



Beekeeping as a livelihood strategy in a changing environment

*A study on the effects of forest governance change and
landscape transitions on local beekeepers in Rwanda*

CoCo Teheux, 2014



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Program:	MSc Forest and Nature Conservation
Chairgroup:	Forest and Nature Conservation Policy
Student:	CoCo Teheux
Registration Number:	880101 824 030

Supervisors:	dr. WH Wolfram Dressler CJ (Cora) van Oosten
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Abstract

The governance of Rwanda has recently been under the influence of decentralisation and privatisation policies. This study aims at measuring the development of these policies in forest governance and their effects on the landscape and the people of Rwanda. The focus of the study is on the landscape of Nyungwe and the local beekeepers whom are dependent on this land in terms of their livelihood. The findings of this research are based on a qualitative analysis of scientific literature and policy documents in combination with 48 semi-structured interviews with government representatives, private actors and local beekeepers. The results show that decentralisation in Rwanda is still limited in terms of accountability towards local people. Privatisation policies have driven the coming in of international investors in the landscape to professionalise land uses and stimulate economic development. These changes in forest governance have driven the expansion of professional land uses in the bufferzone of Nyunwe. Local beekeepers have responded to these developments through the formation of cooperatives which have a strong positive effect on all the capitals of their livelihood. Nevertheless, because the bufferzone is of critical importance to the support of beekeeping as a livelihood strategy and the lack of a clear management policy for all stakeholders, their livelihood has been strongly impacted by the privatisation developments. Cooperatives have reported to have lost their material and access to the landscape which has major implications for the sustainability of their livelihood. This study has generated insight in the complex interactions between forest governance change, landscape transitions and local livelihoods which can be used to improve the implementation of these developments.

List of abbreviations

ARDI	Association Rwandaise pour la promotion du Développement Intégré
DFID	Department for International Development
EDPRS	Economic Development and Poverty Reduction Strategy
GoR	Government of Rwanda
MBC	Market Based Conservation
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
NFC	New Forest Company
NGO	Non-governmental organisation
ORTPN	Office Rwandais du Tourisme et des Parcs Nationaux
RARDA	Rwanda Animal Resource Development Authority
RDB	Rwandan Development Board
REMA	Rwandan Environmental Management Authority
RNRA	Rwandan Natural Resources Authority
ROR	Republic of Rwanda
UNDP	United Nations Development Programme
WCS	Wildlife Conservation Society

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1. Introduction

Since the mid-1980s, changes in governing techniques, shifting from a state oriented to a more society oriented form of governance, has been on the rise. However, despite moving away from a highly centralised form of governance, these shifts have not always resulted in sustainable rural development (Agrawal & Ribot 1999; Larson & Soto 2008; Rutagarama & Martin 2006). A lack of accountability of local institutions and private actors towards local people is often the cause of this limitation (Ribot 2006). Furthermore, these changes in governance influence different transitions in the landscape (McCarthy 2004; Klepeis 2003; Oyono 2005). The combination of these two evolving trends in governance and landscapes has a direct impact on the livelihood of local people.

This study focuses on these changes in governance and landscape transitions in Rwanda, which has had a long history of forest governance changes. During the pre-colonial period, forests were managed through communal arrangements. The colonial period was marked by top-down control from the colonising countries, excluding all agricultural use of forest reserves (Spinage 1972). In the post-colonial period, this control was transferred to the Rwandan government (Masozera & Alavalapati 2004). At the start of the 21st century, the government began decentralizing, which included the devolution of tasks from the central government to local governments and institutions and the enhancement of their capacity, a process still occurring today (MINALOC 2011). The full process is accomplished in three phases, from the enhancement of local capacity to the devolution of tasks from the central government to the local government (MINALOC 2011). Devolution in Rwandan forest governance has been occurring for about five years (Masozera & Alavalapati 2004). An example is the setup of forest concessions in forest plantations to professionalise and commercialise the forestry sector (NFC 2011). Another trend which is stimulated by this relaxation of the state as a central steering organ is privatisation. Rwanda is currently focusing on privatisation strategies in the agricultural and forestry sectors to stimulate capacity building and to generate greater efficiency (Vision 2020).

These changes in forest governance are known to be the catalysts behind a variety of landscape transitions (McCarthy 2004; Klepeis 2003; Oyono 2005). Likewise, in Rwanda the new governance systems have led to transitions in forest cover and agricultural landscapes. During the post-colonial period, the transition of forest to arable land and the logging of natural forest for firewood were outlawed. Additionally, increases in agroforestry were encouraged (ROR 2010). This has led to a transition from high levels of deforestation during the pre-colonial period to a current growth trend in the percentage of forest area in Rwanda (Spinage 1972; FAO 2010). Another transition visible in the landscape of Rwanda is the transformation of agriculture through private sector-driven value chains. One of Rwanda's strategic visions for the coming five years is a greater involvement of the private sector in increasing agricultural exports, processing and value addition. This will stimulate agricultural interventions to increase productivity and transition from subsistence to a more market-oriented agricultural sector (ROR 2013a).

At the local level, these governance changes and the associated implications for landscape transitions can have a significant impact on the lives of the indigenous residents. Shifting to a more society-oriented form of governance, as mentioned previously, are not always compatible with a country's rural development policies. They often struggle to address the underlying societal inequities, limiting the livelihood development of the destitute (Larson & Soto 2008). Moreover, the rural poor are

experiencing the most impact on their livelihood from the governmental-driven landscape transitions. These landscapes represent a large part of their livelihood, making the sustainability of their livelihood strategies extremely fragile (Arnold 2001). In Rwanda, around 90% of the population depends on agriculture, resulting in livelihoods that are very susceptible to landscape transitions (USAID 2008).

The focus of this research is on the landscape surrounding Nyungwe National Park in the south-west region of Rwanda. The Nyungwe area has recently experienced the development of multiple governance changes, with varying effects on the landscape. Multiple new stakeholders such as local governance institutions and foreign private investors, have started operating in the areas both inside and around the park. These new stakeholders implement new land uses and influence the role of local people in the management of the landscape. Because of the novelty of these changes, their effects on the livelihood of the local people have not yet been studied. The area is known for its high population pressure, reaching up to 500 people per km² (USAID 2008). Because of this, people only have access to small pieces of land to farm for their subsistence, which represents the largest part of their livelihood. Apart from farming, beekeeping is a popular addition to the livelihood of the locals. The rich biodiversity of flowers from the national park means that good quality honey can be produced in the region (Ntibabarira 2012). Since beekeeping doesn't require access to large tracts of land and because honey is a valuable commodity, beekeeping has the potential to be a valuable addition to the livelihoods of the locals (Skeens 2013). Additionally, the Ministry of Agriculture and Animal Resources (MINAGRI) expects beekeeping to have the potential to reduce the national human poverty lines of rural communities (MINAGRI 2009). This makes the focus on the sustainability of beekeeping as a livelihood strategy very interesting. In combination with the considerations mentioned previously, the Nyungwe landscape is a perfect research case, since it encapsulates changes in governance, landscape transitions, and the effects of both of these factors on beekeeping as a local livelihood strategy.

This chapter introduces the focus of this study. In section 1.1 a historical background is given, describing how the Rwandan government has been changing and the effects on the landscape and population. Section 1.2 presents the study's problem statement and research questions. The underpinnings for the justifications of this study are found in section 1.3, and lastly, section 1.4 contains a summary of the subsequent chapters.

1.1 Historical background

Governance and landscape changes

In the pre-colonial period, Rwandan forests were managed through communal arrangements set up by the state and communities. These arrangements were not fixed, but provided the possibility for community migration. Land rights could be obtained either by acquiring land from another community or by clearing unoccupied areas. Due to high population growth, large pieces of land were cleared (Spinage 1972).

In 1925, Rwanda's first national park was established under the colonial regime of the Belgium government, and is now known as Volcanoes National Park. At that time, there were no settlements within the boundaries of this protected mountainous forest, and was only used by the pygmy Twa hunters, whom were allowed to continue hunting. The park was under control of the Belgian national

parks administration (Parcs Nationaux du Congo Belge et du Ruanda-Urundi) and it was closed to all visitors. In 1933, the Belgian government declared all remnant forest to be a national reserve (Spinage 1972). Within these reserves, clearing of land was forbidden, but communities had the right to use the forest for the collection of firewood and commercial exploitation of valuable hardwoods. There were no regulations in place to monitor these practices, which resulted in extreme variations of land use, including honey collection, wood and bamboo cutting, hunting, gold mining and subsistence agriculture. After Rwanda became independent in 1961, the park was re-opened to the public (Masozera & Alavalapati 2004).

In the post-colonial period (1962-1990), park management was highly centralised. National parks were managed first by the Ministry of Agriculture, which mainly focused on the development of agriculture, and in 1973 by the Office Rwandais du Tourisme et des Parcs Nationaux (ORTPN) under the support of the Wildlife Conservation Society (WCS). In 1988, the new forestry law, No. 47/1988 was passed, changing forest legislation so that timber extraction and hunting was forbidden in protected areas (Masozera & Alavalapati 2004).

During the years between 1990 and 1994, there was significant political and ethnic tension taking place in Rwanda, which came to a head during the genocide, from April to July 1994. These tensions had major impacts on the conservation of Rwanda's national parks, mainly due to increases in poaching and killing of wildlife by soldiers. After the war, parks have been losing significant amounts of forest, and suffered from fragmentation due to the replacement of people and the low capacity of stakeholders for conservation (Kanyamibwa 1998).

After a few years of recovery, a restructuring of governance has been taking place, focusing on mending the Rwandan disunity. In 2001, Rwanda's Ministry of Local Government (MINALOC) started the current governance reformation, focusing on the economic and social development of communities through decentralisation. This decentralisation consisted of political and administrative reforms and its foundations can be found in the fundamental laws of the country. The implementation focused on the establishment of a local governance organisation structure to strengthen local participation in sustainable development. Open elections were held to select local leaders functioning as a link between the government and Rwandan citizens (MINALOC 2000). The full process was accomplished in three phases, from the enhancement of local capacity to the devolution of tasks from the central government to the local government (MINALOC 2011).

In 2006, under the Law No.16/2006, the Rwandan Environmental Management Authority (REMA) became the overall authority responsible for environmental management, and in 2008, the management of national parks was transferred to the Rwandan Development board (USAID 2008). Since the genocide these institutions were suffering from institutional weakness which resulted in a significant threat to environmental conservation. This is mainly a result of inadequate staff and decreased capacity to effectively manage the area, resulting in a high level of illegal activities in the park (ROR 2010).

These changes in forest governance have been the drivers behind multiple environmental changes in Rwanda. With the current move towards a more decentralised form of forest governance, there is now a focus on the development of local communities that are dependent on the landscapes for their livelihood.

Beekeeping as a livelihood strategy

Beekeeping is a common addition to the options for making a living in Rwanda, and has great potential for supporting sustainable development. However, a healthy environment is extremely important for this livelihood strategy.

Nyungwe has a long history of honey collection, as honey was mainly used for its medicinal value. Beekeepers and honey hunters often settled in the park during the honey harvesting season in the years prior to when Nyungwe was declared a national park. They made use of various forest products, varying from mature trees for building traditional hives, trees for firewood and bush meat for food and as a cash product to sell to community members. Recently, have beekeepers started to form cooperatives with the support of park managers and the Wildlife Conservation Society (an international Non-Governmental Organisation (NGO)). Their focus includes the commercialisation of the honey production and the improvement of honey collecting techniques, decreasing the impact on the forest (Ntibabarira 2012).

To reduce rural poverty in Rwanda, the government supports agricultural transformation strategies towards professionalization and specialisation. Apiculture (the maintenance of honeybee cultures) has received much attention in the scope of sustainable development from governmental and non-governmental organisations for multiple reasons. It requires low levels of input (land, labour and capital), honey is a high value export product, it promotes pollination and it creates employment opportunities, making it an extremely valuable livelihood strategy (MINAGRI & RARDA 2007; MINAGRY 2009).

1.2 Problem statement and research questions

When examining Rwandan history, forest governance has been changing constantly with varying effects on the landscape. Recently, these changes have shifted towards a less centralised form of governance. Because of the recognition of the government of the need for local development, examining the effects of these recent changes on local livelihoods is of high importance. The long history of beekeeping and its excellent potential for earning a livelihood, in combination with the focus of the government on the development of this sector, makes beekeeping an interesting livelihood strategy on which to focus.

Two objectives have been formulated based on these reflections. The first objective is to assess the landscape transitions that have been taking place in the landscape of Nyungwe, and how they are influenced by recent changes in the forest governance of Rwanda. The second objective is to assess how the livelihood of local beekeepers is affected by these land transitions and changes in forest governance. The focus is on the different assets that represent the livelihood and the long-term sustainability of beekeeping as a livelihood strategy under the influence of these changes.

These objectives lead to the formation of the central question of this study:

How do changes in Rwanda's forest governance influence landscape transitions in Nyungwe and how do these affect the livelihood of local beekeepers?

To answer this question, the following research questions were formulated:

- 1) *How and why is forest governance changing in Rwanda?*
- 2) *How does national forest policy affect the landscape in Nyungwe?*
- 3) *How do these changes in governance and the landscape affect the livelihood of beekeepers adjacent to Nyungwe National Park?*

1.3 Justification

Rwanda is currently in a transitional phase, from a central government to a more decentralised system. This development has brought about several transitions in the landscape. This study will provide local insights on the effects of these recent governance changes in Rwanda. Because one of the aims of the government is to enhance local capacity and strengthen local participation towards sustainable development, it is of great importance to examine the local effects of these policies. The outcomes of this study will help to create insights to improve further implementation of policy changes in the country. Further, the outcomes of this study may serve as examples for other countries.

1.4 Chapter summary

This chapter gives an introduction to this study with the focus of the research, the historical background, the problem statement and relevant research questions and lastly, the justification of the research.

Chapter 2 provides the theoretical background of the study, including the relevant research concepts. It also presents the conceptual framework of the study. Chapter 3 describes the methodology used for data collection, a description of the Nyungwe landscape, the data analyses and limitations to the research. Chapter 4 presents the study's empirical data, focusing on the three main research questions. Chapter 5 discusses the main trends emerging from the results and compares them with findings from the literature. Some recommendations are then provided, and lastly, the main conclusions of the study are highlighted.

2. Theory and concepts

This chapter will present the theoretical background and the related concepts used to build the underlying context of the study. It presents the focus of the study and the relationship between the main concepts. The theoretical framework discusses the pertinent literature on this study's three key concepts. Firstly, it examines how forest governance has changed over time and what new forms of governance these changes have generated. Secondly, it describes the notion of a landscape and the transitions it undergoes. Lastly, livelihood sustainability under the influence of external factors will be discussed.

2.1.1 Forest governance change

Forest governance is a notion with many definitions. Traditionally, the term governance was used as a synonym for government, but modern literature refers to forest governance *“as new modes of governing that go beyond the confines of the state”* (Arts & Visseren-Hamakers 2012, p. 241). Cadman (2011) described the following different typologies of governance; “centralised”, which refers to top-down state control, “minimal state”, which is a bottom-up approach led by privatisation, “corporate”, which is market based and controlled by companies, “new public management”, which are private sector-focused practices in the public sector and “self-organising networks” consisting of interdependent stakeholders and agencies. However, he notes that one should look beyond the different concepts of governance, and rather perceive them as a dynamic interplay between the factors influencing institutional expression.

Since the mid-1980s, changes in forest governance have shifted from a state-oriented to a more society-oriented form of governance through decentralisation, de-concentration, devolution, institutionalisation and privatisation (Larson & Soto 2008). Within these transitions, the role of the state varies, from the main steering organisation to one of several key actors. These new forms of governance have a complicated, multidimensional character with a high number of actors and many different concepts of governance (Howlet et al. 2009). Alternative governing style changes have been made, from national to transnational, from the state to local, and from public institutions to cooperation with private institutions. These new forms of governance are expected to function with greater efficiency and increase democracy (Pierre 2000). These changes were driven by political shifts (e.g. the end of colonial structures) which promoted the relaxation of regulatory guidance by the state. The emerging forms of different actors, varying from community-based actors to scientific communities, have been evolving from the ideas of the sustainable forest management planning paradigm. This paradigm has generated a focus on global environmental issues and the acknowledgement of their importance (Howlet et al. 2009; Pierre 2000; Larson & Soto 2008). Some researchers argue if a real shift in forestry, from government to governance, has taken place. As in many cases, forests are still controlled by the government at a central level, despite implemented administrative reforms, or so-called *“control at a distance”* (Arts & Visseren-Hamakers 2012). Different forms of governance change can function effectively, depending on the conditions in which they are applied (Rhodes 1996).

Decentralisation

One visible trend in the institutional changes initiated by governments is the decentralisation of governance (Ribot et al. 2006). Decentralisation can be defined as the transfer of power from the central government to the lower level institutions and actors. During the last century, decentralisation can be seen as an important concept in forestry which was mainly implemented in

the management of commercially low-value forests where local communities were dependent on forestry. This concept was influenced by the material and technical support of donors promoting better governance, as well as local communities demanding a greater recognition of their needs for the management and use of forest products (Agrawal et al. 2008). Another influence of governance shifting towards decentralisation is the international concern about the rapidly growing trend of deforestation. However, many scientists state that these reforms are often incomplete and slow processes due to limitations in the transfer of different kinds of power to local governments and the focus on local institutions that serve central interests (Ribot et al. 2006; Ribot 2009; Larson & Soto 2008; Agrawal & Ribot 1999). There is also a lack of faith in new governance bodies and lack of financial resources. These institutions and actors are held “upwardly accountable” to the central government through, for example, performance contracts that are, in actuality, forms of de-concentration. If local authorities are “downwardly accountable” towards its people, it can be defined as political decentralisation. The resistance against decentralisation comes from both within and without the government (Ribot et al. 2006). Common problems seen in decentralisation processes are the focus of temporary and spatially limited activities and are primarily reliant on NGO’s (Agrawal & Ribot 1999).

Devolution

Lane (2003) states that the promotion of state-society partnerships, instead of the decentralisation of state powers, is the appropriate method for achieving sustainable decentralisation. These partnerships arise from the devolution of tasks from the central government to public or private institutions, which is another concept that can be placed under the umbrella of governance change. A forest governance concept that contains devolution is the private concession model, which incorporates logging companies into forest concessions driven by the market demand for timber (Agrawal et al. 2008).

Privatisation

The involvement of non-state actors in decision-making and implementation processes is a growing concept within forest governance. The involvement of these non-state actors in the regulation of public affairs can be distinguished in four institutional forms: business initiatives, civil society initiatives, private intersectoral partnerships (between business and civil society) and public-private inter-sector partnerships (between business/civil society and governments). Since these forms of alternative governance are still under development, the outcomes of the implementation of forest governance are still unsure (Visseren-Hamakers & Glasbergen 2006). Andonova (2010) stated that these privatisation processes were tools for reinventing the inter-governmental system, rather than the results of real power decentralisation. Others see it as a private capture of what should be a public affair, since, for example, the rules established by the private sector might not be equitable to civil society as a whole, limiting accountability to citizens (Cutler et al. 1999). Some expect that privatisation can generate a more efficient way to patch the gaps in government regulation and create more transparency, policy movement and stimulate sustainable market creation. Privatisation therefore promotes maximum functionality and generates political economic gains. A pitfall is the complex coordination of a large number of private actors and their varying strategies. A common problem is the absence of strategic links between the different private actors as well as between the private actors and public authorities (Visseren-Hamakers & Glasbergen 2006).

Other forms of governance

A development related to the public-private partnerships is the creation of a market-oriented policy (Cashore 2002). A concept that has been present in forest governance for many years, but has been changing form over time, is market based conservation (MBC). MBC attempts to integrate conservation and development of rural people through the creation of livelihood opportunities. The sustainability of these MBCs is dependent on their dependence on state or private donors.

Another popular concept in tropical forests is participatory forest management (e.g. community-based forest management or community forestry) (Arts & Visseren-Hamakers 2012). This can be seen as a sub-concept of decentralisation implying the transfer of decision making power from the central government to local communities (Agrawal & Ribot 1999).

Another growing concept in forest governance is the certification of forest programmes developed through market and civil society responses to public concern about deforestation and the resulting demand for sustainable forest products, international NGOs, and economic globalisation (Agrawal et al. 2008).

Downward accountability

These different forest governance concepts are often criticised on their true transfer of power by some scholars. They theorise that these governance reformations are a way to retain, or possibly even improve, their control from a distance. The government is unable to govern without any interference from outside sources or bodies due to a lack in capacity and requisite knowledge. Therefore, in order to achieve maximal function, the government has to restructure its objects, instruments and tasks. These new forms of governance, as described above, can therefore be seen as a form of indirect control, which can be used to control and shape private or local actors in desired directions. *‘Political forces have sought to utilise, instrumentalise and mobilise techniques and agents other than those of ‘the State’ in order to govern ‘at a distance’* (Rose & Miller 1992, p. 279).

The changes in forest governance can be conceptualised as a transfer of governmental tasks, with varying levels of power, to private actors or public institutes. This study will focus on the types of transfers applied in Rwanda’s forest governance and the drivers behind these changes.

2.1.2 Landscape transition

The concept of landscape and the dynamics and transitions of a landscape on a natural and social level will be described in this section.

Changes in forest governance, described in section 2.1.1, have direct implications for relations with the environment of a country. For example, McCarthy (2004) found that in Indonesia, decentralisation has led to a focus on short-term private benefits through receiving payment from short-term forest concessions. On the other hand, Klepeis (2003) found that the deforestation rate in southern Mexico was increased after transitioning away from a centralised governance structure. Oyono (2005) observed varying results in a case examining a change from central governance to community forestry in Cameroon. These cases are clear examples of how different changes in forestry governance structure can impact landscape transitions in any country.

The word ‘landscape’ has its origins in the Anglo-German language, where it was used to refer to a clearing in the forest, containing animals, huts, fields and enclosures. This means that landscapes

were meant to be 'a man-made artefact with associated cultural process values' from the beginning (Taylor 2008). Urban et al. (1987) refers to a landscape as a mosaic of heterogeneous land forms, vegetation types and land uses. These landscapes are under the constant influence of a complexity of landscape dynamics driven by physical, biological and social forces, on both a spatial and temporal scale (Urban et al. 1987). These dynamics are the drivers behind the transitions in use and cover of a landscape which in turn have an impact on the local and global scales.

In forestry, a transition with impact on a global scale is the declining forest area. Deforestation has been a chronic global threat, which started with the shift from the use of forests by hunter/gatherers to silviculture. These silviculture practises have expanded into forests, savannahs and steppes to meet the human demand for food in different parts of the world. These expansions followed the developments of civilisations, economies and population growth. From 1700 to 1990, croplands have increased almost fivefold, and the area of land under pasture has increased six-fold. This led to high levels of deforestation and transformation of other ecosystems like the steppes, savannahs and grasslands (Lambin et al. 2003). The decrease in humid tropical forests in Africa lies around 0.30 and 0.85 million hectares (ha) per year (Achard et al. 2002). Other factors driving global deforestation are logging, fuel wood extraction and conversions of forest to industrial, urban and infrastructural uses (Barraclough & Ghimire 1995).

However, during the last decade, this trend started to decelerate and a few tropical developing countries have even made the transition towards reforestation (Mather 1992). These local increases in forest cover consist of natural regrowth on, for example, abandoned land and forest plantations. In Africa, the annual forest increase rate lies between 0.11 and 0.14 million ha. However, the ecological, biophysical and economic values of these landscapes vary significantly from natural forests and can therefore not be seen as a complete counterbalance against the loss of natural forest landscapes (Achard et al. 2002). The ecological value of these transitions back to forest land depends upon the residual old growth forest and the level of natural regeneration versus tree plantations (Meyfroidt & Lambin 2011).

These transitions in the landscape also have their counter effects on the people interacting with them. Görg (2007) refers to a landscape as the 'spatial-temporal aspects of the metabolism between nature and society'. A landscape can bring a sense of identity and belonging. It is not just what is seen, but also a way of seeing, as one landscape can be interpreted differently in terms of its value. Taylor (2008) therefore sees a landscape as a 'cultural construct in which our sense of place and memories inhere'. These memories are not always positive. Transitions in the landscape can be associated with loss, pain, social fracture and the loss of a sense of belonging (Taylor 2008). This means that transitions in a landscape have a direct impact on different livelihood aspects for the people living in that area.

The concept of landscape transition as a dynamic mosaic of land uses and cover and the social forces that drive these changes will be the focus of this study.

2.1.3 Sustainable livelihoods

The focus of this section is on the concept of a sustainable livelihood, examining the different aspects that comprise a livelihood, and the external factors that impact them.

The changes in governance and cohesive transitions in landscapes as described previously have multiple implications for livelihoods of rural people living in these landscapes. Land is one of the most critical livelihood resources for the rural poor. Therefore, the link between poverty and environment is often mentioned in debates about sustainable development (Reardon & Vosti 1995). But to understand these links it is necessary to understand the different aspects pertaining to a livelihood, which aspects are underdeveloped, and which are strong.

According to Chambers and Conway (1992), a livelihood is comprised of the capabilities, assets and activities required for a means of living. They define a livelihood as sustainable when it can maintain these capabilities, assets and activities under the influence of stresses and shocks without overexploiting the natural resources. Looking at the sustainable livelihood framework developed by the Sustainable Rural Livelihoods Advisory Committee a livelihood is built upon five core assets:

1. Human capital: the skills, knowledge and ability for labour and good health and physical capability in pursuit of livelihood objectives.
2. Natural capital: the natural resource stocks from which resources flow and services of use for pursuing livelihood objectives are derived.
3. Financial capital: the capital base that is used to achieve livelihood objectives
4. Physical capital: the basic infrastructure and producer of goods used for the support of livelihood objectives.
5. Social capital: the social resources upon which a community can draw when pursuing livelihood objectives.

These assets are influenced directly and indirectly by external structural changes (e.g. form of governance, public/private sector) and processes (e.g. laws, policies, culture, institutions). One important factor influenced by structures and processes is access to various types of capital, livelihood strategies and governance influence. Another influence on livelihood assets comes from the vulnerability context, determined by the environment in which people live (e.g. trends, shocks, seasonality). Taken together, all these influences have an impact on the livelihood strategy used by a person and his subsequent livelihood outcome (DFID 1999).

Many of the debates about the concept of a sustainable livelihood fall under the broader notion of the relationship between poverty and environment (Scoones 1998). Because rural communities in high poverty areas are very often dependent on natural resources for at least parts of their livelihoods, this relationship is very fragile (Arnold 2001). It is important to determine the specific assets on which they depend for resources and which assets determine their poverty. For example, when a farmer produces good quality honey, but has no access to a market to sell it, there is no sense in promoting higher honey yields. Promoting sustainable development of these assets will help in transitioning to a more sustainable livelihood strategy. But reducing poverty will not always reduce environmental degradation. This is dependent on the type of environmental issues at hand (Reardon & Vosti 1995).

The sustainable livelihood concept will be used as a focus in the study of external factor effects, structures, processes and environmental factors, on beekeeping as a livelihood strategy.

2.2 Conceptual framework

The three main concepts of forest governance change, landscape transitions and livelihood sustainability as discussed previously are used as the foundation for this study. The main focus of the study lies on the interrelations between these concepts. Forest governance in Rwanda has been changing over time, under the influence of different drivers. These changes have direct and indirect impacts on events affecting the Nyungwe landscape. The implementation of the landscape transitions are mainly through private actors or local institutes. The landscape transitions arising from this are, together with the governmental changes, expected to have a significant impact on the livelihood of the local beekeepers. The impact of landscape transitions on livelihood will come mainly as a result of shocks and trends, whereas the impact of forest governance mainly comes from changing structures and processes. These concepts and their interrelations are schematically presented in figure 1.

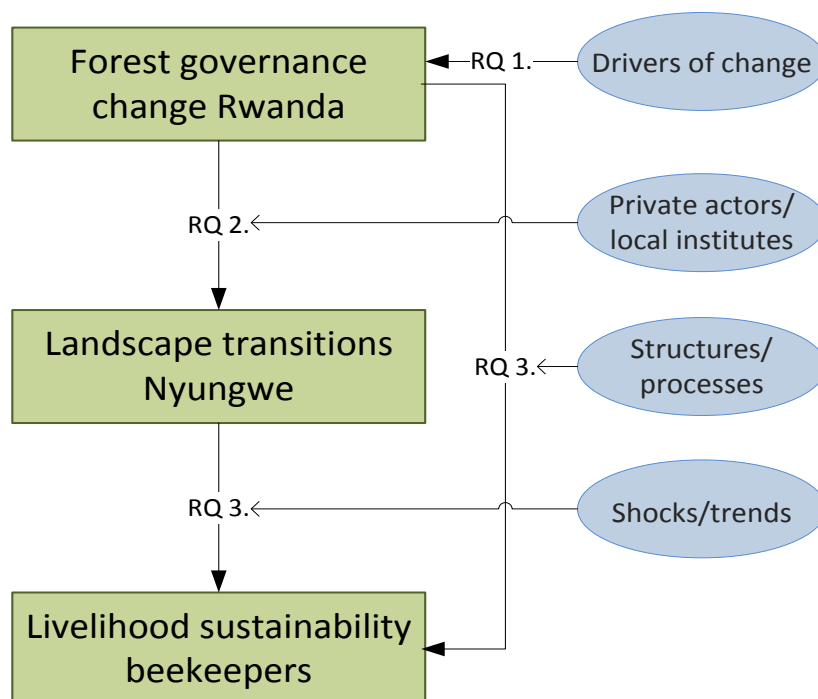


Figure 1. Conceptual framework: the links between the 3 main concepts, their related research questions (RQ) and the external influences that impact them.

3. Methodology

For this research, qualitative approaches for data collection and analyses have been chosen, since the goal is to generate understanding of the social aspects, experiences and attitudes of the respondents (Bernard 2006). Different perspectives on this research topic have been generated from key informants through a number of interviews. Accordingly, a literature research has also been conducted.

3.1 Data collection

The findings of this report are based upon a literature study combined with interviews with forest governance representatives, private actors as well as local beekeepers. Data collection took place in Rwanda from December 2013 to February 2014. Most interviews were conducted in the villages around Nyungwe National Park in the south-west region of Rwanda. Some interviews with government representatives were conducted in Kigali, the capital of Rwanda. An overview of the interviewees and number of interviews can be found in Appendix 1.

3.1.1 Forest governance change

The first question, 1) How and why is forest governance changing in Rwanda, aimed to explore Rwandan policies on transitions in forest governance and the drivers of these changes. This question also examined to what extent these policies have been implemented in the landscape.

The primary data were collected through semi-structured interviews with four government representatives from two different public authorities. Three of the respondents were employees of the Rwandan Development Board (RDB). This Board is responsible for the management of Nyungwe National Park and is therefore closely involved in all activities in this area. Additionally, the board is responsible for the promotion of the commercialisation of the forestry sector. Two interviews were conducted with employees based in the local office in Kitabi at the western entrance of the National Park and one interview was carried out in Kigali in the National RDB office. The other interview was conducted with a representative from the Rwandan Natural Resources Authority (RNRA), based in Kigali. The RNRA is the responsible authority for the management, monitoring and supervision of all natural resources in Rwanda and is also responsible for the management of the buffer zone of Nyungwe National Park. The interviews focused mainly on the perception of the respondent on changes in forest governance with a focus on the changes described in policy documents. The interview guide can be found in Appendix 2.

Secondary data collection was used to determine the focus of the interview questions and further clarify the responses to the first research question. This data was collected through the analysis of legal documents (e.g. policies, laws) and supported by data from scientific articles. The legal documents that were analysed include: the national constitution of 2003, Vision 2020 2000, the economic development and poverty reduction strategy II 2013, the strategic plan for the transformation of agriculture 2013, the decentralisation implementation plan, 2011, the implementation strategy for national decentralisation policy 2000 and the national forest policy 2010. Further, different scientific articles analysing recent developments in forest governance were used.

3.1.2 Landscape transitions

The second research question, 2) How does national forest policy affect the landscape in Nyungwe, aimed to explore how the changes in forest governance have impacted transitions in the physical

landscape and how it is used. Similar to the first question, answers to this question were obtained by performing interviews with key opinion leaders as well as a literature review.

The primary data were collected through semi-structured interviews with seven respondents from private as well as public organisations, as mentioned in section 3.1.1. The private sector respondents included one employer from the New Forest Company (NFC) and two from the WCS, an international NGO. The NFC is a UK based forestry company active in different countries in Africa including Rwanda, in the buffer zone of the national park. In 2011, NFC signed a 49-year contract with the Rwandan government to harvest and replant the buffer zone. The WCS is a US based NGO focusing on global conservation issues. The WCS has been active in Nyungwe for the last 25 years. The focus of the interviews was mainly on the changes that have been taking place in the landscape of Nyungwe and how the respondents perceive the implementation and effects of these changes.

The secondary data contains information from legal documents and scientific articles which further support the answers given by the respondents. The legal documents included in the analysis were: the landscape approach to forest restoration and conservation project, 2014 and law number 22/2005 of 21st November 2005.

3.1.3 Beekeeper livelihood

The last research question, 3) How do these changes in governance and the landscape affect the livelihood of beekeepers adjacent to Nyungwe National Park, aimed to explore the impact of the two changes on the sustainability of beekeeping as a local livelihood strategy. This question was largely addressed through interviews conducted with local beekeepers living adjacent to Nyunwe National Park. Accordingly, one legal document as well as one scientific article have been used to support the primary data.

The collection of the primary data was performed by conducting 41 semi-structured interviews with local beekeepers. Due to variations in the landscape, land uses, and accessibility of different sectors, the interviews were conducted in five different sectors around the National park, including: Kitabi in the east, Twumba in the north, Bushekeri in the west Ruheru in the south and Bweyeye in the south-west of Nyungwe. In each sector the members of one cooperative were interviewed. Kitabi and Ruheru are both easily accessed. The other villages are more remote, where Bweyeye is completely cut off from the rest of Rwanda by the National Park. Twumba, Ruheru and Kitabi are dominated by tea, eucalyptus and pine plantations and Coduru is an important location for wild bamboo growth. Bweyeye is also dominated by pine and eucalyptus plantations in the buffer zone. Between seven and ten members per cooperative in each sector were interviewed. Both male and female members were randomly selected per cooperative from a list containing all names and genders of cooperative members. The interview questions focused on the different capitals supporting livelihood and structures and processes influencing this livelihood. The interview questions can be found in Appendix 3.

The secondary data analysis supporting the answers provided by the respondents included the analysis of the National beekeeping strategic plan 2007, and a scientific article on research conducted on beekeepers in Rwanda in 2004.

3.2 Area description

This research focused on the area surrounding Nyungwe National Park in the western region of Rwanda (Figure 2). The national park covers an area of about 101.516 ha and is an important biodiversity hotspot in the Albertine Rift mountain range, one of the most important regions for conservation in Africa. The park contains a lower montane rainforest with more than 260 species of trees and shrubs, 260 species of birds and 13 species of primates. Additionally, Nyungwe is an extremely important water source for the country, as 70% of the water in Rwanda comes from this region (Plumptre et al. 2007). In the 70s Dutch, Swiss and Belgian settlers started to plant a buffer zone around the park as a marker for the park's boundaries. The plantation consists of 70% pine, 25% eucalyptus and 5% of other tree species (personal comment, Ray 08-01-2014). Currently, large scale tea plantations also make up an important part of the buffer zone.

The Nyungwe park area was officially registered with the government in 1933, but this registration was not enforced until a group of donors enabled funding and set up a management plan for the park in the 1980s. The park came under the management of the ORTPN, which were later supported by the NGO WCS. In 1994, the funding and the projects in Nyungwe were put to a halt during the genocide. Nevertheless, ORTPN and WCS continued their work in the area. However, due to the political unrest the capacity of ORTPN decreased to a staff of 20 people to cover the whole area of Nyungwe. After the genocide, substantial numbers of new workers were recruited and trained (Rutagatama & Martin 2006). In 2005, Nyungwe was legally designated as a national park and the buffer zone was officially registered as a legally established entity covering an area of 10.085ha. In 2008, management was taken over by the

Rwandan Development Board.

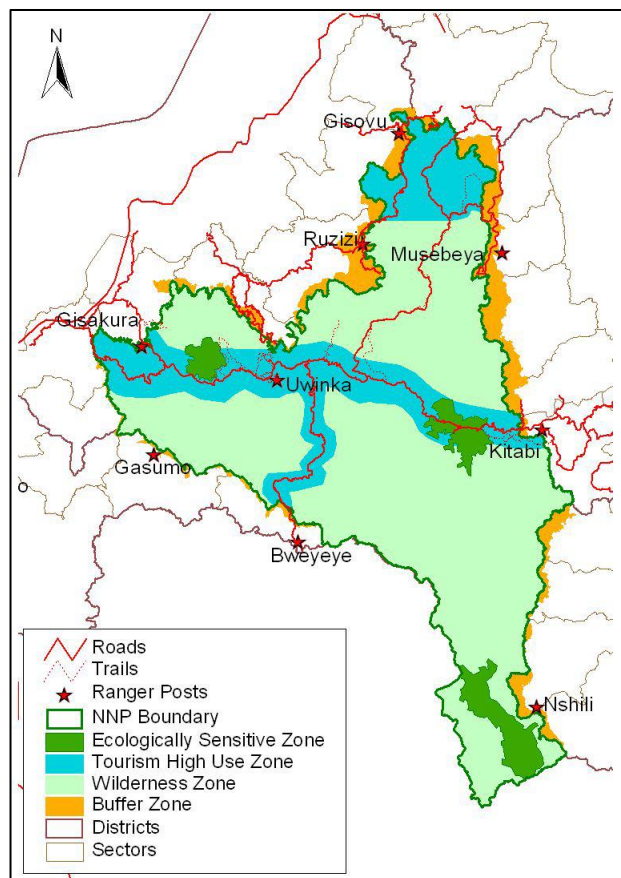


Figure 2. Map of Nyungwe national park including buffer zone (RDB 2012)

The area surrounding the national park is one of the most densely populated areas of Rwanda, with up to 500 people per km². A large part of this population lives below the poverty line and makes a living from subsistence farming on small pieces of land (USAID 2008). This creates the threat of increasing illegal activities in the park, such as encroachment and poaching and therefore demands community involvement in park conservation.

3.3 Data analyses

An “ethnographic content analyses” was performed to interpret the primary data. *“Ethnographic content analysis is used to document and understand the communication of meaning, as well as to verify theoretical relationships. Its distinctive characteristic is the reflexive and highly interactive nature of the investigator, concepts, data collection and analysis.”* (Altheide 1987). The interviews were coded through a combination of open and axial qualitative text coding. During this process, 7 thematic categories were formed (privatisation, decentralisation, centralisation, landscape change, climatic variability, land use conflicts and cooperative formation) which were later divided in 40 subthemes and 74 micro-themes. The categories and themes were manually selected using the conceptual framework as a direct approach for data. To increase the validity and reliability of the research, triangulation of data has been applied by comparing data from different respondents and literature.

3.4 Study limitations

When interpreting the results of this study a number of limitations should be taken into account.

A major limitation of the study was the comparatively closed culture of Rwanda. Due to the long history of internal conflict, the Rwandese society has adopted a comparatively closed culture. Dialogue is precarious and freedom of expression has been repressed, which made it very challenging to find true answers to the research questions. During the fieldtrips, these limitations were minimised as much as possible. The translators and field assistants whom assisted during the interviews all lived in the region, which helped overcome suspicions associated with an outsider coming to collect information. One of the field assistants was a member of the local beekeeper cooperative and was well known as a partner by the respondents. He didn’t participate in the interviews but was present to help clarify the procedures and the research goals.

Another limitation during the beekeeper interviews was the language barrier. All respondents could only speak the local language, Kinyarwanda. Therefore the use of a translator was needed to perform the interviews. This made it difficult to understand the finer details, as the translator was not always able to literally translate the full response.

Lastly, due to the remote locations and therefore long travel time required to visit most of the villages, there was limited time available to interview enough respondents to formulate a representative sample. Therefore, two research assistants were trained to individually perform interviews, allowing a team of three interviewers to work simultaneously. At the end of each day, all interviews were transcribed and translated, which created the possibility for further explanations when needed.

4. Results

This chapter presents the empirical findings of the study on the effects of forest governance changes on the landscape and livelihood of the local people in Nyungwe. Section 4.1 discusses how the shift from a centralised to a more decentralised and privatised forest governance has stimulated the involvement of new actors in the field and new land use practises. This shift in forest governance has influenced multiple changes in the Rwandan landscape, specifically Nyungwe in the south-west region of Rwanda. The drivers and effects of these changes will be discussed in section 4.2. Lastly, section 4.3 will describe how these changes in governance and the landscape affect the livelihood of local beekeepers and what strategies they use to cope with these changes. It will clarify how private investors have taken over the management of land around Nyungwe and deprived local beekeepers access to the land.

4.1 Forest governance Rwanda

This section will further elaborate on the changes in forest governance in Rwanda and the drivers behind these changes. Section 4.1.1 presents main governance changes which explain the shifts visible in forest governance within Rwanda. It explains how driving development policies have influenced policy making and a transition in forest governance from centralised to decentralised. The level and types of decentralisation, and the new actors involved in the field of forest governance, will be discussed. Section 4.1.2 elaborates on the views of multiple government representatives on Rwanda's forest governance changes. It describes the divergent views on the implementation of decentralisation and privatisation policies in forest governance.

4.1.1 Policies on decentralisation and privatisation

During the past decade, the Government of Rwanda (GoR) has been taking serious steps towards the green development of the country by placing the environment high on the agenda. In Article 49 of the national constitution, the importance of safeguarding and promoting the environment is anchored.

“Every citizen is entitled to a healthy and satisfying environment. Every person has the duty to protect, safeguard and promote the environment. The State shall protect the environment. The law determines the modalities for protecting, safeguarding and promoting the environment.”

Source: National constitution, ROR 2003, p.7

This article was the basis for many policies that have included the environment in their actions. Two main driving policies in Rwanda which currently focus on environmental protection are the sustainable development policies, Vision 2020 and the Economic Development and Poverty Reduction Strategy (EDPRS). They have provided the targets for environmental improvement needed for a sustainable development of the country and its people. The GoR recognised that, due to the political, economic and social situations of the country after the genocide, a transition away from the highly centralised governance was needed for sustainable development. To combat high poverty levels and empower local populations, the country adopted and implemented integrated large-scale policies of decentralisation and privatisation. The main thrust of these policies has been private sector development. Different policy documents reflect this shift, emphasizing forest governance from state to private sector led interventions.

Vision 2020, a crucial development plan that was adopted in 2000, clearly states the viewpoint of the GoR on privatisation as a development tool. The first half of the plan focuses on the development of good governance, market orientation and private sector development. The GoR recognised that, due to macroeconomic imbalances in the country, stimulation of privatisation processes were needed to achieve the targets set by 2020. This notion is clearly stated in the following quote from the Vision 2020 document:

“Government will desist from providing services that the private sector can deliver more efficiently and competitively.”

Source: Vision 2020, ROR 2000 p.9

The government's recognition of the country's decreased capacity for fast moving and efficient development, created a space for the private sector to grow. Moreover, the recently revised EDPRS presents the need for sustained and further augmented private sector development. It is described as one of the five priority areas of the EDPRS, as private sector development is valued as a tool for economic growth and job creation. A quote from the document gives an insight in the implementation of this policy:

“The small size of Rwanda's formal private sector is a major limiting factor to future prospects for economic growth. The private sector needs to undergo significant structural transformation to be able to become the main driver of economic growth and create the large number of jobs the Rwandan economy requires. The three proposed interventions to transform the private sector will be to (i) strengthen the investment process to pro-actively target large foreign investors in priority sectors of the economy; (ii) accelerate structural changes in the financial sector by increasing long-term savings with the objective of increasing credit to the private sector; and, (iii) significantly strengthening the business environment through tax and regulatory reform to spur medium and large enterprise growth and attract large investors.”

Source: EDPRS 2, ROR 2013a p.20

Attracting large foreign investors is the most profound intervention in the realm of forest governance development described in the interventions in the quote above. The encouragement of the participation of the private sector in the forest sector is the first objective stated in the National Forest Policy (ROR 2010).

Within the economic transformation approaches, such as privatisation, the EDPRS emphasises the importance of a so-called 'green economy' approach as one of the five priorities penetrating forest governance development initiatives in the country. It has stimulated green investments in the forestry sector and green tourism development in Rwanda. With this approach the economic value of the forestry sector will be optimally utilised, creating significant opportunities for the sustainable development plans of the country. The quote below provides an insight on the green market approach in Rwanda:

“EDPRS 2 incorporates a green economy approach to economic transformation - reducing economic costs and benefiting future generations through exploiting new 'green' economic opportunities. Significant resources are allocated to a number of high impact interventions in

priority sectors. Many of these will reduce costs, create jobs and also have large positive environmental impacts. This priority area will focus on two targets related to (i) green urbanisation and (ii) the promotion of green innovation in industrial and private sectors.”

Source: EDPRS 2, ROR 2013a p.21

Again, the importance of the private sector in green development is emphasised in the context of devolution. However, despite the government's success in attracting large private investors to stimulate economic growth, there is still a gap to bridge in local development. Currently, the strong economic growth of Rwanda is in the hands of a small elite group, resulting in a highly unequal developmental path (Ansoms & Rostagno 2012).

Similar to privatisation, the decentralisation process has left a gap between the government and the population. Decentralisation has been implemented to the extent of the devolution of tasks from the central to the local governments. Nevertheless, these local governments are being held accountable by the central government, as they are bound to targets in public performance contracts. Moreover, the key local authorities are appointed by the central government rather than elected. This system implies that 'the chain of accountability goes upwards towards higher authorities and not downwards towards the population' (Ingelaere 2010). In 2011, during the third phase of the decentralisation policy implementation, the focus shifted to implementing a downwardly accountable governance structure to improve the development of livelihoods of citizens. The ministry of local government clearly phrased their ideas on this concept in the Decentralisation Implementation Plan 2011-2015:

“Enhanced upward accountability (...) has led to significant achievements in terms of governance, social and economic development, and has reinforced synergies, coordination and harmonisation of interventions in local governments. But the next phase needs to improve on the key downward accountability linkages between local government leadership and citizens.”

Source: Decentralisation Implementation Plan 2011-2015, MINALOC 2011 p.3

Elaboration of downward accountability is needed for further development of a thriving milieu for the empowerment of local people, since downward accountability can create an empowering and enabling environment for rural communities (Ribot 1999).

The privatisation and decentralisation targets, as stated in the policies above, are translated into forest governance policies. In forest governance, the focus on the enhancement of local people's livelihood development is supported by the national forestry policy, which is the most relevant policy in forest governance.

“This policy is put in place in order to enhance achievement of objectives and targets of the Vision 2020. This is broadly, about improvement of livelihoods of Rwandans through job employment creation, increased forest revenues, value addition, more balanced ecological benefits and a sustained yield.”

Source: National Forest Policy, ROR 2010 p.3

Overall, the above-mentioned policies on privatisation in Rwanda have stimulated the involvement of international investors through privatisation. The introduction of international investors in the landscape has professionalised land uses and boosted job creation in Rwanda. The implementation

of these strategies has had a positive impact on the economic growth of Rwanda. Nevertheless, the decentralisation process, focusing on the development of downward accountability towards the population, is still limited. This is hampering the development of the livelihoods of rural people. Although the decentralisation policy and the national forestry policy tend to foster a change towards sustainable rural development through decentralisation and privatisation processes, the effects of these policies on the ground are limited.

4.1.2 Decentralisation and privatisation in the field

Although decentralisation seems to be a widely implemented subject on paper, it has generated mixed feelings with environmental agencies, managers and NGO's in Rwanda. Most of these organisations recognise minor changes made towards decentralisation in forest governance, but on the other hand, also mention certain limitations in this process. Some respondents indicated that decentralisation is being implemented in forest governance; although the examples given show that the processes appear to be mainly upwardly accountable.

"The planning within forest governance is top down controlled. But the implementation of the plans is mostly done by local departments. The decentralisation is taking place towards district and sector staff."

Source: Expert from RNRA 1, 17-01-2014

From the quote it is clear that there is some transfer of power from the central steering organs in forest governance to the locally based district and sector representatives. However, because these representatives are not elected and, due to performance targets set out by the central governments, the accountability and empowerment towards rural people is limited. Nevertheless, the first steps towards more downwardly accountable forest governance have been occurring. The following example was cited by a centrally-based forest governance representative about the decision making process of investments in community projects, through park revenue sharing.

"The investment of the park revenue sharing is decided by RDB at park level but they get there input from villages which can bring in ideas through the district representatives."

Source: Expert from RDB 1, 07-02-2014

This example shows a more downward accountable process in which villages can have a larger role in the decision making process, although there is currently no data available to confirm this.

A locally-based government representative had a completely different view on the decentralisation process. He claimed that this process was totally absent in forest governance.

"The decentralisation process does not happen on forest governance level. The decisions made are mainly centralised."

Source: Expert from RDB 2, 11-02-2014

However he did state that there have been changes made in the last park management plan, to a more participatory approach.

"The management plans of the park are developed in a participatory way including all stakeholders in the region."

Source: Expert from RDB 2, 11-02-2014

These two quotes seem very contradictory. From all informant responses given it seems that people have different perceptions of the meaning of decentralisation and therefore divergent views on the level of implementation of the concept in forest governance. From the quotes above, it becomes clear that small steps have been taken towards decentralisation in forest governance, but further implementation requires overcoming some political and economic hurdles.

Similar to decentralisation, the opinions about the implementation of the privatisation in forest governance are divergent. Some people believe privatisation policies have not yet impacted forest governance while others mention the upswing of public-private partnerships. In the quote below, a locally based national park manager shares their opinion.

“The vision 2020 privatisation has not influenced forest governance either. The assets remain under government control but the development of private companies to involve in conservation will be stimulated.”

Source: Expert from RDB 2, 11-02-2014

This quote refers to the fact that control over natural resources remains under government and public agencies. Nevertheless, there are opportunities created for private companies to become involved in the management of the natural resources of Rwanda. The involvement of these companies in rural landscapes can stimulate the development and professionalisation of the forestry and agricultural sectors. A more centrally-based forest governance representative even states that public-private partnerships have already been established within the forest governance.

“There are public private partnerships set up to empower people. Private companies are consulted to co-manage public forests and local private forest owners are trained in the management of their forest by public agencies. These trainings will help them cooperate with the private companies in the forestry sector.”

Source: Expert from RNRA 1, 17-01-2014

The quote above shows that public private partnerships have been established that aim to enhance the empowerment of local people. During this study, no cooperation between local private forest owners and private companies was encountered. Therefore, the extent of this cooperation example and its impact on the empowerment of local people is unknown. The EDPRS has stimulated partnerships with mainly foreign investors in Rwanda. Examples of sectors that are taken up by foreign investors are forestry, tea production and national park management. These examples will be elaborated upon in section 4.2.

Overall, decentralisation and privatisation policies have been perceived differently by different actors on the ground. Some steps seem to have been taken in both decentralisation and privatisation processes. In the decentralisation process, the downward accountability is still underdeveloped. This accountability towards local people is needed to generate more inclusive development and increase empowerment. This is important for the further development of the private sector, especially the attraction of new foreign investors to the landscape, since local people and private investors often operate in the same area.

4.2 Landscape transitions in Rwanda

In the first part of this section, the effects of policy changes on transitions in the Rwandan landscape are explained. The second part focuses on specific examples of transitions at the local level.

With the implementation of the previously mentioned policies, the environment has been placed high up on the agenda of sustainable development. Rwanda has experienced significant environmental problems in the past, which had a negative impact on the livelihoods of its people. The catalysts of these problems are high population pressure, in combination with a socio-economy dominated by subsistence farming. This has led to a 65% decline in forest area between 1960 and 2007, and an exhaustion of the soils on arable land, followed by a migration of cultivation on steep slopes which in turn led to soil erosion and siltation of the wetlands (ROR 2010). To counteract this problem instruments for change towards conservation and restoration of the land have been defined in the development and environmental policies of the country.

The instruments for environmental change, as stated in the policies, mainly focus on privatisation and commercialisation. The decentralisation policies, as mentioned in section 4.1, have not been widely implemented in the forest governance. Hence, decentralisation has seemingly had no impact on the landscape transitions in Rwanda. The privatisation policies, however, have stimulated multiple transitions in the landscape. The biggest transitions have been driven by the arrival of foreign investors to the landscape. But local communities have also brought changes to the landscape and their land use practices.

Vision 2020 stimulated privatisation strategies in the productivity of export crops like tea, coffee and pyrethrum during the past years (ROR 2013b). These developments include, among others, expansions of cultivation areas, improved cultivation techniques and crop quality enhancement (ROR 2010). The target for the amount of land under modernised agriculture is set at 40% by 2020 (ROR 2013b).

The National Forest Policy stimulated privatisation as an instrument for the commercialisation of the forestry business-based wood industry. This has stimulated the harvest and replanting of mainly old colonial plantations. Additionally, targets have been set for the planting of new trees. The goal for total forest cover to be reached in 2020 is set at 30%. At present, this cover is around 20%, equivalent to 673.636 ha of which 547.747 ha are forest plantations. Of these forest plantations, 60% are trees from smallholder woodlots (ROR 2014). Because of the high population density in Rwanda there is a lack of space for growing large scale forest plantations. Therefore, smallholder woodlots and agroforestry are taking up a high percentage of the forest cover.

In the EDPRS, the privatisation of national parks was established as an instrument to compete with the global tourism market. This resulted in the partial privatisation of Akagera National Park in the north-east of Rwanda in 2010. A joint management was set up between African Parks and the Rwandan Development Board which resulted in the “Akagera Management Company”. African Parks is a non-profit organisation based in Johannesburg, South Africa. In 2013, Akagera had reached a 62% increase in tourism revenue, which benefits the neighbouring communities through revenue sharing. Further, they have created over a hundred new permanent jobs for local communities (African Parks, 2013). There are also future plans to privatise other parks National Parks in Rwanda.

In conclusion, privatisation has had a widespread effect on different sectors of the Rwandan landscape. All these changes have been made in line with economic development strategies and the professionalisation and commercialisation of multiple land use practises.

4.2.1 Local effects of landscape transitions

The transitions in the landscape, driven by the national policies in the country have had different impacts at the local level. The privatisation policies mobilised the participation of local actors as well as the attraction of foreign investors in the landscape. Both actors are drivers of different transitions in the landscape. Local actors have an important role in increasing tree cover through small scale tree plantations. Foreign investors are more involved in large scale forestry projects and the increase of cash crop plantations. The effects of these landscape changes on local level will be described in the following section.

Due to a lack of available land for large scale plantations and the policy for the development of the forestry sector, over half of tree plantations became privatised. On the other hand, the livelihoods of rural people in Rwanda are still very dependent on trees in terms of energy and construction resources. In an attempt to secure their livelihoods, people are planting trees on their own land, since they have no access to public forests. Private woodlots and agroforestry have become important parts of the forest cover in Rwanda. Besides being used for firewood, trees are used as a protection against erosion on sloping arable land. These tree plantations are promoted by the Rwandan government through the National Forest Policy as justified and promoted in the National Forest Policy.

“Due to the scarcity of land, industrial forest plantation can’t be considered as an option in Rwanda. We however recognise that trees and forests constitute the pillar of our economy and our ecological balance. Since Rwandans’ livelihood hinges still in various ways on forest products; woodlots created on private land emerge as a serious alternative.”

Source: National Forest Policy, ROR 2010 p.15

Trees on private land can be considered a good way to secure a sustainable livelihood strategy. The pitfall of this policy is the relatively small land size owned by farmers, due to the high population pressure in rural areas, consisting of approximately 400 people/km². The decision between agriculture and forestry is a difficult one to make for people relying on subsistence farming with a small portion of land. Another trend that arose with these plantations was the growing number of eucalyptus trees. Over 80% of the forest plantations in Rwanda consist of eucalyptus (Nduwamungu et al. 2012). This brings a greater risk of pest and disease outbreaks, which would have a negative impact on people’s resistance to shocks and stresses. Since 85% of the population uses firewood as an energy source, this puts the sustainability of their livelihood at risk (Ndayambaje & Mohren 2011). In Nyungwe, increases in the amount of trees on private land, planted by local people, was mentioned by most local respondents. These trees are mainly grown for personal use or, as a few mentioned, to sell for profit.

The National Forest Policy document tends to stimulate the economic development of Rwanda through investments by the private sector in the forestry business around the national park. As a response the forestry company, the NFC signed a leasing contract in August 2013, for harvesting timber in the buffer zone of Nyungwe National Park. The GoR leased 11.000 hectares of the buffer

zone plantation for the company to harvest and replant. Currently, the buffer zone is dominated by eucalyptus and pine, which have been planted during the Rwandan colonial period. According to the park management, these trees are old and need to be harvested.

“A lot of discussion has been going on about the use of the buffer zone before decisions on NFC were made. I think the buffer zone has no sense of protecting it if you won’t harvest the trees at some point. It is economically important.”

Source: Expert from RDB 1, 07-02-2014

This quote clearly shows the vision of park management on the importance of the development of a forestry business. The main harvest target in the buffer zone is creating transmission-poles which will be used for the development of the power distribution in Rwanda. The species that will be used for replantation is the eucalyptus species, which are expected to have a lower impact on the understory of the forest. Which exact species will be used is dependent on the seed availability at the time of planting. The contract is set for 49 years, and in that time the NFC expects three rotational harvests of the bufferzone. A positive effect linked with this forest concession model is that it boosts job availability in the region around Nyungwe. This in turn stimulates the improvement of livelihoods of local people. Nevertheless, the effects of harvest activities on the land are not clear. With the rotational harvest technique used by the NFC, areas are clear cut, leaving the underground unprotected. Because the buffer zone consists out of mostly marginal land, erosion is a constant threat. Additionally, the buffer zone acts as a protection area between community land and the natural forest. By removing this buffer, the forest edges may be affected in terms of species composition, due to a change in sunlight, hydrology and protection from wind.

While the national park is not directly involved in the privatisation of the tea plantations in the buffer zone, the state has acted to privatise the tea plantations, aiming to increase cash crop productivity and stimulating economic development and job availability for local people. Tea is the main export product of Rwanda and accounts for 45% of the country’s foreign exchange earnings (ROR 2014). Further, tea is known for its resistance to crop raiding by animals from the park. Between 1965 and 1974, the three tea plantations around Nyungwe: Kitabi, Gisakura and Gisovu, were established. In 2009, a Rwandan investor, Rwandan Mountain Tea Ltd., bought 65% of the shares of Kibabi tea factory. In 2010, the company bought 60% of the Gisakura tea estate together with an Indian investor (Jay Shree Tea and Industries Ltd). The rest of the shares are owned by cooperatives of the local tea farmers and shared by the government (Rwanda Mountain Tea, 2012). 75% of the plantation in Gisovu has been bought by the Indian firm Mcleod Russel’s UK-based subsidiary, Borelli Tea Holdings Ltd., and took over the full management in 2011 (Kagire 2011). In the EDPRS II, the goal has been set to increase the tea production area in Rwanda with 18.000 ha by 2018 (ROR 2013a). This, together with the aim to reduce the number of human-wildlife conflicts around the park, drove the expansions of the tea plantations in the buffer zone of Nyungwe. These expansions were paired with burning of tracts of land. The negative effect is that this creates a sharply defined boundary with the national park, which runs the risk of decreasing the quality of the forest edges. A positive effect of these plantations is that they provide protection against crop raiding by animals from the park. On top of that, they have created new job opportunities in the area, which is positively affecting the livelihoods of people living in these remote areas where there is limited access to paid labour.

Overall, Rwanda is changing its landscape to increase the financial returns on the land and stimulate the economic growth of the country. Most of these changes are driven by the privatisation of these different land uses by mainly foreign investors. In Nyungwe National Park, privatisation has stimulated harvest of the buffer zone tree plantations, extensions of tea plantations and increases in private woodlots. These landscape transitions have had positive as well as negative impacts on the land, and the people living there. The following section will describe in more depth what these impacts mean for the sustainability of a livelihood of a local beekeeper.

4.3 Livelihoods beekeepers Nyungwe

This final section will focus on the sustainability of livelihood strategies of beekeepers in the changing environment of Nyungwe, impacted by the governance changes and transitions in the landscape. Privatisation policies have brought new actors in the landscape, which have been the drivers behind the expansion of tea plantations and the start of the buffer zone harvest. The effects of these changes under a decentralising government with limited downward accountability towards local people will be described in the following paragraphs. First, a brief characterisation of the beekeepers is given, followed by specific examples of how beekeepers are impacted by the changes. Section 4.3.1 will discuss the impact of competing claims on the land by various stakeholders on beekeepers. Section 4.3.1 describes how beekeepers are managing in this changing landscape, through the formation of cooperatives. The new private actors in the landscape have had significant impacts on the different aspects of the beekeeper's livelihoods.

In its traditional form, apiculture has been practiced by many generations in Rwanda. Honey has always been used for both its nutritional and medicinal value. Further, honey is a valuable commodity, making it a valuable asset to the livelihood of local poor, since apiculture doesn't require access to large tracts of land. Since land in Rwanda is scarce, beekeeping can therefore be seen as a land-saving activity (Hailu & Hassen 2012). In the case of Nyungwe, beekeepers can even use public land for the placement of their hives, because they are allowed to make use of the buffer zone. This diversification of the livelihood strategies of rural people derives multiple assets that benefit all five capitals of the livelihood of these people (Bradbear 2004). In 1992, the "Association Rwandaise Pour la Promotion du développement Integre" (ARDI) was contracted by the ministry to develop a capacity for modernising beekeeping techniques through training and material (MINAGRI & RARDA 2007). This supports the further capacity-building among beekeepers and creates possibilities for product commercialisation. In 2000, the park management started to educate beekeepers on the benefits of cooperative formation. By forming cooperatives, a more organised management of beekeeping practises was promoted, creating opportunities for collaborating with other partners in the region. In turn, this benefits the conservation of the park because it stimulates the use of hives in the buffer zone, rather than wild honey hunting inside the park, which is associated with increased risk of fire to the park (personal comment, expert from RDB 3, 08-02-2014).

In the context of the forest governance's shift towards decentralisation and privatisation, local resource dependent people like beekeepers have experienced a range of livelihood impacts and outcomes. Privatisation policies have stimulated landscape changes in the buffer zone, an important local landscape for the beekeepers, since they use this area for the placement of their beehives. The buffer zone offers a variety of forest flowers for the bees in Nyungwe. Outside the buffer zone, changes in forest cover, driven by the National Forest Policy, have taken place. These interrelated changes in policies and the landscape have had multiple positive and negative consequences on

different aspects of the beekeepers livelihood. The most profound effects will be discussed in more detail in the following paragraphs.

4.3.1 Competing claims in the buffer zone

The transitions in the buffer zone landscape with the expansion of the tea plantations and the harvest of the trees, elaborated upon in the previous section, have resulted in conflicts with competing claims over the land between different stakeholders. The buffer zone is an important zone for the local beekeepers, who use the zone for the placement of their beehives. The beekeepers have no registered legal rights to the land, but their beekeeping practises have been tolerated for many years.

After the planting of the buffer zone, its sole purpose was to act as a visible boundary of the national park. Nowadays, stimulated by the privatisation policies, the buffer zone around Nyungwe National Park is used as a multipurpose zone with many different stakeholders involved. These stakeholders include the RNRA, the buffer zone authority, the RDB, the national park authority, the REMA, the environmental impact assessor, the NFC, the harvesting manager, the tea factories and the local people adjacent to the buffer zone, like the beekeepers. All these stakeholders have different ideas about the function and use of the buffer zone. Stimulated by economic development and privatisation policies, the RNRA mainly aims to manage the buffer zone for its economic value. Therefore, they signed a long-term agreement with the NFC, who is now responsible for the management of the forest plantations in the buffer zone. The RDB stimulates these developments because of their role in professionalising the forestry business. On the other hand, the RDB is responsible for the conservation of the national park in which proper management of the buffer zone plays an important role for protection. The REMA is responsible for the development of strategic environmental assessments to ensure the limitation of negative impacts of activities on the environment in the buffer zone and national park. Also, the forest plantation areas of the buffer zone are used for tea plantations by the tea factories and tea farmers. The main aim of these factories is to increase the harvest of economically valuable high quality tea.

Claims over the use of space have caused conflicts between different stakeholders and put the beekeepers under stress, since they are dependent on the land for their livelihood. Multiple incidents have taken place which resulted in the loss of land, destruction of beehives and other material and the accessory loss of the honey harvest for that season. These incidents have been reported with both the start of the timber harvest as well as the expansion of the Gisovu tea plantation.

With the start of the NFC harvest, a significant proportion of the hives from one cooperative were destroyed. Most of the beehives used by the beekeepers were traditional hives, placed in trees. So with the felling of these trees, the hives were destroyed. Furthermore, wide roads were constructed through the area, destroying the paths used by the local people. The beekeepers claim to not have been warned prior to the harvest, which is why they were not able to rescue their hives. Here, a beekeeper shares their perspective on the communication before the start of the harvest.

“NFC did not consult us before the harvest because we saw them coming and starting to destroy our beehives.”

Source: Beekeeper 2, 27-01-2014

In the northern tip of the park's buffer zone, land was claimed by the Gisovu tea factory. The tea factory exists for almost 50 years and in 2011 it was privatised and started to expand its tea plantations. At the end of 2013, the company burned an area which was currently in use by local beekeepers cooperative in that region for further expansion of their tea plantation. This caused a tremendous material loss for the beekeepers. A beekeeper's reaction to this is shown below:

"The problem with the tea factory is that they burned all the land where the beehives were standing. We have been using this area since 40 years and we were not informed about plans on burning. There was a white man who bought the land and burned the land last October 2013"

Source: Beekeeper 14, 28-01-2014

These two incidents had detrimental effects on the beekeeper cooperatives. The loss of all their material drastically decreased their physical and financial capital. For example, the last harvest from the cooperative adjacent to the tea plantation weighed around 400kg and was sold for almost \$1100. The effect of this loss of material was detrimental due to the beekeeper's lack of resources that would enable them to cope with a shock of this magnitude. The beekeepers don't have the financial or physical resources to recover from these kinds of shocks to buy or build new hives. Although they have strongly developed social capital through their cooperatives, the beekeepers were supported by the RDB. This has led to a donation of new modern hives by the NFC. Nevertheless, the beekeepers have had to move their hives to a dedicated compartment in the buffer zone to prevent further damage. Time will tell if the size and quality of this area is of the same value as the previous area used by the beekeepers. Similar to the previous case, a few weeks after the fire incident in the north of the park, the RDB visited the area to act as a mediator between the tea factory and the beekeepers. The outcome of this meeting is yet to be made public.

Beehive demolitions can be seen as a direct result of poor communication between the stakeholders operating in the area. The privatisation processes have resulted in the arrival of new actors in the landscape. Because of limited decentralisation within forest governance and a minimal downward accountability towards local people, the harmonising of different land uses between local people and private investors is very poor. These conflicting ideas about the function and use of the buffer zone require clear management policies on the rights and responsibilities of all stakeholders. In the law establishing the buffer zone, a specific policy on buffer zone management is lacking (Law Number 22/2005 of 21st November 2005). Therefore, there is little guidance in the development of all the different activities. In this configuration, the rights of the beekeepers to use the land are not well protected. The demolitions show that beekeepers are not perceived as equals by the private investors in the buffer zone. Below, a beekeeper shares his perspective on the lack of government management:

"The zone belongs to the government who should take care of their people."

Source: Beekeeper 7, 27-01-2014

Similar to the beekeepers, the NFC feels the forest governance representative of the buffer zone, the RNRA, is responsible for resolving conflicts with the local people.

"Conflicts are addressed through RNRA who will identify people and hand them over to the government."

Source: Expert from NFC 1, 08-01-2014

When asking the forest governance representatives and the private companies about their views on the situation, no one seems to want to take responsibility for the situation. The RDB has acted as a mediator in the process between the beekeepers and the NFC but doesn't take any further responsibility in the conflict. A representative explains their line of reasoning:

"The buffer zone is not under the management of RDB but as activities the buffer zone can impact the park as well, the area is controlled by RDB too. The legal authorisation is by RNRA."

Source: Expert from RDB 2, 11-02-2014

The RNRA claims that beekeepers were informed prior to the harvest but that they didn't respond to the warning. The view of RNRA on the situation is given below:

"By law the state does not need to consent local communities about management changes. But the district authority was involved in the plans. The beekeepers were visited and were told that the practices will not disturb their business. But the beekeepers were unsure about this information."

Source: Expert from RNRA 1, 17-01-2014

What is apparent from these examples is the lack of responsibility and communication from all parties. Due to the lack of a specific management policy in the buffer zone, there is no clear legislation in place that clarifies the responsibilities of the different parties. This absence of management creates the potential for significant financial shocks for the beekeepers. Due to their low financial and physical capital, they are not able to recover from these shocks without external support. If the land use rights of the beekeepers aren't registered and therefore better protected, the sustainability of beekeeping as a livelihood technique is at risk.

4.3.2 Cooperative challenges

With the privatisation processes, a rising trend of private investors involved in the management of the landscape in and around Nyungwe evolved. The Rwandan government has positively stimulated the involvement of international investors, specifically. The motivation behind this focus is the limited knowledge, skills and materials available inside Rwanda. In contrast to this development, the evolution of multiple types of cooperatives set up by local people is also currently underway. Due to the fact that the government recognises that the development of local people is needed for the development of the country itself, the RDB has been educating beekeepers to help them to organise themselves in cooperatives. When organised in cooperatives, communities have an improved access to collaborations with private companies.

"It is the government policy to stimulate and educate the people on the importance of setting up cooperatives. So RDB provides the education but the people take the initiative of setting up the cooperatives."

Source: Expert from RDB 3, 08-02-2014

This formation of beekeeper cooperatives had a visible positive effect on the livelihood of the beekeeper. In the survey results, they mention such positive points as increased access to markets, access to donor support (materials and training), access to external partners, increased financial capacity, higher yields, access to financial loans, knowledge exchange, the division of workloads, and

an increased social network. These points have major positive impacts on all five of these aspects of the beekeepers sustainable livelihoods. It results in opportunities for survival in times of crisis. Unfortunately, due to corruption and weak management, these advantages are not utilised optimally. Many of the cooperatives have received training and material from different donors like the WCS or the NFC. Nevertheless, almost all respondents mentioned a need for more training, materials or institutional support. Some underpinned their wish by making a comparison with other cooperatives. As stated by a beekeeper:

“I would like to have more training and more funding. I heard that in other districts they get more funding.”

Source: Beekeeper 18, 29-01-2014

This dependency on donor aid is a big obstacle in the move towards a sustainable livelihood. The need for more training seems to be caused by a poor knowledge management within the cooperatives. In order to limit the costs, donors like the WCS often train only one or two people from each cooperative, with the intention that these persons transfer the knowledge to the other cooperative members. But according to some beekeepers, this process is not efficient.

“Not only the leaders of the community, but all members should be trained because one person cannot transfer all the knowledge of the training”

Source: Beekeeper 21, 29-01-2014

These quotes show a need for the development of knowledge management within cooperatives. The demand for more material indicates another weak point in the sustainability of the beekeepers practises. Most likely, this is caused by the donations of modern beehives, rather than training people to build their own. These improvements in the management of the cooperatives are necessary in order to sustain their long-term beekeeping practises. A government representative recognises this need for improvement and offers the following explanation:

“A lot of cooperatives have problems with management and taking initiatives. For the beekeepers there are mainly old man active which have a lot of knowledge on the technique but the knowledge needs to be transferred to their sons and wife. ”

Source: Expert from RDB 3, 08-02-2014

This limited transfer of knowledge within households could be an explanation for current knowledge management problems; although over three quarters of households stated that they involved their partner and/or children in beekeeping. Apart from these problems in knowledge management, which was seen in all cooperatives, two of the five visited cooperatives had serious monetary issues. In these cooperatives, corruption had affected the cooperative leaders. These shocks had a detrimental impact on the financial capital of the beekeepers. In addition, it was extremely demotivating for the beekeepers to keep functioning as they had been before. One beekeeper talks about their experience with the impact of this occurrence.

“The new leader of the cooperative works very well but the old leader stole money and honey from the cooperative. Some members didn’t want to pay a loan to get started again afterwards, so they left the cooperative.”

This level of shock has a devastating impact on the sustainable development of beekeeping as a livelihood strategy. The beekeepers financial capital, which is already extremely limited, is lowered even further by these kinds of incidents. This hampers them in the further development of their beekeeping practices because they don't have the ability, for example, to invest in more beehives to increase production.

Additionally, the ability to deal with shocks like the loss of materials or money is hampered by a strong climatic variability. In the last years, there has been an increase in periods of rain, combined with low temperatures. This rain and additional cold force bees to remain inside their hive, resulting in decreased nectar collection and honey production, forcing the bees to eat their own storage of honey. Aside from honey production, the rain also has had a negative impact on the crop yield. It caused floods, erosion and landslides on the hilly landscapes local people used for agriculture. Because most of the local people adjacent to Nyungwe are still living on subsistence agriculture, this had a major impact on their livelihood. In some cases, the damage to their harvest was so severe that it led to extreme hunger to the point that the government had to step in with support for their survival.

"There has been a lot of rain and our field was destroyed which caused hunger but our government saved us because we were almost dying of hunger. They gave us maize, flour, beans and oil."

Source: Beekeeper 20, 29-01-2014

Clearly, the quote above further clarifies the vulnerability of beekeepers to shocks hampering the sustainability of their livelihood strategies. With their limited resources, they are not capable of developing a buffer to sustain themselves through these rainy periods. Improvement of land practises, such as terrace building and agroforestry, might provide better crop protection. However, the small pieces of land owned by most beekeepers remain a limitation in their livelihood sustainability in times of shock.

Overall, the privatisation policies have had strong negative impacts on the livelihood of local beekeepers. These were mainly caused by weak management and a lack of government responsibility for legislation pertaining to the land. The formation of cooperatives might be a technique to improve collaborations with private companies in the future and help improving the livelihood sustainability. In general, the formation of cooperatives has had a positive impact on all five aspects of the local beekeepers. To optimise this livelihood improvement, long-term investments in knowledge management for sustaining and improving beekeeping skills is necessary. This development will also help sustain beekeeping as a livelihood technique through periods of stress and shocks, like the transitions in the land of the buffer zone.

4.4 Overview and Conclusion

The Rwandan government has been taking serious steps towards sustainable development by placing the environment high on their political agenda. To efficiently support this process, the government adopted and implemented wide-scale integrated policies of decentralisation and privatisation. Nevertheless, the implementation of decentralisation policies in forest governance had a limited

effect on the local level, and was met by scepticism among forest experts. Decision making powers are still mainly centralised and there is little downward accountability towards rural people, like beekeepers. In addition, decentralisation has led to decreases in government responsibility at the local level, resulting in unclear regulation about who is responsible for management, control and monitoring. Privatisation seems to be further developed, since there are multiple private investors active in forest governance, which stimulates economic growth and job availability in the forestry sector. However, privatisation has brought cooperative challenges at the local level. Private actors are attracted to landscapes without clear management policies to regulate all stakeholders and protect people's rights to the land. Although the concept of privatisation is relatively new, it already has had visible impacts on the landscape of Nyungwe. In the buffer zone the arrival of international investors has led to the harvest and replantation of trees and the expansion of tea plantations. On the land of local people adjacent to the buffer zone, the number of trees has been increasing as a response to the stimulation of tree plantations on private land by the government. With the commercialisation of the forestry sector through private investors, these local people may have the opportunity to sell their trees to private companies.

These processes have brought opportunities, as well as challenges, to the sustainability of the livelihood strategies of local beekeepers. Because of the decentralisation limitations on accountability towards local people and an absence of clear management policies, there was a lack of communication between private actors, forest governance representatives and local beekeepers, leading to ignorance in land use policies on the part of the beekeepers. The main challenge faced by the beekeepers is the loss of land and materials to powerful private investors operating in the buffer zone. Due to these private investor's land claims, and their subsequent initiation of land use practices, beehives and other materials belonging to the local communities were destroyed and they lost their access to the land. These shocks to the beekeeper's livelihood were exacerbated by the strong climatic variability, which also had a negative impact on the harvest of honey and crops. This proves that a beekeeper's physical and natural capital is extremely vulnerable. Since natural capital contributes to a significant part of the livelihoods of beekeepers, these shocks hamper the sustainability of their livelihood practises.

As a response to the arrival of private investors in the Nyungwe landscape, beekeepers began to form cooperatives. This development increased access to markets, donors, external partners, loans, knowledge and a social network, decreasing workload and increasing honey yields. This in turn has positively influenced all five aspects of a beekeeper's livelihood, which can create a small buffer for them, in order to cope better with the shocks described above, and therefore improve the long-term sustainability of beekeeping as a livelihood technique. To further improve sustainability and decrease shocks on the livelihoods of beekeepers, improvements are necessary in the collaboration between all stakeholders in the landscape, as well as the management within the beekeeper cooperatives themselves.

5. Discussion

This chapter will discuss the main findings of this study, mainly focusing on the livelihood of the local beekeepers. This study examined how changes in forest governance have driven landscape transitions and how these changes have affected the livelihood of local beekeepers living adjacent to Nyungwe National Park in Rwanda. The study focuses on the question of whether beekeeping can be a sustainable livelihood strategy within a changing environment.

This question has been answered by looking at the concept of forest governance change, including trends of decentralisation, devolution and private concessions, as these have a direct impact on the livelihood of beekeepers. The current trend of decentralisation focuses on the enhancement of local capacity, which is expected to improve the livelihood development of local people. This report examined if this devolution of tasks to local government institutions and the attraction of foreign private investors through concessions enhanced the beekeeper's livelihood and supported local entrepreneurial activities, like beekeeping.

Another concept linked to the question of livelihood sustainability is the one of landscape transitions, specifically, the changing functions and use of the landscape. New actors have driven transitions in the landscape also utilised by the local beekeepers around Nyungwe. To measure the impact of these changes on the different components of the livelihood of local beekeepers, the concept of livelihood sustainability was examined. This included the five different capitals constituting a livelihood, the transforming structures and processes, and shocks influencing them.

This research was conducted through a literature review complemented with a field study in Rwanda. The literature review was done in order to identify governance change policies in Rwanda. Also, interviews were performed with forest governance representatives including private actors active in the field, to examine to what extent these change policies have been implemented. Furthermore, the opinion of these representatives on these changes and their impact was reviewed. To answer the question of how these changes impacted the livelihood of local beekeepers, interviews with beekeepers from five different villages adjacent to the national park were performed.

This chapter begins with a discussion about the main findings, focusing on competing claims over land and the functioning of local cooperatives, highlighting their impact on the livelihood of local people. Afterwards, the following research questions will be answered:

- 1) *How and why is forest governance changing in Rwanda?*
- 2) *How does national forest policy affect the landscape in Nyungwe?*
- 3) *How do these changes in governance and the landscape affect the livelihood of beekeepers adjacent to Nyungwe National Park?*

Taken together, these questions will equally contribute to answering the main question:

How do changes in Rwanda's forest governance influence landscape transitions in Nyungwe and how do these changes affect the livelihood of local beekeepers?

Lastly, the theories behind and methods for this research will be discussed.

5.1 Competing claims

This section will discuss competing claims over land, driven by privatisation and decentralisation of forest governance. Firstly, it will describe how the process of decentralisation and privatisation has resulted in the issue of competing land claims. Secondly, case conflicts over land in the buffer zone of Nyungwe will be described, followed by a literature review of similar cases. By comparing different cases, common characteristics that increase the likelihood of conflicts will be discussed. Lastly, recommendations for improving future implementations of governance and landscape changes will be given.

As seen in this report, governance reforms like decentralisation and privatisation can lead to competing claims over land, caused by the introduction of new stakeholders like private investors in the landscape. The literature shows that considerable conflicts have been taking place in decentralisation processes involved with the redistribution of power and resources. Larson & Ribot (2004) indicated that natural resources have historically been a point of struggle between rural communities and the elite. This is due to the fact that natural resources are of critical need for rural livelihoods and also provide the basis of wealth for governments and national elites. In their paper, Larson and Ribot criticise the justification of most decentralisation theorists and policy makers who state that decentralisation increases efficiency, equity and inclusion. Decentralisation can increase the relevance of local authorities through natural resource transfer, but it can also be perceived as a threat by central authorities because of fear of losing income or patronage resources. This fear produces resistance to decentralised and privatised management and use of natural resources for local communities. Peluso (2002) stated that conflicts are mainly arising due to the introduction of alternative means of organizing control over resources. Decentralisation, as well as privatisation, can lead to increased conflict over resources, and may even result in violence. To minimise these conflicts and prevent violence, effective controls for prevention and mediation in a conflict are necessary.

This study also encountered competing claims over land driven by decentralisation and privatisation. The stimulation of a green market approach has introduced a number of land concessions that have led to competing claims over land. During this study, two cases of conflict over land in the buffer zone of Nyungwe National Park were reported. Both cases involved local beekeepers and private investors that recently became involved in the management of the area. One case in the north of the park involved a private tea investor that had started expanding his plantation, and in the east of the park the conflict involved a timber company that recently started to harvest trees in the buffer zone. During these conflicts, the livelihood of beekeepers had seriously deteriorated due to the loss of material and decreased access to land. One important aspect to the conflicts was the lack of a clear management policy for the buffer zone. Therefore, the rights and regulations of different stakeholders were not clearly defined.

Comparable cases of competing claims

A similar case of competing claims over land took place in Rwanda in 1997, with the privatisation of the sugar cane factory, Kabuye sugar works. The factory was bought for \$1.5 million by the private investor Madhivani Business Group, an Indian consortium which was involved in business in Uganda. A 50 year lease contract was established on approximately 3,150 ha of Nyabarongo swampland. The Nyabarongo valley, consisting of a total of 24,698 ha, is situated nearby Kigali city and is mainly used by local peasants for the cultivation of food as well as cash crops. It is an important safety net for communities in case the harvest of hill-cultivated crops fails due to landslides. After the agreement

was signed, a large portion of the designated land was expropriated by the Rwandan authorities. Despite the fact that local people perceived their self-claimed user rights to be permanent, they received no compensation for the land, as the land was, officially, the property of the state. Additionally, police and defence forces used intimidation to chase people from their land. Local peasants had hoped that the district authorities would intervene on their behalf, and mediate in the process, but this did not occur. For the local communities, this led to the loss of access rights to the land, without any form of compensation. These communities never claimed back the land, even though a considerable part of the swampland was left fallow by Kabuye sugar works because of permanent flooding. The local people had managed to cultivate the area before the privatisation took place, but swampland cultivation was labour-intensive and the risk of losing the land due to lack of official tenure rights was high, so the land remained unused. Privatisation had a significant impact on the livelihood of local peasants, as people were then forced to rely on their land in the hills, with a high risk on crop damage due to erosion and landslides. It is notable that almost no one from the communities had a job on the plantations because of the low wages, long working hours and the physically demanding work (Ansoms 2008).

Outside Africa, similar cases of competing land claims driven by private economic land concessions have been occurring. In Cambodia, the adoption of a free market economy in 1990 has resulted in increased claims over land through the promotion of large-scale land concessions. Agriculture is one of the most important drivers of the Cambodian national economy. The agro-industry is quickly developing through the promotion of economic land concessions to international and local investors. Since about 75% of the people subsist mainly on agricultural production, this has a big impact on their livelihood, especially that of indigenous people practising “slash and burn” agriculture. These communities rely on non-registered customary land rights and receive only limited protection from the state. Because they are not lawful landholders, their rights to the land are not acknowledged. Hence, many concessions have been granted on community land which has led to social and land conflicts among indigenous communities. For example, in a community east of Cambodia, over half of the people claimed to have lost land to a concession company. Again, because of a lack of clear regulatory framework, conflicting claims over land cannot be effectively handled. Community forest land was cleared for rubber plantations and people claimed to not have received sufficient compensation for the loss of land. As a result of the loss of community land, people now had to move 25-40 km away from their village to plant their crops. Also, community access to forest land for the collection of non-timber forest products decreased drastically (Prachbuthy 2011).

Similarly, in Indonesia there are cases where conflicting claims over land were driven by privatisation trends. These conflicts started at the end of a strongly centralised and military-dominated government period. The district authorities and the ministry of forestry were disagreeing over law and management of overlapping resources after their long period of exclusion. In Kapuas, located in Central Kalimantan, the issue of new timber concessions on community land resulted in the fact that people lost their rights to the land and to the timber harvest. These harvests caused a lot of damage to community land, without any compensation. The harvest companies did include community development strategies in their plans, but these were never implemented (McCarthy 2001). As a result, communities were violently invading operating timber concessions. They forced private investors to include development strategies for local communities in their contracts (Peluso 2002).

Common drivers of competing claims

From the cases described above, one issue which seems to be driving the cause of competing claims over land is weak, unclear or even absent property rights. In Nyungwe, beekeepers had no legally based user rights to the land in the buffer zone. Because the buffer zone is public land, no legal tenure rights have been established for beekeepers. In the management policy of the buffer zone, their activities and rights to the use of the land are not clearly defined as part of the total management strategy. This lack of clear land right legislation for local people creates a substantial obstacle to their livelihood sustainability and development. In most developing economies, land is central to local people's development, with agriculture and natural resources continuing to be the main portion of their economy. Therefore, securing people's access and rights to land is a main priority for sustainable livelihood development. A common problem is that most imported techniques for tenure arrangements don't function well in different cultures with different livelihood strategies. To embed rural livelihood strategies in the legal right system of a country, complex and adaptive registration of customary rights are necessary. Common problems with land rights, resulting in increased potential for conflict are dualistic legal systems, low enforcement capacity, outdated inefficient land registries, land inequality and overly-complex and inappropriate regulations (Quan & Toulmin 2004). In Rwanda, customary land rights are nowadays recognised as a basis for adopting official titles. With the new land law of 2004, it became compulsory to register ownership for the acquisition or leasing of land (ROR 2004). However, payment for these registrations is hampering the poor, whereby these people cannot secure their land rights (Ansoms & Rostagno 2012).

Another underlying common problem seen in the cases above is the inequitable balance of power between powerful private actors and local communities. Poor democratic governance can create a lack of accountability for the rural peasants, necessary for the cooperation with private actors (Larson & Ribot 2004). In Rwanda, citizens are involved in all levels of governance, through the entire decentralisation process. Nevertheless, there is still strong top-down control from the central government towards local authorities. This central control is maintained through the sector authorities that are appointed by the central authorities. Elected positions are represented by the cell and village (umudugudu) level. The sector's executive secretary is held accountable through imposed targets specified in public performance contracts (imihigo) by the central authorities (Ingelaere 2010). This lack of downward accountability limits inclusive development and can lead to inequality within a society. In Rwanda, this high inequality is clearly visible in the Gini coefficient¹, which was measured in 2010/2011 and received a score of 0.49. This number is far above the United Nations Development Programme (UNDP) Gini boundary for unacceptable levels of inequality, which is a score of 0.40 (ROR 2012). Additionally, Rwandan laws and policies provide little room for small-scale local entrepreneurs. In the policy documents like Vision 2020 and the Economic Development and Poverty Reduction Strategy, the focus is very much on the stimulation and attraction of large investors. These policies have blocked, and in some cases counteracted small-scale local initiatives and created competition over land with small-scale peasants (Ansoms & Rostagno 2012). This growing market approach in developing countries increases interventions on land, social differentiation, and inequality, privileging big investors.

¹ The Gini coefficient is an index to measure inequality. It varies between 0 and 1 with higher levels representing greater inequality.

Recommendations for improvement

Improvements are necessary in order to prevent further conflicts in the future and secure valuable livelihood opportunities for local people.

First of all, a more decentralised, participatory approach to the design of land allocation and administration systems could limit the negative impact of land concessions. The degree to which it can protect the vulnerable livelihood of local people is as of yet unknown. However, increased representation and empowerment of the poor could result in better protection of their rights (Quan & Toulmin 2004).

Another improvement could be made in the social and environmental assessment standards for granting land concessions to private investors. Usually, before land can be granted under a land concession, a social and environmental assessment has to be conducted. Often the levels of these assessments are performed according to low standards for environmental as well as social aspects. In this process, public consultation is very limited (Quan & Toulmin 2004). The environmental and social standards are currently unknown in Rwanda, but one could expect that the consultation of the beekeepers was very limited. By improving the standards of these assessments, all stakeholders and their role in the landscape can be defined prior to the implementation of new land activities. This may also limit the number of land-related conflicts at the start of the landscape changing process.

Another way to improve livelihood securement and increase opportunities for livelihood improvement for local people is by mobilising domestic investments instead of attracting foreign investors (IIED 2004). By establishing policies that stimulate local initiatives, livelihood sustainability of these people can be improved. For example, tax regulation improvements for small businesses and the improvement of tenure arrangements would be very beneficial. An additional benefit to the promotion of local initiatives is that this can decrease dependency on agriculture for a livelihood, since one of the goals of Vision 2020 is to create an additional 1.4 million jobs that are non-reliant on agriculture in Rwanda (ROR 2000). Policies responding to the challenges imposed upon microenterprises are necessary in order to create a secure livelihood capital (Ansoms & Rostagno 2012).

5.2 Coping through cooperatives

This section will discuss how worker cooperatives, with mainly economic functions, like the production of goods or services and securing control over resources, operate in this changing environment. First, the establishment of cooperatives under constantly changing governance and the function of these joint forces in a changing landscape will be described, followed by a brief description of the characteristics of beekeeper cooperatives around Nyungwe. Thereafter, the effect of cooperatives on livelihood sustainability will be discussed. Lastly, the strengths and weaknesses of these unions will be discussed and compared with other studies.

The ongoing privatisation process in Rwanda has largely shifted government focus to attracting foreign investors (ROR 2000). But in order to combat the country's high poverty rates, emphasis has also been put on inclusive development and increasing possibilities for local people to cooperate with private investors. Forest governance has been stimulating and educating people on the importance of setting up cooperatives. This form of group formation as a key instrument in national

rural development policy has been used over many years in multiple countries (Korten 1980). On the one hand, local people can increase their social network through cooperatives, which is vital for working with new investors in the landscape. However, on the other hand, the Rwandan government makes use of these cooperatives to regulate land use, stimulate monocultures and the production of cash crops through the regulation of access and use of public land (Ansoms et al. 2013). For example, through the formation of increasing numbers of tea cooperatives, the government can stimulate local people to start cultivating tea under an out-growers scheme, instead of a variety of crops for subsistence farming. This will stimulate both professionalization of land use and the increase of monocultures.

Since 2005, sensitisation activities concentrating on the importance of conservation have been implemented by the RDB. They began promoting cooperative formation and raised awareness about the importance of fire prevention among beekeepers that are currently using part of the Nyungwe forest for honey production. The RDB's goal was to organise beekeepers in groups and let them make use of the buffer zone for beehive, because individual beekeepers often placed their hives inside the park, increasing the risk of bushfires. For the beekeepers, this group formation resulted in positive as well as negative effects on their livelihood. The positive points raised by beekeepers were increased market access, access to donor support (materials and training), access to external partners, increased financial capacity, a higher yield, access to loans, knowledge exchange, dividing of workload and an increased social networking. Nevertheless, due to corruption and weak management, these opportunities were not fully utilised. Furthermore, they have a negative impact on the livelihood sustainability of the beekeepers.

Problems and opportunities

The question that must be asked is whether the positive effects associated with cooperatives outweigh the negative effects, and therefore support a sustainable livelihood. To formulate an answer to this question, a comparison with other cases is necessary. A positive driver that was mentioned by the members of the beekeeper cooperatives was that joining a cooperative generated increased access to land and a social network, as well as increases in yield and income. Examples in literature further support this claim. Ansoms (2008) described how the Rwandan government allocated wetlands to cooperatives for cultivation. Lauck & Adams (2000) stated that *"cooperative efforts (...) provide farmers an important sense of inclusion in their own fates by involving them in the marketing process"*. Through the establishment of cooperatives, local people can increase their political weight and bargaining power. Other, more direct, positive effects include improved income generation (Thorp et al. 2005).

A bottleneck to these positive impacts of cooperative formation is the risk of exclusion of certain social groups. This creates access inequality in regards to the opportunities created by cooperatives. For example, land access becomes a matter of having the right social connections to secure access to a piece of land. The extreme poor, who have limited social capital, lack these connections and risk exclusion. This exclusion limitation for the extreme poor can also be caused by a cooperative's demanding entrance requirements. To join a cooperative, people need money, time and social connections which are not readily available to poor peasants. Some cooperatives require steep entrance fees, creating a further barrier for those attempting to join a cooperative. Additionally, some cooperatives require fixed-time labour. For the extreme poor, who experience daily struggles for survival and often perform manual labour in exchange for food, these requirements are unrealistic. Another limitation of access to cooperatives is that most cooperatives are mostly male

dominated. This gender imbalance exists because men focus mainly on cash crops, while women are more concerned about food crops for household use. Because of this, women may be reluctant to enter these male-dominated groups, limiting their access to cooperatives (Ansoms et al. 2014).

There are also several internal problems in the cooperatives that affect the member's livelihood sustainability. Poor management is one of the main problems that strongly affect the sustainability of the cooperatives. There were multiple examples of corruption taking place in the cooperatives around Nyungwe. Most reports of cooperative members concerned cases of stolen money by cooperative leaders. Similar cases of corruption within cooperatives have been reported in literature (Ansoms & Rostagno 2012). In the swampland in Rwanda, multiple cases of unfair harvest distribution were reported; members and managers of the cooperatives received bigger share (Ansoms et al. 2014). Korten (1980) states that exclusion of the extreme poor and corruption is a well-known problem in cooperatives in developing areas. Highly stratified communities, where the poorer members of the community have no voice, are at a higher risk of these inequalities.

Characteristics needed for successful cooperatives

As discussed above, cooperative formation has great potential in the development of rural poor. However, joining forces through group formation is not always the key to success (Ansoms & Rostagno 2012). To improve the chances of success for a cooperative, multiple factors are necessary. To enable the inclusion of all social layers, a cooperative should have a relatively non-stratified and cohesive social structure. Domination by one or a group of actors can cause oppression, exploitation and alienation within groups. Strong internal structures are needed within cooperatives, holding both leaders and members accountable. In cooperatives with material incentives, like those of the beekeepers, accountability is encouraged through self-interested behaviour for material rewards, such as increased honey production (Korten 1980; Thorp et al. 2005). Moreover, strong external linkages with agencies that support their function through training, services, facilities and conflict resolution assistance are vital. In general, the focus should be on capital formation, rather than a means for obtaining government facilities (Thorp et al. 2005).

5.3 Conclusion

This study has examined the influence of forest governance changes on landscape transitions in Rwanda, and their effects on the livelihood of local beekeepers living adjacent to Nyungwe National Park. To answer this question, a literature review, in combination with interviews with forest governance representatives and local beekeepers were performed. This study consisted of three sub-questions, all of which contributed to the answer of the main study question.

- 1) How and why is forest governance changing in Rwanda?*
- 2) How does national forest policy affect the landscape in Nyungwe?*
- 3) How do these changes in governance and the landscape affect the livelihood of beekeepers adjacent to Nyungwe National Park?*

When examining governance changes in Rwanda, two main trends, decentralisation and privatisation, were found. Decentralisation is a concept that was begun in 2001. However, despite the long period of time allotted for implementation, the governance structure in Rwanda remains very centrally controlled. This limited implementation is also visible in Rwandan forest governance. The changes that have taken place mainly include the devolution of tasks to locally-based government

organisations, like the management of Nyunwe National Park. However, because of strict targets set by the central governance, these locally based forest governance representatives are held upwardly accountable. These findings overlap with what is described in the literature about the incomplete and slow processes of decentralisation. Factors which are known to hamper the completion of the decentralisation process include lack of faith, which generates resistance to the process, limited local capacity, and the focus on temporary and spatially limited activities (Ribot et al. 2006; Ribot 2009; Larson & Soto 2008; Agrawal & Ribot 1999). The main factor encountered in this study was the limited capacity of local governments, explaining why the government's main has been on the attraction of foreign investors whose capacities are less limited. The performance targets in Rwanda limit the accountability of forest governance towards local people, like beekeepers, who are currently making use of their assets. This form of decentralisation was described in literature as so-called "governing at a distance" (Rose & Miller 1992). The literature considers this behaviour as a manner of retaining or possibly even improving central government control from a distance. In Rwanda, this system hampers further decentralisation within forest governance and supports a more inclusive form of development, in which there is adequate support for local entrepreneurial activities like beekeeping.

Privatisation is a concept which has been further implemented in forest governance. In Rwanda, the focus of privatisation is mainly on the attracting foreign investors. These investors have a greater capacity of knowledge and materials to implement different land uses more efficiently and competitively. Similar to the decentralisation process, this system is hampering a more inclusive form of development, since it limits possibilities for the development of local entrepreneurs. This is a phenomenon that has also been observed by Cutler (1999), who stated that private capture of public affairs is not necessarily equitable to civil society as a whole. However, the main focus on foreign investors Rwanda is also stimulating the development of local private tree plantations. These include mainly small scale woodlots on local resident's private land. These woodlots are of crucial importance to Rwanda's policy on the increase of tree cover for a sustainable development, since large scale public land available for tree plantations is limited.

The motivation behind these governance changes are the policies focused on sustainable development of Rwanda. Currently, this development is only benefiting a small elite group. Therefore, a more inclusive form of development, through the support of local entrepreneurs and increases in downward accountability is necessary.

When looking at the landscape of Nyungwe, privatisation policies have had significant impacts on transitions in land uses. On the other hand, decentralisation policies have had no visible impacts on the landscape itself. The transitions that privatisation has implemented are located in the buffer zone of Nyungwe, in the forestry sector (e.g. timber harvest, tree plantations) and tea production. For forestry commercialisation and development, Rwanda has started the harvest of exotic, colonial tree stands in the park's buffer zone. This harvest is arranged through a lease contract set up with the New Forest Company, a U.K. based forestry-related company. The harvest of the trees began at the end of 2013, and will continue for a period of 49 years, in which the total area of the buffer zone will be rotationally harvested and replanted three times. For an increase in tea production, which is one of the most important cash crops in Rwanda, the three tea factories and its plantations were privatised by investors based in Rwanda, the UK and India in the period between 2009 and 2011.

These developments have led to expansions of the tea plantations in the buffer zone and on private land, through local out-growers.

These changes in the landscape and the governance have affected the livelihood of beekeepers in multiple ways. The most profound effect is caused by the incoming private actors in forestry and tea production in the landscape of Nyungwe. Their arrival has caused several land-related changes, which in turn, resulted in conflicts that forced the beekeepers of two cooperatives to abandon their beekeeping practices in the buffer zone. This finding is supported by the literature, which describes a landscape as a cultural construct, meaning that different people have different perceptions of a landscape (Taylor 2008). This divergent view lies at the heart of the conflict between the beekeepers and private actors. These conflicts had a big impact on the livelihood of the beekeepers, who lost their access to the buffer zone for the placement of their beehives, and were restricted to a designated area in the buffer zone. Further, the beekeeper cooperatives lost their materials, which were destroyed in the process of the landscape transition. These losses had a devastating impact on the natural, physical and financial capitals of their livelihood. Because the natural capital was supporting a large part of their livelihood and because beekeepers didn't have the resources to recover from this level of shock, the sustainability of their livelihood was significantly threatened by these changes in the landscape.

In order to organise their access to the land in the buffer zone and to promote cooperation with private investors, the beekeepers have organised themselves in local cooperatives. These cooperatives had strong positive influences on all aspects of their livelihood. Positive points mentioned in the survey responses included increases in market access, access to donor support (materials and training), access to external partners, increased financial capacity, a higher yield, access to financial loans, knowledge exchange, dividing of workload and increased social networks. Nevertheless, as observed through the negative impacts on their livelihood by private actors, the cooperation between beekeepers and private companies is very poor. Additionally, beekeepers were experiencing some internal problems within their own cooperatives, which also presented a challenge to their livelihood. They experienced problems with the management, mainly on transfer of knowledge, and several examples of corruption were encountered, which negatively impacted their human and financial capital.

In conclusion, privatisation stimulated by the economic development policies, was the main driver behind land use transitions in the buffer zone of Nyungwe National Park. These transitions in the land have had negative impacts on the livelihood of beekeepers operating in this buffer zone. A limited downward accountability and the lack of clear management policies and land rights for different stakeholders in the buffer zone have resulted in the expulsion of beekeepers from this area. Cooperatives which may have improved the beekeeper's livelihood were not able to amplify the voice of beekeepers in these land use transitions or prevent conflict. However, cooperatives were of value for the recovery from the imposed shock through their improved social network, which brought many new materials and land access. Currently, beekeeping cannot be seen as a sustainable livelihood technique in the landscape of Nyungwe. The risks of loss associated with beekeeping are too great within the current governance and land use system. To ensure the sustainability of beekeeping as a livelihood strategy, the implementation of changes in the securement of land rights, improvement of downward accountability, and the management of cooperatives are necessary.

5.3.1 Recommendations for future research

This research focused on the livelihood of local people who were not directly employed by the private companies operating in the country. It could be interesting to examine if the impact of privatisation can have a more positive effect on the livelihood of people who are directly involved, like employees of the New Forest Company or tea growers.

A point mentioned in the discussion was the lack of an enabling milieu for the development of local entrepreneurs. An interesting study would be to focus on what local entrepreneurs in Rwanda need in order to be able to compete with these bigger international investors.

5.3.2 Reflection on theory and methods

For the interpretation of the findings presented and discussed in this study, it is important to note the limitations and challenges faced in the scope of this research.

For measuring the impact of governance change and landscape transitions on the livelihoods of the beekeepers, the sustainable livelihood framework of the Sustainable Rural Livelihoods Advisory Committee was used. This framework divides a livelihood into five different aspects, making it possible to find weak or limiting factors of a livelihood, or even measure which aspects are land-dependent. However, this study found that this technique of defining a livelihood seems rather artificial. As seen from the collected data, the shocks that were caused by private actors driving landscape transitions had a significant impact on the beekeepers livelihood as a whole. For example, the loss of beehives (physical capital) impacted the beekeepers access to honey (natural capital) which was their most important source of income (financial capital). Due to the tensions caused by the shock, people decided to leave the cooperative (social capital). As seen from this example, all these aspects are strongly interconnected with each other, and the impact of one aspect, can create a domino effect on all the others. Therefore, a simplified focus on separate aspects for improvement was necessary for this research, which is why the focus has mainly focused on livelihood as a whole.

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Appendix 1, List of respondents

Nr.	Type	RQ	Organisation	Date	Location
1	Governance	RQ 1,2	RDB	7-2-2014	Kigali
2	Governance	RQ 1,2	RDB	11-2-2014	Kitabi
3	Governance	RQ 1,2	RDB	8-1-2014	Kitabi
1	Governance	RQ 1,2	RNRA	17-1-2014	Kigali
1	Governance	RQ 1,2	NFC	8-1-2014	Kitabi
1	Governance	RQ 1,2	WCS	10-1-2014	Kigali
2	Governance	RQ 1,2	WCS	10-1-2014	Kigali
1	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
2	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
3	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
4	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
5	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
6	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
7	Beekeeper	RQ 3	COASEKI	27-1-2014	Kitabi
8	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
9	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
10	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
11	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
12	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
13	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
14	Beekeeper	RQ 3	COABISEWU	28-1-2014	Twumba
15	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
16	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
17	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
18	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
19	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
20	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
21	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
22	Beekeeper	RQ 3	COODURU	29-1-2014	Ruheru
23	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
24	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
25	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
26	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
27	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
28	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
29	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
30	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
31	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
32	Beekeeper	RQ 3	KODABU	30-1-2014	Bushekeri
33	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
34	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
35	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye

36	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
37	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
38	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
39	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
40	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye
41	Beekeeper	RQ 3	KAUBWE	31-1-2014	Bweyeye

Appendix 2, interview guide forest governance respondents

First of all I would like to thank you for your time to participate in this interview.

I'm CoCo Teheux and I am a student from Wageningen University in the Netherlands. I'm here to conduct a research on the effects of forest governance on beekeepers surrounding Nyungwe National Park. You were selected for this interview because of your knowledge on the topic. The aim of this interview is to generate information about the livelihood of beekeepers and their relations with the changes in the Landscape of the National Park and Forest Governance in Rwanda.

All the information recorded during this interview will be kept confidential. If requested, a fake name will be used and all other information that could be used to infer your identity will be left out of the report. If at any time during the interview you prefer to not answer the question or you feel like withdrawing from the interview, please feel free to mention this. If there is any information which you don't want to be recorded, just mention OF RECORD and the recording process will be paused and the information told will not be used in the research. Feel free to interrupt at any time during the interview with anything you think is important to add.

If you have any further questions about your participation in this research feel free to contact me afterwards.

New Forest Company

- Contract in bufferzone (2011)
 - What kind of contract
 - Under whose permission
- Forest engineering
 - How many trees cut? Clear cut?
 - Which tree species cut and replanted? Pines eucalyptus
- Investing in communities (beekeeping/charcoal/furniture/wood/employers)
- Challenges with communities? How do you deal with them?
- Future perspective/solutions to problems faced

(When, why, how, what)

Wildlife Conservation Society

- Role of WCS
- Goals of WCS in Nyungwe National Park
- Changes in landscape bufferzone and park
- Cooperation with RDB
- Cooperation with NGO's in region

- Cooperation with NFC
- Power in decision making
- Cooperation with communities (specify on beekeeping)
- Challenges and opportunities in region

Rwandan Development Board

Recent governance

- Tasks of RDB in Region
- Collaboration with other governmental and non-governmental bodies and their tasks
- Region managed; does forest governance include surrounding landscape (communities/agriculture)
- Power in decision making
- National decentralisation policy (how far implemented in forest governance)

History

- Changes in management since set up park (how/why)
- Emersion of ORTPN in RDB
- Changes in landscape buffer zone and park

Management Nyungwe National Park

- Type of management park
- Bufferzone management

Other organisations involved

- Role of local authorities in forest governance
- Role of private organisations in conservation (vision 2020)
- Cooperation with NGO's in region
- Cooperation with other governmental organisations
- Cooperation with NFC
- Cooperation with communities (specify on beekeeping)
- Challenges and opportunities in region

Appendix 3, interview guide beekeepers

First of all I would like to thank you for your time and willingness to participate in this interview.

This study is carried out by students in collaboration between Wageningen University in the Netherlands and KCCEM in Rwanda. We are here to conduct a research on the effects of forest governance and landscape transitions on beekeepers surrounding Nyungwe National Park. You were selected for this interview because of your knowledge on the topic. The aim of this interview is to generate information about the livelihood of beekeepers and their relations with the changes in the Landscape of the National Park and Forest Governance in Rwanda.

All the information recorded during this interview will be kept confidential. If requested, a fake name will be used and all other information that could be used to infer your identity will be left out of the report. If at any time during the interview you prefer to not answer the question or you feel like withdrawing from the interview, please feel free to mention this. If there is any information which you don't want to be recorded, just mention OF RECORD and the recording process will be paused and the information told will not be used in the research. There are no wrong or write answers and feel free to interrupt at any time during the interview with anything you think is important to ad.

If you have any further questions about your participation in this research feel free to contact me afterwards on the phone number 0783092503

Village:.....

Date and time:.....

Names of respondents:.....

Human Capital

1. Household size:

Name	Age	Sex	Highest Education	Occupation	Involved in beekeeping

2. Do you and your household members have access to any other form of education?
3. How many years have you been living in this area?
4. What is the land size owned by your household and how has this changed over time? Where, why, when?
5. How many beehives do you own and how many are actively in use at the moment?
6. Which beekeeping techniques do you use (hive type/harvesting technique)?
7. How is knowledge on beekeeping transferred and what are sources of knowledge available to you? Do you feel this information is sufficient to you?

Social Capital

8. Are you working in a cooperative?
If yes:

- a. What is your task in this cooperation?
 - b. How is the cooperation managed (number of meetings, rules, agreements, organizational structure)?
 - c. What external connections/partners does the cooperation have?
 - d. Can you name a positive and a negative point of working in a cooperation/Union?
- If no:
- e. What is the reason for not working in a cooperation?
 - f. Can you name a positive and a negative point of not working in a cooperation?

Natural Capital

9. Can you name a benefit and a constrain coming from the park and the bufferzone?
10. This region is known for its use of forest products. In the last year have you been making use of any natural resources from the park or the bufferzone? If yes or no why?
11. Make a ranking of the natural resources (community land, bufferzone, park) you use in importance of contribution to your livelihood. Ask explanation; why, since when, for market or private use?

	Type of resource	Source (park, bufferzone, community)
1.		
2.		
3.		
4.		
5.		
other		

12. How much honey have you been producing last year and how much of this has been sold?
13. Are there big changes throughout the year in contribution of different natural resources?
If yes: when, what, why?
14. Have there been changes in the last past 5 years in contribution of different natural resources?
If yes: when, what, why
15. For which specific purposes is the honey plus other bee products used by you and by your clients?

Physical Capital

16. What is the distance to the closest market and how do you access there?
17. Where do you sell your honey?
18. Do you have access to different markets to sell your honey?
19. Who are your clients using the honey?
20. Where do you sell other products?
21. How do you communicate with external clients?
22. How do you store your honey and other products until it is sold?
23. Does the selling and storing process meet your requirements?
If not: What developments would you like to make? Why, how?
24. Where do you get your beehives and other beekeeping equipment from?
25. Before joining the Union did you had access to beekeeping equipment?

Financial Capital

26. Make a ranking of the most important forms of monetary income, the people involved and the time invested in them:

	Forms of income	People involved	Time per week (h)	Time per year (m)
1.				
2.				
3.				
4.				
5.				
other				

27. Do you have any form of savings?

If yes: How do you keep them (cash/livestock/...) and what are the value changes of these savings?

If no: Why?

28. Have you received any benefit from the park revenue sharing program?

If yes: What, when, why?

If no: Why?

Structures and Processes

29. Since your settlement in the area have you experienced any changes in the landscape of influence to your livelihood?

30. What are the biggest challenges you face in your community? Explain.

1.	
2.	
3.	
4.	
5.	

31. Which organisations (public/private) are involved with the communities? Name, role, importance.

32. Can you name at least one challenge and one opportunity that comes with these organisations?

33. What is the role of the village representative in the community and do you feel that he represent the values of the community?

34. Do you feel respected in terms of knowledge and opinion by forest governance representatives in their decision-making process? Why?

35. NFC has been starting a harvesting in the bufferzone. What is your opinion about the process of consultation before the start the process and decisions made since the start of their activities?

Short comments about

interview:

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