wamala. The population increase decreases the space in the four informal settlements around Lake Naivasha. Many communities around Lake Wamala live a cut-off life. Therefore, sub-qualified sanitation is also an acute issue that plagues the local daily life. In both areas, dumpsites and trash cans are very rare. Hence, they deal with the garbage and waste-water by dumping it on the streets and drainages. Thereupon, pollution and a disease-delivering environment is increasing.

Especially around Lake Naivasha, the investments in manufacturing and tourism resulted in road constructions to link the hotels, energy sites and horticultural farms to the main road. Community members at Lake Wamala did not report on any road constructions

[49] On average, a harvester earns between 50 and 100 USD per month (Vivekananda 2015, BBC 2017).

around the Lake. On the contrary, they highlighted that only the transportation network from Kampala to Mityana, and further to Fort Portal is improved. Workers from the flower farms and villagers from Karagita confirmed that the government neither improves the access routes to the four landing sites, nor the access routes to the informal settlements. The researcher observed the state of the access way from Mityana town to the remaining three landing sites. The nearest landing site, Lubajja, is located four kilometers away from Mityana town. Because of its soil conditions (sand), during the rainy season, motorbikes and cars are unable to pass. Fishermen from the landing sites around Lake Wamala highlighted that they were unable to sell fish and other agricultural products to merchants because trucks only pass by Mityana. During the dry season, additionally, they demonstrated that they often have to walk up to Mityana to sell their products, either at the local market or to merchants from Kampala, as trucks pass by their landing sites less frequently.

The previously mentioned oil explorations do not take place at Lake Naivasha or Lake Wamala. Nevertheless, in the future, there is a risk that the pipeline between the extraction site, the refinery and the port city of Lamu (Kenya)[50] and the city port in Tanga (Tanzania)[51] will disrupt migration routes of pastoralists as well as affect the cultivation of farmland. As a result, internal migration is increasing, pushing displaced people closer to labour-offering areas, like around Lake Naivasha, for example. As a consequence of the macro-economic projects, the flower farms and hotels were allowed to build their sites along the lake shores, thereby decreasing the available land for agriculture and cattle grazing. Furthermore, the government invested in transportation routes linking the industrial sites with Naivasha and the main road. The pressure on small-holder farmers and pastoralists increased because a higher amount of local resource users is in immediate need to use the remaining land resources (Vivekananda 2015).

To sum up, both lake basins experienced deforestation, wetland degradation and overexploitation. Furthermore, the pressure on the lake's resources is increasing due to population growth, aggressive agriculture and climate change. Lastly, poor resource management leads to water and soil shortages.

[50] Tullow-Total oil pipeline, linking the oil fields in the Lockichar basin with the city port of Lamu, launched August 2019.
[51] Uganda-Tanzania Crude Oil Pipeline, linking the oil fields in Hoima with the city port of Tanga in Tanzania, launched 2015.

7.4.2 Exposure

Studies show that unsustainable land management increases the effects of climate change on ecosystems and societies (IPCC 2019). But the economic developments undertaken at Lake Naivasha and Lake Wamala, at least so far, did not increase the climate exposure for the stakeholders (see table 7.1). However, the economic projects undertaken expose especially the local communities to environmental changes (i.e. resource access and resource distribution). These environmental changes, furthermore, interact with and accelerate changes in temperature and rainfall (e.g. heat waves or heavy rainfall). Community-based organizations have emphasised the long-known fact that wetland degradation, deforestation or poor waste management on water and land resources is affecting 'water supply and water resource management' (Uluocha/Okeke 2004) and also threatens the surface and groundwater quality (Kobunsingye 2019). Studies conducted in countries like Nigeria, Niger, Malawi and South Africa demonstrate that economic infrastructural projects without environmental impact assessments can have detrimental effects on the environment and the local population, especially where resource governance or environmental regulations are lacking or not enforced (for Nigeria Uluocha/Okeke 2004; for Niger Adekola/Mitchell 2011; for Malawi and South Africa Schuyt 2005). Apart from the changes in resource access and resource distribution, Schuyt (2005) highlights the economic consequences[52] for the actors who are most dependant on land and water resources for their daily survival (i.e. local populations, farmers and pastoralists) (Schuyt 2005).

Additionally, water, land as well as air is polluted through the burning of waste, bushes and charcoal. This, in turn, increases the exposure of the local population to water-borne and other diseases like diarrhoea, cholera or typhoid fever (Otieno 2019; Yakub 2019). Respondents from Kenyan and Ugandan governmental agencies and county/district governments commented that the governments acknowledge that the countries are vulnerable to illegal dumping of waste and other substances (Mbaisi 2018; Tindimungaya 2018). Consequently, both governments drafted national policies for waste management regulations. Observations and interviewees confirmed that, however, the implementation of the policies is limited, especially in rural and slum areas. Solid waste management often remains subject to local or community-based initiatives (Kaka 2019; Otieno 2019).

[52] e.g. poverty, income reduction, low levels of education.

Whilst stakeholders, who do not depend on agriculture, pastoralism or fishing to pursue a living, did not report on negative changes in their environment, community members and local resource users mentioned changes in their resource access, resource distribution and the economic consequences thereof. Small-holder farmers and residents of the informal settlements around Lake Naivasha stated that farmland becomes unavailable due to the set-up of flower farms and hotels or abrupt closing of access routes to farmland or public areas[53]. Correspondingly, small-holder farmers encroach into the lake's shorelines through one of the four remaining landing sites in search for farmland. Furthermore, they claimed that due to changes in water levels, the farmlands are flooded or the crops are either small or do not sprout because they use pesticides or polluted water from the lake. Concerning small-holder farmers at Lake Wamala, community members pointed out that small-holder farmers are hardly found at the lake anymore. Most land is used for rice growing, mineral activities or timber production and, thereupon, is gazetted nowadays. The researcher observed an increase in farming activities in the wider surroundings of Lake Wamala. As a result of the longer distances to the lake or the pumping stations, they rely substantially on rainfall to water their crops. However, unsustainable farming and economic activities accelerate climate change. This results in the unpredictability of seasonal changes and, therewith, farming becomes more difficult. Small-holder farmers stated that crops are washed away or dry up more frequently which leads to economic losses.

At Lake Naivasha, fishermen reported smaller fish stock as a result of overfishing. Small-holder farmers who do not have farmland anymore, or people who worked in flower farms often turn to fishing to sustain a living. Resulting thereof, the number of people who fish, either illegally or using unlicensed fishing gear, is increasing. In the case of Lake Wamala, as of 2019[54], there are three remaining landing sites where fishermen can access the lake directly. Because of their relocation into the wider surroundings of Lake Wamala unlike Lake Naivasha, most fishermen turn to farming activities as they are unable to approach the lake's shorelines anymore. Fishermen at both lakes reported that the release of chemicals, pesticides and other substances led to a reduction in fish sizes and stock. However, to the author's knowledge, there does not exist a study on the effects of the water quality

[53] Due to unclear land tenure, small-holder farmers were used to access free land to cultivate crops. However, in some cases, the used land was either private or sold by the government to individuals who shut off the land without prior notice.

[54] During the field visit in summer 2018, the researcher was able to access four landing sites. One year later the landing site Katigo did not exist anymore.

on Lake Naivasha and Lake Wamala's fish stock. Therefore, in the future, this issue might become more prominent, and remains subject to speculation for the time being.

Pastoralists, especially Maasai and herders from Laikipia county, claimed that the reduction of available land for grazing pushes the cattle closer to the road. The noise from the cars, motorbikes or trucks scares the livestock on the one hand, and on the other hand cattle are injured or killed in road accidents more often. Community members agreed on increased traffic because of jeeps and trucks carrying heavy machinery related to the building of the geothermal sites or the cargo centre. Lastly, residents from the informal settlements highlighted a decrease in water access, as the amount of people pushing onto the remaining landing sites and the few water access points in the informal settlements is increasing. Furthermore, community members around Lake Wamala and villagers at Lake Naivasha emphasised long walking distances to fetch water from the pumping stations or the lake for daily activities. Moreover, villagers from the informal settlements reported on unacceptable living conditions given the increasing number of residents. The unavailability of waste collection, basic sanitation and energy increases air, land and water pollution, and the outbreak of diseases result in higher levels of insecurity.

7.4.3 Adaptive Capacity

Generally, adaptive capacity is mainly determined by the knowledge, skills, resources and options the different stakeholders have to cope with external changes (IPCC 2014). Key adaptation strategies include income opportunities, increase in education and knowledge, the effectiveness of political institutions or migration[55]. Pastoralists mentioned and studies confirmed that internal migration was and is always a key adaptation strategy to counter lack of water and pasture (Schilling et al. 2014; Schilling et al. 2015; Balama 2019).

Especially the small-holder farmers and the people from Eastern and Western Kenya migrate to Lake Naivasha in search of work in the flower farms and hotels (Kapila 2018; Peter 2018). Additionally, pastoralists and small-holder farmers claimed that economic sites and the construction of above-ground pipelines had altered migration routes and blocked farmland. A minority of the interviewees argued that currently uongoing road and railway

[55] The determinants for adaptive capacity are chosen because they are all available for the two countries studied at the same time. Furthermore, these variables are recognized by international agencies and organisations. Lastly, the determinants are used across all disciplines as accepted variables.

constructions as part of the national economic development plans are likely to affect migration routes and farming activities. However, observations have shown that the effects of above-ground pipelines are limited. The researcher considers the future constraints of the railway and road constructions more severe.

	Determinants of Adaptive Capacity								
	Economic Resources				**Health and Water**		**Education**		**Institutions**
	Gross domestic product per capita in PPP USD (2017)	Gini index (year estimate)	Human Development index (2019)	% of people below poverty line (2017)	Under-five mortality rate per 1,000 live births (2018)	% of rural population using improved drinking-water sources (2015)	Education index (2018)	Global Knowledge index (2019)	Corruption Perceptions index (2018)
Kenya	3.500	40,8 (2018)	0,579	36,1	41,1	56,8	0,526	42	27
Uganda	2.400	42,8 (2016)	0,528	21,4	46,4	75,8	0,515	33	26

Table 7.3: Determinants of Adaptive Capacity to economic and environmental changes (Source: The Author 2020, based on CIA 2020, UNDP 2018, UNDP 2019, UNDP 2020, Transparency International 2018).
PPP USD = Purchasing Power Parity in USD. Gini index (Range 0-100) = the degree of inequality in the distribution of family income in a country (CIA 2020). Human Development Index (Range 0-1) = measuring life expectancy, education and income (UNDP 2020). Education index (Range 0-1) = mean years of schooling and expected years of schooling (UNDP 2018). Poverty line = percentage of the population living below 1,9 USD per day (CIA 2020). Global Knowledge index (Range 0-100) = measuring education, research, development and innovation, information and communications technology and economy. (UNDP 2019). For all mentioned indices, higher values indicate higher level of development. For Gini index, higher values indicate higher levels of inequality. Corruption Perceptions Index (Range 0-100) = perceived levels of public sector corruption according to experts and businesspeople (Transparency International 2018). Higher values indicate less corruption transparency.

Both national development agendas stress the importance of employment and the stimulation of the (local) economy related to the undertaken infrastructural investments. Whilst some Ugandan interviewees reported that economic companies offer payments to the communities to compensate them for the loss of their land (Muhindo 2019), others argued that local communities are not compensated financially, but rather through the provision of additional land (Twesigye 2019). When asked about community payments at Lake Naivasha, the participants did not mention any compensation, neither financially nor through the provision of additional land. Generally, the availability of financial resources increases the adaptive capacity of community members, at least in the short term. However, this also has other implications (see chapter 8). The county and district representatives described the geothermal companies, the upcoming cargo centre and other economic projects as promising for income opportunities. However, the low level of education, especially in these rural areas, is a disadvantage for the local communities as they cannot

compete with others for economic and employment opportunities. There have been some rare attempts by the governments to increase the level of education. Along the access roads to Lake Wamala and in the informal settlements, a few classrooms have been built for primary teaching. However, these schools have not begun to operate as equipment (i.e. chairs or tables) were either stolen by the local communities or had not been provided in the first place. Added to that, neither have teachers been ordered to these schools, nor have announcements been placed to attract teachers to the schools respectively. Accordingly, local resource users are often left to work in flower farms, hotels, or as artisanal miners. The resilience to these changes is worsened by the strong population growth[56] which is highly likely to further intensify resource shortages and to exaggerate the poverty levels.

These findings suggest that the adaptive capacity of local resource users is low, because the state of their overall personal living conditions can be described as being multidimensionally poor. According to the World Bank Group, this category includes not only the criteria of income and consumption but also 'other aspects of life [which] are critical for well-being, including education, access to basic utilities, health care, and security' (World Bank Group 2018 c: 5). Uganda has both a lower per capita income and a higher Gini index and thus, compared to Kenya, a more unequal distribution of income (CIA 2020, see table 7.3). Similarly, the level of human development is higher in Kenya than in Uganda (UNDP 2020). Moreover, the under-five child mortality rate is lower in Kenya than in Uganda (World Bank 2020i). However, both countries made significant progress increasing their health service delivery[57]. Uganda, especially, increased its percentage of rural people with access to improved drinking water sources (AQUASTAT 2020). Data only shows how the number of access points to drinking water changes, but does not include information about the condition or kind of access points. Hence, it cannot be concluded from these findings if water is actually provided through the pumping stations or the water access points.

In terms of education, both countries have improved. Nevertheless, there is still a gap between the rural and urban mean years of schooling. In rural areas, children are often unable to attend school since either the walking distance to the nearest school is too far or the way too dangerous, or the children have to assist their parents in daily work activities at

[56] According to UNDESA, the total fertility (children per women) stands at 3,26 in Kenya and 4,44 in Uganda (UNDESA 2020).

[57] Health service delivery increased in urban areas significantly whilst access to hospitals or clinics is limited in rural areas.

home (i.e. farming or fishing, or cleaning and cooking). In some cases, both factors prevent children to even attend primary school in rural areas. The percentage of people living below the poverty line is lower in Uganda compared to Kenya (CIA 2020). For Uganda, the lower levels of income and, therewith, higher levels of poverty cannot only be explained by using the data from the Gini index and GDP per capita PPP. There seem to be two possible explanations for this: (1) in Kenya, the number of people living in urban areas[58] is higher than in Uganda. Given that living expenses are greater in urban areas compared to rural ones, there are more people living below the poverty line. (2) Another possible explanation for this is that in Uganda, local resource users often cultivate what they need to sustain for a living and, therefore, do not consider themselves as poor. Taking all indicators into account, Kenya has a higher adaptive capacity. Uganda's adaptive capacity is lower regarding institutional determinants. However, both countries differ by only one point regarding their level of corruption. Hence, both find themselves among the lower third of the most corrupt countries in the world (Transparency International 2018). Resulting thereof, corruption and political kinship limit the enforcement of the institutional framework, restrict the implementation of economic and social reforms which could increase the adaptive capacity of local resource users.

As indicated, adaptive capacity is not only determined by socio-economic factors. For the successful implementation of adaptation processes, the political system's institutions and organizations clearly need to be considered to get a comprehensive understanding of adaptive capacity as well. Institutions endure and persist throughout the adaptation process and shall support individuals and communities in times of adjustment and change (Nelson et al. 2007).

7.4.3 Governmental Vulnerability

All of the discussed economic and social indicators of vulnerability, exposure and adaptive capacity are enclosed by the influence and effectiveness of political institutions. Economic infrastructure, poverty and income, access to and the distribution of resources within a population are all institutionally determined, and hence, central to the overall analysis of vulnerability, and possible resulting conflict dynamics thereof.

[58] The number of people living in urban areas does not coincide with the number of people being employed.

Devolution in Kenya is completed and, therefore, it is expected that political, economic and social services should come closer to the people. This will likely affect the level of adaptive capacity of local resource users in the mid to long term. On the other hand, Uganda is still in the process of decentralising its institutional framework. The key aim of both processes is to bring services closer to the people and to reduce the imbalances between the different regions and counties within Kenya and Uganda (Vasquez 2013). However, both county and sub-county officers were unanimous in the view that they lack the capacity, knowledge and resources to effectively deliver services to the people. In Uganda, the district and catchment management officers highlighted that there are no financial resources available to both maintain the catchment committees as well as to set-up institutional structures, including office premises or to hire employees. The Lake Albert Catchment Manager claimed that there does not exist any legal backing from national authorities and, thus, the decentralised structures are still in their infants (Kitanirike 2019).

The principle idea of devolution and the introduction of decentralised structures incorporate the sharing of governmental functions, power and resources between the national and county/district level (Constitution of Uganda 1995, Constitution of Kenya 2010). As a result, a fund was established under the Ministry of Finance and The National Treasury to give both less developed counties and districts, as well as their communities the opportunity for empowerment. The aim is to enable them to "catch up" with more developed regions and communities (Ibid). On the basis of the various indicators shown above, it is clear that urban areas and economic stakeholders, whose revenues from horticulture, tourism, energy or mining contribute to an increasing GDP, are the most favourable by national decision-makers, while mostly unskilled and local resource users, who are dependent on agricultural, fishing and pastoralism, appear to be the most marginalized. There is strong evidence that national-level authorities provide statements of political decision-making to favour policies, stakeholders and regions serving their economic development plans.

The named challenges have undermined the effectiveness of devolution and, therewith, the financial fund cannot serve its original objectives. One major challenge is that ongoing political decision-makings work against the principle of separation of powers and still follow a top-down approach. Accordingly, a number of resources and water related projects are not related to the needs of the community and, hence, are not realised. Another challenge includes the low capacity of the sub-county and district authorities to realise projects related to the needs of the communities. Often, the county and district officers are not

given a real opportunity to make decisions on their own, since the national leaders make all the important decisions and expect the communities to accept them. Thus, they do not have the autonomy over the decision-making process, although it is guaranteed by the existing laws. More so, community members and the rural population are often unaware of the decentralised structures and, therefore, hardly participate in critical stages or question the decision-making processes. Another reason for this inactivity is that community members fear arrests, the loss of jobs or access to resources[59] if they participate in community meetings or challenge sub-county officers. Most of this information was retrieved from focus-group discussions. The researcher was not able to cross-check this information with other sources. Accordingly, a note of caution is advisable. Another challenge which should not be underestimated is corruption. During the drafting process of devolution and the decentralised system, critical voices argued that the management of the new system should not be in the same hands as of the people who established it (Wamuyu 2016). It is worth noticing that it has been the case in both countries that sub-national institutions followed national powers and guidelines as often relatives of national authorities hold power on a sub-national or local level of decision-making. Moreover, some community-based organizations follow the top-down approach as they get access to groundwater, land or other public services in return.

The present discussion revealed that the implementation of the governmental structures according to the laws in place stagnated . When combined, the contradiction between the economic development plans, the laws in place and the institutional effectiveness indeed have the potential to increase existing inequalities which both countries have grappled with since colonial times. It is generally accepted by both Kenyans and Ugandans that what is lacking is political will to make the devolved and decentralised system of government work. It seems that many powerful people (at a political and economic level) have vested interests in centralized power structures again. Resulting thereof, they are responsible for the high levels of vulnerability and low levels of adaptive capacity associated with environmental and economic changes for the local resource users around Lake Naivasha and Lake

[59] Community members at Lake Naivasha reported that the Cargo Centre at Lake Naivasha will limit the forest, land and water coverage as it is planned to divert water from Malewa river to the Cargo Centre directly. However, one can hardly find critical voices or even community mobilizations against this infrastructural project. Local resource users and a member of a community-based organization mentioned the disappearance of colleagues and friends after they have voiced their concerns about the economic project.

Wamala. This, finally, increases the inequalities in the regions and results in higher insecurity perceptions.

7.5 Vulnerability and Conflict Risk

This section discusses the conflict risks which are associated with the changes in resource access and resource distribution. It firstly looks at the social implications the resource users face. The implications are actor and location-specific because they depend on the stakeholders' vulnerability to the mentioned changes. The section moves on to discuss the likelihood that conflicts erupt between and within the stakeholder groups. In particular, the dimension of community-community conflict is focussed on.

7.5.1 Social Implications

The reduction of water, land and air quality will negatively affect food security and the daily livelihood of especially rain-fed dependent stakeholders around Lake Naivasha and Lake Wamala. The resilience of economic stakeholders, county and district officials and senior employees from non-governmental and community-based organizations is higher because they have, on the one hand, enough funds available to buy land titles or water to sustain a living. On the other hand, their level of education is greater as they have been able to attend primary and secondary school, or even vocational training or university and, thus, often move to Nairobi in search of employment in the industrial sector[60]. Moreover, political connections and ethnic affiliations grant those actors preferential access to higher education, springs[61] and land titles[62] and, hence, reduces their dependency on the lake's water and public land to sustain a daily living.

Because of environmental degradations, biodiversity is lost, which in turn accelerates the effects of climate change in the two basins and makes sowing unpredictable. Based on the

[60] Especially young people move to urban areas (Nairobi, Mombasa or Kampala) in search for education and employment. Studies have shown an increase in unemployment rates and insecurity especially in slum areas in Nairobi and Mombasa as a result of the mentioned internal migrations (see e.g. Shem Otoi 2016; Peter et al. 2018, Otieno 2019). However, it is beyond the scope of this study to discuss social implications and resulting conflict dynamics thereof.

[61] Around Lake Naivasha, it was reported that senior employees from non-governmental and community-based organizations have been granted water access through springs or water tanks at their private premises. It was indicated that these community and non-governmental organizations decrease their level of criticism regarding the economic projects undertaken and resulting land and water shortages and resource access points in return. The researcher was able to observe this once. However, these data must be interpreted with caution because it is not based on hard evidence or multiple observations and statements.

[62] Around Lake Wamala, respondents reported that kinship, political connections or rich businessmen acquired public land through the national government to sell it to international companies shortly after.

IPCC scenario, the impacts of climate change are likely to result in some 1,8 million extra cattle which could be lost till 2030 because of increased drought frequency. It is projected that the value of the lost animals and production foregone amount to 630 million USD (Herrero et al. 2010; IPCC 2019). Likewise, the IPCC AR 5 scenario forecasts compound stress on water resources, reduced crop productivity and livelihood and food insecurity as well as higher risks of water-borne diseases due to increased temperatures, heat waves, droughts and more intense precipitations (IPCC AR 5 2014). In addition to the losses caused by unpredictable seasonal changes, the lake level fluctuations at Lake Naivasha led to agricultural losses, as soil and seeds have been washed away. Due to the limited space around Lake Naivasha, small-holder farmers move into the catchment areas at one of the four remaining landing sites to do farming. The decline in water and grazing areas forces pastoralists to move farther away from their original migration routes in search of water and land. Hence, the probability that small-holder farmers and pastoralists share the space and available resources at the lake's access points more frequently increases. Whereas pastoralists in Uganda have not yet moved to central Uganda, nowadays pastoralists are found around Lake Naivasha.

Around Lake Naivasha, fishermen have united in fishing associations to increase their level of income. Most associations sell their fish directly to traders who in turn sell the fish in the market in Naivasha or Nairobi. However, the number of fishermen is increasing, as former employees of the flower farms, unemployed youth from the informal settlements or erstwhile farmers turn to fishing. This increases the competitiveness between the unions, results in overfishing and illegal fishing methods. The most obvious finding to emerge from this analysis is that the different groups of local resource users push for the remaining four landing sites nowadays, and therefore, social tensions are increasing around Lake Naivasha. On the contrary, the pressure on farmland is increasing in the surroundings of Lake Wamala, as former fishermen are forced to change their profession because fishing is not possible anymore.

As a result, local resource users already experience reductions in crop and fish stock. Moreover, pastoralists reported on starving cattle as well as the loss of cattle due to road accidents. Thus, most resource users live below the poverty line and are unable to purchase water or food from the nearby towns. Likewise, the lack of adequate funding makes it impossible for parents to pay school fees or purchase school materials for their children. This might result in higher unemployment rates in the mid to long term. The lack of sufficient

financial resources and a social welfare system leads also to the continuously high birth rate (see table 7.3). Another important social implication arising from internal migration and high birth rates are increasing social tensions between the villagers in the informal settlements over housing, the few water stations and the employment opportunities for unskilled workers.

7.5.2 Conflict Risk

The information from the interviews have been used to calculate the risk over the outbreak of water-related conflicts using the software MAXQDA and Excel (see chapter 2). The section *Risk Conflict Outbreak* assesses the general risk over the outbreak of water-related conflicts. The other five sections assess the likelihood that water-related conflicts erupt between one stakeholder group and another. The social implications which result from the economic development agendas is higher for the local resource users compared to the oth-

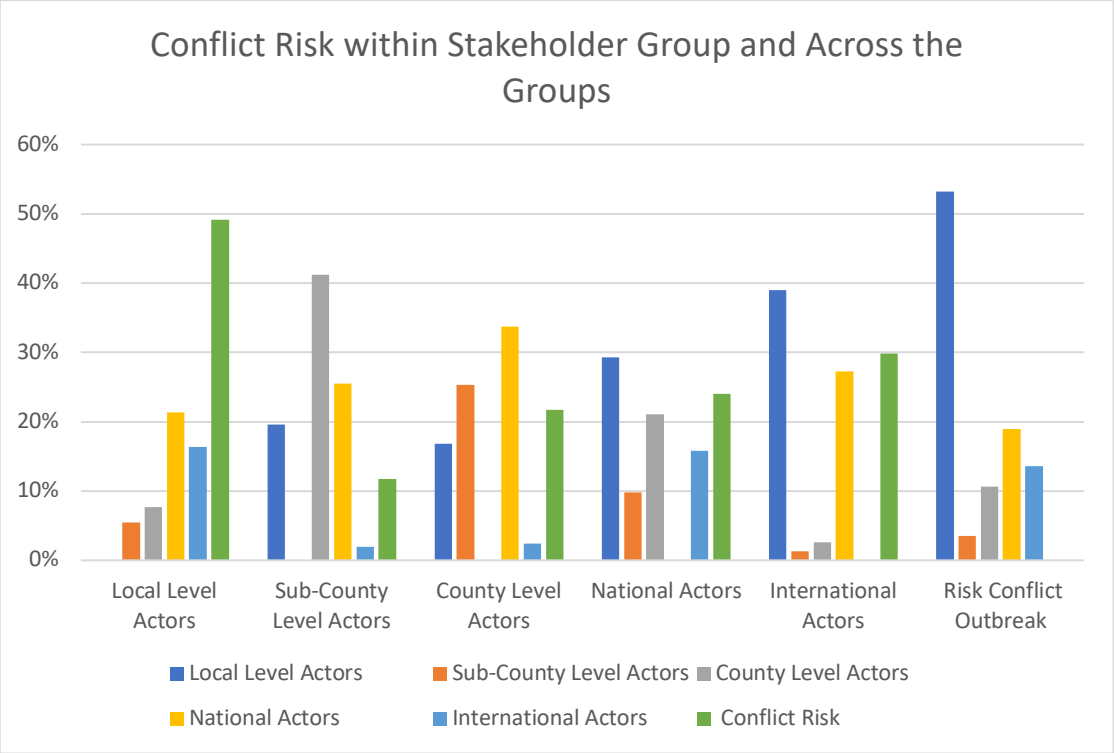

Figure 7.4: % of identified conflict risk within the stakeholder group and across the groups in Kenya and Uganda (Source: The Author 2020)

ers. The current study found out that the local resource users at both lakes face significant challenges which result from political, socio-economic and environmental changes. Based on the data evaluation, the risk over the eruption of water-related conflicts is the highest within the group of the local level actors (49 per cent) (see figure 7.4). The figure shows that the group of local resource users has, by far, the highest values of conflict risks, not just within its stakeholder group but also across the groups. As previously indicated, the

conflicts between local resource users and national (21 per cent) or international actors (16 per cent) are non-violent and are, at most, demonstrations or the expression of critical voices by community leaders against the economic projects. A closer inspection of the figure shows that the conflict risk between local level actors and sub-county (5 per cent) or county level actors (8 per cent) is lower compared to national and international ones. A possible explanation for these results may be the lack of adequate knowledge about the governance compentancies of sub-national actors. Another possible explanation for this is that neither devolution nor decentralisation is implemented sufficiently.

The previous reason can also be attributed to the low conflict risk between sub-national and national level actors. Furthermore, the analysis showed that kinship ties also limit a stricter enforcement of devolution and the decentralised structures. Even though national and international actors reported a clash of interest the economic orientation, the risk of the outbreak of a conflict can be weighed as being close to zero. This positive relationship is explained by, firstly the high level of dependency of the national actors from the financial development contributions on mostly international organizations. Secondly, national actors benefit from the undertaken economic investments of international economic actors and, hence, the government of both countries are reluctant to express criticism regarding the international actors' behaviour. More so, governmental actors give international and national economic actors plenty of rope as they are afraid that economic actors close their sites at one of the lakes to set up the same business in another country. The latter happened already around Lake Naivasha. Some flower enterprises shut down and moved to Ethopia as the government of Ethiopia is offering better economic conditions[63] than Kenya (Kimeta 2018).

[63] e.g. tax reduction for a period of over 20 years.

The discussion and data evaluation noted a strong relationship between local resource users' high sensitivity to external changes, low adaptive capacity and higher levels of insecurity. These results, further, support the perception of higher conflict risks within the group of local-level actors compared to all other stakeholder groups. The data in figure 7.5 highlight that local level actors are very vulnerable to conflict (53 per cent) in Kenya and Uganda. International (14 per cent) and national actors (19 per cent) reported that clashes of interests are possible conflict drivers. However, they mentioned that those can be solved through power sharing or grant benefits. Local level actors indicated that their social tensions are settled by often violent behaviour (see the chapter 9).

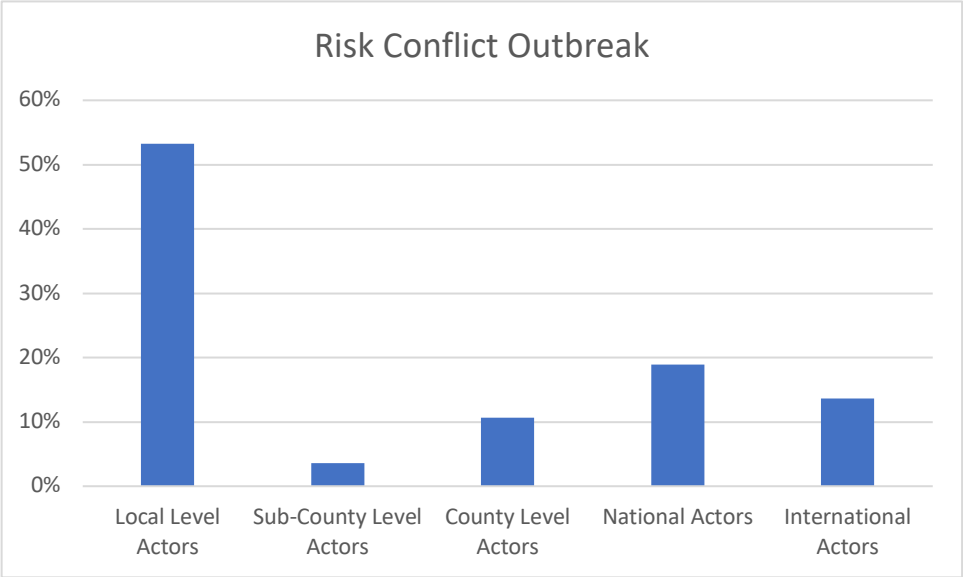

Figure 7.5: % likelihood for outbreak of conflicts within the stakeholder categories (Source: The Author 2020)

7.6 Brief Summary

This chapter aimed to address two questions: First, why do conflicts only erupt between local resource users? Second, to what extent does climate change cause water shortages at both lakes? All stakeholder groups around Lake Naivasha and Lake Wamala face significant challenges in resource access and resource distribution which originate from political and economic changes. The implementation of the economic agendas is moving forward. The current extractions, infrastructural projects or horticultural activities promote employment opportunities for unskilled workers and increase the economic and infrastructural development at both lake basins. Accordingly, this might reduce the vulnerability of especially the local resource users because the economic developments shall increase their adaptive capacity. However, the economic projects accelerate environmental degradations, put pressure on the water levels and increase the pollution of soil and water.

Therefore, the economic projects do not strengthen the local people's adaptive capacity. Instead, the study showed that these economic developments are likely to outstrip their vulnerability further.

The majority of both Lake Naivasha and Lake Wamala's people are strongly dependent on agriculture, pastoralism and fishing for their income and employment. Consequently, the industrial projects are expected to undermine their food security, resilience, resource access and, therewith, their overall livelihood perspective in the region. Their low resilience is significantly undermined by the strong population growth which will increase the demand for food, water and income opportunities in the hotels, flower farms or artisanal mining sites. Both governments have so far failed to provide local resource users with basic services, including education, water infrastructure, health centres and security. Added to that, environmental changes aggravate climate-related effects on the availability of resources. Therefore, the gap between the supply and demand of critical resources (i.e. water and land) is widening. Nonetheless, an obvious finding to emerge from the analysis is that there is not sufficient evidence to draw a direct link that climate change increases water shortages in the two study areas.

It may be the case that collective vulnerability is intensified in the mid to long term by "exogenous" environmental changes which will occur due to global climate change and environmental degradation. This part of the study also accords with earlier observations, which showed that the links between climate change, resource availability and conflict are often indirect and complex (see e.g. Buhaug 2015; Schleussner et al. 2016; Adams et al. 2018). Nevertheless, the two aspects of vulnerability are obviously interlinked. At the community level, social vulnerability is affected by the relative distribution of income, access to and diversity of economic assets, access to and the distribution of resources and by the operation of informal social security arrangements. Further, individual vulnerability to economic and environmental changes is determined by the institutional arrangements which organize warning, planning and other services summarized as "collective" vulnerability in table 7.4. The likely future extent of the social implications depends on firstly, how ongoing and planned macro-economic operations reduce the available land further Secondly, the creation of better employment and education opportunities can limit the dependence on pastoralism, farming or fishing.

	Indicators of Vulnerability	Adaptive Capacity in Relation to Changes
Individual Vulnerability	Distribution of Incomes, Diversity of Economic Assets, Education, Dependency on Resources	Poverty, Access to and Distribution of Resources
Collective Vulnerability	GDP, Inequality, Development Levels, Indicators of Institutional Arrangements, Formal and informal security	Levels of Infrastructure and Development, Institutional Effectiveness

Table 7.4: Summary Individual and Collective Vulnerability and Adaptive Capacity to Changes for both Kenya and Uganda (Source: The Author 2020)

Together, these results provide important insights into the interrelation between high levels of sensitivity and low levels of adaptive capacity for especially local resource users compared to the other stakeholder groups. These results suggest that there is an association between the levels of conflict risks, the levels of sensitivity and adaptive capacities which result from the environmental and economic changes. The results in this chapter indicate that the risk of the outbreak of conflicts is significant for the local-level actors regarding water access and water distribution. The next chapter, therefore, moves on to discuss and to analyse the conflict behaviour and dynamics between the local-level actors.

8. Conflict Assessment

As it was pointed out in the previous chapter, the local resource users are confronted with the highest levels of vulnerability and the lowest levels of adaptive capacity concerning resource access and resource distribution. Hence, the risk of the outbreak of water-related conflicts was identified to be the greatest within the local resource user group. What follows is an account of the conflict dynamics, especially between small-holder farmers, pastoralists and fishermen at the two lake sites. The chapter seeks to answer the following three questions: First, what is the temporal and local resolution of the conflict dynamics? Second, what are the main motivations of the conflict actors? Third, what tools do they use to respond to the conflict dynamics in order to achieve their positions, interests and needs in matters related to the conflict issue?

As mentioned in chapter 4, a systemic conflict assessment approach is adopted. This conflict framework discusses types of conflict within the actors' social and political context and explains the relationship between environmental phenomena and natural resource conflicts (Ropers 2008). One element of this conflict assessment approach is, therefore, to distinguish between conflict analysis and context analysis. The context analysis which 'seeks to understand the broader situation, including all economic, social and political factors' (Collaborative Learning Project 2012: 1) was discussed in the previous chapter. This chapter focuses on the conflict analysis part in particular. Based on the empirical findings from field research, the first section of this chapter will compare the general conflict dynamics at Lake Naivasha and Lake Wamala. A detailed conflict assessment of the small-holder farmer and pastoralist conflict at Lake Naivasha and the small-holder farmer and fishermen conflict at Lake Wamala is conducted in the final parts of this chapter. In both conflict assessments, the conflict profile, the actors involved and their perspectives, as well as the structural and proximate causes and the dynamics of the conflict, are examined. The second part of the conflict analysis focuses on the drawing of the conflict map to highlight latent as well as manifest forms of violence. The last part of the chapter discusses the response tools used by the conflict actors to achieve their positions, interests and needs regarding the conflict issue. The findings are summarized in the final part of the chapter.

8.1 Conflict Dynamics between and across Local Level Actors at Lake Naivasha and Lake Wamala

The conflict analysis is geared to the four-stage process as proposed by Ropers (2008). Firstly, it needs to be defined whether a conflict exists. Secondly, a detailed conflict analysis is conducted. This step includes the identification of the conflict parties, the conflict issues of the identified actors with respect to their positions, interests, values, needs, perceptions, powers and feelings (Galtung 1996; Ropers 2008; Ramsbotham et al. 2011). More so, the history and duration of the conflict, and structural and contextual features are described, which influence the conflict and determine its dynamics respectively (Poolmann et al. 2009; Ramsbotham et al. 2011). The most frequent differentiation takes place between structural and proximate causes of a conflict. Structural causes are long-term or strategic causes which are built on norms, structures and policies within a political and social system. Proximate causes are happening more recently and can change quickly.

The data analysis (see figure 7.4) illustrated that the risk over the outbreak of conflicts are the highest within the local level stakeholder group. The figure, however, does neither present the breakdown of the identified stakeholders within the group of local level actors, nor provides information on how the conflict dynamics differ between Lake Naivasha and Lake Wamala. Respectively, a mixed-method case study analysis approach allowed the researcher to identify conflict risk between the local level actors. The data analysis method, firstly, provided in-depth information on the frequency distribution within the local resource users' stakeholder group. Secondly, the distribution of how the conflict risk differs

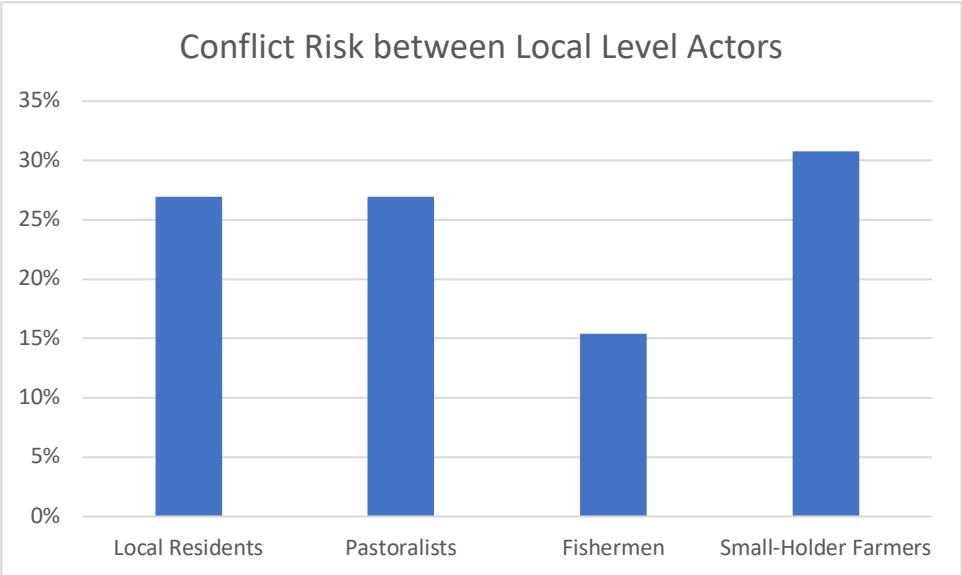

Figure 8.1: Conflict Risk between local level actors (Source: The Author 2020)

between the two case studies was captured. The results of the conflict risk distribution between the local level actors are set out in figure 8.1. From the figure above it can be seen that the conflict risk between the small-holder farmers is the greatest (31 per cent), followed by the local population (27 per cent) and the pastoralists (27 per cent). The conflict risk among the fishermen is the lowest (15 per cent). What stands out is the relatively high conflict risk between the pastoralist communities, even though the previous analysis demonstrated that pastoralists are hardly found around Lake Wamala. From figure 8.2, it is apparent that the high numbers for pastoralists is due to the appearance of pastoralists

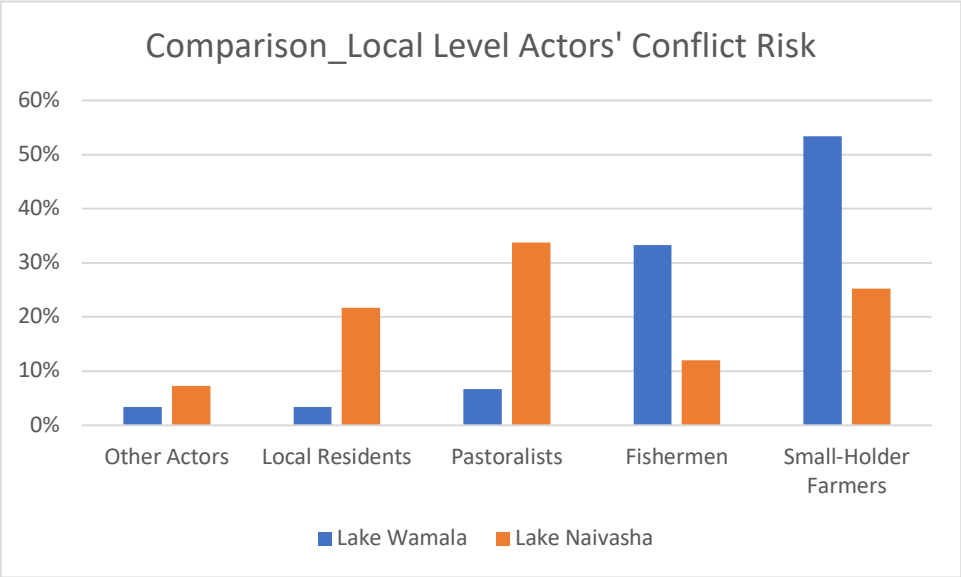

Figure 8.2: Comparison of Conflict Risk between local level actors at Lake Naivasha and Lake Wamala (Source: The Author 2020)

at Lake Naviasha (34 per cent) compared to 7 per cent for Lake Wamala. The great values for Lake Naivasha's local population derive from the increasing population numbers in the lake basin and especially in the informal settlements. As such, more people push onto the four remaining landing sites or the few water access points in the informal settlement and, therefore, the demand is increasing, while at the same time access points are decreasing. Contrarily, the reported conflict risk between the local residents is almost non-existant at Lake Wamala. The reason for this has to do with the small amount of people living at the lake directly. More so, in the wider surroundings of Lake Wamala the communities are often far away from each other so people hardly get together. Comparing the conflict risk between fishermen and small-holder farmers, the chance for a conflict to erupt is higher in both cases for Lake Wamala. There are two likely causes for the difference between the conflict risk. The offer of employment to unskilled workers in the flower farms and hotels is a reason why former small-holder farmers turn to other income opportunities. The merger of fishermen in fishing associations slows down the conflict risk between the fishermen

at Lake Naivasha. The two latter cases can be ruled out for small-holder farmers and fishermen at Lake Wamala.

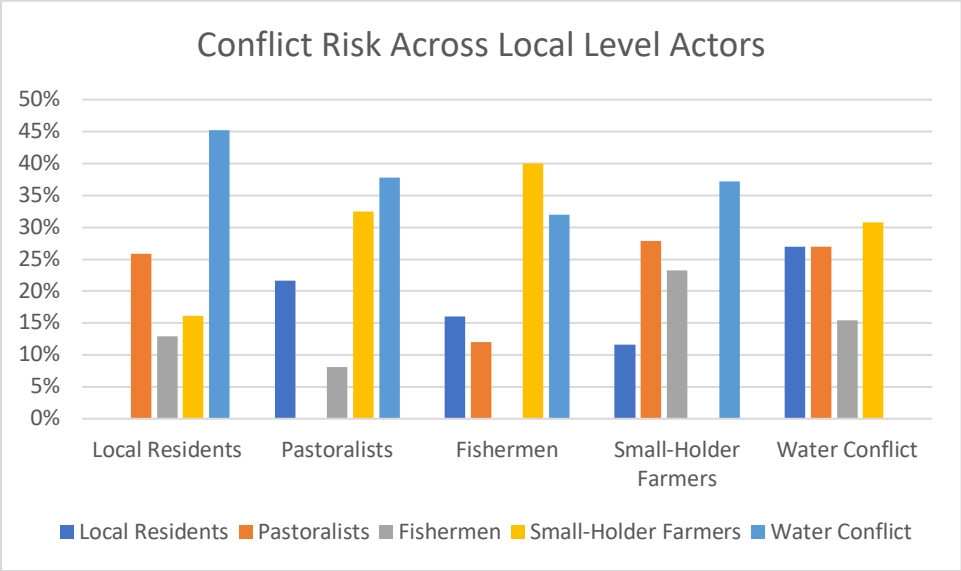

Figure 8.3: Risk over the outbreak of water-related conflicts across the local level actors (Source: The Author 2020)

The data and the recent discussion of the social implications on the conflict risk provide further support for conflictual tensions, not only within the group of small-holder farmers or local residents, but also in between these groups. The figure above (see figure 8.3) shows that the highest values for intergroup conflicts are between pastoralists and small-holder farmers (32 per cent) and among fishermen and small-holder farmers (40 per cent). The lowest values are reported for pastoralists and fishermen (8 per cent). From the context analysis, the situation seems similar for both lake sites. Nevertheless, the data analysis confirms differences regarding the conflict risks between the various local resource user groups. Therefore, the following sections discuss the conflict situation between small-holder farmers and pastoralists for Lake Naivasha and the conflict situation associated amidst small-holder farmers and fishermen at Lake Wamala.

8.2 Small-Holder Farmer-Pastoralist Conflict at Lake Naivasha

8.2.1 Conflict Actors (Positions, Interests, Needs)

As described on the previous pages, conflicts already exist between local resource users. This part of the section is guided by the overarching question - who are the actors that influence conflict dynamics? Drawing on Fisher et al. (2000), primary actors are defined as those who have direct impact on the conflict. Secondary actors are characterized as those who have indirect impact on the conflict. Lastly, tertiary actors are either those who the conflict has an impact on, as those who engage in peace activities or those who act as

spoilers[64] (Fisher et al. 2000). The primary conflictual actors are small-holder farmers and pastoralists. The conflict situation is influenced by both national and regional political stakeholder's decision-making processes, as well as national and international economic actors. Further, fishermen and local residents around Lake Naivasha basin can be classified as tertiary actors.

SMALL-HOLDER FARMERS		PASTORALISTS
Uphold land authority over remaining farming areas, claim over free water access and free farming land	**POSITIONS** **What one *says* they want**	Financial benefits from improved infrastructural developments, claim over grazing authority and water access
Land redistribution, improved water access and infrastructure, increased access to health and education services, employment	**INTERESTS** **What one *really* wants**	Migration routes, water and land access, employment, financial compensations, education and health access
Access to land and water, well-being and security	**NEEDS** **What one *must* have**	Land and water for grazing, well-being and security

Table 8.1: Positions, Interests and Needs of Primary Conflict Actors at Lake Naivasha (Source: The Author 2020)

Both small-holder farmers and pastoralists have competing interests and must make trade-offs. Small-holder farmers take the position that they want to uphold the land authority over the few remaining farming areas without sharing those with other local resource users (see Table 8.1). Furthermore, they insist on the openness of water access routes to the lake's shorelines. They advocate the position that either public farmland remains free for them to use or they demand for the legal use of land within the catchment areas. Contrarily, pastoralists claim authority over public and free land as grazing areas. Additionally, they insist on unprotected water access routes to water their cattle. They argue that they should be allowed free movements, as they are only around for a couple of days before moving further. Regarding the question of employment, pastoralists ask for either financial benefits from the improved infrastructural developments as they lost land through the set-up of economic sites and road constructions. Likewise, they claim jobs in the newly set-up economic sites. The latter holds true especially for the Maasai who lost land around Lake Naivasha or the Samburu in Laikipia county[65]. In a similar vein, Schilling et al. (2015) noted that the Turkana or Pokot claimed financial compensations and employment from Tullow in Turkana county (Schilling et al. 2015). An undertaken field visit confirmed this perspective.

The small-holder farmers' interests can be derived from their dependence on available land and water to pursue their agricultural activities. Consequently, the interest of having a fair and equal land distribution, as well as access to improved water points between all

[64] Spoilers are defined as individuals or groups that actively seek to hinder, delay or undermine conflict settlement approaches (see e.g. Newman/Richmond 2006).

[65] For more detailed information see also e.g. Bond (2014) or Yurco (2017)

stakeholders is pursued. Thus, they are interested in a secure and stable relationship with the other local resource users. Apart from the resource security aspect, they strive for better access to health and education facilities. Access to better education is especially of severe importance as it depicts their potential for an opportunity to get better employment in one of the economic sites. Thus, this interest in education and stable resource access is of crucial importance, as it is directly linked to their need of security. The reintroduction of the traditional rights which regulated the seasonal use of grazing areas by pastoralists in this region and beyond is of significant interest for the pastoral communities. Beyond that, pastoralists have an interest in good relations with other local stakeholders, not least for the reason of accessing land and water. In terms of economic interests, pastoralists are keen to receive financial compensations for the lost land. In a similar vein to small-holder farmers, they are interested in improved education and health centers. Education is seen as a need to be given a choice of whether they want to resettle to other regions or look for skilled employment opportunities. Education might also help them to better understand the existing laws and to negotiate for better conditions with the economic stakeholders. All mentioned interests are, however, directly linked to their need of security and further general well-being.

The positions and interests have to be understood against a wider background to exert power. There is a strong perception among both the pastoral communities and the small-holder farmers that they have been 'forgotten' (Balama 2019; Community Member Karagita 2019) by both the central government and the county representatives. Some small-holder farmers residing in Karagita argued that community-based and non-governmental organizations (spoilers), who formerly expressed critical voices towards the economic investments undertaken, have been bribed with water access points on their private lands or have been granted senior positions and, therefore, remain mostly silent nowadays. Furthermore, the small-holder farmers and pastoralists' low level to exert power is also driven by the companies and governmental representatives' high capabilities to exert power over political institutions. Whereas these secondary actors have both financial means, relations to and support of the national government, small-holder farmers and pastoralists argued that they have been 'chased away' (Kapila 2018; Balama 2019) from their land by the economic actors who fenced off most public farming and grazing areas (Kapila 2018). As a result, small-holder farmers and pastoralists can only observe the flower farms and other economic actors coming in with heavy and expansive machinery as well as with water

purification plants, building roads, drilling water on their private premises or constructing water infrastructures at the economic sites or private land that both pastoralists and the farmers are unable to access. The mentioned perceptions, the low level of resilience and the high economic developments undertaken in Lake Naivasha basin create a hotbed for extremely high inter-community hostilities. The latter is even accelerated as pastoralists move around armed. Majority of the respondents commented that pastoralists purchase guns from the conflicting bordering regions of Kenya to South Sudan, Ethiopia or Somalia. Accordingly, it was reported that pastoralists are able to use weapons to protect their cattle. Small-holder farmers, however, are left with their daily farming gadgets or provisional fences to protect their agricultural land. In contrast to small-holder farmers, pastoralists seem to have more power to assert their positions and interests towards small-holder farmers.

As small-holder farmers have only limited economic and social influence on resource access or land and water distribution, they do not seem to have noteworthy capacities to affect the conflictual setting in their favour. Their low capacity can be related to their permanent residence around the lake and are, therefore, easily traced in case of demonstrations or conflictual behaviour towards the secondary actors. More so, as some small-holder farmers also work in the flower farms to earn an additional income, they reported to be relieved from their obligation if they demonstrate against working-conditions or the closing of access routes. Thus, this explanation may also be attributed to the small-holder farmers low capacity to affect the conflict context. The only alternative small-holder farmers have to alter the conflict context is by fencing off their farmland or by guarding against trespassing of pastoralists and their cattle.

Similarly, pastoralists' capacity to influence the conflict setting is considered to be low. With regard to their relationship to secondary actors, pastoralists argued that neither the national government and country representatives nor the economic stakeholders offered them any employment or financial compensations, despite demonstrations and expressed claims for financial compensation. Thus, the pastoralists' expectation towards almost all secondary actors is characterized by frustration. The capacity of pastoralists to change the conflictual setting towards small-holder farmers can be described to be higher than their opponent's. A possible explanation for this is the short-term stay of the pastoralists in the area and, therefore, they are more likely to be involved in conflictual behaviour. Moreover, pastoralists are used to conflictual situations, as livestock raiding and the usage of semi and

fully automatic small arms became part of pastoral life and still characterizes intra-pastoral conflicts nowadays (see e.g. Adem et al. 2012; Ember et al. 2012; Schilling et al. 2012). As a result, pastoralists are more likely to affect the small-holder farmers vis-à-vis the pastoral conflict setting in their favour through the use of arms.

When asked about possible incentives for peace, both groups stated that they do not foresee any improvement of the situation in the short-term. Historic grievances (see section 8.2.2), ethnic affiliations and also prestige are possible incentives for conflict for the Maasai and Samburu. The mentioned incentives for conflicts are said to be similar for small-holder farmers. Added to that, small-holder farmers also argue that economic motives (in form of crops) are reasons for the continuation of conflictual behaviour. In addition to secondary actors who influence the conflict setting through economic and political kinship, the other local-level actors can be considered as tertiary actors who influence the conflict dynamics (see sub-section 8.2.3). Because of the political ties and the funding that community-based and local non-governmental organizations receive from national actors and also partly from international organizations, they might be considered as potential spoilers who could divide the local level actors even further.

Hostile perceptions among the small-holder farmers and the pastoralists can be considered as an implication of the baseline analysis of the conflict actors and their characteristics respectively. As it will be discussed in further detail below, the perceptions between the primary conflict actors towards the tertiary actors can also be described as hostile, while the perceptions of the primary actors against secondary actors range from hostile nowadays to cautiously hopeful in the mid-term.

8.2.2 Conflict Profile and Conflict Causes (History and Structural and Proximate Causes)

The overarching questions discussing the conflict profile are, firstly, what causes and caused the conflict and, secondly, what is the context that shapes the conflict? As explained in chapter 6, Naivasha basin was historically a Maasai grazing region and its main industry was foremost farming and fishing (Kundu et al. 2010). At the present time, there are a number of economic activities, resulting in a complex situation ‘as there are different users from different locations in different economic sectors’ (Vivekananda 2015: 45). An employee from Lake Naivasha Water Resource Users Association (LNRUA) stated accordingly

that the area is 'a very cosmopolitan area with a lot of different tribes[66] with different needs [that] need to be balanced'. With the population increase, the grievances, especially between young men from opposing tribes and from different economic backgrounds (i.e.

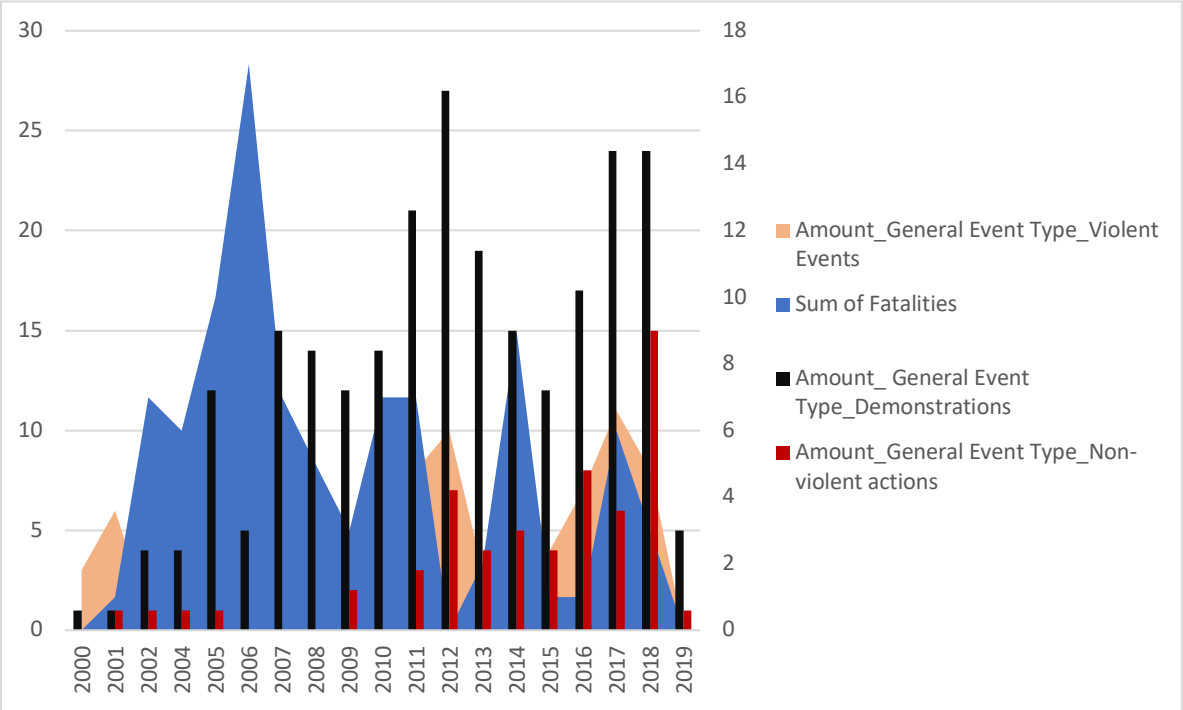

Figure 8.4: Timeline of Conflict Events at Lake Naivasha since 2000 (Source: The Author 2020 based on ACLED 2019 and SCAD 2019)

small-holder farmers, pastoralists or fishermen), have been the strongest. Taking a closer look at the existing conflict data for Lake Naivasha basin, the conflict profile has mostly been local, sporadic and of low intensity without a direct involvement of government and government security forces[67] (see figure 8.4).

Alongside the indicated higher levels of conflict between local-level actors, the analysis of the population development affirms the settlement of members of the Kikuyu tribe around Lake Naivasha after independence. While they practiced rain-fed farming mostly, the incoming fishermen primarily belonged to the Luo tribe. As a result of environmental destructions, over-abstractions in the upper catchment areas and climate change, the amount of cattle increased in the basin, as both Maasai and Samburu came closer to the lake shores. As indicated in the previous section, inter-tribal grievances have been mentioned as a reason for the continuation of conflictive behaviour among the pastoralists, but also

[66] During the interview, it became apparent that the word 'tribe' included, for the interviewee, not only an ethnic affiliation, but the member of LNRUA also used the word tribe for other groups of people who are residing in the basin nowadays, including e.g. economic stakeholders, tourists or NGOs and political actors.

[67] The violent events after the general elections in 2008 and 2016 are exceptions. During this time, the government, as well as security forces, have been involved in violent conflict settlement and resolution. Consequently, the unusual high amount of fatalities in 2008 have to be interpreted with caution as those are less the result of water-related conflicts and more the consequence of the violent post-election upheavals.

between small-holder farmers and pastoralists. Previous studies analysed the structures behind the animosities (see e.g. Shettima/Tar 2008; Goldsmith 2013; Schilling et al. 2014). Ahead of the arrival of economic stakeholders, Kenya's government has conferred preferential land rights to members (often small-holder farmers) of their own ethnic group, thereby marginalizing any other 'foreign' group. Changes in governmental power coincided with the empowerment of the 'other' group and, thereby, the social tensions between the groups over land rights or resource accessibility increased. Respectively, reported violent and non-violent events (figure 8.4) frequently revolved around issues concerning land use, in addition to disputes over water and livestock raiding (Ibid 2014; ACLED 2018). Livestock raiding, especially, is perceived as a conflict issue that weighs heavily between the different livestock owner groups. Inter-pastoral conflicts have been there for a long time and are still accelerating existing conflict as it is perceived as a good means to solve past issues (Humprey 2019).

Furthermore, the residents from Karagita were unanimous in the view that there are higher insecurity levels in the informal settlements. The residents articulated their concern that the arrival of people from other parts of the country increases the levels of insecurity in the informal settlement. Thus, they linked the high crime rates to the new incomers and their lack of employment. A few respondents identified youth employment as the biggest challenge the communities face and, therefore, argued it to be the biggest conflict driver in the basin. When asked about past conflict drivers, interviewees mentioned continued acts of violence by youth gangs. This statement is supported by the data retrieved from both ACLED and SCAD. However, caution must be applied as the findings have only been communicated by a small sample size. Violent events in the form of rioting ensues after sexual exploitations in the flower farms. Furthermore, after a boy drowned in an irrigation, there have been some violent clashes between the Maasai and a flower farm. The Maasai held the flower farm responsible for the death of the boy as the channel was constructed by the flower farm. Non-violent events included pastoralists protesting against the drilling of geothermal vales and resulting fears of environmental and health damages, inter-tribal clashes after the attempts of cattle stealing or demonstrations against the government for its inactivity to follow up on the death of a local resident who seemed to be shot while trespassing a private land to access the lake (ACLED 2019; SCAD 2019).

In summary, the historical aspects indicate that both structural (root causes) and proximate motivations (immediate causes) caused the conflict profile. Structural causes, including

political structures and affiliations, as well as economic growth processes, shaped the conflict dynamics between the primary, secondary and tertiary actors around Lake Naivasha. Social aspects, such as ethnic affiliations, characterized the conflict dynamics between the primary conflict actors, especially after Kenya gained independence. This, for example, resulted in unequal land distribution and fuelled inter-ethnic grievances. After the economic potential of the area (proximate cause) was discovered, institutional reform processes and economic growth agendas shifted the conflict profile. Land and water resources have been used by the economic actors increasingly. Resulting thereof, primary actors demonstrated against the secondary actors' resource exploitation because their economic undertakings reduced the local level actors' access to water and land resources. However, since the turn of the millennium, violent and non-violent events decreased because local-level actors feared job or water supply constraints (structural causes). Whereas the violent and non-violent behaviour of the primary actors towards the secondary actors slowed down, the conflictual situation between the different local-level actors intensified. Since the beginning of the 2000s, people migrated to Lake Naivasha to either graze their cattle, set up agricultural activities or in search of labour, social amenities and natural resources. More so, the overspill of violent conflict and arms proliferation from the neighbouring countries (Somalia or South Sudan) reinforced internal migration because of violent attacks by terrorist groups in the border region (e.g. Al Shabab) (proximate cause).

To sum up, political power contestations shaped inter-ethnic rivalries after independence. This still serves partly as a conflict trigger between small-holder farmers and pastoralists nowadays[68]. Moreover, economic developments accelerated inequalities and resulted in social and economic marginalization of especially the primary and tertiary conflict actors because they are still dependent on natural resources to sustain a living. The prioritization of economic actors and the lack of county and local authority over decision-making processes accelerate political exclusion and decreased resource access for local-level actors. The causes of conflictual behaviour are deeply rooted and politically entrenched (see figure 8.4). However, conflictual tensions were increasingly concentrated at the local level. Taken together, these results suggest that the conflict profile over water alienation is shaped without direct governmental and security force involvement (exception: post-election

[68] It needs to be mentioned that inter-ethnic rivalries do not shape the conflict profile to a large extent anymore. However, interviewees reported that historical grievances accelerate existing and upcoming conflict dynamics.

violence in 2008, 09) and takes place between the primary conflict actors. Nevertheless, the resource demand of secondary and tertiary actors triggers the conflict dynamics between the primary conflict actors.

8.2.3 Conflict Dynamics

Having previously discussed the conflict actors, the profile and causes of the conflict, this section moves on to examine the current conflict dynamics and trends between small-holder farmers and pastoralists. The considered dynamics result from the interaction of the conflict history, its actors and causes and how they can be triggered by current ongoing events (Herbert 2017).

The current conflict dynamics and the anger of the small-holder farmers against the pastoralists and vice versa are not much driven by the externalities of the resource exploitations of the flower farms, hotel sites and the geothermal companies. The analysis of the conflict trends revealed that unmet expectations by the small-holder farmers and pastoralists are recent conflict drivers. As it can be seen from figure 8.4, the quantity of violent and non-violent events over the course of the last 20 years was around two to four events per year. This result, however, is somewhat counterintuitive. The most striking observation to emerge from the two research phases and the comparison with the conflict data from ACLED or SCAD was the high number of conflictual tensions which took place (and are still taking place) without external perception.

During the first research visit, a resident[69] from Naivasha described the situation as 'creating a lot of social tensions' resulting in 'disputes which do not necessarily mean that people are having a real fight'. Without being asked about it, participants of a mixed gender focus group discussion mentioned that the flower farms and hotels are increasingly viewed as stressors and an enemy due to their pollution of the water or their unpredictability in offering labour or the handling of its employees (dismissal or sexual exploitations). During the second research phase, the community members and residents of Naivasha spoke of another stressor which worsens the general situation for the local level actors: geothermal companies and the cargo-centre which is going to be constructed. The majority of the interviewees supported the opinion that the conflict dynamics between the local level actors,

[69] Majority of the interviews were anonymised (see Chapter 2). Therefore, resident refers to a person who is living at Lake Naivasha.

especially between pastoralists and small-holder farmers and between the residents in the informal settlements, has built up generally.

Resulting thereof, their situation can be characterized as being caught between multiple enemies, i.e. on one side there are economic companies and political actors, while on the other side there are local-level actors and external (Kenyan) actors migrating to the lake. Between the two research visits, the level of non-violent and violent acts between the small-holder farmers and the pastoralists had increased. When asked about the rise in inter-communal conflicts, the communities were unanimous in the view that demonstrations, strikes for better working conditions or protests against the closure of a public corridor leading to Lake Naivasha result in dismissals or change in water ratios in the installed water tanks. Hence, non-violent and violent acts against the companies are no longer considered as promising activities to change the situation. This in turn, however, accelerated the level of conflict among the local level actors, especially between the primary conflict actors.

The increasingly violent behaviour between the primary actors undermines the need for conflict resolution and, therewith, reinforces the need for violent acts to enforce one's own right to water and land access. Horizontal economic and political inequalities, furthermore, increases the risk of conflict as a result of, firstly, the absence of effective formal regulations and a general lack of government involvement in the local level actors' concerns. Secondly, economic growth, as set out in the Vision 2030, continues to be driven by investments in infrastructure, constructions, financial services and rapid urbanization, and consequently, does not meet the needs and level of education and knowledge of the primary conflict actors. Thirdly, the society in Kenya remains extremely stratified and political kinship and economic and political privileges fuel grievances between the local-level actors and community-based organizations or county government representatives as public access points are closed off or because of the economic benefits employees receive. A resident summarized this perception by stating 'it is a matter of the rich really fucking over the poor. The businesses are the rich. And [there is] a corrupt government and they all [including the county government and community-based organizations] work very well hand in hand'. He, furthermore, mentioned that inter-communal riots only happen because 'people are screwed over'. President Uhuru Kenyatta's declared war against corruption to make his legacy (BBC 2018) is seen by many only as a public activity to secure funding from international donors and to attract more international businesses.

The farmer-herder conflict and conflicts between the primary and tertiary actors are triggered by climate change. For instance, increased drought frequency and heavy rainfalls force nomadic herders to change their itineraries and compete for water and land with the small-holder farmers, especially at the four remaining landing sites. More so, cattle are also increasingly grazing along the road, causing road accidents. This, furthermore, affects the wildlife corridor between Hells Gate National Park and the ranches along the lake. The gradual changes in weather conditions open up new opportunities for cultivation and incite agricultural encroachment onto pastoral land and the catchment areas. In the absence of effective regulations and conflict mitigation mechanisms this might also lead to communal violence in the short to mid-term. Commitments to pastoralists and small-holder farmers by state and regional authorities have often remained unfulfilled. As a result, historically grown grievances, which caused pastoralist and farmer-herder conflicts in the past, could not have been addressed and continue to trigger the conflicts in recent times.

Additionally, spoilers have the power to change the intensity or direction of violence in the current conflict setting. In the conflict under consideration, community-based and non-governmental organizations can be considered as spoilers. Interviewees reported that over the course of the last few years, community-based organizations decreased their active commitments to advocate for land and water rights for the primary and tertiary actors. During the field visits, employees from community-based organizations and NGOs explained that they try to provide water for the communities living nearby or to press for the implementation of existing laws. However, they highlighted that they do not have the power and influences in 'setting up good policies for [the] people […] who are living around'. During the first research visit, the researcher was able to participate in an NGO representative stakeholder meeting at Lake Naivasha. During this meeting, the employees committed themselves to advocate for the enforcement of environmental laws and to put pressure on the local authorities to create better living conditions for local-level actors. The second research visit revealed in several ways that their effectiveness is limited to certain actor groups (e.g. advocating for fishermen rights given their contribution to the economy) or for their own interest only. As such, NGOs or employees of community-based organizations received permits or land titles from NEMA in case they work within the legislative framework provided by the national authorities and, thereby, promoting the economic development of the basin during public participation meetings. Furthermore, the general analysis pointed out that fishermen are wealthier than the other actor groups because they

organize in fishing associations. Interviewees reported that the temporary 'wealth' of the fishermen can spark violence, either because of other local actors' greed for money or because the fishermen use the money to pay unmarried and married women for sexual favours. This especially fuels intercommunal and inter-ethnic grievances and accelerates existing social tensions.

A further factor contributing to the existing tensions might be the appearance of shadow actors. Shadow actors are not necessarily visible or impacting on the conflict situation directly, but their support for conflict actors can correspond to the division of conflict actors. The research findings point out that rebel groups and militias in the neighbouring countries (e.g. attacks by Al Shabab resulting in ongoing internal migration), international economic actors (especially Chinese investors) and the governments of Uganda (involvement in the construction of the cargo centre) and Ethiopia (offering economic benefits attracting the flower farms at Lake Naivasha to move to Ethiopia) can be considered as shadow actors.

A long history of partly non-violent and partly violent conflict between the farmers and herders, and also with other tertiary actors has provided all relevant local-level stakeholders in the Lake Naivasha basin with the skills, knowledge and arms (pastoralists only) to execute violent attacks. Economic actors do not seem motivated to smoothen the situation or to adjust their operations by adapting corporate responsibility measures. Similarly, national and county representatives do not show interest in calming down the situation. Neither do they seem motivated to address underlying social security issues including access to health care or education facilities. Instead, their priority remains with the implementation of the economic development agenda, and up until now, the profits and revenues from the economic sites do not trickle down to the local level. Against this background, the conflict dynamics between the small-holder farmers and the pastoralists are significant. In addition, the conflict between the tertiary actors and the primary actors also has implications for the stability in the region as it fuels a further escalation of the already existing violent tensions. The next section will move on to map the relationship of the conflict actors.

8.2.4 Conflict Mapping

The map represents the conflict geographically by placing the parties in relation to both the conflict issue and to the conflict actors. The map, moreover, helps not only to visualize the power alignments but also in mapping the needs and fears. The power relationships become evident through the relative size of the actors in the map (see figure 8.5) and the

lines between the actors symbolise the type of the relationship (e.g. alliance, or conflict over a particular issue). Mapping the conflict dynamics also allows outsiders to the conflict context to understand the overall conflict system and the relationship between the different conflict actors. However, a conflict map can show a particular moment in a specific situation only. Additionally, conflict mapping is dynamic and the map reflects a particular point in a changing situation and points towards an action. Furthermore, the map should not show objective aspects only, but it should also be useful to outline the issues between the parties that are in the conflict. For the above-mentioned reasons, the layout of the map depends on the person who prepares it and, therefore, captures the perspective and point of view of the conflict researcher.

Figure 8.5 shows the mapping analysis of the pastoralist and herder conflict from the perspective of the field visits conducted in 2018 and in summer 2019 especially. It illustrates the conflict between any pastoralist group (Maasai or Samburu) and the small-holder farmers. Looking at the map, it is possible to identify the main parties involved in the context, as well as the relationship between them. The relative size of the circle indicates the level of conflict between the parties. While the conflict relationship between the pastoralists and the farmers (represented by the bold zig-zag line) is the core issue, in the context and the basis for violent and non-violent responses to the conflict dynamics, other relationships are also important and are brought into focus when analysing the conflict situation. Thus, both fishermen and villagers negatively influence the conflict situation as both groups of actors are in conflict with the pastoralists (villagers) and the small-holder farmers (fishermen and villagers). The large dashed circle presents the conflict actors who are visibly at odds with each other. It was observed that the primary and tertiary actors are in conflict whereas secondary actors (Government of Kenya (GoK) and the County Government of Nakuru (CGoN))[70] influence the conflict context negatively. The broken connection between the GoK and the CGoN results from the ineffective implementation of the policy rights as laid out in the institutional framework. Economic actors (both national and international ones) influence the national actors to support their business activities in the basin, which in turn increases the broken connection between the GoK and the CGoN. Other external actors, such as NGOs, IOs, community-based organizations or countries do not seem to influence the situation directly. However, they should be included to show, firstly, that

[70] Government of Kenya and County Government of Nakuru serve as umbrella terms for ministries and departments on the national and sub-national decision-making level to avoid an overload of the conflict map.

they are indirectly involved and, secondly, to draw conclusions about intervention opportunities. Lastly, the map further highlights that the topic associated with the broken connection and visible conflict dynamics are different. Whereas the broken connection between the secondary actors results from the institutional framework, the conflict dynamics between the primary conflict actors are associated with access, especially denied access over water.

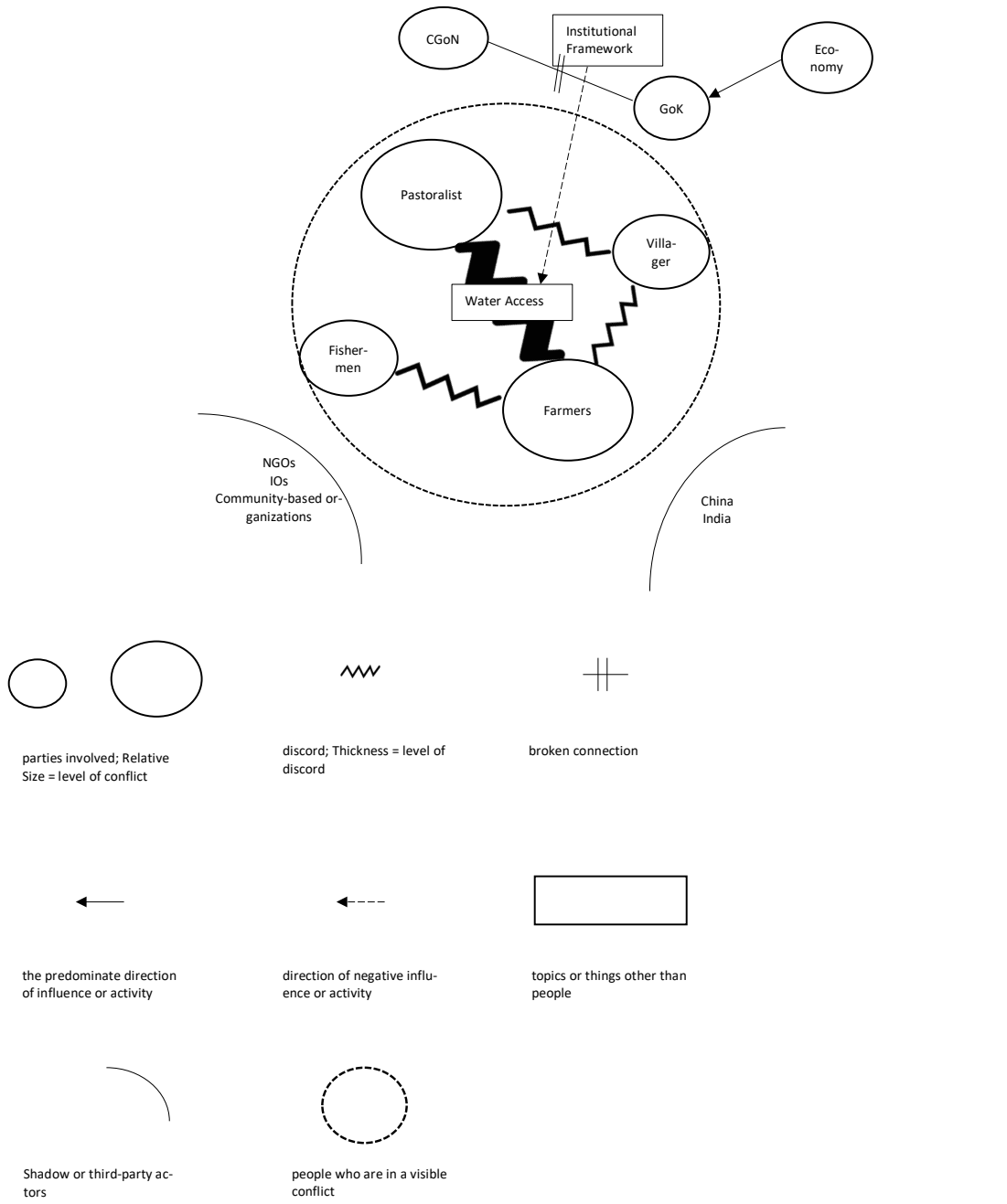

Figure 8.5: Conflict Map, Pastoralist-Farmer Conflict, summer 2019 (Source: The Author 2020)

8.3 Small-Holder Farmer and Fishermen Conflict at Lake Wamala

8.3.1 Conflict Actors (Position, Interests, Needs)

The research area is affected by intercommunal conflict between the primary conflict actors, small-holder farmers and fishermen. National actors influence the conflict situation through decision-making processes indirectly. Furthermore, national economic actors can be classified as secondary actors as they influence the primary conflict situation by setting up economic sites and environmental destructions. International and non-governmental organizations shall be characterized as shadow actors given their indirect role in decision-making processes and conflict interventions mostly through financial contributions.

SMALL-HOLDER FARMERS		FISHERMEN
Uphold land authority over remaining farming areas	**POSITIONS** **What one *says* they want**	Uphold right of abode in one of the three fishing villages
Claim over free water access and free farming land		Free access to the lake, stop farmers from polluting the lake
Compensation for loss of land, improved water access and infrastructure in new living areas, access to health and education services, employment	**INTERESTS** **What one *really* wants**	Access to the market to sell fish, financial compensation in case of relocations to wider surrounding of the lake, education facilities, improvement of the lake's access routes
Access to land and water, well-being and security	**NEEDS** **What one *must* have**	Water access for fishing, market access, security, well-being

Table 8.2: Position, Interests and Needs of Primary Conflict Actors at Lake Wamala (Source: The Author 2020)

Similar to Lake Naivasha, small-holder farmers and fishermen have competing interests over the land and water resources at Lake Wamala (see table 8.2). Small-holder farmers want to uphold authority over the farming areas which are still accessible at Lake Wamala directly. Moreover, they claim access rights to the lake's shorelines through one of the three remaining fishing villages. Fishermen advocate the position that they are the rightful owners of the land which the three remaining fishing villages belong to. Additionally, they insist on free access to the lake's shorelines to be able to perform their fishing obligations. Furthermore, fishermen argue that small-holder farmers pollute the water as they use pesticides and chemicals to increase the crop productivity. Thus, they indicate that they want small-holder farmers to leave the land and to move into the wider surrounding of Lake Wamala.

The current interests of both primary actors can be derived from the progressively occurring relocations of both actor groups. As a result of the economic activities, both primary actor groups are relocated as the land is taken by the government or investors and sold to national and international businesses. Thus, small-holder farmers demand either financial or physical compensations for the loss of their land. Small-holders move to mostly

uninhabited land. Consequently, they are interested in improved water access, infrastructure, as well as access to education and health facilities. The interest in education is of crucial importance as it is directly linked to their need of security and well-being. As it is expected that the effects of climate change will severely impact small-scale farming, small-holder farmers are interested in finding other employment opportunities. However, looking for skilled employment opportunities requires access to education facilities. Fishermen are interested in remaining in their fishing villages and are also keen to access the local market to sell their fish. Moreover, they are interested in improving lake access routes as trucks may be able to stop at the fishing villages, giving the fishermen the opportunity to sell to the traders directly. Fishermen are also interested in financial compensations once they have been relocated into the wider surroundings of Lake Wamala. Beyond that, fishermen also have an interest in improved access to education and health facilities allowing them to look for skilled employment opportunities. All mentioned interests are linked to their need of security and general well-being.

Neither small-holder farmers nor fishermen indicated that they expect jobs, revenues or any other benefits from the economic actors who set up their sites around the lakes. They argue that international companies come in with their own labour force and, therefore, are not in need of other employees. In addition, they do not count on the national or district government to look for manpower at Lake Wamala and its surroundings. There is a strong perception among them that they have either been 'forgotten' or remain unknown to the political stakeholders. Thus, their capabilities to exert power for their positions or interests vis-à-vis the economic and national stakeholders are close to zero. Hence, hostile perceptions among the small-holder farmers and the fishermen can be considered as an implication for their lack of power, capabilities and knowledge to strive for a better implementation of their rights to access resources and basic amenities, including education, health and market facilities.

8.3.2 Conflict Profile and Conflict Causes

Figure 8.6 shows the conflict dynamics for Lake Wamala and Mityana. Similarly, the conflict profile is mostly local, sporadic and also of low intensity without direct involvement of government and security forces. Between 2000 and 2019 small-holder farmers and fishermen expressed their level of insecurity by demonstrations and non-violent attacks. Interviewees

reported on low death rates[71] over the period considered. A number of interviewees in mixed-gender focus group discussions and also during individual face-to-face interviews have indicated that demonstrations and violent events were used vis-à-vis the district and

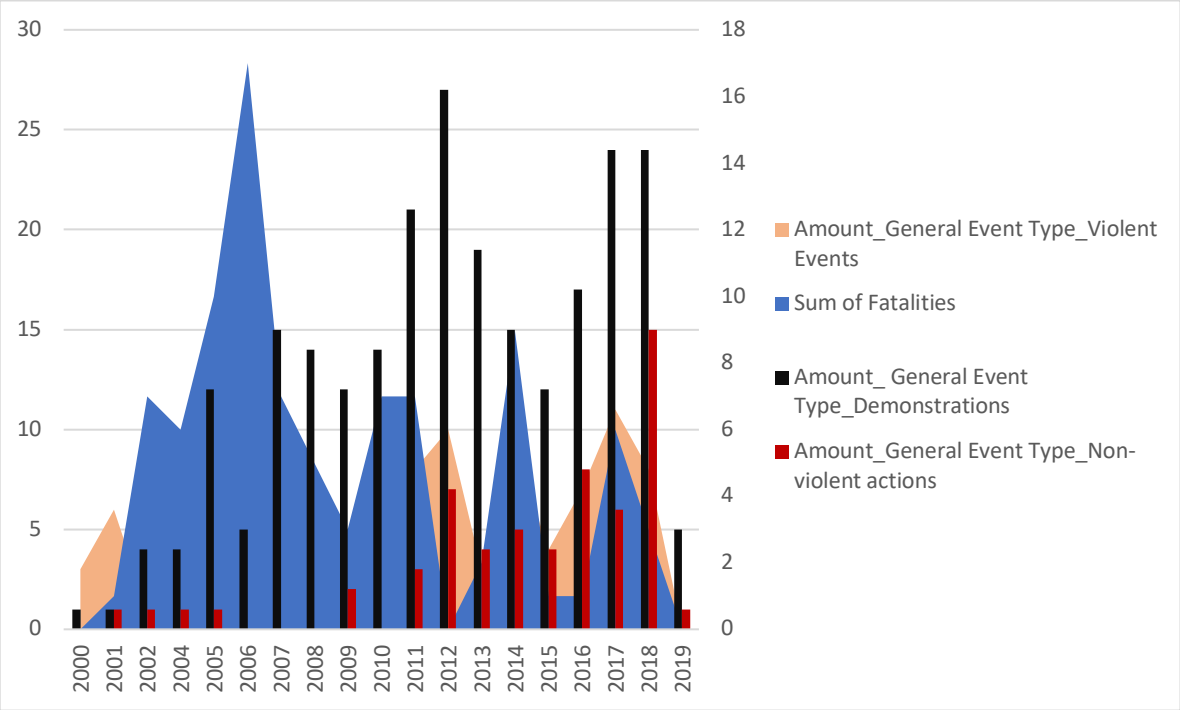

Figure 8.6: Timeline of Conflict Events at Lake Wamala since 2000 (Source: The Author 2020 based on ACLED 2019 and SCAD 2019)

governmental officials to claim for the maintenance of the landing sites, land compensations or infrastructural developments. Since 2010, political and economic actors increased their interests and investments in the basin. The rise in demonstrations by the local communities against the loss of land and environmental destructions can be attributed to this. In addition to the protests against the governmental officials, there are increasing tensions between the primary conflict actors. Respondents argued that the conflict dynamics between the local resource users increased especially after political actors gained interest in the area and sold land to economic actors (proximate cause). The stagnated institutional reform process reduced the adaptive capacity of the farmers and fishermen and accelerated their competition for farmland and access to either the lake's water or pumping stations especially (structural causes).

In summary, increasing economic developments accelerated the poor conditions which the farmers and fishermen have experienced for several decades. However, prior to the

[71] The higher death rates in 2005 and 2006 resulted from the residents' demonstrations against President Museveni's intention to run again in the 2006 presidential election. The 2010 and 2011 have also be understood against a different background. The government intended to sell parts of Uganda's largest forest (Mabira forest) to Indian investors who aimed to convert the forest for a better economic utilization, in particular for intensive rice growing. The partly strong demonstrations have been dissolved by police and security forces resulting in higher number of deaths.

beginning of the economic investments, neither small-holder farmers nor fishermen mentioned that they have been in conflict with each other. Thus, the causes for the responses to the conflict dynamics are, to a lesser extent, deeply rooted or have been based on historically grown grievances[72] than they are the result of attempts to cope with the changing situation and to sustain a living given the new living environment.

8.3.3 Conflict Dynamics

As briefly touched upon, the current conflict dynamics result from the inability to cope with the currently existing environment. As indicated, farmers and fishermen felt that they were forgotten for a long time by the political elites. Respectively, their level of education and their knowledge about the institutional framework and the existing laws are low, or rather close to zero. Since the increasing investments and economic developments resulted in the relocations of farmers and fishermen, community-based organizations and a few environmental NGOs have started to organize community meetings, teaching the small-holder farmers their rights and how the institutional framework works. Additionally, fishermen who are not able to pursue their fishing business anymore are taught simple farming techniques during other community meetings. Thus, political marginalization is not yet viewed as a stressor to intensify existing tensions between the primary conflict actors but might be considered as potential conflict drivers in the mid-term.

Economic actors are characterized by fishermen and farmers as conflict stressors because they increase the competitiveness between the farmers and fishermen over land at the lake and therewith water access directly. Between the two research visits, economic companies enhanced their engagements around the lake, resulting in the closing of one landing site (Bugolo). Hence, the fishing community had to leave their small village. During an interview with the residents of another fishing village called Buzi Bazi, the participants mentioned that the fishermen were relocated into the wider surrounding of Lake Wamala. Furthermore, they were unanimous in the view that demonstrations, blockades or any other form of violent behaviour against the companies' acquisition of the land results in the retention of the financial compensations or even leads to detentions. Thus, protests are not considered as promising means to remain on the land. Rather, the fishermen prefer to take the money which improves their situation at least for a very short period of time. However,

[72] Fishermen and small-holder farmers around Lake Wamala belonged all to the same tribe and have been members of Baganda Kingdom. As such, across the interviews, ethnic rivalries have not been mentioned as potential conflict drivers.

financial grants accelerate the conflictual tensions between farmers and fishermen. Fishermen use the money to either buy small plots of land to fence off land which small-holder farmers used for decades or pay women for sexual favors. This results in and increases intercommunal clashes between the fishermen and the farmers. Furthermore, farmers also reported that fishermen use the money to buy alcohol. In return, the consumption of alcohol increases the aggressiveness of the fishermen against the other community members, and thus, intensifies the existing social tensions.

Currently, the conflict dynamics between small-holder farmers and fishermen are accelerating. Economic and political inequalities aggravate the risk of conflict as an ineffective institutional framework, lack of formal regulations and a patronage network prevents law enforcement or the empowerment of administrative and political structures on a district level. Furthermore, the national economic agenda is driven by the President's aim to invest in infrastructure, road constructions and other macro-economic projects. Thus, the needs and capabilities of the local population are not taken into consideration. Lastly, the farmer-fishermen conflict is triggered by climate change. The gradual changes in the weather conditions which are intensified by environmental destructions and unsustainable farming techniques, make farming more unpredictable. This can result in the drying of crops (during longer heatwaves) or the flooding of agricultural lands (during heavy rainfalls).

Additionally, the conflict situation is triggered by spoilers and shadow actors. District authorities can be considered as spoilers. As a result of President Museveni's attempts to continuously extend his duration in office, underlying tensions within the population built up towards him (Employee German Foreign Office 2018; The Daily Nation 2018). To manifest this power and to limit political opposition, he builds his power on a patronage network which is constantly increasing. As a result, more and more districts, sub districts and catchment zones are set-up to create employment opportunities for Museveni friendly people (Employee German Foreign Office 2018). On the one hand, these supporters work within the institutional and legislative framework which is provided by the President and the national authorities. As such, they are supporting the economic development agenda despite its negative impacts on the local population. On the other hand, the President's patronage network puts a lot of strain on the county's financial resources which in contrast negatively affects the monetary situation of the districts and catchment authorities.

The research findings point out that international economic actors can be considered as shadow actors. Interviewees reported that Indian and Chinese businesses are the masterminds who operate through national businesses. Thus, Ugandan companies acquire land, set up the economic sites and supervise the operations. However, Chinese and Indian businessmen dictate the national companies on what to do on the ground and influence national authorities in their economic decision-making.

Against this background, conflicts between small-holder farmers and fishermen at Lake Wamala frequently revolve around issues of contested land use and access to water at Lake Wamala's shorelines directly. Furthermore, the conflict dynamics are also driven by relocations and the adaptation to a new living and working environment. Increasingly, these conflicts are triggered or exacerbated by the inadequate implementation of the institutional framework and the proceeding economic operations. Climate change puts additional stress on the resources and the farming and fishing practices. Lastly, drought-induced movement of pastoralists to resource rich areas might become a further source of tensions and conflict between the communities in the mid to long term. However, this remains subject to speculation, as pastoralists hardly pass by Lake Wamala nowadays.

8.3.4 Conflict Mapping

Figure 8.7 shows the mapping analysis of the small-holder farmer and fishermen conflict based on the observations and interviews conducted during the two research visits. The conflict between the fishermen and the farmers is the main issue and the basis for violent and non-violent responses to the conflict dynamics. The situation is accelerated through the interaction with villagers over land and water pumping stations while also living in the wider surroundings of Lake Wamala. Whereas the stakeholders within the dashed circle are in conflict with each other, the secondary actors (Government of Uganda (GoU) and the District Government of Mityana (DGoM)) negatively influence the conflict context. Economic stakeholders predominantly influence the governmental stakeholders' economic activities, who in turn implement those guidelines using a top-down decision-making approach. External actors, such as NGOS, IOs and community-based organizations influence the conflict situation indirectly through their connection to the national ministries via financial aid or development assistance. Shadow actors and spoilers are also included in the map. The discussion of the main conflict actors, including their positions, interests and

needs in matters related to the conflict issue revealed that the underlying needs of both

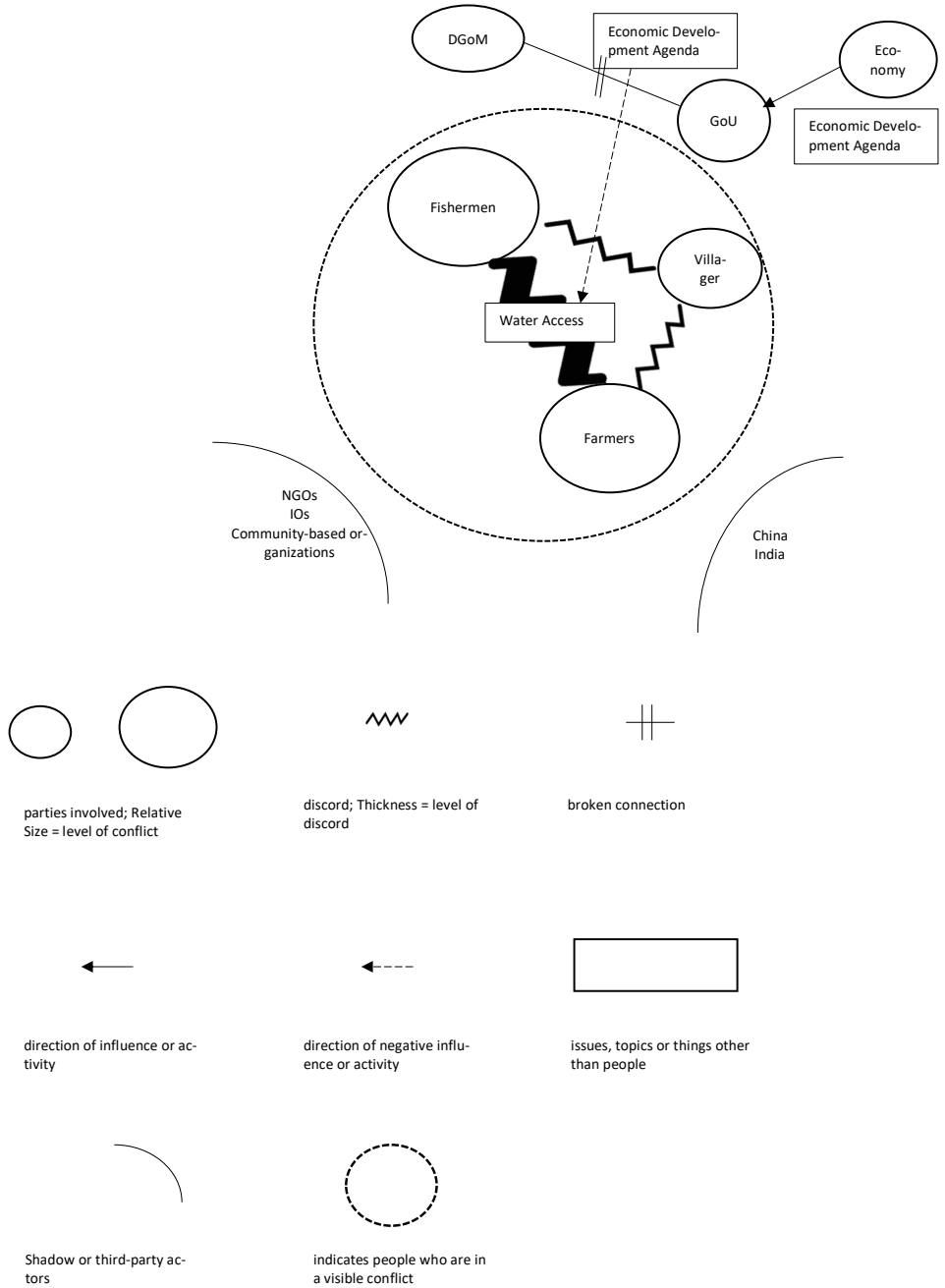

Figure 8.7: Conflict Map, Fishermen-Farmer Conflict, summer 2019 (Source: The Author 2020)

primary conflict parties are almost similar. However, they are overshadowed by divergent positions and interests which determine the actors' capacities to exert power over the other primary conflict actors. The conflict actor description disclosed that the conflict dynamics between the primary and tertiary actors is driven by the secondary conflict actor's interests and political and economic strategies. Furthermore, in the case of Lake Naivasha, the currently existing conflict dynamics are the result of both historically grown grievances between the small-holder farmers and pastoralists and the accumulated horizontal political

and economic inequalities. In the case of Lake Wamala, the conflict is caused by the primary actor's low capacity and ability to adapt to the changing environment. The conflict analysis illustrated that the topics associated with the broken connection between the various conflict actors are different. This, furthermore, results in latent and visible conflict dynamics. Thus, whereas the conflict between the secondary and external actors remains dormant, the conflict dynamics between the primary and tertiary actors are erupting. The final part of this chapter, therefore, moves on to discuss which response tools the primary and tertiary actors use regarding the previously mentioned conflict dynamics.

8.4 Response Tools to the Conflict Dynamics

Figure 8.8 combines an overview of the tools the local resource users use to respond to the conflict dynamics across both research sites. The economic investments put high pressures on the accessibility of the water and land resources, water provision and the general development of both lake basins. This, in return, puts pressure on the local resource users to adapt to the changing environment. Due to their low adaptive capacity, local resource users turn to non-violent and violent means to limit their high sensitivity to the changes experienced in matters related to water access especially.

Local resource users identified cattle raiding and the blockade of access routes to the lake or water pumping stations as the most commonly used response tools. The results highlight that non-violent and violent response tools are almost balanced nowadays. The most striking result to emerge from the interviews and the performed data analysis is that deathly encounters between the single local resource user groups and individuals is increasing. This

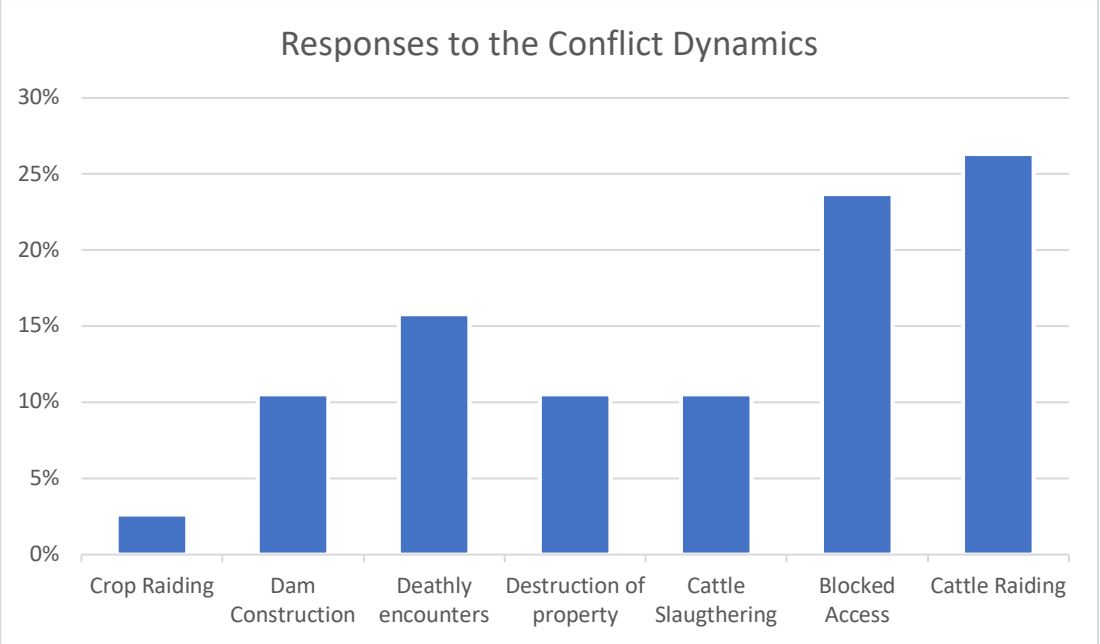

Figure 8.8: Response Tools to the Conflict Dynamics (Source: The Author 2020)

is, furthermore, reflected in the responses of the interviewees who reported on higher levels of insecurity in the informal settlements around Lake Naivasha especially. The distribution of non-violent and violent response tools across both research sites shows that attacks take place mostly in the evenings or at night. Resulting thereof, respondents indicated that small-holder farmers, villagers and fishermen have put up night watches. Small-holder farmers fence off their land to avoid crop raiding or the destruction of their agricultural land, while fishermen protect their fishing equipment, boats and fishing. The majority of the respondents in the informal settlements at Lake Naivasha and within the community settlements around Lake Wamala argued that night guards protect the access routes to the lake, the pumping stations or the few water pipes, if there are any, in the informal settlements. A few respondents highlighted that these night watches are necessary to avoid either a diversion of the water pipes to individual residents' houses or the demolition of the water stations. Generally, the levels of insecurity and suspicion between the local resource users was expressed in the interviews and is reflected in the response tools the four user groups use against each other (see figure 8.8 and appendix C).

At Lake Wamala, small-holder farmers mentioned that cases of food theft and cattle raiding happen especially during the dry season. The motivation of the farmers is to either consume the agricultural products or to sell it at the local market. Similarly, cattle are either sold for a small fee or used for domestic purposes. Moreover, farmers mentioned that the destruction of fences around agricultural land or housing premises are increasing. Around

Lake Naivasha, small-holder farmers indicated that denied access, cattle raiding and cattle slaughtering as well as deadly encounters are the most commonly used response tools. Around Lake Wamala, pastoralists hardly pass by. However, members of Kikandwa community mentioned that conflicts between pastoralists and the other resource users erupt quickly when pastoralists try to access the lake and its water and land resources. The most commonly used form of non-violent behaviour is the destruction of property as pastoralists push their cattle through agricultural areas down to the lake's shorelines. Nevertheless, the percentages of other reported incidents are lower than in the case of Lake Naivasha. Around Lake Naivasha, both cattle raiding and cattle slaughtering, as well as deadly encounters have the highest values. Cattle raiding is either used to re-stock the pastoralist's own herd or as a means to pay dowry. The latter especially happens in traditional community settings. These numbers are only exceeded by the values mentioned for denied and blocked access. The high values for blocked access routes can be explained by the villagers' and small-holder farmers' wish to protect water holes, water stations and farmland. As already mentioned, there is little conflict between the fishermen. In the case of Lake Wamala, fishermen destroy farmland, block access or steal crops and agricultural products from small-holder farmers. Around Lake Naivasha, cattle slaughtering and cattle raiding are regularly used tools against pastoralists. Furthermore, the blockade of the access routes to the landing sites, as well as deadly encounters by and between the different user groups have increased over the last years. Lastly, villagers and employees in the flower farms or hotels reported that they have also been targeted by non-violent and violent response tools. At Lake Wamala, the destruction of property and cattle raiding have been mentioned the most. Around Lake Naivasha, cattle raiding, the blockade of water stations and access routes to the landing sites and deadly encounters are frequent.

Generally, Lake Naivasha is more affected by non-violent and violent behaviour than Lake Wamala (see figure 8.9). The figure illustrates the conflict intensities for the two lake sites separated for water conflict and general conflict response tools. During the interviews, the participants were asked about their main motivations for applying non-violent and violent response tools. At both lake sites, the underlying motivation of conflict is less driven by water per se. Instead, stakeholders mentioned other reasons for the conflict dynamics and, therewith, this results in the high percentages for general conflict intensity. The higher numbers for Lake Naivasha may be explained by the fact that the conflict dynamics are shaped by historically grown grievances and ethnic affiliations. Another possible

explanation for this is that there are more people living in Lake Naivasha basin and, thus, the demand for the diminishing resources and space around the four remaining landing

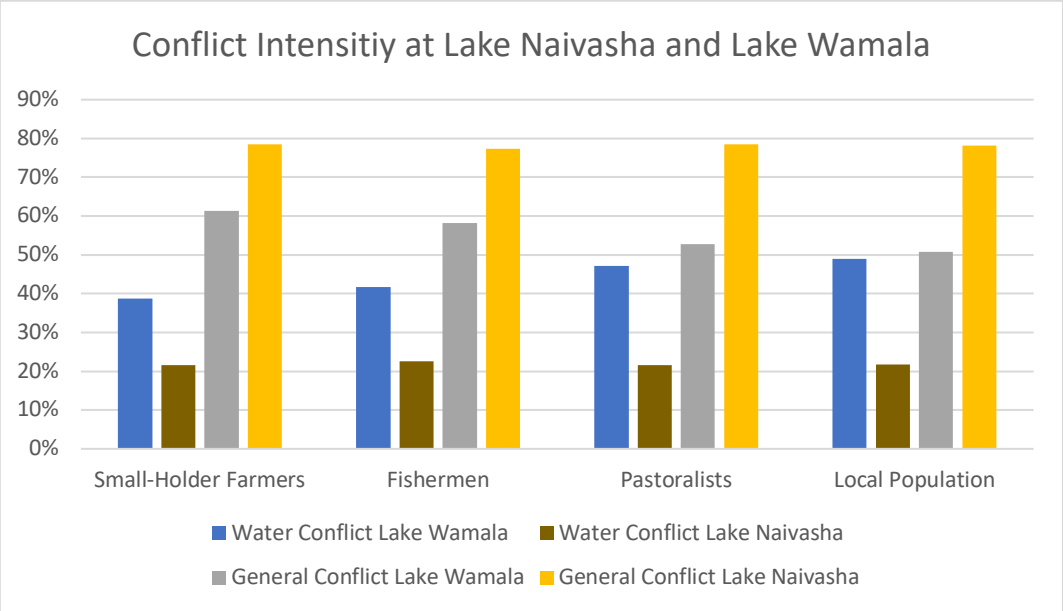

Figure 8.9: Conflict Intensity at Lake Naivasha and Lake Wamala (Source: The Author 2020)

sites increases. What stand out in the figures are the higher values for water conflict at Lake Wamala compared to Lake Naivasha. This difference compared to the data for general conflict can be explained in part by, firstly, the relatively new situation for the local resource users to adapt to the changing situation. Resulting thereof, the issue of water access, especially the lack thereof, superposes other motivations for conflict. Secondly, local resource users have been used to adapt to the living conditions without external assistance, or even expectations towards them. Thus, for a long time, political, economic and social changes happened without notice of the local resource users and, therefore, have never been seen as a reason for conflict. Accordingly, current conflict dynamics, which are also slightly driven by demands for health centres, better road infrastructure or education facilities emerged with the arrival of the economic companies. The observed increase in general non-violent and violent behaviour could be attributed to the increasing economic investments undertaken. The numbers are still lower than at Lake Naivasha. Nevertheless, the frequency of non-violent and violent response tools to the changing environment is rising.

During the interviews and focus group discussions, the interviewees also mentioned other response tools to the conflict dynamics. Among others, verbal violence, conflicts between human beings and wildlife, adultery, drunkenness and domestic violence have been named by the interview and focus group participants. What was surprising during the research visits was the openness of the local resource users about the response tools used vis-à-vis

the other resource users. Furthermore, one unanticipated finding was the high intensity of violent behaviour. When asked about the motivations for non-violent and violent behaviour, the majority of the respondents highlighted that violence is applied to reduce the number of residents and local resource user groups living and sharing the space around the lake. They indicated further that by aggravating the living situation for any group, these groups might move away from the basin in search of a new and securer living environment. Resulting thereof, the amount of people straining the landing sites and using the few land and water resources available decreases. A few respondents expressed the view that violent response tools are used to raise the national and international communities' awareness about their living situation. Between the two research visits, the levels of non-violent and violent response tools increased. However, the conflict dynamics are continuing without much notice from the other actor groups.

8.5 Brief Summary

The aim of this chapter was to assess and compare the conflict dynamics at Lake Naivasha and Lake Wamala with an emphasis on the temporal and local resolution, the motivation and the response tools used. Firstly, a systematic study of the actors' positions, interests and needs, root causes and conflict profile were carried out. Secondly, the conflict analysis captured the conflict dynamics contributing to violent conflict and the multidimensionality of the conflict patterns, including political, social, economic or environmental fields of policy. Thirdly, the conflict map highlighted the relationship between the directly and indirectly involved conflict actors and the main conflict issue. The conflict assessment for the research sites revealed different motivations for the currently existing conflict dynamics. Whereas the current conflict dynamics are accelerated by historically grown grievances and ethnic affiliations at Lake Naivasha, at Lake Wamala, the conflict dynamics are the result of the relatively recently started economic investments and relocations of the fishermen and small-holder farmers. Furthermore, political kinship, economic investments and environmental destructions intensified the conflict situation at Lake Naivasha because the government has failed to provide the local stakeholders with basic services, including education and health facilities or water infrastructure. This has led the communities to demonstrate against the companies and the government for better working conditions, the improvement of water provision or against environmental destructions. However, dismissals or reduced water provision drove the communities to transfer their unmet expectations for

development, employment or resource access away from the government and the companies onto other local resource users. The new living environment and the economic investments undertaken in conjunction with the ongoing process of decentralization have resulted in emerging conflict dynamics between the small-holder farmers, fishermen and villagers at Lake Wamala.

Both the temporal resolution and the conflict motivations resulted in non-violent and violent response tools to increase the stakeholders' adaptive capacity to external changes. While non-violent behaviour, including the blockade of access routes, destruction of fences or crop and cattle raiding was a commonly used tool at the beginning, violent response tools are often used instead. In general, the conflict intensity is reported to be higher at Lake Naivasha than at Lake Wamala. However, the conflict dynamics around Lake Wamala are rising. There is a likely scenario that economic investments and political kinship will exacerbate existing marginalization and discrimination will fuel more conflict. Lastly, the conflict assessment revealed that the conflict data obtained from ACLED or SCAD do not capture all conflict dynamics at Lake Naivasha and Lake Wamala. Especially latent conflict dynamics and conflicts between local resource users are not captured. Resulting thereof, the lake sites seem calm on the surface, however, there are some serious underlying problems for peace in the area.

9. Synthesis of water, conflict, vulnerability, and governance

This chapter seeks to shed light on the interplay between both countries' institutional framework, the economic agendas and its effects on the people's vulnerability and adaptive capacity to water access and its availability. The chapter combines the results of the previous chapters. The aim is to place them within the context of the big picture and to draw general conclusions about the complexity and multi-dimensionality of water-related conflicts and its drivers in Kenya and Uganda. The chapter is divided into three sections. The first section aims to discuss the main causes of water-related conflicts and to compare the results for the two lake sites. The final analysis is carried out according to four broad conflict categories: (I) governance and implementation (II) accessibility, (III) the usage of natural resources and (IV) other causes of conflict. This section is followed by exploring the interaction between water, conflict, vulnerability and governance. Based on the previous analysis, in the third section of this chapter, strategies are proposed to limit future outbreaks of water-related conflicts between the local resource user groups. Thereafter, the results are summarized.

9.1 Drivers of water-related conflicts

As indicated previously, the conflicts between the local resource users frequently revolve around issues of water access and contested land use. The analysis has shown that these conflicts are triggered by the institutional framework and the economic development agendas (see table 9.1). The results, furthermore, show that farmer-herder and farmer-fishermen conflicts occur independently from the seasonal changes.

	Causes of Conflict	**Conflict Motives**		**Conflict Capabilities**
		Lake Naivasha	Lake Wamala	
1.	Political power contestations	Improved water access and water infrastructure	Defending of territory	Experience in attacks
2.	Territorial control over key resources	Improvement in education and health infrastructure	Improved water and land access	Knowledge of are and the communities
3.	Unclear land rights and governmental land policies	Defending of territory	Financial compensations	Weapons and ammunition (partly)
4.	Unmet expectations	Payment of dowry	Hunger/Poverty	
5.	Ethnic polarization, historical grown rivalries and revenge	Avoiding of population increase		
6.	Economic marginalization			

Table 9.1: Causes of Conflict and Conflict Motivations and Capabilities of Local Level Actors at Lake Naivasha and Lake Wamala (Source: The Author 2020)

When asked about the main causes of conflict (see figure 9.1), community members expressed the view that the economic undertakings are not the problem. Instead, they stressed that the national political system and its main stakeholders are the main issues (30 per cent at Lake Wamala and 29 per cent at Lake Naivasha). Thus, the insufficient

implementation of the policy rights, as laid out in the countries' constitutions, negatively affects the situation between the local level stakeholders.

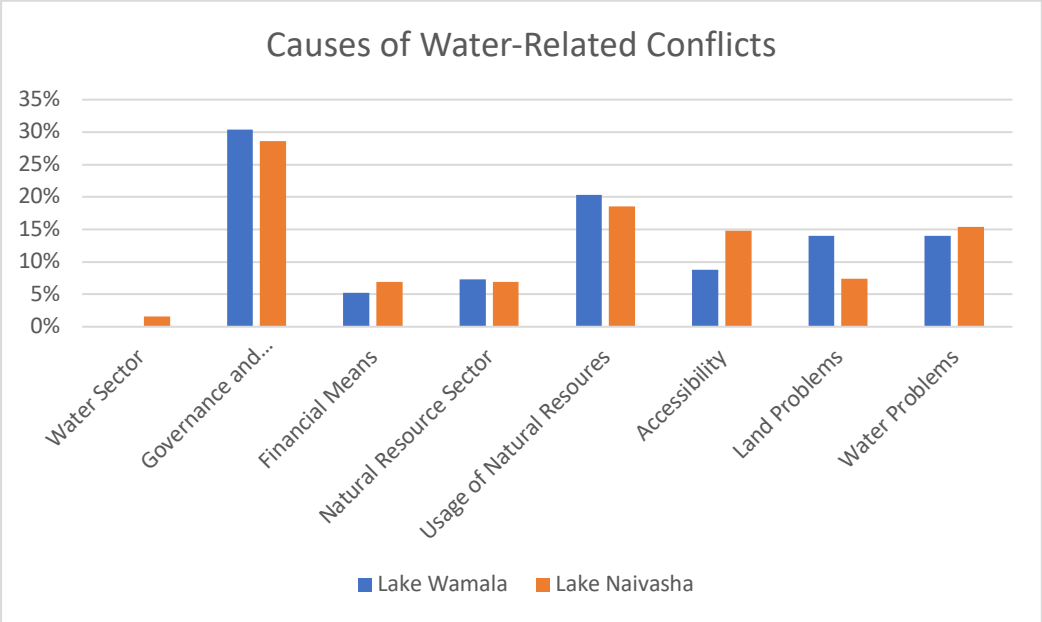

Figure 9.1: Causes of Water-Related Conflicts at Lake Naivasha and Lake Wamala (Source: The Author 2020)

At Lake Naivasha, a few community members blame the government in Nairobi for the situation in the basin. They highlight that the county government, and, therefore, the local population, does not benefit from the revenues. More recently, they voiced their displeasure about the county government representative's inactivity to demand law enforcement and decision-making as laid out in the constitution. They argue that high levels of corruption and the promise of economic and political benefits is limiting county involvement in local affairs or even working against the local level actors. Thus, they feel politically marginalized and ignored by both county and national government representatives. Similarly at Lake Wamala, people do not feel that they have the power to change anything. Moreover, they seem to be unwilling to change anything as they only want to follow national objectives.

Thus, securing access to water and land and other necessary resources to sustain a living seems to be a crucial prerequisite to the local resource users to cope with difficult social and economic drivers in the lake basins (15 per cent for Lake Naivasha and 9 per cent for Lake Wamala). The economic investments undertaken led to changes in land use and, hence, obtaining territorial control over key resources was identified as an important conflict cause. Whereas pastoralists aim to secure their mobility, farmers want to expand their cultures. Due to the relocations of fishermen into the wider surrounding of Lake Wamala, fishermen obtain farmland. Because small-holder farmers, pastoralists, villagers and

fishermen utilize the same land, conflicts erupt easily (14 per cent for Lake Wamala and 7 per cent for Lake Naivasha). The former is intensified through unclear land tenure and governmental land policies. Traditionally, land along the South and West of Lake Naivasha and around Lake Wamala is communal land, which means that there is no individual ownership of the land.

This, however, has created two problems. Firstly, farmers, pastoralists and villagers have issues concerning land use (crop cultivation vs. grazing vs. construction of houses). Secondly, the government lends communal land to economic companies to cultivate roses, produce geothermal energy, to do extensive rice growing or to explore the area for other economic undertakings. The communities around Lake Naivasha perceive these economic actors as stressors who have taken their farming and grazing land without improving their living situation as promised, including, well-paid labour opportunities, improved access to water and other infrastructural investments. Hence, most land around Lake Naivasha is private land which is inhabited by families or economic stakeholders currently. Local stakeholders are left to the four remaining sites and to the land inside the informal settlements. Moreover, the communities around Lake Naivasha did not receive any compensation from the Kenyan government after they rented out the land to economic stakeholders. Once the businesses started to operate and to generate incomes, the constitution of Kenya requires an equitable revenue sharing from nationally earned revenues between the national government (70 per cent), the county government (30 per cent) and the local communities (10 per cent) (The Constitution of Kenya 2010). However, the issue of revenue sharing is causing tensions between the government and the counties, thus, the local communities do not receive their revenue share. Similarly, at Lake Wamala, the communities at the three remaining landing sites perceive the economic actors as stressors who come in and take their land without prior consultation. As mentioned, the fishermen at the landing sites received small financial compensations from the economic investors. Nevertheless, the community members who are living in the wider surroundings of the lake do not receive any financial compensation and, therefore, fear the newly arrived fishermen more than the economic actors. Consequently, they fence off their land or agricultural sites to defend their territory.

At Lake Wamala, the land issue is even more intensified through the misunderstanding about mailo land. The misunderstanding is created as mailo tenure generates dual ownership over the same piece of land (Uganda Land Act 1998; The Observer 2019). Mailo landowners have the same rights as freehold land owners, however, according to section 3 (4)

of the Ugandan Land Act they have to respect 'the rights of lawful and bonafide occupants[73] and Kibanja holders[74] to occupy and live on the land' (Uganda Land Act 1998). Moreover, the Kabaka's[75] land also falls into the category of mailo land. As a result, the Kabaka's land cannot be sold entirely as some land belongs to the Kabaka personally while other parts of the land can accommodate Kibanja holders. Additionally, some portions of the Kabaka's land are used for spiritual activities or for cultural rituals. Resulting thereof, there is a lot of misunderstanding about interests and rights to the land around Lake Wamala and the land ownership respectively. Moreover, the four different local resource user groups disagree about the individual set boundaries and land demarcations.

Unmet expectations are the next critical conflict issue. The communities around the lake basins articulated that they have been expecting improvements in both educational, health and road infrastructure, as well as improvements regarding water access. Furthermore, the residents of the informal settlements and incomers from East and North Kenya expressed their wish for employment opportunities in the economic sites around Lake Naivasha. According to the county representatives and a flower farm representative, almost all jobs in the flower farms are meant for local people. They highlighted that they adhere to international working standards. Thus, community members receive employment benefits, including free transportation from Naivasha town to the flower farm, a 7,5-hour working day and a regular income. However, they also acknowledged that the local people are not qualified for senior positions due to their low level of education. According to villagers and employees, workers in the flower farms are exposed to inhuman working conditions. There are different types of work e.g. flower picking, spraying and cutting or security and cleaning. Employees reported that they are exposed to the chemicals directly as they have to harvest and treat the cut flowers without protection. Workers reported that they earn between 50 to 100 USD per month. This is not enough to sustain a living for them and their families (Vivekananda 2015; BBC 2017). Moreover, employees mentioned that they have to work between 10 and 11 hours per day. Lastly, most of the workers are female. Some of them reported on gender-based violence and sexual exploitations of senior workers to either increase their monthly salary or to get promotions.

[73] Bonafide is the purchaser of the land.
[74] Kibanja is a person who settles on land with the consent of the landowner, the Bonafide.
[75] Kabaka means king.

When asked about employment in the geothermal sites, villagers argued that they will not be able to work in these sites as they do not meet the qualifications. The most senior position a local resident might get is as a security guard. Given that educational facilities are still rare, local residents do not expect any improvement in the short to medium term. At Lake Wamala, people do not expect any employment opportunities in the newly constructed economic sites. According to villagers, the companies come in with their own manpower. Hence, there is very low demand for unskilled labour. Instead, they suggested that these companies should improve the road infrastructure and education opportunities around the lake and in its surroundings. The two field visits revealed that investments in road and education infrastructures have not started yet. The roads around the lake are in really bad conditions, and especially during the rainy season people are unable to access the lake's landing sites or access Mityana town and the main road. Because villagers are unable to sell their fruits and fish to traders from Kampala, the prices drop as they cannot be sold in the major cities. Lastly, education around the lake remains really low as schools are either not operating or not existing. Conversely, this means, that unemployment rates around the lake remain very high.

Ethnic polarization, historically grown grievances and revenge are the next conflict driver, especially around Lake Naivasha. After independence, Jomo Kenyatta placed members of his own ethnic group (Kikuyu) across the country to both gain access and control over the land. Consequently, tribes created artificial borders which are often questioned by farmers, pastoralists and communities. Cross-border movements of farmers and pastoralists do not affect the inter-state relationships on a national level even though the national land rights are working against the national policy structures which have changed in the 1980s and revised again in 2012 again. Thus, ethnic polarization and historically grown rivalries are a sub-national problem between the local level actors. The motive of revenge intensifies the conflictual situation between them.

Economic marginalization was less mentioned as a driver of the conflicts, although it is present and is influencing the local conflict dynamics (7 per cent for Lake Naivasha and 5 per cent for Lake Wamala). The economic sites divert water which was originally used for agriculture. Thus, around Lake Naivasha and Lake Wamala, water becomes commercialized and therefore, allows the economic companies, political actors and governmental loyal people to manage water and dams at their own discretion and to their own prices. Community members expressed hope that the economic sites or national water providers

would give them water. To a limited extent, National Water and Sewage Cooperation (Uganda) and Naivasha Water and Sewage Cooperation (Kenya) drill boreholes or set up water tanks along the road. Additionally, to the researcher's knowledge, economic companies provide piped water to the informal settlements of Karagita and Kameri. This, however, does not mean that the entire settlements have access to piped water. Generally, there are a few pipes which supply a few water points throughout the entire area.

Community members and residents in the informal settlements reported that water was provided only at the beginning on a regular basis (15 per cent for Lake Naivasha and 14 per cent for Lake Wamala). Moreover, they emphasized that neither the economic companies nor the water suppliers met their expectations for water. At both lake sites, local resource users highlighted that the bore holes and water stations are 'far away' from their settlements and, moreover, one water source cannot provide enough water to support livestock, the agricultural sites and the communities. Even though the water suppliers were not available for any interviews, observations revealed that clean and fresh water can be purchased. However, the communities are unable to buy water from the water suppliers. Thus, there is nothing else they can do but to use the water from the lakes. The demand for improvements in health and education facilities have not been met. Some efforts have been made to improve health care and education facilities. Nevertheless, schools remain empty and health centres are out of reach of the communities. Resulting thereof, the level of education remains low and, accordingly, unemployment rates remain high. Furthermore, many community members are in poor health because of bad human sanitation[76], water borne diseases and high HIV quotas. Taken together, these factors undermine the economic and social situation of the local resource users and are likely to become more prominent conflict drivers in the future.

Even though both lake basins have not been affected tremendously by climate change yet, the economic investments at both lake sites are going against the climate goals of Kenya and Uganda. There is a risk that the economic undertakings intensify the basin's exposure to climate change. Thus, increased droughts or heavy rainfalls can force small-holder farmers and pastoralists to change their mobility routes and agricultural sites and aggravate their competition for water and land among each other and with other communities.

[76] At the landing sites and in the informal settlements, there hardly exist latrines. Consequently, the residents have to go to the bushes and in the lake for basic sanitation.

The majority of the community members and local resource users expressed the view that the security situation is worsening since the economic investments have started. When asked about the drivers for increased insecurity levels, they noted that the conflict motives centre around access to water and land, as well as the defence of water infrastructure or land ownership. They furthermore highlighted that neither the economic companies nor the political stakeholders want to mitigate or respond to the conflict drivers between the local resource users. A landing site overseer indicated that political and economic stakeholders remain ignorant to the local people's concerns and vulnerability to the economic investments undertaken. This perception was supported by the responses the researcher received from the conducted interviews with political, economic and international stakeholders. After introducing the main focus of the research, some interviewees asked why Lake Wamala or Lake Naivasha were chosen as research sites as they are not aware of any ongoing conflicts in these areas. In the case of Lake Wamala, a few interviewees even asked where the lake is located as they have never come across it previously.

Due to the insecurity arising from both the intensified conflict dynamics and the economic situation, most of the agricultural land and the water access points are either destroyed or over-utilized, implying that all groups of local stakeholders are confined to smaller and scuffed land. Thereby, they contribute to the degradation of the farm- and rangeland and negatively affect the water quality and water availability. The depletion of the available water and land resources during both seasons have negative ecological impacts as the farmland loses productivity due to encroachments and the use of chemicals or pesticides. Resulting thereof, undesirable species invade the lake basins and replace key flora and fauna (Donald et al. 2006). To cope with the situation, local resource users opt to plant both fast growing and highly utilizable species (e.g. Eucalyptus trees), as well as choose to use fertilizers and chemicals to boost the crop productivity. This, however, results in undergrowth suppression, an increase in soil nutrient or water depletion (Zerga 2015). When asked about the effects of foreign species on the lake basin's biodiversity, community members indicated that some of them are aware of the consequences. Yet, they also argued that population pressure, the high demand for water, agricultural products or timber overshadow the need to plant trees or to conserve the basins resources in ideal site.

9.2 The nexus of water, conflict, vulnerability and governance

Figure 9.2 summarizes the key findings of the empirical chapters 5 to 8. The analysis showed that key to understanding the outbreak of water-related conflicts are the institutional and governance dynamics. During the past decade, Kenya and Uganda have given attention to change the institutional framework. The change of the institutional context was also linked to the wish to be better integrated into the world market and to become a player in a more globalized world. However, the changing institutional framework and the economic orientation is linked to a number of concerns and controversies over natural

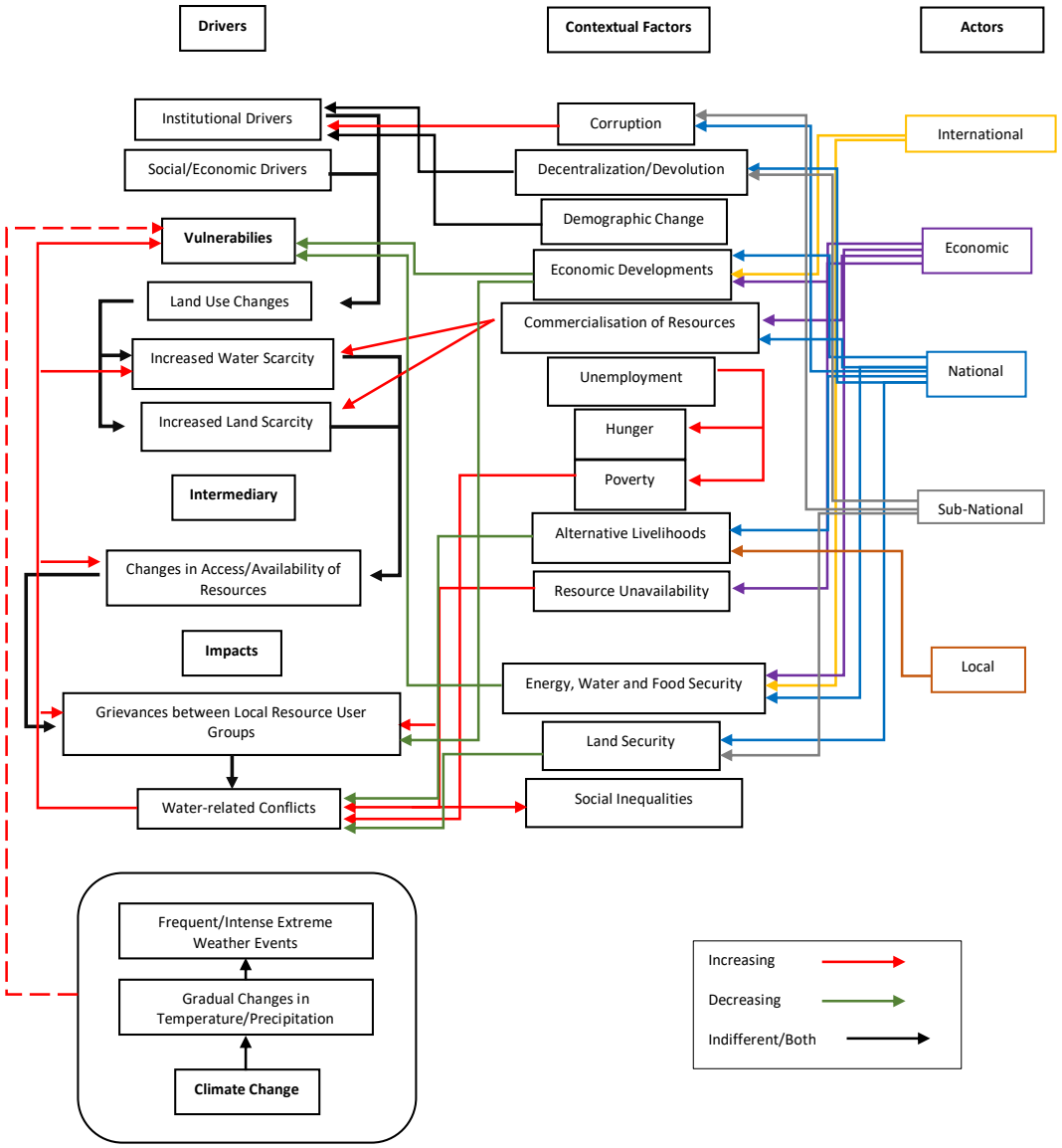

Figure 9.2: Schematic Overview of Drivers, Contextual Factors and Actors influencing water-related conflicts. The red arrow should be read: If this factor increases, the dependent variable increases; the green arrow should be read: If this factor increases, the dependent variable decreases; the different colors of the arrows on the right help to differentiate the different actors' influences on the contextual factor (Source: The Author 2020).

resource security and competition, social and economic impacts and inadequate government regulations.

The role of the institutional framework and the economic agenda in shaping water shortages

Beside the already discussed drivers of water-related conflicts, the figure shows that the conflicts have significant direct and indirect effects on the local level actor's wellbeing. It, furthermore, highlights that the causes of water-related conflicts are less water driven than institutionally made. Both Kenya and Uganda are increasingly susceptible to national and international economic developments and institutional changes. These investments range from low level economic developments including agriculture, horticulture and farmland to macro-economic ones including manufacturing, transport and energy. These economic developments create high expectations among the community members, the political stakeholders as well as the international community. The most important expectation to emerge from the analysis is that the community members expected, and to some extent still expect education, infrastructural improvements, employment and water provision. Political stakeholders want to strengthen the economic profile of the countries and strive to become export-oriented economies and middle-income countries within the next two decades. Resulting thereof, natural resources are commercialized and sold and rented to international economic actors. Both Kenya and Uganda are very attractive for international actors for land, as well as to develop cash crops. Generally, international actors benefit from the involvement on the ground over and above the cash as it gives them the opportunity to influence the operation and strategic direction of the economic developments or to discuss their concerns of good governance. These economic developments lead to changes in land use. In a similar way, demographic changes cause land use changes. Additionally, demographic changes increase the pressure on the available water resources.

Both countries' institutional effectiveness is undermined by the national economic agendas. Therefore, the ongoing decentralization process, as well as the performance of devolution which has been finalized since 2018, is unable to fulfil its water governance and general policy formulation objectives as laid out in the constitutions. In addition, high levels of corruption and political kinship undercut the institutional effectiveness. Thus, the county and district governments have failed to provide the local resource users with basic services, which in return increases their vulnerability to resource access.

Effects of the institutional and social and economic drivers on the actors' vulnerabilities to water access

Flower farming, the geothermal companies and other economic investments need significant amounts of ground- and lake-water which the local resource users depend on. The population growth increases the pressure on the available water resources. Resulting thereof, the communities at Lake Naivasha and Lake Wamala experience water shortages or water scarcities even though both lake's water levels seem sufficient high from the outside. The economic developments and demographic changes shift the land ownership and, hence, reduce the available and usable land. Aside from the mentioned vulnerabilities, other external factors (high unemployment rates, food security and poverty) worsen the local people's vulnerability. By the time the research was conducted, these externalities were less mentioned and noticeable as conflict drivers. However, they are likely to become a source of conflict or exacerbate the existing tensions between the local resource users. Pollution and unsustainable farming activities (deforestation, use of pesticides or degradation of natural resources) of the local communities and the contamination associated with the economic investments contribute to the lake basin's exposure to environmental and climate change and, thus, increase the local resource user's vulnerability. Climate change leads to gradual changes in temperature and precipitation. Additionally, there are more frequent, intense and extreme weather events. Changing climate leads to decreased water and land availability. Similarly, extreme weather events result in reduced water levels and available land. Together, these factors have the potential to reduce the adaptive capacity of all local resource users.

Increased land scarcity hampers the agricultural production of small-scale farmers and reduces the mobility of pastoralists. The limited availability of water access routes to the lakes interact with a parallel increase in people pushing onto the remaining landing sites and water pumping stations. Because of the previously mentioned factors, freshwater becomes noticeably scarce as an essential resource for the local resource users. Thus, the reduced change in access and availability of natural resources, especially water, leads to grievances between the local resource user groups.

The role of the institutional and social and economic drivers in shaping the overall impacts on the local resource users towards water access

The current study found that there are different reasons and roots to the conflict. As such, it would be oversimplified to assume that water-related conflicts at Lake Naivasha and Lake Wamala are environmental conflicts only. The factors associated with the outbreak of water-related conflicts are influenced and shaped by contextual factors and have to be understood against a wider background. The social and economic drivers of both countries are determined by a primary focus on development to regain control over the spiralling debt stock[77]. Institutionally, both countries appear to be largely on track in matters related to decentralization. However, the national governments successfully undermine the effects of shifting national responsibilities to the county and district level. Thus, a proper policy implementation as laid out in the constitution is seen as a clear threat to an effective economic development planning and implementation. This leads to an unnecessary duplication and localization of corruption. The institutional, social and economic drivers increase local resource users' vulnerabilities to externalities. The vulnerabilities are intensified and defined by water unavailability or land limitations. To increase their individual adaptive capacity, farmers, pastoralists, fishermen and villagers are looking for alternative sources to recover and to strengthen the agricultural sector. However, they do not sufficiently take into consideration the sector's vulnerability to environmental and climate-related shocks (i.e. droughts, floods, overfishing, health diseases due to the overuse of chemicals and pesticides). The changes in resource availability is determined by the national development plans for energy, land and water security for the economic sites. Nonetheless, these changes negatively impact water and food security for the local resource users. Ultimately, grievances, tensions and conflicts over water and other resources increase and erupt between the local resource users.

An interesting finding which emerged from the study was that water becomes a target between the economic actors, the countries and the communities. The mis-match between the institutional framework and the economic prioritization of the national decision-makers causes multiscaler conflicts at the same time[78]. Generally, the conflict between the economic and political stakeholders can be classified as a diplomatic conflict. The conflict about political power and its implementation between the national and sub-national stakeholders is resolved through the idea of strengthening economic developments in the lake

[77] In 2018, Kenya's debt stock was 60,2 per cent of its GDP. In 2018, Uganda's debt stock amounted 41,4 per cent of its GDP (IMF 2019)

[78] e.g. economic stakeholder vs economic stakeholder; economic stakeholder vs. political stakeholder; political stakeholder vs. political stakeholder; local stakeholder vs. political stakeholder or farmer vs. herder.

basins and a rent seeking behaviour of both the county and district, and the national representatives. Furthermore, political kinship and political and economic favours settle the institutional and diplomatic conflict. In general, therefore, it seems that the diplomatic conflict revolves around the narrative of economic transformation. Accordingly, the access to water becomes commercialized and is regarded as a question of the actors' relationship and support from the national government on the one hand, and the government's dependency on the stakeholders for economic development on the other hand. For this reason, when economic companies come in, local resource users are displaced.

Figure 9.1 displays the percentages of conflict causes for the eruption of water-related conflicts. The conflict causes are set as the default type which can cause non-violent and violent behaviour between local stakeholders at Lake Naivasha and Lake Wamala. The data has been viewed through the lens of non-parametric statistical tests because a Gaussian distribution cannot be assumed, and the variables are independent. A Pearson Chi-square test was conducted to detect a link between two variables, namely the variable of conflict cause and the research sites. The variable of research sites includes the two variants 'Lake Naivasha' and 'Lake Wamala'. The Pearson Chi-square test confirms that there is a medium effect on the significant relationship in the tendencies over the outbreak of a water-related conflict in terms of the main detected conflict causes - 'governance and implementation', 'water and land usage' and 'accessibility' between these individual research sites ($\chi^2(9) = 13$, $p = 0{,}057$, $\phi = 0{,}169$).

Additionally, the Spearman's rank correlation coefficient was conducted which is a non-parametric measure of a rank correlation. It analyses the statistical dependence between the rankings of the two variables. The Spearman correlation shows that there is a positive correlation between the conflict cause and the research site ($r = 0{,}923$). Hence, the Spearman correlation indicates that when local stakeholders experience a decline in resource access as a result of a fragmented institutional framework, the greater is their correspondence to violent behaviour. This highlights that the proper implementation of the institutional framework is the default type for resource access and resource distribution. Hence, it could conceivably be hypothesized that the local stakeholders' water-related conflicts are the result of the localization of the diplomatic conflict between the national and sub-national level actors. This localization is possible because of the local actors' high vulnerability to external changes. Thereupon, resentments between and against the locals emerged and led to an increase in the manipulation of the groups against each other.

Overall, water-related conflicts between the local resource users are the result of institutional and social and economic drivers.

To sum up, the increasing complexity of the institutional framework and the growing influence of external actors confirm the importance of assessing the complex interaction between political actors, economy and civil society internationally, nationally and sub-nationally. In the case of the two lake sites studied in this thesis, the mentioned interactions resulted in an environment in which local stakeholders are faced with increasing restrictions to water and land access. This has served to stimulate resentments and social grievances among the local resource users. Both Kenya and Uganda have strengthened their national institutional framework despite the ongoing processes of decentralization and the conclusion of devolution. At the national and economic level, the economic agendas have played a key role in terms of assuring natural resource access for economic actors. In this regard, the component water management authorities (e.g. BWRC and the Catchment Management Organizations) did not play a key role. Instead, the Ministry of Water and Sanitation and the Ministry of Water and Environment facilitate the implementation of the national economic agendas in the lake basins. The tightened legal frameworks which define the rights and codes to natural resource access, institutional decision-making and economic revenue sharing are still incipient, generally due to the lack of political willingness (inefficient bureaucracies and endemic corruption) and the national economic orientation. In the current study, comparing Lake Naivasha with Lake Wamala demonstrated that the broader institutional, regulatory and legal framework play the most important role in shaping the overall eruption of water-related conflicts at the local level. An unanticipated finding was the low level of coordination and cooperation amongst the local stakeholders. Instead, recurrent violent incidents to access and use natural resources are a major impediment to security and adaptive capacity.

9.3 Policy Recommendations

There are multiple constraints which result in increased tensions, and which enhance the potential for conflict and contribute, therefore, to an increased human insecurity. If those constraints are not mitigated, they might intensify already existing grievances and cause regional instability in the medium term. The study provided a bigger set of significant constraints which are associated with the eruption of water-related conflicts between the local stakeholders: (I) weak state institutions and institutional capacity, (II) suffocating economic

expansion and (III) high level of distrust among the local actors and the motivation of revenge, particularly for Kenya. Given the constraints and blockades identified, in the following, three key entry points are proposed: (I) changing the narrative; (II) a holistic approach to economic development and (III) empowering local stakeholders.

9.3.1 Changing the narrative

The analysis above on water-related conflicts, vulnerability and governance within the two lake basins indicated that there is the need for a different narrative focusing on shared problems and, therewith, shared solutions. This suggests 'to look for mutual gains whenever possible [...] and the result [will] be based on fair standards independent of the will of the other side' (Fisher/Ury 2012: xxvi). It further enables a fair solution and protects the other party 'taken advantage of [one's own] fairness' (Ibid). Another advantage of a changed narrative is its relation to an integrative approach. The latter can be defined as 'parties whose strategy is to create value [and] understand that they can get more [from a cooperation] than they would away from it' (Bercovitch/Jackson 2001: 73). To provide more solid, shared and jointly accepted solutions on all levels of decision-making, a comprehensive approach is required. This should focus 'on basic interests, mutually satisfying options, and fair standards' (Fisher/Ury 2012: 11,14-15).

Separate the People from the Problem

Conflict participants are often emotionally involved with the conflict (e.g. anger or frustration) which can impede coming to an agreement, particularly when some kind of relationship between the parties pre-existed, as in this conflict. Therefore, the problem has to be disentangled from the people (Fisher/Ury 2012: 21-23). The challenge revolves around the narrative of economic development at the national level and access to natural resources including, primarily, water and land at the local level. However, access to water and land is relevant for social and economic stability and to preserve the integrity of the ecosystem. Resulting thereof, the political leadership is required to overcome their currently existing diplomatic conflict at the national and sub-national level of decision-making. Thus, both the national and sub-national governments need to feel equally involved in the process of natural resource governance. Nevertheless, the current institutional decision-making suppresses any further calls for cooperation. Hence, to address this issue, the root cause of the diplomatic conflict needs to be focused on. This does not mean a regime change, but it requires some major reforms of the existing political system and the political culture (i.e.

corruption). Resulting thereof, a possible reintroduction of decentralization and devolution is seen as one way of mitigation against the institutional ineffectiveness. Dialogue among the political stakeholders and the catchment management representatives is a precondition to overcome overlapping areas of responsibilities, financial constraints or the formulation of legal and policy reforms, especially. The political institutions at a sub-national level of decision-making are weak, though they have the potential to perform far better with more commitment to transparency, accountability and performance orientation. Thereby, it might be easier to focus the attention on the current political polarization and problem and reduce the potential for future conflicts.

Focus on Interests, Not Positions

Although leadership is important to solve the diplomatic conflict, the water-related conflict between the local stakeholders needs to be addressed separately. The communities, smallholder farmers and pastoralists' interest are the actual cause of the dispute, not their positions (see tables 8.1 and 8.2). As these positions from the basis of any agreement, they must be prioritised. To achieve this, the underlying interests of both primary conflict actors need to be made explicit. This can happen by asking the other 'Why?' – why do the other side persist on their positions (Fisher/Ury 2012: 42-46, 50). By making the positions explicit and visible, like during joint community meetings, and thereby writing them down, it should be easier not to relapse into positional bargaining again. Furthermore, joint community meetings can be an essential platform to identify trade-offs and opportunities to promote sustainable agriculture and livelihood opportunities and safeguard security between the different local stakeholder groups. Lastly, community meetings help to build or to restore mutual trust between the different local stakeholders and to simplify broader dialogue and burden sharing. The onion analysis in chapter 8 pointed to the shared interest of access to water and land, as well as social and economic developments. Specifically, the shared interest in improved water and land access illustrates a possible zone of agreement and depicts the most important controversial issue which therefore should be addressed first.

Invent Options for Mutual Gain

In order to find possible options from which both the political and local stakeholders' benefit, a communal meeting between the stakeholders and district or county representatives can be conducted which shall be free from any judgement or criticism (Fisher/Ury 2012:

62-65). The researcher participated in such a community meeting during the stay at Kikandwa. In such meetings, various ideas may come up on how to solve the problem of land and water access, the usage of more sustainable farming techniques or security issues from which the viable ones can later be separated. In addition, both the primary, secondary and tertiary actors' interests will be taken into account and treated equally. Further, the idea of a fixed pie for everybody has to be overcome (Fisher/Ury 2012: 72). The national and sub-national decision-makers need to understand that their interests in economic development and institutional transformation can only be solved mutually. This becomes increasingly important regarding the revenues from the economic sites, the infrastructure and its likely potential for economic and financial well-being (Johnson 2010: 41). Regarding the local communities, it is the reverse, as they are not primarily interested in the revenues but in grazing and agricultural lands, improved water access and the set-up of educational and health facilities. Hence, the political stakeholders and the communities are interested in different objectives (Fisher/Ury 2012: 58-59).

Insist on Using Objective Criteria

Basing a possible agreement on objective criteria enhances the changes of a commitment (Fisher/Ury 2012: 84). Regarding the first narrative of economic development and institutional ineffectiveness, it might be advisable to look at both issues at the same time, as any economic transformation will, in the end, go hand in hand with a political transformation and effective institutions. Considering the question of revenue sharing of the economic investments undertaken and the use of the financial infrastructure, agreements between the different companies and the countries should be taken as objective criteria to find a fair solution which corresponds to the international standard and is also in line with the already existing legal framework for revenue sharing. Thus, the concerns of the communities in matters related to improved educational and health care facilities might become second-ranked by making explicit the actual interests of the actors.

9.3.2 A holistic approach to economic development

Notwithstanding the earlier comments about changing the narrative, economically it will be essential to first regain control over the spiralling debt stock and to go beyond the credo of ‘infrastructure first’ and ‘foreign investment benefit Uganda’ (Statehouse 2015). Both Museveni’s and Kenyatta’s understanding of economic development includes primarily infrastructure (with a focus on roads and transport) and pivotal trade partnerships with

foreign investors, primarily Chinese and Indian ones. However, this economic understanding undermines a more holistic approach to development. A critical reassessment of the economic objectives and the change of the structural guidelines of the existing economic potential seems a requirement. Hence, the government needs to shift its directions to focus trimming the bloated public services (e.g. inflated administration and patronage network) and to focus on the set up of solid and fundamental public services (including health and education as well as improving basic sanitation and water supply) instead. To reach the desired levels of productivity and competitiveness, as laid out in the national development plans, both countries cannot work around the demographic challenge. Some community members highlighted that youth unemployment is a major obstacle to security in the basins. Thus, providing opportunities for the young generation will be key to a successful and sustainable development, especially in rural areas. Moreover, this could help to improve the security situation.

Especially around Lake Naivasha, the economic sites are already in place. Thus, a modernized and strengthened educational system that not only focusses on both critical thinking and creativity, as well as vocational training and technical skills, provide the young generation around Lake Naivasha with the opportunity to find well-skilled employment. Considering that more than 50 per cent of the population are still employed in the agricultural sector, education, especially in rural areas, should not only prioritize economic development but should also address sustainability and natural resource management. Additionally, the labour market in both countries needs to be expanded so that it can absorb more young people. Thus, modernizing agriculture and drafting a more robust industrialization strategy shall contribute towards a greater productivity.

As indicated earlier, both presidents focus on foreign investments to improve the economic situation. Both Kenya and Uganda borrow money from foreign investors or foreign investors are hired for prestigious infrastructure projects or to implement the economic agenda. As a result, the debt levels of both countries are growing. There is concern that both countries are heading into a debt crisis, even though the debt levels can be considered sustainable currently[79]. It would be advisable that the governments critically assess the conditions

[79] For Uganda, the external debt for the public and private sector increased from 1 per cent to 41,4 per cent of the GDP in 2017/18. At the same time, the debt owed to China is steadily increasing, from 3,3 per cent in 2011 to 20,3 per cent in 2017 (IMF 2019). For Kenya, the external debt for the public and private sector increased by 5 per cent to 60,2 per cent in 2017/18. At the same time, the debt owed to China is also steadily increasing, standing at 21,3 per cent in 2018 (IMF 2019).

under which they borrow money from foreign investors. The countries should find sustainable ways to both fund the economic transformation as well as include their country's own labor force instead of allowing the foreign investors to bring in their own. Possible first steps could include a joint engagement with the foreign partners which is in line with the five-year and long-term development plans. Secondly, the countries could attract foreign investments and should strengthen a domestic revenue generation without relying on unconditional loans from China or India. The former also requires the willingness of international organizations to rest and assess their growth assumptions for both economic expansion and monetary benefits. The international organizations' allowances towards the agricultural sector should not be based entirely on strengthening the agricultural sector but should also take into account the sector's vulnerability to external shocks and climate change.

9.3.3 Empowerment of Local Stakeholders

The study found out that water-related conflicts between the local stakeholders are a result of their low adaptive capacity to cope with the different externalities. Therefore, key entry points should include the empowerment of local stakeholders in matters related to water supply and water accessibility. This shall reduce the risk of outbreak, or the fear of outbreak of water-related conflicts in the medium to long term.

In both lake basins, local and non-governmental international and national actors try to achieve similar political, economic, as well as environmental aims. Local NGOs especially should be given more responsibilities in matters related to formulating, implementing and monitoring decision-making environmental processes concerning Lake Naivasha and Lake Wamala basin. However, to be capable of acting, they need to be better equipped financially, as well as have to be treated as a reliable and equivalent partner. Furthermore, the existing legal framework regarding a sustainable and equal handling of water resources needs to be implemented and put into action. Therefore, to reduce water induced conflicts in the basins, a more active, free and meaningful participation of all water resource users is inevitable. A good water and natural resource governance approach is aimed at including responsibility, transparency, equity and efficiency. In the end, it needs to be community oriented overall. It should further include sanctions in case the laws are not followed as well as to hold all stakeholders accountable in case of natural resource and policy mismanagement.

Local resource users need to be empowered taking action to improve their water supply and accessibility instead of 'waiting' for the government to take action. Thus, local resource users can also put efforts to increase their own adaptative capacity. In the case of Lake Naivasha, most local resource users reside within one of four informal settlements within the closer surrounding of the lakes. However, these settlements lack basic amenities. As the installment of water services are often costly and also will remain costly in the near future, a group-oriented approach is recommended. This group-oriented approach shall cover all local resource user groups. It might enable them to construct a water infrastructure which serves all their priorities while simultaneously reducing the costs for all of them. Furthermore, a cooperative sharing of resources would result in more advanced communication between the different resource user groups and thus reduce the levels of distrust. As proposed earlier, a community-centered approach also includes regularly held meetings to bring all local stakeholders together. During these meetings, employees from international and national NGOs in cooperation with local stakeholders shall provide the stakeholder groups with trainings and workshops on how to manage and use natural resources sustainably, especially in times of unpredictable weather changes. These meetings can further help to build trust and confidence among the different resource users. However, it is not sufficient to arrange community meetings only. To increase local low-key conflict prevention and resolution mechanisms, traditional institutions as well as peace meetings facilitated by NGOs and government actors need to be promoted. A failure to mitigate the already existing conflicts will further add fuel to the fire and increase the vulnerability of the affected communities. This then might lead in the near future to regional destabilization. In summary, the local stakeholders need to address the Elephant in the room and work towards containing the land and water situation and to push towards a joint solution instead of following the credo 'every man for himself, god for us all'.

9.4 Brief Summary

Kenya and Uganda's lack of state capacity has been a challenge in reaching equal access opportunities to water resources at the local level. Due to its direct interaction with social and economic factors at the national level and indirect interaction with climate change, domestically, increasing temperatures coupled with governance challenges and social and economic implications will affect multidimensional security, not only among the local stakeholders but in the medium to long term. Water and food security, livelihood

challenges, internal migration and intensifying communal conflict due to impacts on water access and the continuation of traditional livelihoods are all issues that might exacerbate already existing grievances and lead to social tensions in the first place. Furthermore, communal conflicts and perceptions of insecurity might also be compounded by climate change impacts in the near to medium term.

The study showed that the competition for scarce water resources, which are actually still abundant in the lake basins are central to violent and non-violent conflicts witnessed in the area. The eruption and persistence of those conflicts is an indication of a weak national institutional framework. The implementation of the existing governance structures is carried in disregard to the local stakeholders' abilities and means of livelihood. Thus, ill-informed and ill-planned political and economic interventions neither address the root causes of the problem nor meet the local stakeholder's level of knowledge. Moreover, inadequate policies focus on the complex tenure issues in traditional settings. Therefore, the development of a macro economic agenda that leads to an economic transformation has to meet, first, the countries' citizens' abilities and, second, has to work closely within the existing political framework. Furthermore, dialogue between the national and sub-national political stakeholders is a precondition, especially to overcome the current political polarization. Independently, community participation in resource and conflict management is crucial for achieving a sustainable conflict-free resource sharing. However, national and international actors need to acknowledge the local stakeholder's high levels of vulnerability to water access which is attended by violent and non-violent behaviour. Thus, nothing of the above mentioned can be accomplished by silencing dissent.

10. Conclusion

Firstly, this chapter summarizes the key findings of the previous chapters to answer the research question associated with the overall objective of this thesis (10.1). Secondly, overarching conclusions are drawn to highlight further research areas (10.2).

10.1 Summary

As water-related security risks are increasingly compounding. Because of existing political, economic and social challenges worldwide, it becomes more and more important to understand the impact of institutional and economic factors on human livelihoods. This thesis, therefore, has sought to answer the main research question 'How does water management influence innerstate low-key conflict intensity in Kenya and Uganda?' by looking at, and discussing the eruption of water-related conflicts at Lake Naivasha and Lake Wamala.

The research into water-related conflicts at water abundant areas is still in an early stage but, nevertheless, it is possible to highlight some points. Even in areas which do not seem water scarce from the outside due to their vulnerability to climate change, it does not automatically imply that conflicts over water are inexistent. When economic and political stakeholders, with different motivations and capabilities to influence national economic and political processes, weak institutions, marginalization and unequal resource access and distribution at play, local stakeholders fuelled the intention to forcefully pursue their right to water. In this case, water is more likely to contribute to violent conflicts, independent of the amount of water available.

The empirical findings of the research both underscore and weaken certain lines of thoughts within the ES/PE and vulnerability and resilience literature (chapter 3). Several quantitative long-term studies have found a link between the effects of changes in climatic conditions and its influence on armed and violent conflict. However, for more recent studies, the evidence is more ambiguous and less robust. Another major challenge for quantitative studies is the lack of adequate data on water and, particularly, on conflicts. The commonly used conflict datasets of UCDP or PRIO require the involvement of the government for a conflict to be documented, for instance. Consequently, all non-state conflicts are excluded. This poses a major limitation, considering that current research suggests a stronger linkage between water-related conflicts and intergroup conflicts at a local level of decision-making. With regard to the analysis of intraregional and local factors, research moved

beyond the environmental aspect, discussing the importance of integrating governance and economic factors as distinct drivers of resource-related conflicts. Nevertheless, these studies have difficulties to move beyond case-specific data and, moreover, climate change and environmental aspects are often cited as one of the main drivers of conflicts. Generally, the sensitivity to resource and environmentally-related externalities are often driven by a country's political, economic and social system. The vulnerability and resilience literature show how environmental and other aspects impact a country's adaptive capacity and, therewith, its level of vulnerability. Even though the literature shows that exposure, sensitivity and adaptive capacity are closely interlinked to explain vulnerability, the vulnerability concept does not pay attention to the motives and positions that might result in conflictive behaviour as a result of high levels of vulnerability. Lastly, research on the water and conflict nexus is mostly focused on areas which are classified as water stressed or water scarce.

Among the major research questions, the literature review identified two main gaps. The gaps identified point to the need to integrate institutional factors, global processes of economic dynamics and actors into a comprehensive, multi-level network as distinct drivers of on the ground water-related conflicts and networks. Additionally, this particularly suggests identifying how the interaction of global and national processes leverage change in local people's behaviour in matters related to water access beyond the aspect of climate change. The research gaps identified can be summarized in the following two questions: How does the interplay between global dynamics and actors influence and impact water shortages at the local level and how do the affected communities respond to an altered water base?

To address these gaps and questions, chapter 4 presented three theoretical concepts with instrumental concepts and models to explore and analyse the water-conflict nexus (see figure 4.1). The complex water security interactions can be understood by conceptualizing them in actor-context factor frameworks (see figures 6.3 and 6.4, 7.3 and 8.5 and 8.7). The three theoretical concepts (Vulnerability Framework, Stakeholder Analysis and Conflict Assessment) can serve as a basis for a comprehensive actor-based model as the example of the actor classification for Lake Naivasha and Lake Wamala basin has demonstrated (chapter 6). Based on the actor classification, the vulnerability framework allows for a detailed analysis of the actor's degree of vulnerability to political or social and economic processes (chapter 7). Resulting thereof, it contributes to the understanding of how the former factors increase the competitiveness over available water resources between the stakeholders identified (chapter 8). The combination of the three theoretical strands into a multi-

dimensional model provide a deeper insight into the dynamics and characteristics of the complex water and conflict nexus. The combination of the three separate theoretical frameworks underscores the relevance of vulnerability and recognizes the different variations of resilience of the individual stakeholders as drivers of water-related conflicts.

Chapter 5 discussed the importance of water for both private and public life. It showed that Kenya and Uganda are well-endowed with water bodies but also highly vulnerable to climate change and, therewith, water stress. But the vulnerability to climate change differs from region to region. Moreover, the description of water availability suggested that its accessibility is highly segmented across the countries. Thus, the institutional framework contextualizing the water sector appears to be positively related to both water availability and water accessibility, independent from a region's water availability. The water acts suggest that water governance has been decentralized to the county and district representatives. However, central issues, including financial support and contributions, have not been implemented. Thus, an adequate water regulation as it is laid out in the water acts seems to be curtailed.

The purpose of chapter 6 was to determine the stakeholder composition and their interests in the water and land resource, and their influences to integrate environmental policies in the institutional framework at Lake Naivasha and Lake Wamala. The stakeholder analysis identified nine broader groups of stakeholders which live and work in the lake basins. At Lake Naivasha, the increase in economic activities and economic stakeholders led to a shift from agricultural to economic production. Additionally, the economic upgrading resulted in a tremendous population increase, as people are moving to Lake Naivasha in search of employment. Both aspects, furthermore, decreased the available grazing and farming areas and contributed to a decrease in access routes to the lake's landing sites. At Lake Wamala, economic undertakings reduced the number of landing sites and people living in close proximity to the lake. However, the water and land infrastructure in the wider surroundings of the lake has not been improving in the same way as people moved to these areas. Consequently, the amount of water and land resources not only decreased for those actors who moved away from the lake but also decreased for those who already resided in the wider surrounding of the lake.

The analysis illustrated the mismatch between interests in the resources and influences stakeholders have to shape natural resource governance processes. The results from

chapter 6 also indicate that the mentioned water shortages at Lake Naivasha and Lake Wamala are less the result of environmental effects (climate change), but that political marginalization and the political directives are strong drivers of conflicts between the local resource users. The chapter concludes that those who depend on the water resources most to satisfy basic needs have the least influence to integrate local water governance in the institutional decision-making framework.

Chapter 7 discussed the correlation between vulnerability and conflict for the identified stakeholder groups. The analysis of the annual temperature and precipitation deviations illustrated that neither Lake Naivasha nor Lake Wamala have yet been vulnerable to climate change compared to the arid areas in the north. The stakeholder analysis showed that economic undertakings are increasingly taking place in both lake basins. The economic development agendas aim to upgrade Kenya and Uganda's economic performance to achieve the status of a middle-income country by 2030 (Kenya) and 2040 (Uganda). The majority of the people at Lake Naivasha and Lake Wamala, however, still rely on the agricultural sector. The economic undertakings result in environmental degradation, the pollution of soil and water and undermine local stakeholders' food security, resource access and their overall livelihood perspective. The economic undertakings further decrease water and land resources and, hence, contribute to farmers moving into grazing areas, herders entering farming land and villagers clashing over water access in the informal settlements.

Several options for adaption exist for the national, sub-national and economic stakeholder groups. Political kinship, the lack of political will to implement the devolved and decentralized system or the dependency of the national actors on national and international economic actors and their financial contributions reduces their level of vulnerability and, consequently, the risk over the eruption of conflicts. Employment opportunities in the flower farms and hotels or infrastructural improvements could help to increase the adaptive capacity of local stakeholders in the medium term. Nevertheless, the local stakeholder groups' vulnerability is affected by the relative distribution of income, the access to and diversity of economic assets, the access to and the distribution of resources and by the operation of informal social security arrangements. Further, individual vulnerability to economic and environmental changes is determined by the ineffective implementation of institutional arrangements. The combination of collective and individual vulnerability results in high levels of insecurity. This increases the risk over the outbreak of water-related conflicts between the local level actors.

The likelihood over the eruption of water-related conflicts is the highest between small-holder famers and pastoralists at Lake Naivasha and between small-holder farmers and fishermen at Lake Wamala (chapter 8). Cattle raiding, the blockage of access routes to water and land resources and deathly encounters between the conflict actors are the most often used conflict response tools. Violent and non-violent behaviour seems to be conducted regardless of the season. Generally, Lake Naivasha is more affected by violent and non-violent behaviour. Historically grown grievances, ethnic affiliations and the high number of people sharing the space and the resources at Lake Naivasha and in the informal settlements have been identified as the main conflict causes. Additionally, the current conflict dynamics are shaped by the economic undertakings, environmental destructions and unmet expectations. At Lake Wamala, the conflicts are intensifying. The majority of the interviewees have stated that non-violent and violent response tools are not only used to acquire water but also to gain and to secure control over land and water resources. Moreover, violence is conducted to take away people's livelihood to reduce the number of actors asking for water and land.

In chapter 9 the overall hypothesis was developed based on the analysis of conflict, the stakeholders and vulnerability, interviews and the literature records. The hypothesis suggests that the localization of the institutional conflict between the national and sub-national actors increases the pressure on water access for the local resource users. This, in turn, creates the general pressure to use non-violent and violent means to compensate their high levels of vulnerability. The study was able to identify that the implementation of the institutional frameworks is not thoroughly executed, indexing the dominance over the outbreak of water-related conflicts between the local stakeholders. It is important to bear in mind that the institutional framework seems to function as the main conflict cause. However, the other conflict causes detected can be perceived as inherently linked. Unclear land rights issues, unmet economic expectations and historically grown grievances and the motive of revenge are positively related to increased social tensions and to intensified existing conflict dynamics. These motives are related to other conflict drivers which include the commercialization of water and land, the availability of small arms (pastoralists at Lake Naivasha) and financial compensations (fishermen at Lake Wamala). The situation is affected by climate change indirectly because prolonged droughts or heavy rainfalls make farming and grazing more unpredictable.

Figure 10.1 summarizes some key findings presented in chapter 9 (see figure 9.2) in a condensed form. The insecurity in the communities has led to ineffective resource use and the forceful destruction of land and water resources. The identified actors have a variety of instruments to strengthen the adaptive capacity of the local resource users and, therewith, to mitigate the conflicts. The instruments, firstly, need to be conflict sensitive and applied carefully and, secondly, the local stakeholders need to be integrated in the approaches to avoid negative effects (chapter 9). At Lake Naivasha it would imply strengthening the farmer and pastoralists' capacity to ensure farming and grazing security. At Lake Wamala the issue of husbandry and joint farming needs to be addressed. Local stakeholder's livelihood could be improved by ensuring safe and cooperative resource sharing. This would also imply a more holistic approach to economic development which does not only concentrate on macro-economic projects. Further, local and sub-national institutions should be strengthened to promote dialogue, resource sharing and community participation in sustainable resource management.

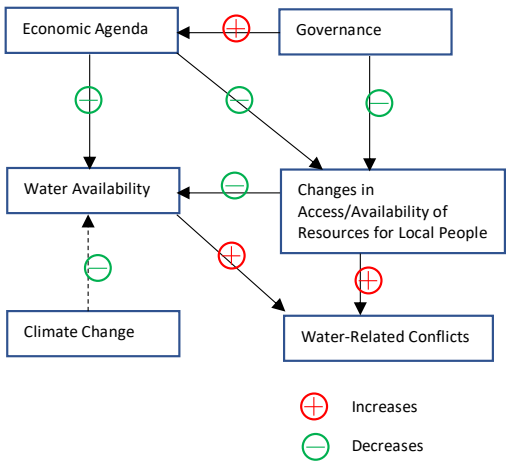

Figure 10.1: Key interaction between governance, economic agenda, water availability and conflict (Source: The Author 2020)

10.2 Contribution and Avenues for Future Research

Several overarching conclusions can be drawn from the summary and, therewith, highlight the contribution of this research for a better understanding of water-related conflicts in water abundant areas. First, the complex relations between water availability and conflict can only be understood if questions of vulnerability and adaptation for all identified stakeholder groups are answered. Consequently, any attempts to mitigate water-related conflicts need to address the specific vulnerabilities of each individual conflict actor.

This leads to the second point, that the lack of political willingness to allow sub-national participation in resource policies leads to ineffective local adaptation processes, and therewith, the eruption of local level conflicts. The localization of the institutional conflicts is more than a mere struggle in the study countries. In many countries of the Global South, issues of governance and economic upgrading is an arena for struggles over authority between the central state and 'twilight institutions', such as sub-national governments and customary institutions. This is especially the case in countries with weak state authorities which are, furthermore, highly vulnerable to being affected by climatic changes and transitioning from least developed to middle-income countries. The context is appreciated by international and national business actors where conventional donors have lost clout as a result of the growth in developing economies and the lack of a clear-cut system of responsibilities. It allows them to engage in national decision-making processes and to influence national policies in matters related to their interests.

Third, this study has demonstrated that it is possible to grasp the complexity of the research objective by applying multiple research methods and theoretical frameworks. The comparative case study analysis allowed specific conclusions to be drawn about the causes and dynamics of water-related conflicts beyond the aspect of climate change. As climate change has led to the drying up of water bodies in arid areas, people are moving to humid and, therewith, water-rich areas. Thus, regions and areas which have not been affected by climate change yet, will be affected by water shortages. Particularly, with respect to future research on the water and conflict nexus, the combination of the various methods and approaches used, as done in this thesis, might allow for a more in-depth qualitative field research with quantitative data analysis and modeling beyond the cases studied.

From this, the fourth point emerges, the increased need to focus on water abundant areas even though they seem calm on the surface. As indicated in chapter 3, there is a need to establish a water and resource available georeferenced spatio-temporal database to researchers and decision makers to better understand the spatio-temporal distribution of water and economically-relevant resources. This database should capture local and non-state conflict dynamics as well as allow to understand how the different levels of decision-making influence operations on the ground. With gradual development of databases and frameworks, it will be possible to test hypothesis on the relation of water and conflict in all areas, like the one developed here, in other conflict contexts.

Consequently, a relevant area for future research efforts would be to clarify how powerful international companies wield leverage in and across economic value chains and what implications this has on not only the shift in the end markets towards the south and the growing importance of securing access to water and land but also the supply in the agri-food sector for local and national actors. Another important area for future research would be to examine the implications of international cash flows to limit the effects of climate change on the available resources. Kenya and Uganda are dependent on the economic undertakings at Lake Naivasha and Lake Wamala. The Covid19 pandemic resulted in the temporary disruption of global trade. Thus, an area for future research might be the analysis of the correlation of the economic effects of the corona crisis on water-related conflicts.

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Appendices

Appendix A: Questionnaire Scoping Trip 2018 and Three-Month Field Research 2019

Scoping Trip 2018

International and National Organisations:

1. Please describe the current political and economic situation in the country!
2. Please provide some background information on the economic situation and agenda setting/priorities within the economic sector in regard to water!
3. How do colonial power structures and colonial politics influence today's political situation?
4. Please describe the current water situation (water situation during dry season compared to wet season)!
5. Which factors contribute to water stress and water scarcity (despite abundance of water)?
6. Which actors use water and which actors take part in water allocation and water distribution processes?
7. For what purposes do various actors use water?
8. To what extent does the political situation/political elite contribute to water shortages despite water abundance?
9. To what extent do ethnic affiliations impact on water allocation and distribution processes?
10. Would say that water is the cause of conflict or is water the outcome of conflict?
11. What do you do to improve water situation?
12. What does violence mean to you or what do you consider to be violent/conflictual behaviour?
13. Which actors do you consider to be a potential rivals in matters related to water usage?

Local Actors Lake:

1. Get a general understanding of current water situation!
    a. For what do you need water?
    b. Do you think you have enough water?
    c. Where do you get your water from?
    d. Who are other actors using the same water resource as you do?
    e. Are there any problems with the other actors?
    f. Is the water clean? Do you get sick from using water?
2. Do you think water will be less available in the future?
3. For what purposes do other actors use water?
4. To what extent does the political situation/political elite contribute the water problems you have?
5. To what extent do ethnic affiliations impact on water allocation and distribution processes?
6. Do you think there are conflicts about water?
    a. Yes: What causes these conflicts/why are there conflicts?
    b. Do you think you can stay at this place or do you have to move around in order to get enough water?
7. What does violence mean to you or what do you consider to be violent/conflictual behaviour?
8. Which actors do you consider to be a potential rivals due to water uses?
9. Do political and economic actors help you with your water problems?

Three-Month Field Research 2019

Basic Information on Water Sector

Aspects of the Water Sector	
Name of responsible Ministry	
National responsibility or with county/district?	
Is there a Water Act?	Yes No
If yes, year established?	
How is the water sector or natural resource sector managed?	
Who is responsible for the Water Act's implementation?	
Do the political elites prioritize natural resource governance?	
Are there enough financial means available?	
To what extent is there a difference between the rural and urban areas in regard to water governance?	
Physical aspects of the natural resource sector	
Which topics are covered by the natural resource sector?	
Are there any water-related problems?	

What technical solutions are there to deal with water-related problems?	
To what extent are there organisational solution structures?	
To what extent are water-related problems related to land issues?	
Which types of resources are interrelated and lead to potential conflict tensions?	
For what is water used?	
To what extent is water used in the economic sphere? Agricultural vs. industrial sector?	
Accessibility to water and natural resources in the country? Rural vs. urban?	

Stakeholder and Conflict Analysis

Stakeholder Analysis	
Which actors are involved in the water sector or in natural resources in general?	
Which actors are on the national level?	
Which actors are on the sub-national level?	
Which actors are on the local level?	

How do international actors influence the natural resource sector?	
Level of Influence and Interests	
Which of the named actors do you consider to have the most influence in the water sector?	
Which of the named actors do you consider to have the greatest interest in the water sector?	
Conflict Analysis	
Do water or natural resource conflicts exist at present?	Yes No
Where do these conflicts exist?	Region/City etc.
What are possible reasons for conflicts?	
How did the conflict arise?	
How long is the conflict been going on?	
Who are the main parties in conflict?	
Which actors support or indirectly influence the conflict dynamics?	
Are there shadow actors which might influence water governance?	

What issues do the conflict concern?	
What are the interests of the conflict parties?	
What are the positions of the conflict parties?	
What are the needs of the conflict parties?	
What kind of power do the conflict parties have?	
What are historical relationships between the conflicting groups/people?	
Conflict Dynamics and Forms of Violence	
How did the conflict develop over time?	Increased Decreased
How do you describe the conflict intensity?	
How visible is the conflict?	
What are the conflict dynamics?	
How violent is the conflict?	
What are structural features of the conflict?	
What are contextual features of the conflict?	
To what extent do external actors, e.g. economic companies, political elites influence the conflict dynamics?	
To what extent do historical aspects influence current conflict dynamics?	

Appendix B: Coding System

Stakeholders

- Influence of Stakeholders
- Interests of Stakeholders
- Local Level
    - Local Population
    - Pastoralists
    - Fishermen
    - Small-Holder Farmers
- Sub-County Level
- County Level
- National Actors
- International Actors

Water Sector

- Rural and urban Water Governance
- Governance and Implementation
- Financial Means
- Water Act
- Responsible Ministry

Conflict Development

- External Actors Influence Conflict
- Contextual Factors
- Structural Factors
- Violence
- Intensity
- Visibility
- Development over time

Natural Resource Sector

- Usage of Natural Resources
- Other Sectors
- Solutions to Problems
- Accessibility
- Land Problems
- Water Problems
- Water and Land Issues

Conflicts

- Powers
- Needs
- Positions
- Issues
- Shadow Actors
- Indirectly Involved Actors
- Directly Involved Actors
- Eruption
- Reasons

- History

Water Conflict

- Availability
- Crop Raiding
- Dam Construction
- Illegal Abstractions
- Accessibility
- Illegal Fishing
- Pollution
- Deathly Encounters
- Destruction of Property
- Cattle Slaughtering
- Blocked Access
- Cattle Raiding

Political Situation

- Education
- Water Infrastructure
- Poverty
- Institutions
- Governance
- Unemployment
- Employment
- Corruption

Environmental Impacts

- Floods
- Sanitation
- Waste Management
- Encroachment/Degradation
- Pollution
- Siltation
- Poor Farming Practices
- Deforestation

Appendix C: Conflict Dynamics and Conflict Response Tools Local Stakeholders from Lake Naivasha and Lake Wamala

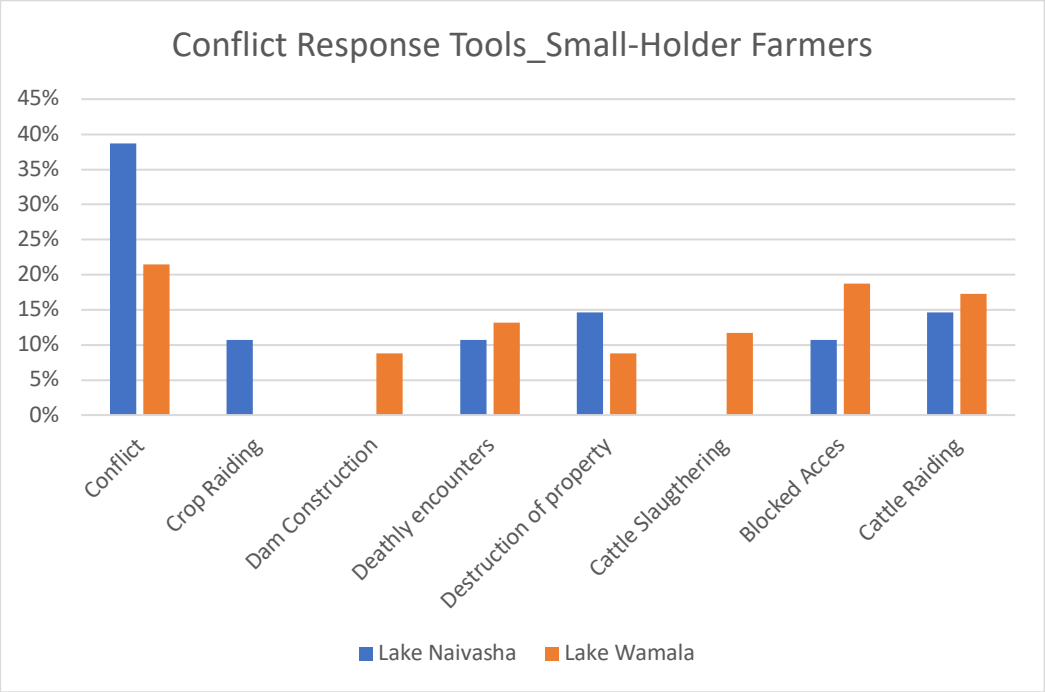

Figure C.1: Conflict Response Tool of Small-Holder Farmers compared at Lake Naivasha and Lake Wamala (Source: The Author 2020)

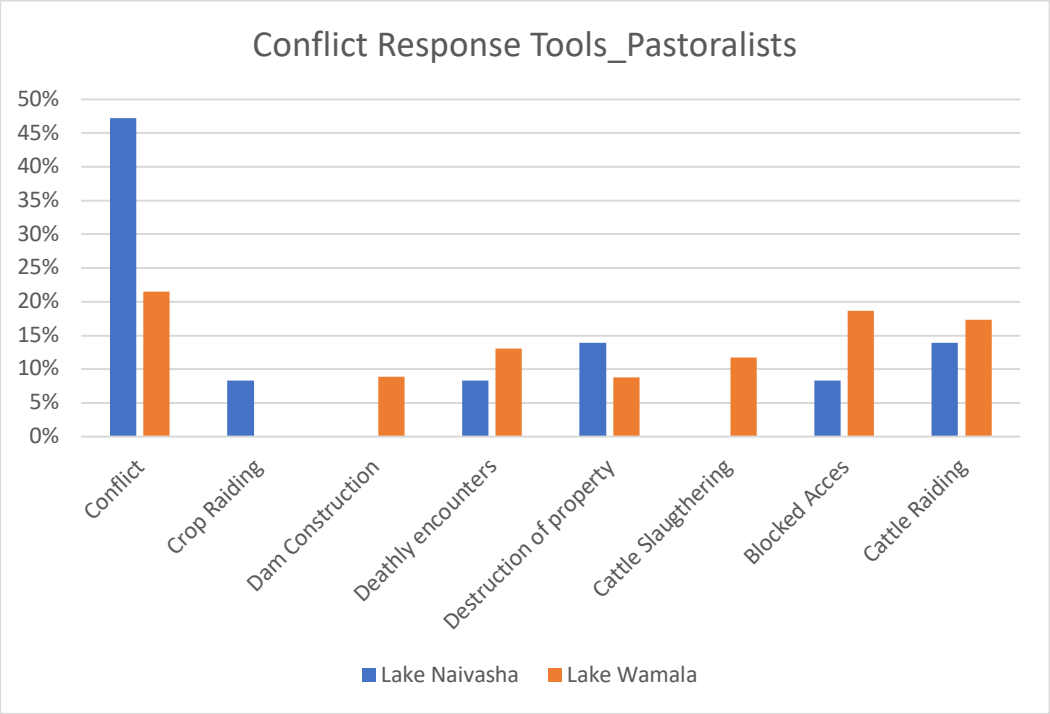

Figure C.2: Conflict Response Tool of Pastoralists compared at Lake Naivasha and Lake Wamala (Source: The Author 2020)

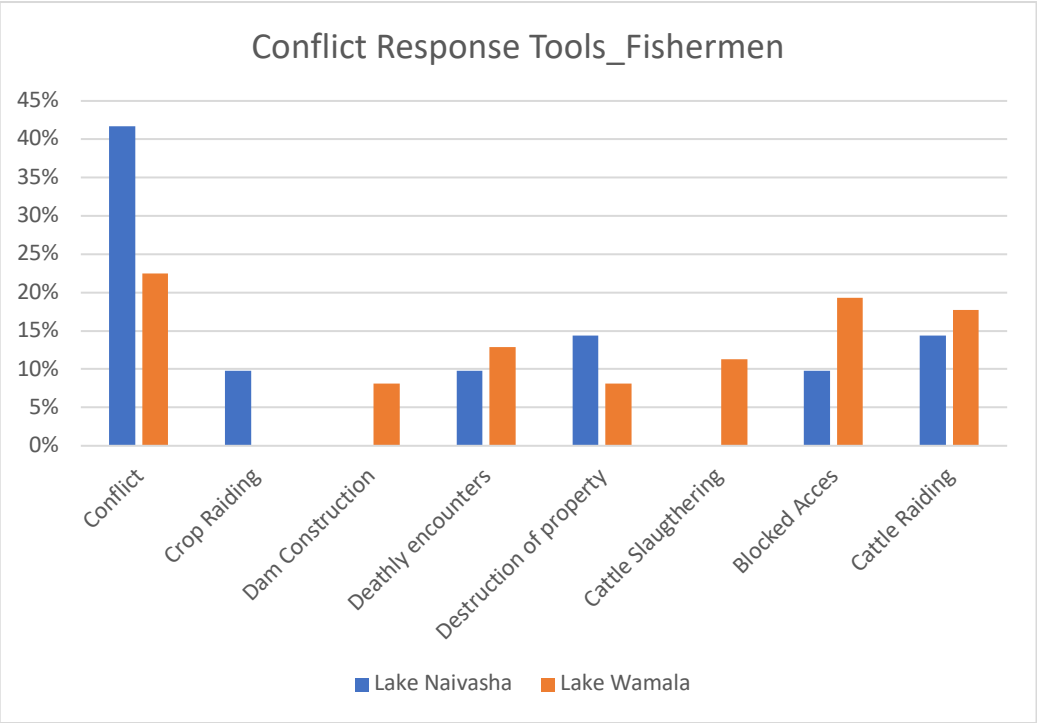

Figure C.3: Conflict Response Tool of Fishermen compared at Lake Naivasha and Lake Wamala (Source: The Author 2020)

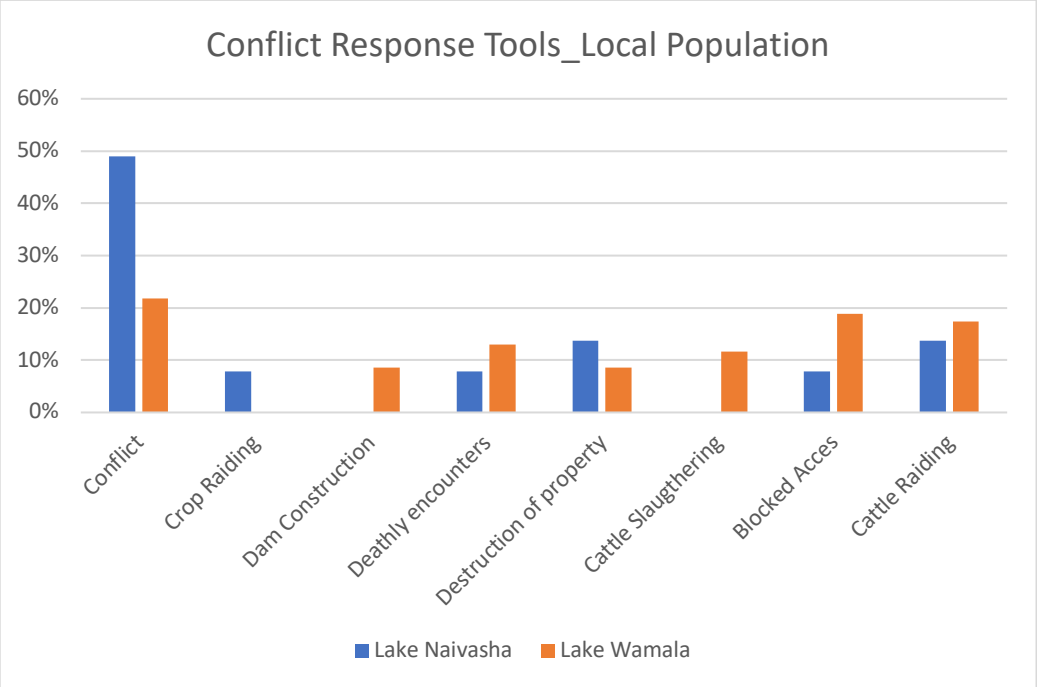

Figure C.4: Conflict Response Tool of the Local Population compared at Lake Naivasha and Lake Wamala (Source: The Author 2020)

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