

Local People's Strategies to Cope with Land Degradation:  
Understanding the Role of Traditional Leaders in Yassa-Munene Village in the  
Democratic Republic of Congo

by

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DISSERTATION

Submitted in Partial Fulfillment of the Requirements

for the Degree of

Doctor of Philosophy  
in International Development

GRADUATE SCHOOL OF INTERNATIONAL DEVELOPMENT

NAGOYA UNIVERSITY

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## **LIST OF ABBREVIATIONS**

TEK	: Traditional Ecological Knowledge
SSA	: Sub-Saharan Africa
IK	: Indigenous Knowledge
PRA	: Participatory Rural Appraisal
TK	: Traditional knowledge
CBO	: Community Based Organizations
TL	: Traditional leaders
VL	: Village leader
UN	: United Nations
FAO	: Food and Agriculture Organization
USAID	: United States Agency for International Development
NGO	: Non-Governmental Organization
DRC	: Democratic Republic of Congo
N	: Nitrogen
P	: Phosphorus
K	: Potassium
IIRR	: International Institute of Rural Reconstruction guidelines

## ACKNOWLEDGEMENT

I am particularly grateful to God who provided me with life, health, chances and wisdom to pursue my studies until this stage of doctoral level.

I am deeply grateful to Prof. Sanae Ito, my principal supervisor, who dedicated her time and effort to help me achieve my doctoral dissertation. My thanks are also directed towards the sub-supervisors: Prof. Higashimura, Prof. Nishikawa and Prof. Hanai whose commentaries, critiques and remarks helped me improve the quality of this dissertation.

I thank the Sojitz Foundation for the scholarship I was awarded during the years 2012 and 2013. Without this scholarship, the beginning of the doctoral program would be impossible.

I feel obliged also to express my gratitude to the Congregation of the Divine Word Missionaries, to which I belonged from 2000 to 2012, in the Democratic Republic of Congo, Kenya and Japan. My special thanks go to my wife, Germaine Muzadi NTUMBA. She has been a special support for my research and study for years. I am also grateful to my relatives: Eyen, Lasas Maurice, Noon Madeleine, Kalata, Jean Kianza, Ognam, Osagn, Lamats, Odile Ngwayi, Etienne Ipoom, Aniar, Inung, Ebis, Donette Ingwen, Gordien Ingwen, Lanten Thierry, Marie-Jeanne Mulangi and all the other relatives.

I thank also all the relatives that have been helpful in my life, but who died before seen this great day: Antoine Mututu (Grand-father), Leonie Mututu Ambets (mother-1981), Abbe Kalom Philbert (Uncle- 1987), Marie-Claire Ayinon (Grand-mother - 1989), , Robert Ingwen (father - 2008), Stanislas Mututu Ngul (Uncle - 2010) and Kalata Baudouin (Uncle - 2017); I thank also Abbe Anki Bellarmin (tutor, died in 1998) who adopted me during my primary and secondary schools studies.

I thank the local informants who helped me undertake the research in the village area.



I finally thank all the Japanese friends who assisted me during this period of the study. I thank Kurimura family, Kamiya, Kondo, Kato and Cesar, Taniguchi, Mitako (Milty) and to all other friends.

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September 27, 2017

## ABSTRACT

Recently the interest in local people's strategies to cope with land degradation has grown among scholars and policy-makers. However, most of the studies have only examined the degradation process and described farmers' strategies without placing attention on understanding the factors influencing farmers' decisions and reasons to choose innovative strategies.

The aim of this study is to examine local farmers' strategies to cope with land degradation in Yassa-Munene village, and to analyze why farmers choose the strategies they apply.

The findings in this study revealed that farmers' major strategies are based on their local customs, adoptions and innovations in farming and non-farming activities. A body of literature has argued that farmers' decisions to choose strategies are often based on the land users' interest in direct and indirect cost and benefits of the undertaken strategies, in term of yield, time and cash. Using the *'framework for traditional local institution analysis in land management'*, this study argues that farmers' decisions to adopt or reject innovative strategies are mostly based on local traditional leaders' will and approach to implement the strategies. Leaders play a central role as custodians, resources controllers, mediators and advisors. But they are also exemplars, models, key actors, risk takers and 'servants' or helpers of the community in implementing innovations. They are the 'well informed' and 'well educated' in resources management than ordinary farmers. This study reveals that all the major past innovations have successfully been adopted with and through leaders' involvement and decisions, rather than through the farmers' own initiatives or that of the external actors.

Based on the problems and findings, this study recommends the need to support local traditional institutions (leaders), strengthening local farmers' capacity and resilience at the community and individual level. However, based on the study's limitations, further studies are needed to provide more information and quantitative data necessary for sustainable development and avoid more degradation of land. Still, while this study acknowledges that leaders' role can provide vital social insurance during crisis and encourages trust in the new attempts, it also acknowledges that in the future this role can become an obstacle for peasants to voluntarily take initiatives without depending on the leaders. Besides that, the weakening of traditional institutions, the changing socio-political and ecological situation, and the inaccessibility to various assets, may not enable leaders to be up-dated and continue to play their historical role in the modern context. This could lead into more land degradation, poverty, famine or conflicts.

*Key words:* local people, strategies, land degradation, traditional leaders

## CHAPTER 1. INTRODUCTION

### 1.1. The problem statement

Today more than ever, the interest in the role of the indigenous knowledge in sustainable development efforts and in combating land degradation is growing. For decades, this role has been ignored by the development agencies, decision makers and scholars. However, most of them are presently becoming more aware of its usefulness, and acknowledge the indigenous people's close relation with nature (Maass 2008: 26; Berry 1988; Elgin Duan 2009; Breemer J. 1992; Tucker and Grim 2001; Castillo and Castillo 2010). This knowledge is being acknowledged by many as a necessary and important resource that can enable the development processes that are cost-effective, participative and sustainable (Vanek, 1989 quoted by Warren 1991: 1; Nkansa Buabeng 2004: 14; and Cajete 2001). This can also play an important role in formulating new participatory models of the development that are sustainable, ecologically, socially and ethically sound (Alan *et al.* 2004).

Dealing with land degradation is a particular interest of local knowledge. During the last two decades, land degradation has become an environmental issue because of the growing public concern about the fate of local communities. Degradation is considered as a serious threat to food self-sufficiency and development in the dry lands of Africa (Kwasi Nsiah-Gyabaah 1994: 38; Brosius 2001, and White, Andy *et al.* 2010). Experts and non-professionals warned African governments and development agencies of the serious long-term effects on the ecology, hydrology, hydrometeorology, and on human and animal life (Eckholm 1976 quoted by Kwasi Nsiah-Gyabaah 1994: 2).

Social scientists have studied the issues of land degradation. However, most of them have investigated mainly the causes and the consequences of degradation at a macro or regional level. They have simply provided quantitative and qualitative data. Others have focused on the physical constraints of the environment using sophisticated

and expensive techniques, while neglecting the simple, low-cost and quick techniques of the local people. Such was the research provided on the humid tropical zone level by Rattan Lal (1995); Alemneh *et al.* (1997); Stocking and Niamh (2001); and Homer-Dixon (1999). Some scientists have focused on investigating the strategies adopted by local people to deal with the degradation. Examples are from the case studies conducted in Tanzania by Kaihura and Stocking (2003); by Gyasi *et al.* (2004) and Kwasi Nsiah-Gyabaah (1994) in Ghana; and the study of Kronik and Verner (2010a) conducted in Latin America and the Caribbean.

These studies have provided valuable information on factors influencing degradation and its process. They have also described the strategies adopted by the local communities to deal with degradation. Others have attempted to explain the reasons behind the farmers' strategies and adoptions used to deal with degradation (Hanna 2010; Stocking and Niamh 2001; Tumuhairwe and Nkwiine 2003: 49, and Cleaver M. Kevin and Gotz A. S. 2000).

Despite their contribution in analyzing the impacts of the forces behind land degradation and the causal factors of land changes, early studies have not properly addressed the question of why these factors are the driving forces for land changes. Most of the studies are limited to the investigation on the degradation causes, the process or the mechanisms adopted by farmers to deal with it (Gyasi 1997, 86). Less attention has been put on understanding the decisions and reasons leading to the land users' adopted mechanisms. Details on the various indigenous strategies have been provided in the next chapter (chapter 2). "The small amount of literature on farmers' actions and decisions can be broadly be grouped into the following categories" (Onken Ingwen 2016: 2): farmers' behavior, costs /economy, work load, yield/benefits, tradition, biophysical conditions and so on (Hanna, 2010; Stocking and Niamh 2001; Scott 1976; Agrawal 2010; Nuwagaba-Manzi and Tumuhairwe 2003; Clement 2007).

## **1.2. Objectives of the study**

The objectives of this dissertation are the following:

-To examine local farmers' strategies to cope with land degradation in Yassa-Munene

village of the Democratic Republic of the Congo.

-To analyze local farmers' reasons and decisions in the adoption of management solutions; and to understand the role played by local traditional leaders or authorities in the people's choice for adoptive solutions.

### **1.3. Research questions and central argument**

In order to fulfill the objectives of this study, the study seeks to answer the following questions:

-How do local farmers in Yassa-Munene manage to deal with land degradation? What are the management practices and strategies used to cope with land degradation? What benefits do they obtain from managing land in the traditional way?  
-What influences farmers' decisions to adopt or not some of the alternative solutions? And, what specific role do the local traditional leaders play in land use and management decisions?

The description of the land degradation situation and local strategies to cope with the degradation presented in the *Problem Statement* has led this study to argue mainly that: Local farmers' adoption/non-adoption of adaptive strategies to cope with land degradation depends on the local traditional leaders' (authorities) decisions and involvement. Contrary to most theories, the adoption of solutions does not necessarily depend on the farmers' needs to increase cost and benefits in terms of food, time or energy. Unlike most African traditional leaders, here the role that the leader plays in the adoption of strategies is not simply that of the mediator, coordinator or the controller who is not involved on the ground. But he acts as exemplar, the 'model', 'risk taker' even 'servant'. He tries the innovations before all the other farmers use such technologies.

This aspect of the role traditional leaders appears in the interviews, but is not clearly mentioned in the literature. The reason why this information is missed might lie in the very nature, culture and history of each society examined; and mostly on the definitions and roles of the personalities the studies identify as 'leaders' in their societies and communities. Some of these studies do not clearly distinguish the traditional leaders (customary leaders, who have obligations for their subjects) from

‘appointed leaders’ (internal or external actors, who act as patrons, and wait for rewards). Most of these studies also over-estimated the capacity of the colonial and modern political and economic powers to transform traditional societies; but they under-estimated the fact that there are things in the indigenous communities that may have not changed. Thus, for these studies all decisions are measured in terms of what the authority (patron) and peasants would gain.

Scholars have described the role of traditional leaders, such as in West and in East Africa (Mowo 2013; Nuwagaba-Manzi and Tumuhairwe 2003). In particular, they identified the traditional leaders as almighty, great, sacred, powerful and resource controllers, project initiators, and coordinators; but these scholars failed to see roles such as ‘servants’, risk takers, ‘model land users’. In this dissertation, the traditional leaders’ position and role, that is as ‘model land users’ is preserved. In this case study, the leaders do not actually have an official role to play, nor wealth to lend to others. The farmers, on their part, do not have pay taxes or *corvee* (unpaid labor) in return for the services done by the leaders, as in the societies described in Scott (1976). Torday and Joyce (1922: 251) confirm that there was no tribute paid to the Ambuun chiefs. Leaders are given only a portion of animals killed during the communal game hunting. So, although this dissertation acknowledges the factors influencing farmers (as mentioned above), it argues that these factors are only secondary. The farmers’ behavior, traditions, financial cost, work load, benefits, or the biophysical conditions are not primary in the farmers’ decisions.

Although this dissertation emphasizes the adaptive role of the traditional leaders in the Yassa-Munene community, it affirms that farmers should not be seen as passive actors who are waiting for the leaders to decide on everything. The relationship should be seen as a cultural task sharing practice and sign of solidarity between the community members and the leaders. Farmers at times, undertake initiatives that do not require, in advance, the leaders’ involvement. However, since in this community, the most important and historical strategies have been related to adopting new crops and new crops combinations, and the re-focus on the traditional practices, the leaders were always the key actors. Any sincere analysis of African traditional communities must reveal that leaders actually played this role in all other domains. For instance, the missionaries’ registrations of newly baptized had always revealed that: the traditional

leader and his people; or the head of clans with the household were baptized on a certain day, after that the leaders have themselves been baptized. Or, that the entire village disobeyed colonial power or authority just because their leaders disobeyed.

This dissertation shows that most of the important past adaptive strategies in the village were successful only with and through the traditional leaders. Leaders' role is more than permission providers, advisors, controllers of the rules or mediators through whom the external interventions and new adaptations reach the local community, as suggested by Agrawal (2010: 178). But they act also as models, experts (farmers), or exemplars that the others should imitate. They take the lead and act before advising others since they are the most informed and educated in land management. They had received valuable information from the previous generation of leaders. They know more about the land's history, story, problems and potentialities than any other individual or external actors because their ancestors were leaders and had learnt the issues. The study also shows that the external initiatives in the community have failed to adopt new solutions and improve the land use practices. The failure was not due to the lack of the people's participation or sufficient subsidies; but, because the role of the hierarchy (traditional leaders) was not clearly defined by the actors.

#### **1.4. Significance of the study**

This study is important from academic, political, social, ecological and economical perspectives. It is beneficial for the local farmers in the village and the region; it is equally important for researchers, NGOs and national authorities in the DRC (Democratic Republic of the Congo).

The country is the second largest in Africa. It is located in central part of Africa; it is surrounded by nine countries: Central African Republic, South Soudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, Angola, and Republic of Congo. The country was a Belgian colony until 30<sup>th</sup> June, 1960. The country has experienced many troubles, wars and insurgencies after independence, among which are: the Mulele's rebellion in the 1964; the war of AFDL (Alliance des Forces Democratiques pour la Liberation du Congo) conducted by Rwanda, Uganda and Burundi together with the Congolese

dissidents such as Laurent Desire Kabila who overthrew President Mobutu from power in 1997. In 1998, a new war began in Congo between the force of the new President Laurent Desire Kabila and his allies (Rwandese and Uganda) who refused to leave Congo after their victory over President Mobutu. When these forces officially left, they helped create various rebellions in eastern Congo to control mines. In 2001, Laurent Kabila was assassinated. He was replaced by an unknown boy, Joseph Kabila (who might be the adopted son of Kabila, a former officer in the Rwandese army). From then on rebellions continued until present day.

The last 20 years after Mobutu dictatorship, the country experienced internal conflicts, neighboring country invasions, pillages and Rwandan and Ugandan infiltrations. Facts show that currently the country is totally under Rwandan occupation<sup>1</sup>. More than 8 million people have been killed. And many people are being displaced due conflicts and wars exacerbated by people who are in power, who cling into power and refuse to leave power peacefully. In April 2001, a UN Panel of Experts (under the direction of Paul Collier) created to investigate the role of the Uganda and Rwanda in DRC, concluded already in their final report that:

Presidents Kagame and Museveni are on the verge of becoming the godfathers of the illegal exploitation of natural resources in the DRC because they have indirectly given criminal cartels a unique opportunity to organize and operate in this fragile and sensitive region (Koen and Raeymaekers 2004: 28).

After the report, many facts confirmed the occupation of the country. Millions of people have been killed, raped and displaced. The conflicts and wars are exacerbated by people who are in power, who cope with the occupant and who cling into power and refuse to leave power peacefully. The country is one of the world's resource rich countries. But

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<sup>1</sup> By occupation I refer to political, economic and military occupation. When observing people's living condition, infrastructure, employment, education, health situation, currency value and environmental situation, communication means, it is obvious that there is no freedom, no plan for the better future; and there is project to exterminate the population and the higher desire to exploit them. There is intension to create fear in people who escape from assassinations and violence and in massive rapes. It is also clear that the neighboring countries who invade DRC and their puppet in DRC have a support from some of western countries who never condemn them and continue to do business with them.



the population is one of the poorest in the world. The country faces also serious environmental problems due to poor governance and poverty. Rural populations are almost abandoned, with no basic infrastructure. The subsidy and help from agencies to improve people life are insufficient and sometime inexistent in most of the places. People depend mainly on land natural resources, and use traditional practices to exploit the land. There are very limited studies done to understand land degradation issues and the strategies to improve land and people's life. There have also very limited interventions of agencies that work to improve the situation.

The Democratic Republic of Congo counts more than 250 ethnic groups. All are identified by their own language. It is divided into four larger linguistic zones (Lingala, Kikongo, Thsiluba and Swahili). Ambuun ethnic people, who are under this study, are situated in the Kikongo zone, in the central-west part of the country, in the former Bandundu province that became Kwilu province (Chapter 4 provides more description on the Ambuun people, land, and resources).

This study is significant and important for two reasons. First because there are almost no previous studies to explore the contribution of the traditional leaders to rural communities' land management and mechanisms to deal with land degradation in the Democratic Republic of Congo. There have been no previous studies either conducted to examine particularly the Ambuun indigenous land management and land degradation issues in the Ambuun zone, around the region of Yassa-Lokwa and the area of Yassa-Munene village. And there has been no study of the historical role played by the Ambuun traditional leaders in land and natural resource management. The situation of Yassa-Munene is always linked to the entire Ambuun ethnic group, in term of culture, politics, and customs. Besides, this Yassa-Munene village is unique in term of its influence in the region occupied by Ambuun people. The Ambuun ethnic group is an older ethnic group in the Bandundu (presently Kwilu) region (Torday and Joyce 1922). It has long history, was a larger and powerful village in the past, and was a chiefdom village for the Ambuun people living in the central part of the Ambuun living zone (around Idiofa town). Most of the ethnic people who are living in the eastern or in the center part of the region (in the villages such as: Idiofa, Idiofa, Impini, Ingundu, Musanga, Impang, Ekwer, Ambulu, among other), originated recently from the Yassa village areas. While moving from this region to other regions (in the past), people

carried with them their customs, activities, habits and many other influence of this village.

In terms of their activities, there is a variety of cassava crops cultivated in the eastern village of Intswem, called 'cassava from Yassa' (*ote a bis iyas*), which is still being acknowledged as a crop from Yassa. And in the colonial epoch, it was the only village that held a small school and a catechumenal center (Christian religion center for candidates to baptism). Other villages joined the village for basic education. In terms of political influence, many villages acknowledge the village leadership in the Ambuun region. The village's 'land owner' (*chef de terre* who became the chief of *chefferie* and *groupement*) controlled more than one-third of the Ambuun political region entity. The *Chef de terre* living in Yassa governed over 80 villages on the territory under his authority.

It is from this village, from the *Oluum* leading clan, the *Ongaa* sub-clan that colonial authorities also chose all the first indigenous formal authorities (chiefs) to govern the new, formal, created entities such as *chefferie*, *secteur* and *groupement* established in the Yassa-Lokwa administrative zone. So for most of the villages around Yassa, the traditional chiefs, who are *chef de terre* in Yassa, are still their leaders. These chiefs can still have an (indirect) influence on them and on their decisions. Although some of the leaders' authority has been reduced, the leaders in Yassa-Munene still keep connections with other villages through exchanges such as funerals, resources sharing, cultural activities and crops.

Second, this dissertation is also significant in terms of policy making, research and development. It provides an example of a case where the role played by local traditional institutions, versus 'traditional leaders' institutions', on land management and adaptive strategies has proved to be more effective than the external initiatives or the farmers' own initiatives. Leader-initiated practices or his involvement in innovation activities has always been followed. Meanwhile the suggestions from external actors or local individual actors, backed by external actors, have been rejected. Besides, this village is the only village in the Yassa region where the 1990s and 2000s reforestation projects were not implemented. Meanwhile, all the surrounding villages had participated in programs to plant eucalyptus or acacia trees initiated by external agencies. The village also rejected both seeds (maize and cassava) and/or tractors

services suggested by external agencies or the government in 2012. From this dissertation, scholars and development agencies can learn about the reasons and decisions for the farmers in adopting or rejecting the solutions suggested.

### **1.5. Scope and limitation of the study**

The field study in Yassa-Munene village was conducted from March to September 2014. The definition of terms and limitations in this study are as follows:

(1) The definitions of terms and delimitations set in this study are as follows:

*First*, the meaning of the concepts used:

Local people or indigenous people, land degradation, land management strategies and traditional leaders.

- The term '**local people**' is used to mean '**indigenous people**' in the study of traditional ecological knowledge (TEK). The term TEK is interchangeably used as indigenous knowledge (IK), local knowledge (LK), or traditional knowledge (TK) (Grenier 1998: 1).
- The term '**land degradation**', is a broader and a *composite term*. It has no single identifiable feature. It can be viewed as an umbrella which covers a variety of ways in which land quality and productivity may diminish from the viewpoint of those who use the land everyday (and the society at large). Thus, it includes all the changes related to the soil quality, the reduction in water availability, the diminution of vegetation sources, and biological diversity; and also many other ways occasioned by inappropriate land use (Stocking and Niamh 1997: 6-7).

Hurni (1996 cited by Alemneh et al. 1997: 1) refers to land degradation as the "degradation of soil, water, climate and fauna and flora". Soil degradation instead, refers more to

“water erosion and wind erosion as well as chemical, physical and biological degradation. Land degradation is the aggregate diminution of the productive potential of the land, including its major uses (rain-fed, arable, irrigated, rangeland, forest), its farming system and its value as economic resources” (Stocking and Niamh 1997: 9).

- Land management **strategies** are mechanisms chosen to use the land and resources to deal and cope with adverse situations on the land. Very often the term is used to refer to adaptation and mitigation solutions. Considered as ‘adaptation’ (‘cultural adaptation’), it is defined as “adjustments of societies to the natural environment through subsistence activities”; or “a process of change in response to a change in internal stimulus such as demography, economics and organization” (Butzer 1989, Devevan 1983 quoted by Kronik and Verner 2010b: 160). Mitigation is more about repairing the degraded condition of the land. Rasmus et al. (2010: 259) defined the “strategies” in relation to climate change as “a process whereby societies improve their ability to manage climate risks and climate fluctuations”.

- The term ‘**traditional leader**’ is often used to refer to “custom-ascribed or elected traditional authorities who provide the necessary leadership which ensures that the norms, practices, people worldview and values of the community are respected” (Mohammed-Katerere 2004, quoted by Bonye 2008: 21). Traditional leaders are also said to often embody historical and lineage alliance with their living territory that empowers the leaders with necessary rights and obligations. Their major or primary functions are to enable peace and harmony in their rural communities. The leaders are also referred to as the ‘leadership structures’ within the local community (this refers to chief, queen mother or clan heads) whose role and function are to ensure that the norms and values of the community are respected” (Kendie and Guri 2010: 54).

In this case study traditional leaders, traditional authorities or chiefs are used to mean the same thing. People considered as traditional leaders are: *Chef de groupement*, *chef de terre* (land owner) and woman leader (*nga mpio*). All are from the leading Oluum clan, they cope each other and were established in Yassa-Munene village. The first leader’s role is more political and deals with various issues related to the

governance of the *groupement* entity and other villages. The second is associated with land issues in the village, but also in other villages. The last is more focused on activities on land and with rituals. All are considered leaders.

*Second*, the delimitation made here concerns various aspects of the people's life. Although the dissertation also refers to economy or many other aspects of the village situation, it does not deal with the issues such as economic analysis of environmental degradation or of their measures to cope with the degradation. This dissertation used social research methods only to investigate the degradation problem and local solutions.

The *third* the other delimitation concerns the area and the informants. Although this dissertation refers to 'Ambuun people's knowledge' and 'land degradation problem', it is limited to the Yassa-Munene village area, and the findings could not simply be extrapolated to the entire region of the village. The dissertation concerns solely people in the village, within the study area. The information provided by observation reflects only the issues experienced during the specific seasons or period of study.

**(2) The limitations in this study:**

-*First*, the major obstacle for this study is the lack of recorded information on the village in the official documents and in the research reports on the region. There is no information on the village traditional authority role in land management, on the indigenous resources use, and on the problems they face or on the solutions always tried. The only available information is oral. This may have affected the quality or the authenticity of the information collected from villagers, land users, informants or from the traditional authorities.

-*Second*, the fact that very important information is kept by traditional leader or his clan members, is a big constraint for the good quality of the information and the solutions to be suggested. This fact limits individual initiatives towards land management mechanisms.

-*Third*, another limitation acknowledged in this study concerns the process and the nature of the information provided. The Ambuun people are a very reserved people. They are reluctant to speak openly to outsiders (Awak 1978: 18). Although I am an Ambuun (*Ombuun* or *Mumbunda*) person, I couldn't immediately be provided with all the details about the local species or their community life. Since I have lived for a longer period outside the community, I was seen as an outsider. Some of the information may have not been provided or had been provided with reservation. This applies for instance to information related to resources management, the mechanisms used to reverse the land degradation situation, location of resources, spiritual practices used in any activity, conflicts in the village or even successes.

-*Fourth* and last limitation of this dissertation is the financial and time constraints. A study that involved the indigenous people, their knowledge and every day activities, requires funds and a longer stay in the community. However, with a limited budget, I could not stay longer in the village. Also, the academic schedule, the need to continue other stages of the study program at the university, did not enable me to stay longer in the village.

## **1.6. Structure of the dissertation**

This dissertation is divided into 7 chapters, plus the Appendix. The present chapter (**Chapter 1**) is the introduction. It discusses the background of the study, objectives, the significances of the study, and explains the study area.

**Chapter 2** is a comprehensive overview of indigenous resources management. It concretely reviews indigenous' strategies to deal with the problem of the degradation of the land and the role of traditional institutions, namely traditional leaders. The most common mechanisms used by indigenous people or rural communities (especially in Africa) to adapt to and control land degradation are agronomical and non-agronomical and other life style adaptations. Traditional leaders are considered as important figures that ensure peace and harmony on their lands and community. They are also coordinators, liaisons or implementers of external initiatives for projects to solve the

degradation issues. The factors influencing farmers' decisions to adopt land management strategies are also discussed here.

**Chapter 3** provides the methods followed to collect and analyze the data on indigenous natural resources management, traditional ecological knowledge (TEK), land degradation issues and the indigenous mechanisms to deal with the degradation. The analysis of the indigenous land management decisions and reasons relied particularly on *Framework for Traditional Local Institution Analysis in Land Management* (Bonye 2011: 23; Mowo et al. (2013: 1).

**Chapter 4** presents the findings. It examines the local people's strategies to cope with land degradation in Yassa-Munene village. It also presents the village land management system, land degradation issues, the traditional institutions, namely traditional leader's institutional role in natural resources management. Major strategies were: building furrows, making fences, agro forestry, local solidarity, crop adoptions, livestock killing or destocking, land size extension, intensification, crop rotation, and others. The major local traditional institutions that have always supported farmers' actions are: traditional leaders, clans, families, diviners etc.

**Chapter 5** analyzes particularly farmers' reasons and decisions to adopt strategies to cope with land degradation in Yassa-Munene village, based on the *Framework for Traditional Local Institution Analysis in Land Management* adapted from Bonye (2011: 23) and Mowo et al. (2013: 1). It tries to understand concretely the role played by the local traditional leader on the farmers' choice of adaptive solutions. The analysis uses a chronological, historical and institutional perspective to understand the role of traditional leaders in the local strategies (Onken Ingwen 2016: 14). This should be analyzed throughout three different periods of the village history.

The first period includes the period prior to external initiatives of development. Here the major adoptions concerned were the introduction of crops like cassava or maize; the second period concerns the period when outsiders' initiatives and innovations were being tried; the last period will focus on numerous innovations evolving in the local people management strategies, on local solutions that continued working with the help of the traditional institutions and leaders.

A concluding chapter, **Chapter 6** provides a summary of the dissertation's conclusions and arguments. Besides the summary of the conclusions, the chapter

provides also the policy recommendations and suggestions that are useful for future researches. The **Appendix** provides complementary information about the informants, the household questionnaire used for the field research and the photos showing the situation of the village.



## **CHAPTER 2. LOCAL PEOPLE’S LAND MANAGEMENT STRATEGIES AND THE ROLE OF TRADITIONAL LEADERS’ INSTITUTIONS**

The purpose of this dissertation as defined in the introductory chapter is mainly to examine local farmers’ strategies to cope with land degradation in Yassa-Munene village; to analyze the farmers’ reasons and decisions in the adoption of management solutions; and to try to understand the role played by local traditional leaders or authorities in people’s choices for adaptive solutions.

This chapter reviews the literature on various aspects of the study. It focuses particularly on aspects such as local people’s land management strategies, the role of leaders, and the farmers’ decisions to adopt the management solutions.

### **2.1. Local people’s land management and strategies to cope with land degradations**

Studies acknowledge that people worldwide have experienced land degradation in their living areas; similarly locals have developed or adopted methods to cope with degradation (Suneetha and Balakrishna 2010; Suneetha 2010: 228; and Battistte and Marie 2010). Kronik and Verner (2010a: 109) found that the indigenous adaptation strategies vary according to the opportunities available to them. Rasmus et al. (2010: 264) argue that “farmers always have private incentives enabling them to explore investment opportunities in order to adjust assets, technologies, and livelihoods to the climate change”. Some strategies have been: cultivation contour, terracing, intercropping, inorganic fertilizers, compost and manure, incorporation of new crops, crop rotation, migration, sale of livestock, borrowing grain and money from kinsmen. Scholars consider local farmers as having wealth of knowledge to offer to the national and international development efforts (Onken Ingwen 2016: 6 quoting Warren 1991: 28; Benneh, Georges 1997; Corsiglia John, 2006). This acknowledgement comes as a result of the efforts to find alternative solutions to the land degradation issue that farmers face.

In spite of the gravity of the degradation problem, it has been observed that indigenous people are adapting to the situation. Scott's (1976: 104-225) study in Southeast Asian societies, roughly distinguished four different and interlinked sorts of peasants' strategies (Onken Ingwen 2016: 7):

-Reliance on a *local form of self-help* refers to the solution that a family or an individual has at hand, that they can take during the period of troubles or that they take as subsistence alternatives. These solutions include petty trade, small crafts, casual labor, mutual assistance and migration (Scott 1976: 104-225). Villagers may shift from cultivation due to an absence of alternatives. Or also they may shift to more labor intensive techniques in return for a minute, but an incremental in yield per unit of land. For these reasons, families shift from plot land that cannot sustain livelihood to labor intensive cash crops.

Beyond the fact that agronomic solutions may be taken, local adaptation such as mutual assistance were also taken: social welfare group creation, rotating credit associations, and local efforts to speed the work and food resources. The case of Southeast Asia shows also that although the self-help assistance may actually be hardly a viable strategy in itself, or may be a false start and failure, it may well help build and reinforce horizontal bonds among peasants.

-*The non-peasant economy* is an initiative to seek income from outside sources and the shift to high yielding crops (Scott 1976: 104-225 quoted by Onken Ingwen 2016: 7). This option is often taken when the limits of local resources are reached. The strategy here is based on: a 'green revolution' and 'raiding the cash economy'. The 'green revolution' was perceived as likely to provide a relatively peaceful path to agrarian development. But, the case notes then that, unfortunately, for most of the regions, the green revolution only contributed to aggravating class conflicts instead of providing a peaceful path to development. For 'raiding the cash economy' or also termed 'short-term migration', financially, the most significant link was established between the external and the nexus of local social pressure and economic imperatives that held the

subsistence-oriented village together. It has been shown that actually, the augmentation of migratory labor works against economic and political cooperation on the village level.

*-State's patronage and assistance* in the form of subsidies, structural reforms, tenancy, credits, and employment may act as shock absorbers during economic crises (Scott 1976).

*-Religious or 'oppositionist structure' of protection and assistance.* Scott (1976: 104-225) observed that peasants may also rely on oppositionist structures or on religious institutions for protection, and for assistance. They can provide physical security, employment, material assistance, and organized mutual assistance. Sects, spiritual movements, and organizations have played this role in the Asia region examined above.

Along the same lines as described in Southeast Asia, other studies described in detail peasants' strategies elsewhere, such as multi-activity (Kronik and Verner 2010a: 37). In their study of Tanzania, Stocking and Niamh (2001: 19-25) describe local conservation measures such as: cultivation contour, terracing, intercropping, inorganic fertilizers, compost and manure. In parts of Ghana, the incorporation of new crops, crop rotation and compound farms were practiced (Gyasi 1997: 85-88). In the Upper West region of Ghana, local strategies identified include: agricultural adjustment, migration, sale of livestock, borrowing grain and money from kinsmen, use of famine foods, purchase of food from market, the sale of domestic assets (Nsiah-Gyabaah 1994: 162-168; Onken Ingwen 2016: 13). These strategies are widespread in Africa and continue to be the only viable alternatives capable of sustaining agriculture and maintaining ecological balance without external assistance (Nsiah-Gyabaah 1994: 168).

From all the various studies, the most enumerated strategies, as summarized, are: selling stored produce, migration, strengthening mutual assistance, sale of livestock, consumption of local brew of substitute foods, sale of labor, adapting productive practices such as mixed cropping and farming of multiple sites, cultivation contour, terracing, construction of dams, intercropping, using inorganic fertilizers, compost,

manure or cultivating around the termite mounds, “incorporation of new crops, crop rotation, compound farms” (Onken Ingwen 2016: 13), market gardens, kitchen or backyard and home gardens (Kwasi Nsiah-Gyabaah 1994: 159-168; Mink 1993: 12; Stocking and Niamh (2001: 19, 25, 122; Gyasi 1997: 85-88; Ngailo et al. 2003: 149; Kronik and Verner 2010a: 109). The table below provides a summary of the strategies adopted by different local communities, at the village or individual level to control environmental degradation.

Table 2.1: Most adopted indigenous strategies to deal with land degradation

No.	Preferred strategies
1.	Sale of livestock
2.	Eating food substitutes
3.	Sale of household property
4.	Taking a loan from friends/bank
5.	Out-migration
6.	Depending on governmental relief
7.	Purchasing food from the south
8.	Moving cattle to new pastures
9.	Changing occupation; off-farm employment
10.	Fuel wood substitute
11.	Agro forestry, crop rotation, intermixture, bio-intensive organic, kitchen or back yard manure, mulch
12.	Cultivating along contour, strip, terracing, wind break, bunding, vegetation and crop cover, grass way, legumes
13.	Tree planting, silviculture
14.	Control grazing
15.	Re-filling gullies and rills, planting hedges on field boundaries

Sources: Kwasi Nsiah-Gyabaah 1994: 159-168; Mink 1993: 12; Stocking and Niamh (2001: 19, 25 and 122), Gyasi (1997: 88), Ngailo et al. (2003: 149), Biot et al (1995: 35-38), and Rattan Lal 1995: 89-99.

Studies also acknowledged that within local communities, traditional institutions as well as external institutions play some role in the farmers' land management strategies. Numerous relationships exist between these institutions and the local people. Studies explain this reality in the following illustration of the role of formal local institutions and organizations, and the traditional institutions.

### **2.1.1. Formal local institutions and organizations**

Studies have observed that formal institutions and organizations in particular may promote the local formal or informal process of the adaptations. These interactions can be vital to adoption. Efforts and initiatives are being undertaken by external actors and institutions such as international agencies, NGOs, governments, researchers and local community associations in order to improve, adapt or change the local people's strategies to combat land degradation effectively. By partnering with the 'civil bodies,' governmental agencies seek to manage resources in an effective way (Agrawal 2010: 179).

In respect to the role of the institutions and organizations, Rasmus et al. (2010: 266) found that many of external adaptive interventions have focused on "specific sectors such as energy, communications, or water and on 'climate proofing' of infrastructure projects"; and some have also focused on the agricultural sector, where crops are to be modified. From this observation Rasmus et al. (2010: 267) suggested that more attention should be paid to various social issues such as household vulnerability, disaster risk management, and inclusion of vulnerable people. Concretely, these scientists consider that the successful interventions intending to meet people's needs should focus on social funds for community-based adaptation, social safety nets for natural disasters, livelihoods programs, microfinance, and weather-based index insurance (Rasmus et al. 2010: 267-272; Kojo Amanor 1997: 104).

The authors observed also that international organization and southern country governments have been trying to accelerate the adaptation process of indigenous knowledge (Rasmus et al. 2010: 260). Initiatives promoting land repair and poverty eradication have been promoted through the suggestion of new practices and

technologies. Like these scientists, others suggest the need to improve access to the market, and suggest also the need for adapted technologies to enable work, control disease, fertilize soil and increase yields. Sachs (2005:53) argues for the necessity to teach farmers “how to manage the soil nutrients in a new and improved manner by explaining special nitrogen-fixing trees that replenish the vital nitrogen nutrients of the soil, and to multiply the benefits by using improved grains”.

In order to clearly illustrate the role of these institutions and organizations, it is important to review case studies. The summary of these studies in the lines below provides insights on case studies across Africa. In Ghana, for instance, the government promoted the traditional African practices of agroforestry and mixed cropping. The growing of leucaena plants together with maize or yam was suggested as a means to maintain soil fertility and provide trees for fuel wood. The combination of maize with groundnuts was encouraged as a measure to reduce damage caused by corn-borne diseases (Gyasi 2010: 88). Initiatives have also been conducted in Ghana, in the Yensi region by an NGO called Gh RRM to support farmers in dealing with land degradation issues. It helped in agriculture through providing services such as: technical advice, training, and financial assistance. (Ardayfio-Schandorf 1997: 92).

Elsewhere, in Zimbabwe, Derek Gunby (2001: 57) described the role of NGOs, government and other agencies in promoting the use of small grains production such as maize, millet, and sorghum. These were promoted because they are said to be more tolerant of the ecological conditions of Zimbabwe, and for many other socio-economic reasons. In 1983, the Organization of Rural Associations for Progress (ORAP) adopted a four-point strategy for enhanced food security which gave priority to recourse to traditional seeds; in 1987. The Zimbabwe Seeds Action Network (ZSAN) and other numerous NGOs promoted small grains during the 1990s droughts.

In the effort to deal with land degradation in Botswana, the government adopted fencing policy in communal rangelands. In 1991, a land reform measure was seen by the government as an essential ingredient in efforts to deal with land degradation, enhance livestock disease control and encourage better land management practices (Onalenna Selolwane 2001: 94).

Describing the role of NGOs in Eastern Africa, Salih (1998: 72-73) argues that they have focused on ecological situations such as “drought, floods, erupting volcanoes,

and locust invasions”. Thus, their responses have been:

-For *short-term drought*: relief food delivering system, distribution of seeds, storage means and facilities; transport and monitoring of prices.

-For *long-term drought*: there are development initiatives (projects), small irrigation initiatives that generate income, and so on.

-For *dry land degradation*: implementation of conservation structures of soil and water, reforestation programs and the introduction of crops varieties that resist to drought.

-For *poverty-related environment destruction*: suggestion of ‘energy-saving stoves’ and ‘consciousness-raising’ campaign to avoid tree felling for fuel wood.

The case of Swaziland described the nation’s commitment to promote small-farms as an agrarian policy, and to be friendly to the environment to improve low productivity, reduce rate of unemployment, pollution, and soil erosion (Mensah S. 1998: 141).

The studies by Sagala et al. (2007: 216) inform that various initiatives have been undertaken in local communities to improve activities, livelihood, food production and environmental conditions in the DRC. Since 2004, DRC’s government initiated actions, through creation of the ‘administrative structures and plans to manage the environment’. The government, in cooperation with international agencies, has attempted to launch numerous programs to protect the natural environment and support rural people (Sagala et al. 2001: 203). They aimed concretely at rehabilitating the basic infrastructures, encouraging the people’s active participation, boosting the economy, fighting land degradation, and improving agricultural production.

Besides the government initiatives, the international agencies also have directly promoted development and eradication of poverty efforts across the DRC. Since 2010, the USAID has been investing in improving the small scale farmers’ production capacity through teaching them new techniques and providing financial support. With a budget of US\$ 32 million, its project, FPPM, for instance targeted the Bandundu,

Kinshasa and Bas-Congo provinces. Improved varieties of cassava were distributed around Idiofa zone town (USAID, 2010). Other agencies and NGOs have also been directly involved in similar activities by providing seeds or tools to farmers.

### **2.1.2. Traditional institutions**

Studies consider also that traditional institutions can work in association with other actors in the community (Agrawal 2010: 188; 179). The studies of Kendies and Guri (2010: 64) in Northern Ghana identified that working relationships between different hierarchies of traditional authorities (terms used to designate traditional leaders or traditional chief in Africa) were cordial; there were loyalty and obedience on governance and spiritual-related issues. Likewise Kronik and Verner (2010b: 160) found that cultural institutions have the potential to play an important role for instance in forest protection. In Southeast Asia there existed the relation of dependency of peasants on patrons and landlords who ‘will help in crisis’ by lending them living expenses or ensuring them the minimum level of livelihood, and sponsoring religious activities and weddings (Scott 1976, 37).

This dependency exists in some of the communities where (Scott 1976: 37): “the peasant preferred a system of tenancy or dependency in which the landlord/patron protected his tenant/client against ruin in bad years and an officialdom which, at the very least, made allowances in periods of dearth”. But it was observed that landlords in Southeast Asia only exploited the clients (Scott 1976: 37; 41; 158). Rule of reciprocity existed in the exchanges between villagers, although tensions between the better-off and the poor were frequent. Nevertheless, village mutuality existed to ensure the ‘survival of the weakest’. The village had the moral obligation to protect and feed its inhabitants (Scott 1976:43; 44). However, Scott observed that all these institutions have ambivalent roles toward the peasants. They may provide vital social insurance during a difficult crisis, but may also make claims on peasants’ resources.

Numerous local traditional or indigenous institutions exist in African society. In Ghana for instance, the indigenous institutions are traditional leadership institutions and



traditional healers: there also institutions such as ritual forests, traditional midwives and taboos (Gyasi et al. 2004). These institutions play important roles in the management of natural resources In Tanzania, family/clan, traditional leaders, chieftainship, are said to be the main indigenous institutions dealing with the management of the land (Kangalawe et al., 2014: 471). In Ethiopia, as also in Tanzania, local institutions related to natural resource use and management are: land institutions, livestock institutions, labor institutions, mutual sharing institutions, health institutions, traditional beliefs, traditional leaders, recreation institutions, and conflict resolution institutions.

Clan leaders had the role of controlling the lands. They possess and control sacred sites of the forests that serve in the performance of the rituals, or use them for other functions (Kangalawe, et al. 2014: 484; Mowo et al. 2013: 14) (see Onken Ingwen 2016:8). Traditional authorities' institutions (chiefs, clan heads, family heads and diviners), indigenous groups, and organizations as well as societal norms (Kangalawe, et al. 2014: 484; Mowo et al. 2013: 14) also ensure resource management.

After the description of the literature on indigenous strategies (and the relationship between external structure, informal institutions and local community), the next paragraphs focus more on the particular roles and functions of traditional leadership institutions within the rural community.

### **2.1.3. Traditional leaders**

For some of the studies, the 'indigenous institutions' are "the leadership structures within the community (chief, queen mother or clan heads) and their functional roles, which ensure that the norms and values of the community are respected" (Kendie and Guri 2010: 54). These institutions have existed in Africa and evolved over many hundreds of years. They served the African societies during the situation of wars, slavery, famine, freedom struggles, economic and political restructuring, in natural resource management and during colonial periods. These institutions carry with them historical and lineage alliance with their territory that gives them a certain authority, rights and obligations.

The institutions' primary roles are to enable peace and harmony in their living communities (Bonye 2008: 21; Kangalawe, et al. 2014; Mowo et al. 2013). Thus, "indigenous institutions play a significant role in the adaptation to climate change and variability. As regularized practices, they are important in shaping natural resources management" (Kronik and Verner 2010b: 160). The traditional leaders under discussion are part of the indigenous informal institutions. At the same time, they are considered as "living institutions" (Mowo et al. 2013: 162). The role of the leaders in the community should be investigated from two perspectives: farmers' resources management and the extensionists' initiatives:

***1) In respect to farmers 'customary practices and initiatives***

The role of traditional leaders was concretely of: "regulating access to land, mediating disputes over land, thefts of crops, and misconduct", ensuring ceremonies and sacrifices, and mobilizing people for community events and work. They take important decisions in the rural community (World Bank 2002, quoted by Kronik and Verner 2010b: 160). They supervise and maintain cultural norms and values; they watch out for anti-social behaviors (Kendie and Guri 2010: 61). For instance, they enforce rules and taboos in order to restrict access to some of land locations, to particular activities and to some of the members of the community. The restrictions enabled the villages' sacred and resource rich sites to survive over several years, and to act as reservoirs for biodiversity (Bonye 2008: 30).

The leaders enforced measures on adaptations and mitigation of the degradation (Kronik and Verner 2010b: 156). In Nduuri region of Kenya traditional leaders encouraged the local practices that consisted of integrating livestock into the land use system in order to improve soil fertility (Kang'ara et al. 2010: 112). In order to maintain land availability in the Yensi area of Ghana, leaders take measures to control the population number (Gyasi 1997: 88). Leaders in Ghana are considered as depositories of values, social norms, and land use practices that can allow the development in the community (Bonye 2008: 21). The functions of the leaders in Ghana have been summarized by Kendie and Guri (2010: 60-61):

- Decision-making on matters relating to community development
- Making and enforcing rules in the community
- Providing traditional judicial services
- Conflict resolution and settlement of disputes
- Performance of funerals in burnt sacred groves; and support organization of festivals
- Custodianship of land and land resources
- Supervising and monitoring development initiatives
- Protecting and maintaining cultural norms and values
- Overseeing the mobilization of community resources

In the Kilimanjaro Region (Tanzania), traditional and customary leaders are mainly seen as wise men and women who have gained respect of people, due to their involvement in peaceful resolution of problems in their communities. They were for instance integrated in the village government through Village Land Councils. Thus they were able to deal with land-use conflict. They helped raise the awareness about the need to plant trees in order to conserve soil. Leaders involved in sharing their experiences; while doing so, all the other peasants were relying on training offered by the actors such as civil organizations and government (Kangalawe, et al. 2014: 484).

The overview of the above local communities' strategies to cope and deal with land degradation has shown that local people have mainly depended on traditional practices and solution that were adopted. It has also shown the significant role played by traditional institutions, and traditional leaders' institution (in particular), in the community and activities. Generally, leaders act as mediators between farmers; they are mediators between other actors of the village, or are mediators between human and

spiritual realities. They are controllers and advisors of the land and community. The case study (in chapter 4 and chapter 5) will particularly show that the role of traditional leaders is more than the role described in previous studies. In the early societies in Southeast Asian countries, leaders acted as patrons, protectors or landowners and money lenders, who also claimed the peasants' lands. "They used their surplus to provide crisis subsistence insurance to their clients" (Scott 1976: 51).

In other situations and cases, traditional authorities played both the role of formal and traditional/informal authority. In the Colombian Amazon, their political authority was said to have been rooted in the practices of ritual, and it was connected to their capacity to keep and reproduce life. Their commitment and involvement is said to be through constant dialogue with the environment around them and through people's continual dialogue and exchange among them (Kronik and Verner 2010: 35).

## ***2) In respect to the technological transfer and extensionists' work***

The literature showed in the previous lines that customary leaders played a major role in the community natural resources management and mechanisms (or strategies) to cope with degradation at the local level. These roles rely on local capital assets. Most of them have been considered as custodians, sacred or spiritual people, mediators, and advisors. The above sub-section demonstrated how external actors or organizations played an important role in the community development process, climate change mitigation, and adoptions of new solutions.

Here, instead, the study examines particularly the role that the traditional leaders have played in the technology transfer or adaptations acquired for the communities' development (in rural Africa in particular). Studies in Sub-Saharan Africa have indicated that there exist circumstances where traditional leaders have worked with national authorities or with international organizations in rural Africa. Many of them have contributed to the development and adoption of new initiatives; although there are always many conflicts rising between them. The summary of a few case studies below can provide insights.

Traditional leaders, for example, had an important role to play in the planning of the land use or in implementation of the projects during pre- and post-Apartheid

South-Africa (Peter Bikam and James Chikwizira 2014: 142). The authors found that during the pre-colonial period,

traditional leaders served as politicians, spiritual bodies, military and agents in defense, development and cultural activities. However, they argue that during the colonial era, the most important powers and functions were taken away from the traditional leaders by the colonial South African apartheid regime thus weakening the role of traditional leaders in governing their communities and in deciding on matters pertaining to land use and development projects (Peter Bikam and James Chikwizira 2014: 142).

Peter Bikam and James Chikwizira (2014: 142) suggest also that since the advent of democracy in South Africa in 1994, various administrations at the local sphere of government have accommodated traditional leaders in land use planning and development projects. Involvement of traditional leaders was considered as one of the surest ways to promote rural development in this country.

A concrete example provided in this case study shows that traditional leaders played a role in “statutory board application for land use planning and development projects for 2010/2011 in the Vhembe District Municipalities” (Bikam and James Chikwizira 2014: 147). Here fifty local leaders were distinctively chosen and used by scientists to determine a model of development to apply in South Africa. It was found that for the development that requires higher (for instance “‘eco wild life estate’, ‘residential development’/ ‘township establishment’/ ‘housing projects and business rights’ / ‘bus and taxi range’ / ‘office park’”), “traditional leaders played an effective role in the planning process and development projects at 15%, 25% and 25%” (Bikam and James Chikwizira 2014: 147), respectively.

On the other hand, it was found that development projects such as “excision, golf estate and rezoning/special consent” (Bikam and James Chikwizira 2014: 147), there was almost inexistent participation of traditional leaders. The lack of this participation was attributed to leaders’ lack of interest in such projects, because they were not directly linked to livelihood benefits, hence most of them did not participate. The case study shows that in the four municipalities of the Vhembe district and particularly for the type

of projects mentioned, traditional leaders and development planners sometimes clashed on certain projects; but that it was more because of leaders' private interest rather than for promoting development.

However, the study also showed that leaders participated in taking the decision on some of the development projects; but such decisions were only consultative. Leaders did not have direct decisions on the establishment and management of the projects (Bikam and James Chikwizira 2014: 147). According to the findings, traditional leaders did not have the legal right or authority to change the process of planning the project, nor to take any decisions on issues regarding the land use planning. The leaders' involvement was mainly seen through the 'Integrated Development Planning (IDP) forum where the municipal officials ask them for their opinion. Traditional leaders' activities were not to be regarded as an activity separated from their (leaders') role; their involvement was to be upgraded in order to support local municipalities towards land use planning and development projects in such a way that they could take part in the decision making process within the jurisdiction under their authority (Bikam and Chikwizira 2014: 147).

A little bit far away from the South African situation, the traditional leaders' role has been shown in the case study of the Ideato area of Nigeria (Ozor and Nwankwo 2008). Leaders' role in development initiatives was appreciated. Here leaders were clearly identified as "an institution for extension policy". Their roles in development of their community were (Ozor and Nwankwo 2008: 67): "decision-making, being the liaison between governmental and non-governmental agencies and the community for financial and technical assistance, monitoring and evaluation of projects, raising funds for projects" (Ozor and Nwankwo 2008: 68), and managing all rural projects in the community be sure that the results are as expected and planned. They were the most important source of information for community development efforts. It was estimated that they are the ones who know the best approaches to bring extension services into the community for assistance.

In this review, supplementary insights on the role played by traditional leaders can also be learned from Joseph Chinkonda's (2012: 29) review of the studies on the situation of Malawi. It showed the role the leaders played in the implementation of the development projects. The World Bank has actually been providing loans and support

for community development in the country through the umbrella of the project called 'Malawi Social Action Fund' (MASAF). It is reported that the traditional leaders had to play a capital and great function role at the implementation of the MASAF project because of its strategic importance for society. The government has relied on leaders to mobilize the communities to contribute towards the implementation of the projects. The traditional authorities have also been used to mobilize people to attend the consultative meetings which are organized by project and public officials (Chinkonda 2012: 30).

In his investigation of Tsabango, in the Lilongwe district, Chinkonda's findings about trying to determine the extent to which the role of leaders was effective, confirmed that leaders were perceived by people as important actors. They are responsible for leading people in the village. During development activities, they have to inform and call people to take part. They settle disputes among people. They also apply punishment as a good tool for ensuring that people make their contribution to the projects (Chinkonda 2012: 43). In these ways the leaders contribute to the success of the project.

Furthermore, traditional leaders act as a link between their people and development agencies. They have a privileged position of authority and their invitation to a development meeting is likely to be interpreted as normal thing; and the presence of the traditional leaders has an effect on the outcomes of meetings (Chinkonda 2012: 18; 60). The study predicts that the traditional leaders will continue to reinvent themselves and become relevant in the implementation of neo-liberal economic policies. However, these leaders are said to have been used by the post-colonial government in Malawi to force people to participate in development work by forcing them to contribute labor and other items in kind (Chinkonda 2012: 57).

The final example of studies investigating the concrete role of traditional leaders was found in the study by Sharma (2011: 8) in Botswana. This study showed that traditional leaders and the *Kgotla* (village assembly) were supposed to have a role that is active and significant role in the village project planning at district and local level. They were given important role when participating in the deliberations of the District Development Committee (DDC), that consisted of representatives of all the district level organizations that were involved in administration of the district development. The traditional leaders' actual and possible contribution becomes manifest with regard to

many tasks and activities contributing towards protection, management, and allocation of natural resources by lending support to the Community Based Organizations (CBOs) in the concerned districts (Sharma 2011: 9).

These organizations were major instruments in mobilizing resources and in helping to enhance the state's revenue by informing and educating the community for timely payment of taxes and service levies, and by explaining to villagers the significance of cost-recovery or cost-sharing principles in the delivery of the services. They also give active and effective leadership to the community and the village development committees (VDCs) in organizing self-help projects and in involving the non-governmental organizations. Traditional leadership was a source of inspiration for adequate use of local natural resources (like water, or firewood). Likewise, in these communities, Kgotla and customary courts were used as "instruments of the traditional structures for resolution of conflicts related to the use of resources if any" (Sharma 2011: 9)

The investigation in this section has provided a literature review on the indigenous peoples' most often adopted strategies to cope with land degradation at the community level, the customary role played by traditional leaders, the role played by external actors at the community's level, and the role of the traditional leaders in the context of technological transfer and extension work. The overview of the local communities' strategies to cope with land degradation has shown that local people often use measures taken at the farm level, based on traditional practices. They have also depended adoption decisions on external actors, such as the local government, foreign governments and agencies, or foreign individuals.

The literature has shown that local traditional institutions namely traditional leaders institutions, acted mainly as mediators between farmers and external actors. The studies found also that they played the role of advisors, coordinators within their own communities. However, there is a need, in this study, to investigate what the literature says on other factors than the influence of traditional leaders or external organizations. They are influencing the decisions and reasons for adopting the strategies in the community by local people.



## **2.2. Indigenous people's reasons and decisions to adopt land management strategies**

A summary of the indigenous peoples' adopted strategies as well as the role of traditional institutions was provided in the previous sections above. Most of the studies agree that indigenous land management strategies always evolve in a particular local context. However, they acknowledge that there are always external factors of socio-economic and political resources and traditional informal institutions that influence local strategies. Factors to be taken into account here are accessibility and use of land capital (farm size/households), food security, market, population, and off-farm opportunities or eco-geographical conditions. These factors influence agro diversity through creating opportunities to push farmers to broaden, impose constraints on farm investments, and push land users into choosing mechanisms or strategies that minimize risk at household level (Mwalukasa et al., 2003: 130; Kronik and Verner 2010b: 162).

Agrawal (2010: 177) considers that "indigenous peoples' ability to adjust depends mainly on the ways local institutions regulate and structure their interactions, both among themselves and with external actors. All adaptive efforts for their success depend on specific institutional arrangements because adaptations never occur in an institutional vacuum".

In order to explain farmers' decisions in the adoption or the abandonment of some of the locally used strategies, the next section provides different authors' reasons grouped under categories such as: behavior, work load, yield and benefits cost, tradition, biophysical conditions and other social categories.

### **2.2.1. Farmers' behavior**

Literature has mentioned the farmers' behavior among the major reasons determining the adoption of a management mechanism. Here behavior category refers to various factors including "laziness, mistrust, 'culture in community', risk, and lack of knowledge/insufficient knowledge transfer" (Hanna 2010: 41). Hanna (2010: 51) particularly pointed out the "indigenous incapacity to be adapted", as an important

constraint to deal with soil changing issue of South African case study that the author conducted. But, Hanna indicates also that many older farmers said they chose some of the practices as strategies to deal with the issue simply because they like farming in that way. Referring to mistrust, Hanna considers that the refusal of some farmers to join training and having groups (due to political antagonisms) led to the refusal of the formation sessions initiated because members of the political parties did not trust the others or the instructors from other groups.

As Hanna points out in the above behavior, Garrett Kenneth (2007: 106) pointed to jealousy in eastern Zambia. He shows that in the community he described, jealousy was rampant. Sometimes jealousy damages programs that were to be adopted by farmers. It can occur during the selection of committee members, the distribution of benefits, and the consideration of power by committee members, village headman, or chiefs. And also, jealousy affects innovators through the destruction of prosperity, thefts of crops, and by spreading false rumors. In this respect, Stocking and Niamh (2001: 119) emphasize particularly the farmers' level of education as a crucial factor in any decision taken. Nuwagaba and Tumuhairwe (2003: 199) found in farmers' strategies adopted and used in Uganda that farmers used controlled/trash burning because the practice was considered as a good practice, since it limited destruction and favored conservation.

### **2.2.2. Costs /Economy**

The category labeled 'costs/ economy' used here refers to: costs for "herbicide, pesticide or labor; low investment for equipment, land size and tenure system; market system and price, gender or planning" (Hanna 2010: 41). In this respect, Stocking and Niamh (2001: 119) referred to "the farmers' household size, income level and cultivated area; or to the land user's interest in the direct and indirect cost and benefits of the undertaken measures in terms of the crop or products yield, time and cash or easier farming practices". The practice of 'controlled bush/trash burning' for instance was used in Uganda simply because the practice was considered as less expensive for farmers (Nuwagaba-Manzi and Tumuhairwe 2003: 19). In Rajasekaran's (1993: 91) study in the Pondicherry Region of India, the increasing of fertilizers' price was an important factor

influencing the planting of casuarinas plants.

Prior to the above mentioned authors, Scott (1976: 4-15) had already discovered that the farmers' own decisions towards land management strategies played a major role and were crucial. Their selection and options depended on "safety-first" or the "economic subsistence" understood as the desire to "meet people's minimal need in reliable and stable way" (Scott 1976: 5). And that the fear of food shortage in most of the pre-capitalist peasant societies conditioned their decision-making. Since the peasant often "seeks to avoid the failure that will ruin him than attempting a big, but risky, killing initiatives" (Scott 1976: 4).

### **2.2.3. Work load**

Labor load and other factors like lack of labor, age or health problems, lack of equipment, migration, weeding (Hanna 2010: 40-41) were important factors in South African studies. Similarly as in Hanna's study, other studies referred to the same factors. Referring to migration, Agrawal (2010: 183) stated that "for agricultural populations, mobility often can be the last resort in the face of environmental risk and disruption of livelihoods". Nuwagaba-Manzi and Tumuhairwe's (2003: 191-197; 199) study in Uganda pointed out that the use of trenches, as a measure was refused by farmers because the practice required much labor and was expensive. But, that controlled bush/trash burning, mulching, crop rotation practices were accepted because they had a low labor requirement, and also were easy to operate. Like the use of trenches, people in Uganda used the soak pits. It is inexpensive for some of farmers. However, it is reported that most of people perceive the practice as labor intensive "because making the basin-like pits involved scooping considerable amounts of soil from pits" (Nuwagaba-Manzi and Tumuhairwe's 2003: 198).

### **2.2.4. Yield/benefits cost and economic benefits**

Here are mentioned factors such as "grant dependency, yield decrease, lack of evaluation, end of subsidies, and conflict" (Hanna 2010). Clement (2007: 54) particularly found that in Vietnam the end of annual crop cultivation in 1990s was due

to the yields decrease and that the reforestation program was encouraged by government subsidies to recover yield increase. Nuwagaba-Manzi and Tumuhairwe (2003: 195; 199) found that in Uganda, farmers chose rough and fine tillage, mulching, controlled bush burning, household waste, crop rotation, or intercropping practices because they increase yield and soil fertility. The need for tangible benefits (economic benefits) for farmers was considered in Zambia as the final factor for the adoption of conservation measures (Garrett Kenneth 2007: 120). In Rajasekaran's (1993: 91) study of the Pondicherry Region of India, farmers were planting crops such as '*casuarinas*' because farmers themselves always decide on fixing the price of the crop.

### **2.2.5. Tradition**

The term tradition broadly refers to farming customs, habits, other socio-cultural practices, land tenure, rules (also included is the land tenure aspect), and historical factors that are taken into account in the indigenous decisions. Nuwagaba-Manzi and Tumuhairwe (2003: 199) found that in Uganda, land users chose *rough and fine tillage* practice because they were perceived first of all as traditional methods. In the Pondicherry Region of India, farmers planted crops such as *ragi* (finger millet) because the practice was dictated by the community's "traditional food habits" (Rajasekaran 1993: 91). Hanna's (2010) studies in South Africa demonstrated that intercropping and crop rotation were preferred in rural areas because they were practiced in their culture for centuries. Meanwhile, Clement (2007: 542) found that "the end of annual cultivation in the 1990s in Vietnam, which was in part due to the need for a natural fallow and because informal rules had been modified"; this had affected the costs and benefits of annual cropping systems.

Referring also to rules, Rasmus et al. (2010) argued that counterproductive policies and regulations can become barriers to adaptations. For instance, "lack of clear and enforced property rights to land undermines incentives to invest in land improvements and irrigation. These investments are needed to address the projected declines in agricultural productivity and increased volatility of precipitation" (266). Garrett Kenneth (2007: 7) believed that the people's traditional concept of 'time' in Zambia plays a role in their decisions. They are mostly preoccupied with the situation

‘today’, not much for ‘tomorrow’. In their spoken language the ‘today’ (*lelo*) means more than ‘tomorrow’ or ‘yesterday’. Thus, this perception affects decisions on conservation measures that require months or years to see quick results.

Another factor to be taken into account, as mentioned by Garrett was the ‘history’ factors. He considered that the prior history of programs aimed at improving livelihood can influence successes or failures. They can create distrust and resentment and limit adherence into an initiative (Garrette Kenneth, 2007: 108). In this respect, Rajasekaran (1993: 91) stated that among the factors influencing farmers’ decisions in Pondicherry Region of India, once again, were also the fact that farmers ‘consult their neighbors’ before deciding on which particular crop they should choose for planting. Referring to land tenure Stocking and Niamh (2001: 27) mentioned land tenure as a factor affecting land users’ decisions: the “insecurity of land tenure shortens the time-frame used by farmers for decision-making, making it less likely that measures which protect against land degradation will achieve a positive return in the planning horizon of the land user”. And that “a farmer with clear title to the land is more likely to consider investment of money, labor and land in conservation because benefits in production which may only accrue” (27).

#### **2.2.6. Biophysical conditions**

This category includes soil properties and other factors related to climate (Hanna 2010). Warren (1991: 2) considered that indigenous decisions depend on close knowledge of soils, vegetation, climate, and pests. Nuwagaba-Manzi and Tumuhairwe (2003: 197) found that the farmers’ reasons for using introduced practices could be the typical topography of the area or the erosion control, water conservation. Ngailo et al. (2003: 153) believed that the use of intensification of land in Arumeru and Tanzania as a measure, depended on season, soil and land type. In Clement (2007: 542) “the end of annual cultivation in 1990s in Vietnam was in part due to poor soil condition”. They explained that they decided to stop the crop cultivation on the upland, but took the decision to involve in tree planting because the soil quality was poor, nothing could be produced on it.

### **2.3. Conclusion and discussion**

The literature reviewed in this chapter has shown that local peoples' strategies to cope with land degradation are based on many customary practices and on diversity in adaptations. Indigenous people themselves or external actors are the initiators of the adaptations. Traditional leaders have played an important role within the community and towards external actors. They are mainly seen as sacred, almighty conflict settlers; coordinators; liaison agents; and mediators. The literature has shown also that the farmers' reasons and decisions to adopt land management strategies depend on many socio-economic reasons such as: cost and benefits, tradition, behavior, biophysical reasons and work load.

From the literature reviewed and investigated in this chapter, the following discussions have emerged:

-Most of the strategies cited in the literature have focused on indigenous customary resources management practices that people try to re-visit, based on some adaptations. Very often the initiatives presented are from the farmers and also from external actors (formal organizations, institutions and agencies). However, the role of the traditional institutions is not much focused on. And very little is said about the traditional leaders' role in the management of natural resources. The few studies that are interested in the role of traditional leaders, have only presented them as intermediaries, mediators, coordinators, rule enforcers, mobilizers in the projects and technological transfers. The crucial role of the traditional leaders as initiators and risk takers in new attempts is not often pointed out.

-Most of the studies also have described and examined the indigenous strategies without providing a deeper understanding of the reasons why these strategies are chosen. The few studies that focus on these reasons often state that local farmers merely adopt the strategies because of their cost and benefit; or because these strategies are not time, energy, and cash consuming. However, the real factors influencing and guiding decisions are not sufficiently investigated.

The next chapter will provide the methodology followed to review the literature, conduct the research in the field study, and analyze the data.

## CHAPTER 3. METHODS USED IN THE STUDY

This chapter describes the research approach and the methodology used to examine and investigate local people's natural resource management knowledge and local people strategies to cope with land degradation in Yassa-Munene village and traditional institutions' role. Specifically it describes the methodology used to collect and analyze the data in the study in Yassa-Munene village. The fieldwork was conducted from March 2014 to September 2014. In addition to these periods are to be included other various short periods of informal visits in the villages. The interviews and discussions were conducted in local languages, *Kimbunda* or *Embuun*. The study took place in houses or on farms, with individuals or groups; often men were separated from women, and the chiefs separated from the subjects.

In the following pages the chapter discusses: (1) data collection methodology, (2) data analysis methodology, (3) and presents the characteristics of the study site.

### 3.1. Data collection methodology

The literature reviewed in this dissertation have tackled issues related to traditional indigenous natural resource management, land degradation and indigenous strategies to deal with the degradation and the role played by traditional leaders. The study gathered also the information on the socio-economical situation, cultural, historical and natural condition of the Ambuun people (see Awak 1976; Decker 1948; Koni 2010; Mubesala 2006). However, there was no written literature or map found for Yassa-Munene village; neither was found any written information about the village land management.

It is argued that indigenous knowledge (IK) study is a relatively new and growing field of study; and that "there is no one correct method for data collection" (Grenier 1998: 93). The methodologies used to study the TEK are often adapted to the individual needs; they always remain innovative and sensitive to the community needs (Grenier

1998: 93); to what the local community experiences as issues and the way land resources are managed.

This study is mainly qualitative. It used particularly Participatory Rural Appraisal (PRA) methodology for the IK investigation. The method is described as holistic, meaning that all elements are viewed as interconnected (Menzie 2006: 9; Maass 2008: 57; Grenier 1998; Berkes 1999: 174). PRA is considered such: “a family of approaches and methods to enable rural people to share, enhance and analyze their knowledge of life and conditions, to plan and to act” (Chambers 1994 quoted by Stocking and Niamh 2001: 35). Data collection took place in houses or on farms, with individuals or groups (Onken Ingwen 2016); often men were separated (or not) from women, and chiefs separated (or not) from their subjects.

PRA was chosen because the methodology enables a learning on “rural life and conditions from, with, and by rural people” (Grenier 1998: 41). The rural people themselves are to be seen as investigators and analysts. PRA is ‘people-centered’ model that emphasizes the process in which each individual people and societies are building their ability to get together the needs they long for, in order to change or develop the life’ feature (Grenier 1998: 41-42; see also Berry Thomas 1988). PRA involves local land users in the exercise to identify their assets and issues like land change problems, in assessing of its consequences on people life, and the choice of the adequate mechanisms to deal with the issue; and also discovering factors of the land users which constraint whatever they may take as decisions (Stocking and Niahm 2001: 35; Taylor 2004). The value of PRA was succinctly provided by Grandstaff et al. (1987: 11 quoted by Rajasekaran 1993: 57):

Participatory rural appraisal (PRA) technique is carried out as close to the source as possible. Farmers’ perceptions and understanding of resource situations and problems are important to learn and comprehend because solutions must be viable and acceptable in the local context and because local inhabitants possess extensive knowledge about their settings. In many instances, PRA researchers have also discovered that farmers are capable not only of devising viable solutions to local problems based on their own understanding, but also conducting relatively sophisticated field experiments in response to local constraints and opportunities. For the above reasons, an understanding of indigenous knowledge and practices is extremely valuable for viable and appropriate rural development, and many of the methods, tools and techniques



of PRA have been selected for their abilities to elicit, evaluate, understand, and avoid misunderstanding indigenous knowledge.

The different methods or techniques of PRA to collect the data in this study include:

*The sketch map:*

Sketch mapping is often used in PRA to compile an inventory of resources. It helps people explain their perception of their natural resources' situation (Stocking and Niamh 2001: 36). It shows the location of major natural resources, landmarks, boundaries and divisions, drainage points, and settlements. The mapping provides also information on land-use patterns, local land use and soil classification, and the status of community assets or infrastructure. The mapping helps break down communication barriers. It encourages local field observation. For its elaboration, it uses simple local material: it can be drawn on the soil or on the paper using various locally available materials like seed, twigs, leaves, flowers, lime or thorns (Cornwall 2000: 108).

In this case study, the *map* of the village was drawn (See photos 2 and 3). Within the map, forests areas, streams, rivers, valleys, lagoons, land boundaries were shown. The map shows also the community's prior historical settlement areas, cemetery and sacred areas, location that are the most affected and the most fertile land. The *farm sketch* identified the particular problem of land degradation at the individual farms; and detailed the conservative measures taken by farmers to reverse the situation.

*The transect walk and observation:*

Transect walks and observation techniques were also used in this study. Transects are the systematic walks through an area, normally done on predetermined routes, identified on the base map. They compile spatial information (Stocking 1987: 36; Cornwall 2000: 108; Alemneh et al. 1997: 15). This step or tool focuses on observation of physical characteristics and conditions like the level of the erosion of soil, water logging, or soil depth and moisture retention. It helps to appraise different resources like private and public lands, forests, grazing areas, rivulets, gullies and others (Cornwall

2000: 108). The technique helped in the visit of the major working sites like Nto-Lankoon, Nto-lankaam; streams' locations such as Mbuum, Lakwa (Lokwa), Empii and plateaus where farming and non-farming activities are practiced. It has also helped to ask additional questions on the fields. A traditional leader helped in all visits to identify most of the sites.

*Group discussion, questionnaires and interview:*

This study used also discussions and interviews. It is always suggested that the target of the group discussion can be the farmers who are the users of the land, who have also some responsibility in the modification of the biodiversity. The specific target can be elderly people, women, men and youths (Gyasi and Uitto 1997: 46-47). Through group discussions, the social groupings and their effects on the access to land may be learned. A questionnaire was also used. Individual interview is necessary in order to learn what cannot be learned in public. Thus, the semi-structured interviews are also suggested. They help to understand individual motivations and rationale for any action taken or the lack of actions. Individual discussions with the farmers enabled sharing of the history, population, resource management, wisdom, belief, taboos, totems, rituals, ceremonies, the narrative and the detailed information on the species and practices discovered in the transect visit (Grenier 1998).

*Calendar and historical profile:*

Calendars are used for recording changes that happen over time. They help to write down events such as past and present disease, food issues, deforestation, erosion, population, drought or also historical profile and timeline (Grenier 1998). The research may record events according to the farmers' capacity to remember them. As with calendar, also to give historical profile helps to situate historically problems such as animal disease, the change in food abundance, drought, gullies, deforestation, population growth and others. Chamber explains that seasonal calendars help to understand the many dimensions of welfare and that it highlights the dynamics of rural livelihoods (Chamber 1993, cited by Cornwall et al. 2000: 108). In Yassa-Munene, the

orally reported information was valuable to understand once again the ongoing degradation and the past experiences of the problems. Traditional leaders provided most of this information, since they know most of the village stories.

#### *Ranking and classification:*

Classification tools can help also to monitor and evaluate “the applicability of a set of soil conservation technologies” (Stocking 1987: 36) that are to be used. Classification tools take into account the local people’s attitude and perception of resources (Stocking 1987: 36). Similarly, Cornwall (2000: 108) observed that *Ranking and scoring* exercises show up some of the complexity included in making of the decision, that very often the which formal surveys cannot provide, and which enable researchers to appreciate farmers’ different needs and preferences. This study used ranking to explain differences of farmers’ knowledge on resources, perceiving the land degradation issue or evaluating the decisions to adopt mechanisms to cope with the degradation.

#### *Flow Diagram:*

Diagrams, problem trees, and charts can be used as tools to establish links between activities, events and outcomes in any rural analysis of the problems and also can guide the investigator to the possible interventions possible to adopt. It can be, for instance used “to link parts of a farm and aspects of household livelihood” (Stocking 1987: 37). The diagrams can also be used to show local land-use classifications, the existing state of resources, constraints to effective management of those resources, solutions tried and the possible solutions identified by local people (Cornwall et al. 2000: 109). The diagram has been use in this study to match reasons behind the people’s responses to land degradation, to show the connection between different assets, and to compare the individual or group answers.

PRA methodology and its techniques present some advantages: PRA increases the capacity of participation. “Both the rich and the poor, illiterates and literates, and powerful and disenfranchised men, women, and children, all are invited to share their

knowledge. PRA supports speaking independence” (Grenier 1998: 43). PRA encourages land users to express their needs by involving them in all the stages of research; PRA also can build people’s dignity and generate knowledge. The knowledge is enabled by the fact of teaching, learning, analyzing or explaining knowledge to each other in the community. Finally, PRA is said to be flexible, useful to support people’s inventiveness and creativity (Wickham 1993 city in Grenier 1998: 43). In this perspective, PRA tools can adopted so that all the factors included in the use of the land that influence decisions that can change the conditions of the degraded land, may be found out. The technique helps that farmers or villagers find out and decide on which mechanisms to adopt to cope with land degradation, and to choose the conservative practice to adopt (Stocking 1987: 35). Likewise Cornwall et al. (2000: 108) who used PRA in their research, esteem that PRA combines research with action, offering opportunity for mobilizing local people for joint action. The adoption of PRA in the study in Yassa-Munene has proved to be effective. It has enabled active participation, provided valuable information and has helped to analyze the result obtained. The Table 3.1 bellow summarized the above techniques.

Table 3.1. Summary of data collection techniques in Yassa-Munene

<b>Techniques</b>	<b>Data collected, descriptions</b>
(1) Participatory observation	Organization, institutions, norms, values, ceremonies, practices, belief system, subsistence activities' practices
(2) Participatory mapping and modeling	Watersheds, forests, farms, home gardens, residential areas, soils, water sources, wealth rankings, household assets, land-use patterns, routes, changes in farming practices, constraints, trends, health and welfare contradictions, and the distribution of various resources.
(3) Walks and guided field walks	Topography, soil, land use, forests, watersheds, historical and ritual sites and community assets.
(4) Structured interview and semi-structured interview	Questionnaire to learn the resources use, fauna, flora and land state
(5) Seasonal calendars	Agricultural, hunting, fishing and gathering seasons (with the variables like the rainfall, labor, income, expenditures, debt, animal fodder or pests, and harvesting periods).
(6) Daily-activity profiles	People's time spent in activities
(7) Ecological survey	Sample sites in the fields, forest areas, specific plants or animals were selected to evaluate the degradation
(8) Documents	Secondary readings regarding the Ambuun people: historical origin of the tribe, religions, population, localization, photos.
(8) Information recording	Tape (story and history telling), photos, maps, notes or charts (land areas and resource areas, degradation areas and products).

*Source: Author, adapted from Grenier (1998), Alemneh et al. (1997), Stocking and Niahm (2001).*

*Note: This table presents the specific way the techniques were adapted in the study in Yassa-Munene village.*

### 3.2. Framework for analysis

In order to respond to the research questions asked in the introduction, the analysis focuses on the function of *traditional leaders* institutions in the farmers' decisions. The analysis of the data is the result of the continual reading through the data and information. Practically, the analysis relied on the *framework for traditional local institution analysis in land management* adapted from the study of Bonye (2011: 23) in Ghana; and the study of Mowo et al. (2013) (Figure 3.1) in East Africa. The examination is combined with a historical perspective that methodically explores the farmers' understanding of the nature around them and decision-making processes. The analysis is mainly qualitative.

The typology of the indigenous institutions in most parts of Africa is similar as indicated in the Bonye (2011) study in West Africa, in Kendie and Guri (2010) for Ghana or in East African studies by Mowo et al. (2013). Most of the common traditional institutions are: spiritual world, land institutions, livestock institutions, labor institutions, mutual assistance institutions, health institutions, traditional beliefs, traditional leaders or authority, recreation, and conflicts resolutions. To these institutions are often added other institutions such as: female traditional leaders, singing and dancing groups; or also youth groups and associations that have always existed in the community (Bonye 2011; Mowo et al. 2013; Kendie and Guri 2010).

Traditional indigenous institutions play various functions in the local communities. There is often found a decentralized and hierarchal system in their institutions structures in respect to their responsibility. The indigenous institutions' roles are explicit in social, cultural, economic, political, ecological, religious or ethical aspects. They have controlling effects on the individual as well as on community resource utilization and management. But beyond this agreement, there exist specificities for each different institution.

Figure 3. 1. Framework for traditional local institution analysis in land management



Source: Adapted from Bonye (2011: 26).

The framework components and functions according to Bonye (2011) are described as followed:

*-Spiritual world:*

This component includes gods, ancestors, ethnic or clan founders, and spirits. They are invisible realities but are still being considered as personalities that are alive and influencing human community. It is “the driving force that indigenous people consider as regulators” of the various natural resources management institutions (Bonye 2011: 64).

*-Chief or leader:*

This is described by Bonye as a leader institution that was introduced during colonialism in Africa. The chief was the authority in charge of managing life of the community and of organizing the management of natural resources. He was the supreme figure in his community and contributed to the community through the various roles he played. He worked in collaboration with the elders of the community (Bonye 2011: 64). The leader situated at the top of the structure (in the figure above) is portrayed as the

traditional political figure who is in charge of performing administration and judiciary functions in relation to the management of the natural resources. He controls the use of all resources in their land.

He is considered as the mediator between people and the dead relatives (ancestors); but he is also a “spiritual, cultural and judicial leader, and the custodian of the values of his community. He coordinates the various aspects of everyday life, the realization of community dreams and aspirations, and the creator of harmony between people and their natural, spiritual, social, physical and economic environment” (Bonye 2011: 64). The chief or leader institution is the apex of the institutional structure for instance in Ghana. He is superior to all other local chiefs in the area (Kendie and Guri 2010: 60). The chief makes decisions regarding development, enforcing rules or resolving disputes.

*-Priests, rainmakers and diviners:*

They operate as “spiritual leaders of a community and wield powers in their control over land” (Bonye 2011: 23). They are consulted by the chief and the members of the community. They are intermediaries between ‘gods’ and people; or between ‘gods’ and the leaders. They are actually called specialists and spirit mediums. These personalities are said to hold power of making rain or even stopping it. Thus, they are respected since the rain that they can influence is necessary in the farming activities of the community.

*-The Tindanas (land owner):*

The *Tindanas* are considered as personalities who represent the earlier settlers; they played the role of custodian of land and control the use of the natural resources. They perform religious functions in their community. They “perform sacrifices, manage sacred groves, allocate household lands to individuals and families and hold land and its resources in trust at the household level. They make sacrifices and are the caretakers of sacred places. Hence, the use of natural resources was done with respect and guided by norms and values” (Bonye 2011: 23).

*-Magazia (Woman/female Leaders):*

Women leaders are “elderly women who have demonstrated leadership qualities in



community organization and management. They are generally nominated on the basis of their leadership qualities. Women leaders play a central role in the organization and exploitation of natural resources. Therefore, there is a strong linkage between women leaders, natural resources and the domestic economies” (Bonye 2011: 24).

*-Clan/Household heads:*

Clans/household heads are descendants of the common putative ancestors. They represent different families, from different and diversified sections of the community; clans or households heads can also be called sectional heads. The family members of different families and clans support the heads of their clans. The land that is hold by the leaders is common good for all members of the families. It protect for the benefits of all (Bonye 2011: 66).

*-The NGOs and intervention:*

The NGOs and intervention are external interventions that are undertaken by external actors within the community. They include also all the local associations supported by the external actors. Very often these external actors remain in connection with farmers. The external actors and organizations such as government and NGO can give service, consulting and capital important for the management of the natural resources.

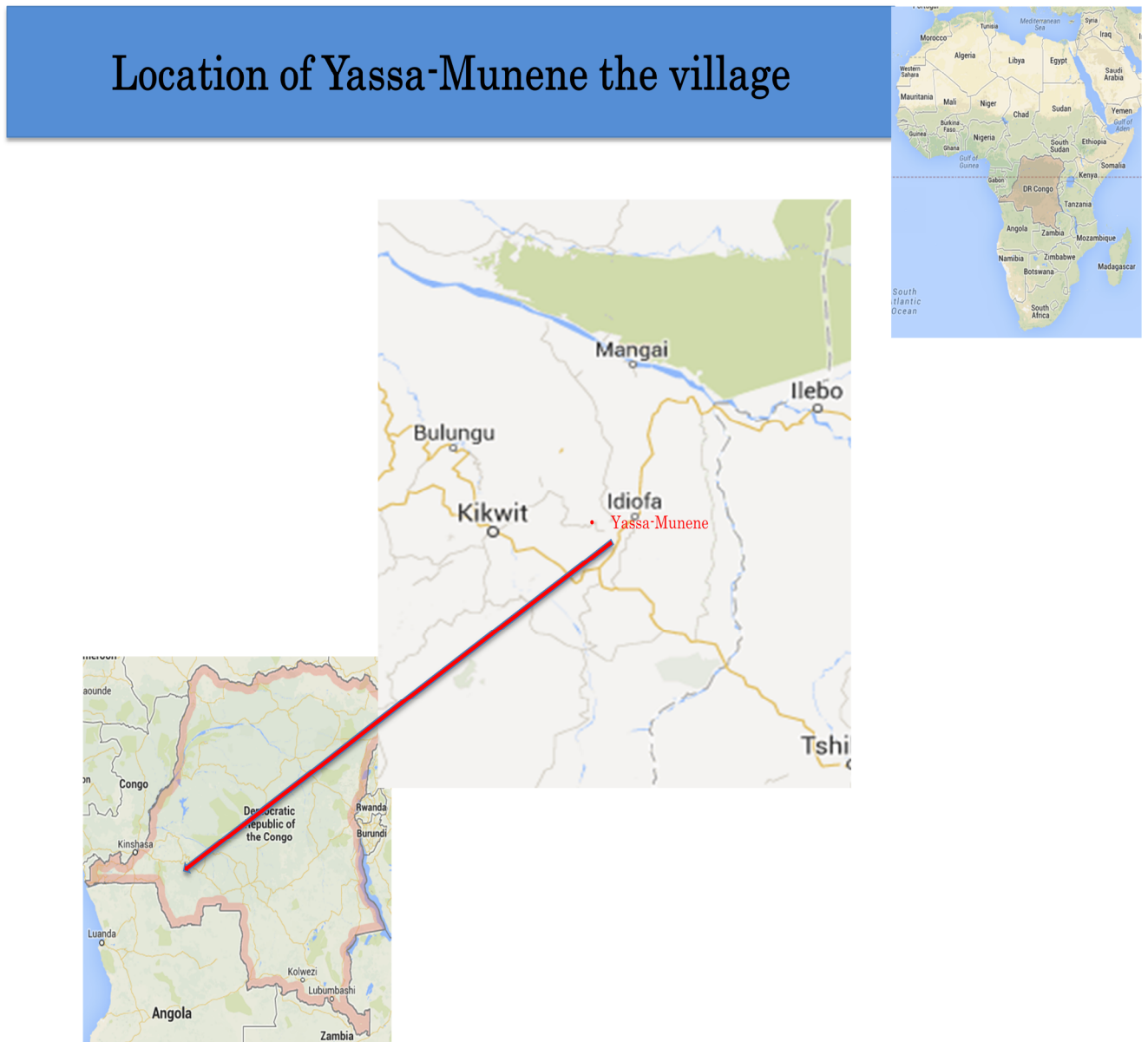
This framework fit this study because it points out the importance and the role of the traditional leadership institutions towards local people land management system. The framework shows also clear interactions between leadership institutions and the other institutions or elements of the structure in order to ensure a land management in a sustainable way (Mowo et al. 2013).

The methodology used is based on the analysis of historical trends and on how the institutions have contributed to effective solutions (Onken Ingwen 2016: 5). Before moving to the case study (presented in the next chapter) the village site is described in the following section.

### **3.3. Characteristics of the study site**

The village map in Figure 3.2 indicates solely the location where the village is situated in the Democratic Republic of the Congo (DRC); it shows the village position in the administrative zone of Idiofa. And the position of the country within the African map provides the global idea on the location of the country in the world map. The map has not shown the exact location of the village, but the approximate location. It has neither presented the other geo-ecological aspects such as soil, temperature, landscape, etc. Below is the map of the village:

Figure 3. 2: Map of location of Yassa-Munene in the Ambuun area.



*Source:* Adaptation from Google (Google maps, 2016).

*Notes:* Three maps are posed together in order to show how Yassa-Munene fits into the territory of Idiofa, how the territory of Idiofa fits within the map of DRC and within the map of Africa.

### 3.3.1. Location, population and history of the village

Yassa-Munene village belongs to the Ambuun ethnic group (also called Mbuun, Bunda or Bambunda ethnic group). The ethnic group is one of the 250 ethnic groups in the Democratic Republic of the Congo (DRC), in Africa. It is relatively a larger ethnicity of the DRC compared with many others. “The Ambuun population is estimated between 800,000 and 1,000,000 people” (Mubesala 2006: 20) in the country.

This village (Yassa-Munene village) is situated nearly 700 km away from Kinshasa, the capital city. The Ambuun people inhabit the Kwilu (former Bandundu) Province<sup>2</sup>, situated in the West part of the country. The Ambuun people mainly live in the territoire of Idiofa, Gungu and Bulungu (Imbongo). Today many of them live in bigger cities such as Kikwit and Kinshasa. Yassa-Munene village is located within the *territoire*<sup>3</sup> of Idiofa, in *Secteur* or *Collectivité*<sup>4</sup> of Yassa-Lokwa and the *groupement*<sup>5</sup> of *Thsim Angung*<sup>6</sup>. The neighboring villages are: Intswem, Isang-Mpoon, Yassa-Lokwa, Intsung, Isaal, Impes, and Kimpata-Lokwa.

Ambuun is one of the ancient ethnic groups that occupy the region (Onken Ingwen 2016: 11, quoting Torday and Joyce 1922: 228). They are said to have come from Northern Africa, have passed through the African regions that are presently Gabon, Cameroun and Angola and to have crossed other regions of the DR. Congo. In all these

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<sup>2</sup> *Province* is the larger administrative entity in the D.R. Congo. The country presently counts 26 Provinces.

<sup>3</sup> *Territoire* is another administrative entity in the DRC. It is smaller than the Province entity.

<sup>4</sup> *Secteur* or *Collectivité* is the local entity that is smaller than *Territoire*.

<sup>5</sup> *Groupement*, formerly called *Chefferie* is smaller than the other administrative entities. It was created by the colonial authority. It is formalization of a traditional authority. The entity is actually situated between the formal and the information organization. It is made of many villages.

<sup>6</sup> *Thsim Angung* was one on the 4 Ambuun major traditional leaders of the Ambuun people along their migration. The 3 others chefferies are: *Mbiim*, *Ngal a Ngots* and *Ngal a Lweel*. Each one of them became the leader in the Ambuun portion of land that that they occupied after settlement. All the descendents of these chiefs were called by the name of these leaders. After the restructuring the administrative system in the DRC the *Chefferies* were divided into numerous *Groupements*. The *Groupement* of *Thsim Angung* kept the same name and helmet village as the *Chefferie*. But it lost control over the larger territory.

locations they seem to have left linguistic signs that are specific to the ethnic group. It was since 14<sup>th</sup> centuries that the Ambuun have settled in the present location. They have established their homeland on vast area of the land (200 km<sup>2</sup>) “lying between Kwilu River and the Lubwe River” (Awak 1975, quoted in Onken Ingwen 2016: 8) or between Kwilu River and Loange River.

The Ambuun territory is bordered by the other ethnic groups’ territories like the Pende, Pindi, Yansi, Dinga, Wongo, Mbala, and Ngong. Torday and Joyce (1922: 230) describe an ombuun (an ambuun person) man as “handsome, great, with pig and short legs, measuring about 1.80 m of height, very dark skin”. And that they are lovely, but reserved; it is difficult to obtain information about their customs, or it difficult to know their intellectual capacity. They get discouraged even from a minor disappointment or contradiction; this disappointment can often lead to consider the interlocutor as an enemy forever.

Yassa-Munene is a one of the older settlements in the Ambuun territory. It is there that the Ambunn (of the east) established first, before migrating to the Eastern part of the Ambuun territory. Most of the inhabitants in villages such as Impini, Ingundu, Iliop (Idiofa), Impang, Bikwiti, Inyendong etc. originated from Yassa region.

### **3.3.2. Socio-political organization**

The socio-political organization of Yassa-Munene village is the typical organization of the Ambuun society. The village is divided into clans (*mbil*), sub-clans (*ikaan/iyor*), families (*ndzo*) and household (*ndzo/idzo*). A clan can be divided into diverse sub-clans. The sub-clan is then divided into extended families (*ndzo*). The extended family members have the same grand-mother. They are brothers and sisters, since in Ambuun language, the word *cousin* is weak. Members of the same clan are united by a totemic animal/plant that they respect as sacred, that they cannot eat or touch (Onken Ingwen 2013: 7). The members of the same clan can be found in the other Ambuun villages or in the neighboring ethnic areas.

Yassa-Munene village is composed of eight clans and sub-clans. The leading clan of *Oluum* has three sub clans: *Ongaa*, *mbel lashie* and *ntsin ongaa*. Each clan and sub-clan has its chief. The chiefs of the clans are generally members of the village

council of elders. Among other members of the councils are sages, *teen*. The highest authority is the *chef de terre*, from the leading Olum clan, who is also chief of the Oluum clan. Presently, Mr. Ndandula occupies this position. He is the legitimate authority and the real person in charge of the land. In this village is found also the *chef du groupement*, from the same clan. He is a traditional leader, but has political authority, as instituted since colonial institutionalization of the traditional chieftaincies.

His influence goes beyond the village level. Recently, the chef Kalata played this role until 1988s, before being deposed by the formal authority in the 1980s. After him, the power was given to Kalata's cousin Asab in Yassa *Secteur* (Yassa-Nzaa Kiek). Beside the traditional authorities, the formal national authority is represented in the village by the village chief chosen and established by political authority from the *Secteur*. The chief of the village does not belong to the leading clan. He is the person in charge of administration of the village. He gives villages' reports to the collectivity and mobilizes villagers for diverse activities on behalf of the formal authority, but does not have real legitimacy. The population in Yassa-Munene village is about 820 people, divided into around 80 households. All the inhabitants (100%) of Yassa-Munene village are Ambuun ethnic members.

Local people's economy is based, on one hand, on small-scale farming activities. The local major crops are cassava, maize, millet, peanuts and rice that are used for exchanges and household needs. On the other hand, there are non-farming activities like small-scale hunting (wild animals, birds and reptiles), fishing in streams (fish and crustaceans), gathering (crafting, construction, medicinal and food materials) and domestication (cows, pigs, chickens and goats).

The youth education is ensured through customary way: through the oral tradition, storytelling and in participating in activities. The formal education is ensured by Western model school (meaning that children assemble in a room with a teacher). The older people recall that in the 1940s a small school and a Christian catechetical center was established, but they disappeared some years later because of the insurgencies. A small school was once again opened in 2009 on the villagers' initiative.

### 3.3.3. Geo-ecological situation

Yassa-Munene village is located in the Southern part of the Equator line and in the Eastern of the GMT, between 40°40' of latitude and 80°50', and between 19° et 20° of longitude (Awak Ayom 1976: 21). It is located in the humid tropical region. The village is established on the savanna or grass land plateau. Most of the village subsistence activities are practiced on the savanna. The gallery forests are found along the streams. The temperature is high and exceeds 30°C throughout the year. There exist two seasons: the dry season (from May 15<sup>th</sup> to August 15<sup>th</sup>), and rainy season the rest of the year. The annual rainfall ranges between 1500 to 2500 mm (Rattan Lal 1995: 11; Awak 1976: 21). There can be identified different types of soil around the village land. According to the indigenous color and texture identification, the local types of soils are: hard and soft; big grain and small. There are white, black, yellow, red and grey soil.

The village is surrounded by a vast area of land. It is endowed with a variety of biodiversity. There are forests, savanna and streams. The larger land part is savanna. It is made of trees and herbs, is estimated to 20 Km<sup>2</sup>. The few forests are found along the streams. The principal streams are: *Lokwa (Lakwa or Kamtsa)*, *Lankoon*, *Mbuum*, *Empii*, *lakwe Iyum*, *Osambits* and *Labwe* river that marks the limits with Intswem village' land. Two major lagoons are: *Isa la dzeb-nzeb*, in the north; and the *isas lakwe Iyum* in the south.

## **CHAPTER 4. LOCAL PEOPLE'S STRATEGIES SHAPED BY TRADITIONAL LEADERS: CASE STUDY EVIDENCE FROM YASSA-MUNENE VILLAGE**

This chapter presents the study findings in Yassa-Munene village. It presents the village situation, examines indigenous land management strategies and the role of traditional leaders institution in farmers' adoptions of strategies to cope with land degradation in Yassa-Munene village. The presentation of the situation of the village, location, management system, land degradation issues, and traditional institutions help to acquire an understanding of the strategies of the farmers to deal with degradation on their land. The chapter's purpose was to answer the question 'How do local farmers in Yassa-Munene village manage to deal with land degradation? (What are the management practices and strategies used to cope with land degradation?); and what benefits do they obtain from managing land in the traditional way?

### **4.2. Presentation of Yassa-Munene village: land management, land degradation issue and institutions**

#### **4.2.1. Land management knowledge system in the village**

In order to acquire knowledge on local community strategies adopted by local people to deal with land degradation (discussed below), it is necessary to provide here a summary of the description of the Ambuun people's land management system and resource use. The Ambuun people in general, and the farmers in Yassa-Munene in particular, have their perception, understanding and appreciation of the environment and natural resources.

There are diverse indigenous management practices that enable soil fertility and land regeneration. The major practices are as shown in table below (Table 4.1).



Table 4.1: Soil fertility enriching practices in the village (n=40)

Practices	Frequency n (%)
Agroforestry and fallow	30 (75)
Intercropping	40 (100)
Inorganic fertilizer	0 (0)
Farmyard manure	22 (55)
Crop residues	18 (40)
Mulching	70 (95)
Self- practice	2 (5)
Bush fire	38 (95)
Intensification, rotation,	<b>38 (95)</b>

Source: Author's field notes.

The details on the soil fertility enriching practices and management methods are:

**-Agroforestry and long fallow:** the Agro-forestry systems are said to be also an important in the erosion control and nutrient recycling (Rattan Lal, 1995, p. 3). People in Yassa-Munene practice agroforestry and fallow (75 %).

**-Intercropping:** In Yassa-Munene the intercropping is being practiced by all farmers (100%) not only to regenerate fertility but it also protects crops against mosaic and pest; and the practice is said to be time and space saving. When asking a farmer what crops are in his farm he mentions major crops like cassava or millet, but does not mention diverse legumes that are mixed.

**-Intensification, sequencing and rotation:** Besides combining the crops the study found also that the intensification and the sequencing are practiced on the farm of 38 people out 40 farmers questioned in Yassa-Munene village.

**-Mulching:** There are important reasons explaining why most of the farmers use mulch. Most often, they use mulching because of its effects on the weeds control, soil fertility improvement or for water conservation. Villagers, 95 % of 40 peoples questioned

practices the mulching to maintain the soil fertility of their farms and gardens. With the herbs cleared, women (working in savanna) return the soil with herbs that will decompose.

**-Farmyard manure and waste utilization:** Household waste, rubbish from the cleaning and food left over are used in home gardens by people in Yassa-Munene village. Animals waste such as cows and goats manure is also used to fertilize the soil. Only 7 people use it for their non home gardens. Actually, it is difficult to collect or transport it to the farms. And there are limited numbers of cows and goats. The pig number is rather larger, but its manure cannot be collected, because the animals are left roaming within the village.

**-Bush fire:** It was also observed that the village used controlled burning as a soil enriching practice.

The environment is considered as both in material and non-material objects. They are understood in both empirical and symbolic dimensions.

### 1) *Empirical or physical dimension:*

By empirical dimensions, indigenous people refer to all activities they perform every day; the activities that are concerned with land use, production and conservation. This refers concretely to the small-scale farming, gathering, fishing, hunting and animal domestication activities. Indigenous people have developed numerous techniques and wisdom around these subsistence activities. There exist various and specific tools and methods used in these activities. The outcomes of these activities have always impacted on both the society and the surrounding environment. Here the study refers to the bush, forest, water and the community. The major activities here are grouped into following categories:

### ***Farming activities:***

Small-scale agriculture is the major subsistence activity in Yassa-Munene village. All the farmers questioned during this research acknowledged that over the 80% of the activities are performed in the savanna bush land, 18% of the activities in the forest areas, and only 2% of the work is home gardening in the village area. The farming regimes of the activities are: bush fallow, home garden and non-home garden agro-forestry. The fallow concerns the land management in the post-harvesting period. It is practiced along with other management practices such as the shifting cultivation, controlled use of fire, mulching, minimal tillage, mixed crops, use of low-impact tools, and intercropping.

Home garden agroforestry is also practiced. This is about the cultivation of crops and trees on the village land. It enables cultivation of crops and trees. Trees are planted and managed around the house, in the *asamb* (conventional gardens) and the plants left in the *ayum* (the abandoned land, location where the village was established before). The management of home garden is generally similar to non-home garden. Crops are sustained by household refuse. The major annual crops and perennial trees cultivated are: cassava, maize, millet, peanuts, rice, squash, and beans; banana, avocado and others. The main tools used to prepare land in the village are: hoes, machetes, hand and fire. In the forest land, the machete is used to cut trees and fibers, generally used by men. In bush land, the hoe is used by women to clear the grass land, to turn the soil, to make mounds, furrows, ridges, and drainage channels.

### ***Gathering activities:***

The small-scale gathering activities in Yassa-Munene village are practiced in forests, savanna or water. The gathered products serve mainly for household needs. The products gathered are mainly timber and non-timber products: foods, beverage, fire wood or medicine. The gathered resources management relies on the ensembles of regulations, practices or behaviors for the agro-forestry, especially promoted and enforced by leaders. They enforced the rules about the respect of some of resources.

### ***Hunting activities:***

Villagers also practice small-scale hunting. All the hunted products are generally destined for household food although portions of some animals can serve other purposes like commercialization. The hunting methods and tools are animal, season, location and time specific. The hunting tools are traps, fire, guns, dogs net, and poison. The conservation practices used to enable a proper use of wild animals lie in the methods and local natural resource management, land tenure system and rules related to the farming management. Proper conservation of nature in agro-forestry or rotation contributes also to protecting wild animals. Meanwhile the mismanagement causes animals loss.

### ***Fishing in the village:***

Small-scale fishing is practiced on and along the streams and in the mud. The activity is mostly practiced by boys and women. Here also the fishing was specie, time, technique and location specific. The study showed that the fishing was also gender and age specific. The fish, like the animals, present the same utility. They are part of the household diet. The fish are in small quantity and mainly intended for house food, but not necessarily for selling. Techniques and tools used to fish were: *Hooking, line fishing, walled barrier, poison fishing, fish traps, hand-netting, hand grasping, spearing and shooting*. The conservative practices to ensure successful fishing depend on land management. From all the information obtained from farmers, it is demonstrated that local people read signals like: wind, weather, rain, movement of moon, sun, level of water in swamps, and age of the grass in fishing areas in order to decide on an activity.

### ***In animal husbandry:***

The Ambuun people domesticated animals. The activity is an integral part of the home garden activities. The livestock serves for food, commercialization and other needs. In Yassa-Munene as in the entire region, animal domestication is not professional and the livestock are often small in number. Domesticated animals are chickens, pigs,

goats or pigeons, ducks, dogs, cats, and cows. The animals are fed with crop residues, seeds and food left-overs. They are generally left roaming in the village. The animals' meat contributes to household diet. It is used for food, medicines and other purposes like dowry. The animal pest control methods contribute to keeping land safer and fruitful. Animals are kept healthy with good feeding and medicines extracted from plants; they are also protected against predators. The validity of this information has been confirmed by various information farmers provided in group or in private. The author of this study observed all the farmers' houses, and come to the conclusion that without animal domestication these people seem not to have a joyful life.

Still, besides the empirical aspect of indigenous knowledge, there is always a non-empirical or symbolical dimension of their knowledge and resources use and activities.

## 2) *Symbolic dimension:*

Beside the empirical dimension of the Ambuun resources use described above, the Ambuun indigenous people consider the environment as also non-empirical or symbolic (Onken Ingwen 2013: 8). By symbolic dimensions the study refers to the indigenous, less apparent, unseen dimension of their activities and resources. In other words, it refers to culture: cosmological and religious ideas, myths, norms, taboos, totems, proverbs, rituals and ceremonies. For the indigenous people, the visible objects alone cannot provide complete perception of the reality. Thus, natural resource management should be explained by the realities that are not material or visible.

These aspects provide insights on resources, and help acknowledge the value that each creature holds. Farmers themselves, leaders or farmers together with leaders have rituals that they perform in common or in private. In order to enhance good harvest in community, for instance, farmers perform a ritual called *ka kiel e buul*. It is done before opening the land for cultivation. It is performed under the leadership of the traditional woman leader in charge of the *mpio* (blessing). The similar rituals happen at the harvest and at the consumption of the first harvest moments.

The village land tenure system that is followed is the same with the other rural areas in the Congo (DRC). The system is said to be the customary or indigenous tenure

system (although the state insists that land is for the state). The majority of small-scale farmers in the rural areas, hold land under their natural land right occupancy, prescribed by the customary land system, where the land can be hold in perpetuity by the owners. In Yassa-Munene village in particular, land belongs to clans. And the resources on the land belong to the land users who own land. It is used by members of the family and clans. Beside the customary system, in the DRC, the land can belong to the private individuals or to the state.

#### **4.2.2. Land degradation issue: perception, causes and consequences**

This section is the summary of the description of land degradation issue in Yassa-Munene in order to understand the necessity for people to adopt the strategies that they often adopt.

Land degradation is a crucial problem and constitutes a threat to activities and natural resources in Yassa-Munene village (Onken Ingwen 2014: 5). Before the 1600s, even all the periods around the independence in the 1960s, most of the forest-savanna areas were considered as virtually uninhabited virgin land owned by the Ambuun people (Awak 1976). Until the 1970s, land around Yassa-Munene supplied food and other services. However, pressure on the land has been increased by the number of clans that migrated into the village, increased activities, economic and political problems in the 1960s and 80s. Political and religious ideologies based on colonization, dictatorship and Christianization, are said to have aggravated the situation and weakened traditional institutions (Onken Ingwen 2016: 12). These facts have been leading reason for people to abandon or neglect some of their land friendly customs.

Currently, the major degradation problems are: Production constraints, deforestation, decline in soil fertility, and soil erosion (Onken Ingwen 2014: 6). The specific local indicators of degradation are plant color, and size changes; rarity or appearance of opportunistic species, declines of productivity and other. These problems in turn have caused shortage of fertile land, food insecurity, conflicts, loss of biodiversity, and other issues. Many useful plants such as *ambus (jaune)* used in coloring raphia fibers (*Eyus*) (*Raphia gentiliana*) are no more found Yassa-Munene village. The plant is only found in the surrounding of Intsung village where they go to

extract it. Recently good quality raphia tree (*Eyus*) (*Raphia gentiliana*) fibers are bought from Bujimbila and Impini village or other places.

The major problems related to land degradation that farmers identified during the last 20 years in Yassa-Munene village were: low productivity, deforestation, soil fertility decline and soil erosion (Onken Ingwen 2014: 6) (Table 4.2).

Table 4.2: Land degradation indicators<sup>7</sup> and awareness by villagers in Yassa-Munene (n=120)

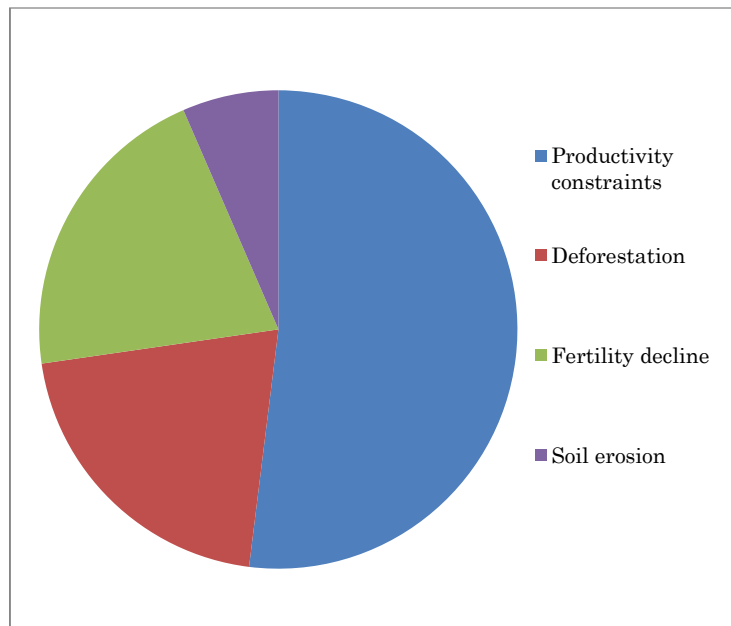
<b>Major indicators</b>	<b>Men n=60(%)</b>	<b>Women n=40(%)</b>	<b>Youth n=20(%)</b>
Productivity constraints	30 (50)	32 (80)	4(18)
Deforestation	34 (58)	20 (50)	4 (19)
Soil Fertility decline	27 (46)	24 (60)	4 (18)
Soil erosion	1 (2)	2 (5)	0 (0)

*Source: Author's field notes.*

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<sup>7</sup> Land degradation indicators here refer to indigenous indicators that based on change in plant or soil color, size, smell, taste quantity. They may be similar to what physical scientists can also describe.

Figure 4.2: Major land degradation problems in Yassa-Munene



Source: Author's field note.

Note: The most serious land degradation issue is represented in blue color, followed by the dark red, then by the green, and finally the purple color indicating the least serious. The seriousness is determined by villager indicators such as the color change, their food quantity or the taste.

So, various stories, information from many land users from the field in this study provide the evidence on the farmers' awareness about land degradation perception, indicators, causes and outcomes of the degradation by villagers. This shows that land users are well informed of the changes happening on the land and on their society. This awareness and action are the concern of the entire community as a whole, including ordinary farmers and their leaders.

However, beyond the ordinary indicators of land degradation perceptions, traditional leaders (land owner, *chef de groupement*, woman chief) in Yassa-Munene village rely on "trophies"<sup>8</sup>. In the present context, the trophies are understood as objects and products from farming, fishing, hunting gathering activities. The trophies are kept and hang up in the leaders houses, in a 'sanctuary' (*nzo a mpio*, blessing house), or on the roofs of leaders' houses. These objects may be: teeth, horns, skin, nails, becks,

<sup>8</sup> 'Trophy' can broadly be understood as 'an award for success in war or hunting' or 'something given as a token of victory' (Audioenglish, 2015).



plumages or bones of animals, birds or fish; they are also crop cob (of maize, millet), grains (peanuts), nuts, fibers; insects (caterpillars, crickets). In this society the leaders always receive portions of animals killed or other products from important activities or from the first harvest.

The trophies they receive help leaders always be informed of the quantity and quality of the game or products still available in their lands. Farmers believe that without doing so, they disobey the rules. Leaders in turn have obligation to perform ritual, provide security in their activities and keep the trophies. These objects are traditionally embedded with spiritual power, are considered as significant for the village culture and are symbols of a land that is alive and fruitful. The objects are embedded with spiritual, magical, medicinal, artistic and practical values; and were symbols of success, victories and proud.

So, besides these values and significance, the ‘trophies’ were additional information tools and indicators for the traditional leaders in the village. They acquire valuable information on their land, local origins of the products; information of on the size, the age, the health of the species. And that can remind them the previous problems and solutions of the problems that had face before. These objects complete the daily information they obtain about farms and from land farmers. In addition, to determine crucial issues, leaders use them to establish a comparison from the objects they have kept from previous game with what they receive. It is in this way that they acquire a certain size and quality of the objects. Thus, they determine the occurrence of the declined environment. And this kind of information is obtained only from leaders because ordinary farmer do not own these trophies.

The major causal factors of land degradation in the village can be summarized as situated within villagers’ inappropriate land used practices (abusive use of fire, disrespect of rules, overexploitation and other causes) and the lack of capital assets (natural, social, financial, physical and human). These refer, on one hand, to local community behavior on resource use practices that can go against their customs; on the other hand, to the lack of material assets that cannot enable proper resources management. But this was the purpose of this section to describe it.

### **4.2.3. The village traditional institutions: Nature and roles**

In the Ambuun ethnic societies in general, and in Yassa-Munene village in particular, there exists a number of traditional institutions that are very important in the social life and natural resource management. These institutions have existed for centuries and are connected with each another. Their roles in land management are specific to each institution.

The major village institutions are: family and clan, traditional leaders (land owner also called *chef de terre*, *chef de groupement* or *chieftainship*, woman chief), supporting institution (diviners, witchcraft men), other social organizations and associations. Besides the customary institutions, there is also the presence of formal institutions represented by a chief of the village.

In this village, land and the resources belong to the community's clans, although the national (legal) land tenure system states that land belongs to the state. Each clan owns its land. The clan's heads or clan chiefs control the lands. Above the clan chiefs is the land owner (or *chief de terre*, *Mfum a ntor*). The major village institutions are: family/clan organizations, traditional leaders, land owner (*chef de terre*), chieftainship (*chef de groupement*), woman institution, informal resource use groups or organization, associations. The role of each institution can be described as follows:

#### **1) Families/Clans institutions**

Family/clan organizations are important and basic institutions sustaining people life at the household level. This institution manages natural resources at the village level. There are similarities in the families' or clans' way of managing the land and their members. Family and clan heads have responsibility on household activities and on watching over sacred sites. Sacred forests are used for various activities and for ritual and spiritual purposes. Individual farmers take resources management actions at farm and at individual level. They deal intuitively with minor and occasional problems, and take decision without waiting for authorities to decide.

## 2) Traditional leaders institutions: Land owner, *chef de groupement*, woman chief

Traditional leaders in Yassa-Munene village refer to customary authorities, namely land owner (*chef de terre*), *chef de groupement* ('*groupement*' is the smaller and traditional institution above the village level; it is composed of villages) or also woman chief; all are from the leading clan of *Oluum*, and generally sub-clan of *Ongaa*. Traditional leaders are a very important institution in the Ambuun society (Onken Ingwen 2016). They play various roles. Their roles in respect to towards resource management strategies are more explained below (see section 4.2; few concrete examples of their impacts are shown in chapter 5).

Traditional leaders, namely land owner, *chef de groupement*, and woman chiefs do not actually act in the village as official chiefs in the village, but are just seen as chiefs in charge of village customary issues. They are considered as the most legitimate local authorities by local people. In the past, their role was extended to other villages in the region of Yassa.

Besides being the village *chef de terre* (land owner) they were chosen by the colonial power to play a formal role, as chief of the *chefferie* or *groupement* and *chef de secteur*<sup>9</sup>. This was the case with the choice of chiefs like Okwendel and Etienne Ipom in the 1950s or 1960s. The Chief Ipom became the first black chief of Yassa-Lokwa *Secteur*. However the other leaders that succeeded him, like Chef Kalata or Asab, played only the role of chief of *groupement* (after that major administrative restructuration, called *zairianization* had taken place in Zaire/DRC). There is no relation of dependence between these institutions. But there is role sharing between them.

The village figures that are officially acknowledged as chiefs, in strict sense, are the following categories:

### ● Women leader institution

There exists in the village, a women' institution, represented by a woman in

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<sup>9</sup> *Chefferie* is the local institution above the village level; it was created by the colonial authority; it was created for the adapting the traditional institution to official perception; 'secteur': is the lowest administrative institution above the *groupement*, the village level in DR Congo.

charge of many issues. It is also called *mpio* or *ngaa mpio* meaning ‘kaolin keeper’ or ‘blessings’. The present person in charge is Madame Antuum, from the leading clan, *Oluum*. This leader works in collaboration with *chef de groupement* and *chef de terre*. This is the institution most involved in resource use activities. This chief in charge of land has acquired land management wisdom from older generations and is said to hold spiritual powers. She knows the story, history and age of each land; and she knows its problems, soil quality and limitations. For activities, she decides on time, tools and working place to choose for the farmers. This applies in agriculture, gathering, fishing, or hunting. To support these activities, she performs rituals, and ceremonies related to activities; and she tries to enforce customary rules. She organizes and controls her activities in a mini-house called, *ndzo a mpio*, that only she can enter to perform rituals and say prayers. She knows very well the study and history of each land.

Beside this role, Madame Antuum is considered as a sort of ‘diviner’. She has spiritual powers that allow her to foresee, predict some realities, to explain dreams, to heal sicknesses, cast away bad spirits and also to name new-born children in the village. There are also famous woman leaders like Madame Eyen who always reminds other people of correct behavior in land use activities.

- ***Chef de terre, or mfum a ntoor***

*Chef de terre* (land owner) as traditional leader is an old Ambuun traditional institution. He is spiritual and social authority. *Chefs de terre* leaders are always members of the clan *Oluum*, especially those from the sub-clan *Ongaa*. The land owners are the most legitimate leaders. The *chef de terre* residing Yassa-Munene village governed many villages in the past. His authority extended beyond Yassa-Munene village. He acts in parallel with the chief of the village appointed by formal authorities. The current chief is Mr. Ndandula Inkank. The most known ancient chefs de terre were Etienne Oke and Okwendel who played also the role chiefs of *chefferie*, *groupement* and the *secteur* entities (as discussed in lines below). Most of the farmers interviewed recalled stories about these figures and their role.

The chief plays also a role in solving social conflicts, enforces traditional rules and practices for social harmony, and makes sure that abusive land use practices are not

applied. He is considered as sacred, symbolizes the link between the dead ancestors and the living. The chief is particularly in charge of adoption of new practices that can improve local activities. He decides on crops, activities and practices to adopt. Very often he tries the innovations before others. It is through and by him that cow domestication, rice cultivation and other practices were introduced. The chief has knowledge on each zone, or portion of the land. They know the story of their lands. He is the symbol of unity and people learn everything from his behavior or actions.

- ***Chef de chefferie and chef de groupement institutions***

*Chefferies* or chieftaincy institutions were established in D.R. Congo by the colonial power during the colonization. The *chefferies* entities were later replaced by *groupements* entities in the 1970s. Groupement plays the same political role as the chefferie entity. Yassa-Munene village belong to *chefferie* and *groupement* of *Thsimangung*. *Groupement* and *chefferie* can broadly be explained as the administrative entity that regroups villages. The chiefs of the entity and institution in the region of Yassa were chosen from Yassa-Munene village, from the leading clan of *Oluum* and *Ongaa* sub-clan. This was the case with the choice of the chief Etienne Oke Ipom, Okwendel, Kalata and Asab.

The chief played various roles. The major roles were political, social and spiritual. As a political a figure, the chief was invested with formal and informal authority. He has to be appointed and invested by the official authorities. In the past, the chief received a salary from the government. This led to changes, disputes and decline of the indigenous institutions during these periods in the region and other villages. His traditional role was to ensure everyday life, organize activities, control activities and norms, ensures harmony and peace. He used to organize and perform ritual towards spiritual realities, protect people and the land. The chief was also involved in activities and in search of solutions towards the problems the community faced.

The actual role of the chief of *groupement* in land management was not different from the role of the *chef de terre*, because he was a *chef de terre* by nature. But the person playing the role of the *chef de terre* is more visible in the village. The *chef de groupement* had power over all other *chefs de terre* in other villages under his entity

control.

### **3) Other social organizations and institutions**

There exist also in the village other various, smaller and informal organizations or associations that play a role in the community and land. There were found in the village, a group of women working together; or the group of hunters, fishers, or farmers managing activities together during specific periods. They take some of the management initiatives at individual and farm level. There were found in groups of youth doing the raphia crafting or the making fish ponds together. There are also groups of traditional dancers and singers. These institutions do not have direct or practical role to play; but have an indirect role of transmitting knowledge, value and wisdom about the land to the younger generations. Through dances and songs, dancers learn about the story, culture, norms and land of the Ambuun ethnic group; about the consequences of abuse and the need to do positive actions.

Institutions like the witchcraft men (also called medicine/magic men), diviners are quite invisible, but real. They help the chief, land users with their wisdom to predict the rain, drought or famine. They observe the movement of the sun, moon, clouds, wind; the movement of the insects, animal, birds or the appearance of the flower; diminution of the water; drills and on, to tell the community about actions, practice, tools to use for the activities. And also remind the community of with moral action to take; then have the power to influence natural phenomena. A village time line obtained from the discussion with local farmers, chefs and all informants in Yassa-Munene, has brought to this study a summary of most of stories, history and past event (see Box 4.1). In most of the cases, the same story has been told by different people. The stories are often reported with no exact date. In the box, the informants names have been kept secret.

#### Box 4.1: Yassa-Munene Village Historical Time Line

1920s: Itsang became *chef de terre* of the village and the village surroundings.  
1937: Chief Etienne Epom (a *chef de terre*) was slapped by colonial authority. This act is said to have caused flooding over Lokwa River in the village.  
1940: Etienne Oke Epom, a village chef de terre became chief de *Secteur/Collectivité* in Yassa-Lokwa.  
1942: Crop attacked and devastated by crickets (*ayoy*); introduction of rice cultivation  
1964-65: Involvement of the villagers in Mulele rebellion  
1966s: Introduction of new peanuts variety, *ndzu ombom*  
1978-79: Kasong rebellion; Introduction of first cattle livestock in the village by Ndandula; appearance of cases of polio disease.  
1980s: Introduction of squash.  
1980-84: Major traditional power struggle between Chiefs Kalata and Masaba for the chieftaincy leader position in *Groupement* of Tsimangung.  
1989: Beginning of youth out migrations to Thsikapa and Angola.  
1990: Development of raphia crafting commercialization toward outside destinations.  
2001: Famine in the village, crop yield general failure.  
2005: Development of Charismatic churches  
2008: Pig pest and diseases.  
2009: Establishment of a school in the village.  
2013: Animal pest; major peanut crop failure; introduction of beans and hemp crops; Confrontation and conflicts between inhabitants from Intswem and Yassa-Munene villagers over territorial delimitation; Implantation of *village agricole* in disputed areas by administrators officials.  
2014: Heavy chicken disease.  
2017, January: death of Chief Kalata (Former chief of *Groupement* of Thsim Angung in the 1980s)

*Source: Author's field note.*

*Note:* The information in this box is the summary of most the stories reported by the village leaders and farmers who recall most of their past. No specific date is provided. The same story has been reported by different people.

### **4.3. Local people's strategies in Yassa-Munene village: indigenous, introduced and innovative practices**

The description of the village traditional institutions, land degradation issue, geo-ecology and socio-economic situation in the previous section of this chapter provides insights to understand the present for framers' strategies to cope with degradation in Yassa-Munene village.

The findings in this study show that “in order to deal and cope with land degradation in Yassa-Munene village, farmers rely on a variety of strategies that are mainly indigenous, introduced or evolved” (Onken Ingwen 2016: 11). The practices consist of agronomic, non-agronomic strategies and other social life adaptations. They are measures undertaken by farmers themselves and also by their traditional leaders. Local land management practices, customary rules, taboos, belief and rituals encouraged and practiced by traditional leaders and head of clans have played an important role to support each strategy adopted or practiced in the village. Thus, each of the mechanism is always associated to influence of the traditional leaders. In the adoption of new strategies the evidence shows that the leaders are the ones who adopted first the husbandry of cows, sheep, rice and squash.

#### **4.3.1. Major agronomical strategies**

The major agronomical strategies adopted by villagers in Yassa-Munene villages have been the following:

*-Intensification:* Intensification is a practice that exists for centuries. It consists of “using intensively the same unit of the land, then leaving it to regenerate and moving somewhere else” (Onken Ingwen 2016: 11). Traditionally, the Ambuun people practiced it. They intensely used a mature land for diverse crops. When for instance a major crop like cassava is planted, it was followed by fruit trees. A cassava harvest could last for two or three years. Then, the growing tree on the land can last for longer period. So, extending farm size was not the priority. The head of clans encouraged their clan members to maximize the use of the plot farm unit by insisting on the need for a correct use of mulch and with crop that last in order to allow other land to rest.

Other traditional leaders enforced rules regarding the respect for the fallowing. At the opening of the land, a ceremony and ritual called ‘*kakiel ebuu*’ (chopping of the herb) was performed by the traditional woman leader on the chosen working site (Onken Ingwen 2013). It consisted of letting the leader cut the first herb before all on the working site. To enable and encourage the practice of intensification, very often the leaders, especially the women in charge of the land, choose new location for community



activities after that a long fallowing has been observed on the land. The traditional woman leaders always knew the duration of the fallow. No one in community could decide to move alone to other sites. The major ceremonies are performed in August during the clearing of land and during the harvest in December. Besides these, are numerous other ceremonies performed in private or in public by leaders or by individuals.

*-Agroforestry and fallow* are also in Yassa-Munene village, ancient practices used to increase productivity and repair land. Ambuun people plant trees in the forests, village or in the farms; or they just leave the plant standing on the farm for ecological, meteorological, aesthetical, and medical purposes. When land is reforested, it enables the development of biodiversity (Onken Ingwen 2016: 11). By reminding people about norms and the punishment of divinities, leaders and clan heads ensure that useful medicinal plants are not cut down. Village diviners and healers also encourage these practices. In order to perform some of the ceremonies, rituals, or obtain medicinal plants, very often healers or ceremony requested from the patient (patient family) a mature object (product from land use activity); an object obtained from a mature plant (for instance, the cola nuts, maize, animals, and raphia fibers). Only these sort of mature products were offer to the chief as fruit of first harvest. Thus, this has always encouraged people to plant and protect some of these plants in their forests and lands. Young people are taught these values at home, at working activities or in gatherings.

Ambuun people, in reality, consider a man rich, who has larger number of raphia palm trees, *iyus*. They said *ebyal iyus* ('is a rich, true man, he who owns a plantation of iyus tree') (Onken Ingwen 2013). There are also many stories and myths about the consequences of disrespect of the agro forestry and fallow. Besides the fact that land owners leaders are opposed to land abusers, there are invisibles punishments that can follow for the resources misuse.

*-Intercropping, rotation and mix cropping* as described by all farmers are also old practices being used. The combination of diverse plants in the same plot increases productivity and reduces plants' vulnerability to diseases. Squash, peanut, cassava, sorrel or other plants are often grown together in non home gardens, a plot of squash

visited was actually a former plot of peanut. It continuously holds legumes planted in very little quantity. A home garden plot (20mx8m) found in the village held a combination of 20 varieties of vegetables, crop and medicinal plants like *Onsunsus* or *isang ndzem* that are used as pesticides, useful for crops. Leaders and traditional taboos forbid people to cut these plants because they serve also for other purposes such as the medicine against colds. It is used also to expel evil spirits (Onken Ingwen 2013: 9).

*-Introduction of new crops and new crop combinations* as strategies are also ancient practices in use. To the historical crops (millet and Ambuun peanuts, *Ndzu Ambuun*), new crops were added: cassava, new peanuts variety, maize, rice, beans and squash. With the decline in peanut yield, in 2012, 2013 and 2014, the village adopted beans (*Niebe*) and hemp just to respond to the local social and natural constraints and market demands. The introduction of the cassava crop can be situated around the 17<sup>th</sup> century; maize and pineapples were adopted in the 19<sup>th</sup> century after the encounter with Europeans. The introduction of rice (by chief Ndandula) and an improved peanut variety (*Ndzu Ombom*) as reported by older farmers occurred in the 1980s. The cultivation of squash was introduced in 1982 by Madame Eyen. It was brought from Kimpata Lokwa village. In 2013, 80% of farmers planted beans (*Niebe*).

*-Farmers also use manure and mulch in farming.* In some of the cases, farmers use chicken, goat and cow' manure. The utilization of chicken and goat manure has a very long history compared to the use of manure from cows for their home-garden. The practice was identified in the maintaining of small home garden or individual trees behind the houses and in the cultivation of tobacco and pigment around the kraal; likewise, the mulch is used on the farms. They turn the soil with the grass that was cleared on the land. Recently, it has been identified that they maximize the use of the leaves of a plant called *sekoper* or *verven*. Its leaves are returned with the soil to fertilize the soil. There is no rule that obliges farmers to use the manure or mulch. But there exist norms that forbid to burn bush land for individual or criminal ends. Leaders and land owners watched over it respect in order that the grass land remain fertile and the mulch from clearing be used as compost.

-The use of furrows, mounds and enlarging the furrows: Farmers in Yassa-Munene were *building furrow* or *enlarging furrows*. For them the mechanism is a cheap and low cost option. In fact, the Ambuun people have always utilized furrows in farming. To avoid or control soil erosion (sediments run-off across the field), they construct furrows/barrages within the cassava, maize or millet farms plots that are located on slope. But for the farms located on flat land, farmers build mounds to plant cassava. So, in sloppy farms plots, they particularly use the following mechanisms:

(1) Building larger furrows around the plot to mark boundaries between different plots; these furrows help also as barrier to stop rain flow running from upper slope to the down slope of the field. On these furrows are often planted a diversity of legumes;

(2) Within the farms, long furrows are built from upper slope to down slope of the field so that the unnecessary rain water can run between the furrows without affecting the furrows and crops;

(3) They similarly enlarge the distance between furrows to avoid water destroying furrows and crops. Some farmers plant vegetables in between these furrows. Or, they let the plants that develop themselves in the alleys to grow freely.

(4) They increase the interval between crop plants because the size of crops depends on the spacing between the plants.

(5) Farmers do not clear/burn the immediate or closer vegetation at the upper field area in order to avoid erosion.

(6) They leave *in situ*, trees in the fields. Trees protect crops against strong wind, storm and pests. Around the trees were planted vegetables. Under trees, they plant vegetables such as hot peppers, bitter amaranth, sorrel or tomato. Some of these trees are left standing in respect to customary rules over tree protection that traditional authorities enforced. Leaders at the stage of selecting sites for clearing, identify trees that needed to be kept standing for their services.

In regard to all major agronomic strategies used, the number of farmers and the estimated percentages have been provided in the following table (table 4.1.) bellow. The table provides only 20 people' responses about soil fertility decline issue. For the mechanisms to cope 40 people responded (in Table 4.1).

Table 4.3: People's responses to any soil fertility decline (n=20)

<b>Practices</b>	<b>Yes n (%)</b>	<b>No n(%)</b>
Intercropping	16 (80)	4(20)
Use of inorganic fertilizer	0 (0)	20 (100)
Compost /plugging in crop residue	14 (70)	6 (30)
Farm yard manure	16 (80)	4 (20)
Agro forestry	16 (80)	4 (20)

*Source: Author field data*

The findings here showed that for the farm located on flat lands, farmers generally build mounds to plant cassava. But there is no furrow or mounds for peanuts. Peanut is generally planted on a land that has been level and prepared simply. Very often the mulch is burn on site and the ash kept for its soil fertilizing service.

Villagers' major reasons and advantages for the use of above agronomical practices are as in the table below (Table 4.4)

Table 4.4. Farmer’s reasons and advantages of using traditional farming managements

<b>Local solutions</b>	<b>Reasons</b>
Intercropping, mix-cropping	Food, medicine, shelter, less labor, soil fertility, cheap, prestige, dignity, time and energy saving, maintain diversity, space; weed and pest control
Manure	Weed control, soil fertility, local materials, less expensive
Mulching	Weed control, less labor, no input, local materials, less expensive
Agro-forestry	Sacred site, preserves history, dignity, shelter, less labor, soil fertility
Crop rotation	Good yield, less labor, not expensive
Fallow	Fertility, plant maturity, good yield, no input, sacred sites, historical means

Source: Author’s field data

These mechanisms apply to each individual farmer at his farm or household level according to the customary practices and norms enforced by their leaders. However, according to the informants, leaders are not personally required to be involved in each minor measure taken by a farmer. But for important decisions (as shown with specific examples in Chapter 5), they remained the only ones to decide and take the lead.

Still, in each above strategies, the leaders’ role was crucial. Leaders for instance watch over the rules regarding the respect of the fallow and rotating period in order to allow land maturation that is useful for agriculture, hunting, fishing, and gathering. The woman leader (Madame Antuum) always tries to make sure that activities are performed on an agreed location, on working days and that ritual are performed before opening land. Leaders are also involved in preserving sacred sites from disturbances. No activities are practiced on the sites. The areas like *mbong ongaa* (a bath site for the chief along Lokwa River, belonging to *Ongaa* sub-clan) and other sites are watched over. The biodiversity found in these locations is quite different in quality and quantity than other locations.

#### 4.3.2. Major non-agronomical strategies

Besides the above agronomic mechanisms, farmers' other farming related adaptations were:

##### *-Construction of fences around farms:*

This mechanism is not a direct strategy against land degradation, but it is related to the strategies. Some of the failures in crop yield were attributed to livestock that was left roaming, which destroyed the farms and crops (Onken Ingwen 2016: 12). Livestock was seen then as a bigger threat to the farming activities. An elder informant recalled that until 1990 bush farm plots were only few hundred meters away from houses. No animal destroyed the farms. Presently, all the peanuts, maize and rice farms cultivation are made within stick fences. Each year, before clearing the land for cultivation, men build larger fences. In 2007 and after, peanuts and maize productivity was low because cows and goats destroyed their fences, walked in the farms, ate the growing plants and destroyed the other crops. And the crops remaining on the farm did not have normal growth. So, fences around farms intended to prevent livestock destroying the crops, did not work and indirectly caused crop failure on the farm. For fence building and work efficacy, the traditional leaders or the chef of the village take the lead. They proceed first by choosing the working site, and then proceed to choose regular working days and fence building days.

##### *-Extending farm size and diversification of plot parcels:*

Traditionally, the Ambuun practiced intensification. Extending the farm size was not the priority. With the recent declines in major crops and wild biodiversity, farmers extended the size of their farms. Many multiplied farm parcels for the same crops, in order to increase production. Women cultivated diverse bush land parcels of the same crops in different areas (in *Nto-Lankoon* region, 8 km away; and in *Lankaam* region, 17 km away). In 2013, each owned two parcels of cassava (Onken ingwen 2016: 14). As always, the work site is selected by the traditional leaders in charge of land. This can be

interpreted as that they agreed with and allowed the strategy.

*-Abandonment of traditional crop and activities:*

Villagers sometimes respond to land degradation with extreme answers like abandonment of the activities or crops. Due to failures in peanuts in 2012-2013, more than 60% of women said they were not willing to cultivate peanuts in 2014. Until June and July 2014, many had not yet started the clearing. They were still frustrated by previous failures. Likewise, men who cultivated rice were not willing to cultivate it.

For several years already, farmers have been responding to the problem with abandonment of some of crops such as the Ambuun peanut (*Ndzu Ambuun*). This crop requires mostly mature bush land, where the crop can be cultivated twice a year. The variety is also time-consuming at the harvesting stage. Since the farmers cultivate the farm land far away, presently, they do not have much time to invest in cultivating this variety. Besides that, the peanut variety is not accepted in the market. Thus, many just decided to avoid cultivating it. Only three women cultivated it in small quantities in 2012. Apparently, no leader has requested people to take this option. But farmers at individual level decide according to their own reasons. Leaders do not force people to cultivate these crops. Actually, in 2013 none of the leaders personally cultivated this crop either.

*-Killing, selling and destocking:*

Killing, selling or destocking the animals in the village areas were mentioned by farmers as another extreme response to the problem of land degradation in Yassa-Munene. This is always adopted by individual farmers rather than by the group or under the influence of a leader. Between 1990 and 2010, numerous disputes occurred between animal owners and the farmers. Farmers often complained about the destruction of their crops, properties and water sources point by the livestock. These destructions have frequently caused crop yield declines and many social problems. So, to avoid the destruction on the land and conflicts, in 2010 Mr. Yongo, a local inhabitant, decided to destock his livestock into Inyekongo village. Similarly, another villager, Mr.

Kayong decided to kill most of his cows and sold all the animals.

*-Diversifying sources of income:*

In Yassa-Munene, many have been involved in the small-scale commercialization of raphia craft. To confront the difficult Congolese economic situation and political troubles in the 1970s/80s, and land degradations issue recently, many rural people have tried to diversify their land use work activities and source of income. Non-agricultural activities such as petit commodity production activities have been adopted. Adding to the historical livestock, pigs, goats and chickens, two initial cows were brought in 1975 by chief Ndandula. The study found also that it was in the 1980s that he introduced rice cultivation. During the same period, they began to be engaged in commercialization of the raphia crafting activity. Presently, raphia crafts are sold in the cities. The activities attracts youths into business because agriculture has declined.

It was finally observed that in 2014, some people have begun fish pond activities along the Mbuun stream. New species of fish have been introduced. All the changes in the activities intended to compensate for losses in agriculture. The commercialization of Ambuun is not new. But recently young people have developed it as business for cash. Some of the crafts are sold in the capital city, Kinshasa. The informants recall that the son of Chief Kalata, Mr. Angaan, is the one who started the activity. Similarly, some young people are beginning fish ponds as a business activity along Mbuun stream. These were started by Mr. Ongnam Maro, the nephew of chief Kalata and the son of the chief, Mr. Maurice. There are three other farmers beginning the activity.

Besides all these initiatives, some youths also try to engage in other small businesses. Some buy from the city, products such as salt, dried fish, sugar, soap or prepaid phone cards that they commercialize in the village. This is seen by most of them as a ways to sustain their life; a ways to stop depending on land activities that actually do not provide income.



Table 4. 5. Farmers’ strategies to cope with land degradation (n=40)

	<b>Farmers’ responses to land degradation</b>	<b>n (%)</b>
1.	Constructing fences	36 (90)
2.	Making furrows, enlarging furrows intervals	32 (80)
3.	New crops adoption and New crops combinations	36 (90)
4.	Extending and diversification of farm parcels	36 (90)
5.	Abandonment of traditional crops	36(90)
6.	Killing, selling or destocking livestock	32(80)
7.	Diversification of sources of income	2 0 (50)
8.	Other traditional farming mechanisms	28(70)

*Source:* Author’s fieldwork data 2014.

#### **4.3.3. Other minor strategies**

Along with the major agronomic and non-agronomic mechanisms, there have always existed many other minor practices used by villagers to deal with the degradation problems and other constraints they face in Yassa-Munene (Onken Ingwen 2016: 12). It was found that local people try to re-focus on them to maintain soil, land and productivity. There are practices such as wounding avocado and hevea trees trunk in order to increase plants’ productive capacity; mixing hot pepper with grains in storage to protect them against pests or against evil spirits; attaching a small bottle of ‘holy water’ to a fruit tree or to the neck of livestock to protect it against evil spirits and against sickness. The customary rules, through leaders, always forbid people to use seeds from unknown sources if the ‘adequate’ conservation methods, such as conserving seeds with hot peppers, has not been followed.

In order to protect their soil and crops, recently people chose to avoid using Chinese made tools (machete and hoes). They always break and last only a few weeks. Besides that, the metal used to make these tools are said to be infecting the soil. People prefer using locally made tools because they trust them, they are solid and the metal used is not infectious for soil. Leaders actually are not opposed to these local tools, because they are considered as a way to perpetuate tradition and customs, and done in

accordance with the rules. Thus, when a young girl is married, only these traditional tools are required as a part of dowry.

To prevent animal contamination or transmission of raphia plant sickness from a raphia plant to another, traditional taboos allowed only the owner to harvest its leaves, and forbid a stranger to do so. The same applied for the harvest of pepper.

Traditional leaders also insisted on the respecting holidays and death mourning days. These are days when land rested without being disturbed and ‘the dead ancestors walked on the land’.

The study findings have showed that the application and choices of the above group of mechanisms were mainly the initiatives of farmers, but also under the influences of leaders in some of them. If leaders decided each year on the location of the farms, they also agreed with the building of the fences. Their own farms were located within the fence. In the recent diversification and extending of farm parcels, leaders contributed by suggesting locations for work. They went to the sites and began their own work. Leaders instead are the only farmers to introduce new variety of crops and new activities (as shown in the chapter 5 with the introduction of new peanuts, rice, cows).

In the given evidence on farmers’ land management strategies to deal with land degradation, farmers and leaders have specific roles to play in the uses of these practices. Table 4.3 shows that among the strategies adopted, farmers’ higher interest to improve the situation has been placed on adopting new crops and new crops combinations, traditional practices or suppressing some, and changing activities.

### **4.3. Conclusion and discussion**

The chapter gave us here the data findings on the study conducted in Yassa-Munene village. It examined local people’s strategies to cope with land degradation in the village. Along with this, the village land degradation situation and traditional institutions’ roles have been also provided. The examination had to answer the question ‘How do local farmers in Yassa-Munene manage to deal with land degradation? (what are the management practices and strategies used to cope with land degradation?); what benefits do they obtain from managing land in the traditional way?’

The findings showed that their strategies are based on indigenous farming and non-farming mechanisms. These strategies have often been the initiatives of farmers, external actors and also of their leaders. Still there is knowledge attributed to each group. The leaders' implementation or enforcing of the rules helped local management practices to work effectively.

So, the discussion reveals that as in most of the studies reviewed on indigenous strategies, in this village farmers relied on revitalizing customary land management strategies and some adaptations from external actors, agencies, and institutions. Farmers and traditional leaders seem to have the same customary knowledge and awareness of the degradation issue and strategies to adopt. However, in this study since leaders additionally rely also on other indicators, the 'trophies', the strategies they implement personally are more effective. They take into account local practices, worldview and traditional institutions such as taboos, rules, ritual and ceremonies in the application of strategies. Meanwhile the strategies by ordinary farmers (who cannot have access or perform some of institutions) are not balanced. The next chapter (chapter 5) instead analyzes farmers' reasons and decisions to choose the strategies they apply in the village. It looks concretely at the leaders' role.

## **CHAPTER 5. UNDERSTANDING THE ROLE OF TRADITIONAL LEADERS IN FARMER'S STRATEGIES AND DECISIONS IN YASSA-MUNENE VILLAGE**

The objectives of this dissertation as defined in the introductory chapter were:

- To examine local farmers' strategies to cope with land degradation in Yassa-Munene village;
- To analyze farmers' reasons and decisions in the adoption of management solutions; and to understand the role played by local traditional leaders or authorities in people's choice for adaptive solutions.

The present chapter fulfils the second objective. It analyzes the reasons behind farmers' decisions to adopt land management strategies. It particularly analyzes local leaders' role in farmers' decisions to adopt land management strategies. The analysis relied on the case study findings in chapter 4, examining farmers' strategies in Yassa-Munene village. The analysis based on the *framework for traditional local institution analysis in land management* elaborated in Chapter 3, adopted from Bonye (2011: 23; Mowo et al. 2013: 1).

The framework adopted was previously used to analyze land management situations in most of the studies in Sub-Saharan Africa. It has been used because it fits the situation in this village. Traditional leaders' institution in this framework affects all the categories of framework. Leaders influence and condition land users' decisions on land management. Besides the role of mediators or rule enforcers played by traditional authorities in other cases (Agrawal 2010; Bonye 2011), in this case they have a more special role. Leaders in this study are required to take the lead, act as models and try the innovations before recommending them to others. Because local land users often find it easy to adopt the practices that leaders have applied personally (Onken Ingwen 2016: 4).

These arrangements may contrast with the common image of traditional African leaders traditional leaders/ chiefs that only command and make others follow their order.

But in this case study, Ambuun customs require the full involvement of the chiefs, who should take risks for people's interest and survival, since leaders are intellectually and culturally better equipped than others. All the informants confirmed that from their younger age, leaders are prepared to govern and control land. They have been taught local history, story, norms, geographic situation, and past problems and solutions concerning land. From previous generations they have received the *Ntsim* (oral information about past leaders, events, calamities, successes and dreams) of the village. Leaders have also developed important relations with neighboring chieftaincies, villages or clans. This advantage placed leaders in a better position to initiate innovations (Onken Ingwen 2016: 11).

The framework's components and functions of the components have been described below as institutions (in Figure 5.1):

(1) *The spiritual world* is portrayed by all African societies as a physical or a visible institution but it cannot be seen. In the Ambuun societies, the spiritual world is also an institution. It is composed of God or the Supreme Being, ancestors and spirits. This institution influences living beings activities, actions and thought. It is above all the local institutions or organizations of human societies. The human actors, institutions and individuals connect to the invisible institution through prayers, rituals, ceremonies and other institutions. The position of the spiritual realities in the figure reveals the influences of the god, ancestors and spirit on other elements of the structure (except the external actors, formal authorities and NGOS).

(2) *Chief of groupement institution* is among the higher institutions. It is portrayed as the first leader's institution. *Groupement* can literally mean "assembly of villages". It is equivalent to chieftainship. This is a sort of modernization made by of traditional institution which put together several villages. Before creating *groupements*, the colonial authority established chieftaincies, called *chefferies*, which had the similar role as the *groupement*. Traditional chiefs chose to lead these institutions. The *groupement* or *chefferie* where Yassa-Munene belongs is *Thism Angung*. Its chieftaindom is located in Yassa-Munene. The chief of the *groupement* is a leader as are the two following types of leaders (land owner and woman chief). The authority of the chief of *groupement* was

extended to the other neighboring villages. This institution is the most acknowledged by the official authorities; the chief was chosen from leading clan, the *Ongaa* clan. The chief of the *groupement* assumes traditional political, social, judiciary and spiritual tasks. He is the center of the decisions, especially important decision on resource utilization and control in the village and in the other villages under his authority. He played the role of mediator between his community and external actors, ensures security in the villages or in the region under his power. He is more involved in the governance of the entire *groupement* rather than only in his chiefdom village. The chief of *groupement* of *Thsim angung* from the leading clan in Yassa-Munene has been chief Kalata. However, most of the land management issues in the village are ensured by the land owner (*chef de terre*) and woman leader (*nga mpio*). But all the three are acknowledged as chiefs.

In the frame the chief of the *groupement* institution is placed immediately bellow the spiritual institution. From this position the leader is considered as a sort of mediator between the spiritual world and the human community. He tells the community the will of God or of the ancestors. He transmits the will and problems of the community to God. Along with the chef of *groupement*, are the *chef de terre* (land owner) and the woman chefs (*nga mpio*) who play the similar role.

(3) The *chef de terre* (land owner) is also a leader as is *chef de groupement* and woman chief. The *chef de terre* institution is the most respected and holds the full legitimacy of power in the village. While the *chef de groupement*'s role is more on external politics and relation with formal institutions, the present leader's role is more focused on the village's land, social and spiritual issues. As shown in the structure, although the *chef de terre* interacts or cooperates with the chief of *groupement*, actually, he does not depend on his decisions before acting. But, like the chief of the *groupement*, he is directly dependent on the spiritual world. He plays many of the roles as described in the chief of the *groupement*, but he is more involved in village and land issues, and not much in the politics. He controls activities and customs at the village level. Currently, Chief Ndandula is the *chef de terre*. He is respected by all. He is the only leader to whom leading clan secrets are told.

(4) A woman chief (*nga mpio*) particularly is a born leader because she belongs to the

leading clan/family; she is said to possess spiritual capacities that enables her to connect the community with the spiritual realities. She is the major actor in land activities. She plays a coordinating role on land and activities. She plans and control activities in different areas. She is very attached to the leader and to the spiritual forces; she is the one in charge of the sanctuary where rituals are performed and the trophies kept. She decides on working sites and the crops to introduce, ensures the respect of the holidays, performs rituals, and consults with the *chef de terre* or with the *chef de groupement*. She consult the ancestors. In this village Madame Antum was the woman leader; Madame Eyen is as well considered so.

The evidence in this study shows that the relation between the three leaders is not of dependency, like in most of the other societies in Africa. Here all people met during the study informed that there is a strong collaboration between the leaders. They behave as decision makers who share the same interest, who have responsibility towards the entire community. During this research it was observed that the leaders consulted one another before important decisions. They have the same degree of respect before the Supreme Being. Their role and level seem to be equal. That is why they have the same position within the adapter frame below (see Figure 5.1).

Besides the village leaders' institutions the villages have other institutions that are described below.

(5) The *witchcraft men* or *diviners* institutions are not chiefs, but are major actors in the communities. They are consulted by chiefs and villagers on numerous issues such as people's spiritual life, health problems, and land condition concerns. They are said to be in relation with the Supreme Being and divinities. So, they have influence on chiefs and people. Farmers often consult with them for the activities in the village.

(6) *Norms, belief, cosmological visions, rituals, ceremonies* in the structure are these practices that impact and influence all institutions, perception and land management. They provide the chief, the leaders, and the farmers with wisdom and guidance to use their resources and deal with other social issues.

(7) Sages or sectional heads, all depend on the chief and are constantly connected with

farmers. They are also consulted by leaders, clans and households. Clan leaders look out for people under their responsibility and the clan's land; they are in permanent contact with the chief. They are major judges and advisors in the villages, and play important roles in indigenous tribunals.

(8) *Farmers* institution operates on the land level, manage individual activities and actions. They perform ceremonies and rituals to enable harmony with the spiritual world and the community members, at the farm or household level.

(9) *External actors like NGO, governments, formal local institutions* and others. They normally deal with development or land management issues. They can consult leaders, families or individuals or even village organization, but do not depend on them for their decisions, and are not influenced by local traditional institutions or the spiritual world.

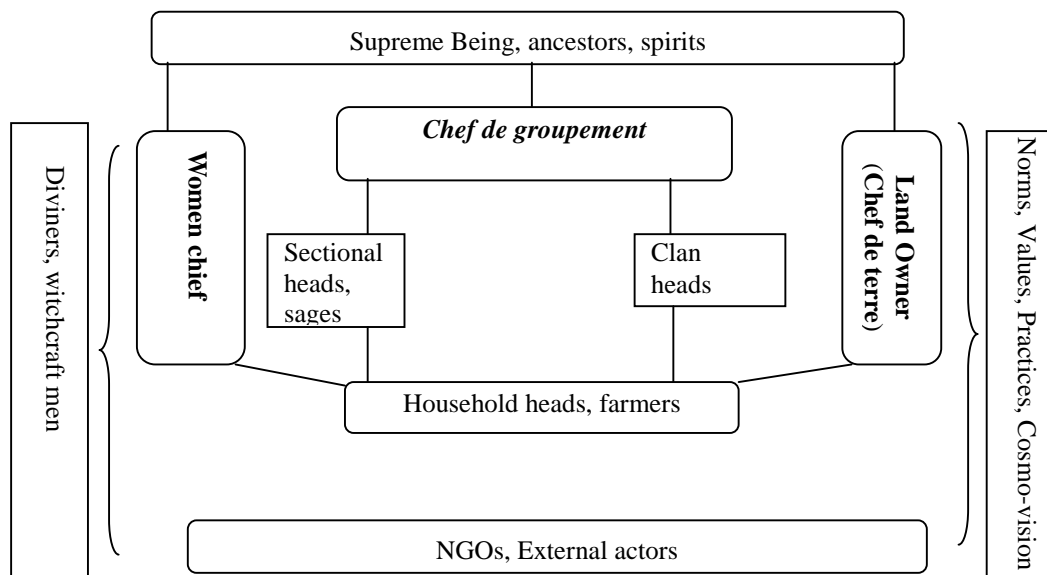
Besides the village traditional leaders are also a *chief of the village*<sup>10</sup>. He represents the formal authority; he is not a traditional leader or authority. He is appointed by formal authority from the *Secteur* (higher formal institution above village and *groupement*). He does not belong to the traditional leaders' leading clan. He represents the village at the higher formal institutions; he plays a role in the country administration. He has not been considered as a traditional institution or leader. In the case of the village under investigation he is neither considered as a traditional leader nor authority. He does not play a role in traditional land management. His role is limited to the political role in the village. He is very often feared and suspected to play a negative role. Still, collaboration between traditional leaders and him can found. Thus, the chief of the village has not been represented in the figure a traditional institution.

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<sup>10</sup> A *chief of the village* is part of the formal institution. He is appointed by formal authority from the *Secteur* (higher formal institution above village and *groupement*).



Figure 5.1. Framework for traditional local institution analysis in land management in Yassa-Munene



Sources: Adapted and modified from Bonye 2011: 26).

The analysis of the data from a chronological, historical and institutional perspective, as adopted here, focuses on the role of traditional leaders in farmers' strategies. Traditional leaders (also called traditional authorities) here mainly refers to the chief of *groupement*, *chef de terre* and woman chief. All are from the leading clan in Yassa-Munene. The *chef de groupement* is a *chef de terre* who was given some formal political responsibility in the village or beyond the village level. He has several villages under his authority. The *chef de terre* is more concerned with issues in the village; he did not have formal political role as did the chef of *groupement*. His customary power cannot be taken away from him. The woman leader is a woman from the leading clan, who plays various customary roles in the villages, especially on working activities and in keeping of the *Nzo a mpio* (sanctuary). All the three are considered as leaders. There is no power competition between them; each of them plays his or her role. Still, the role of the *chef de terre* seems to be quite higher. The *chef de groupement* seems to play more external role (towards formal authorities) than the *chef de terre* and the woman leader or chief.

The analysis focuses on three periods of time: from the village's initial situation,

the changing situation, and during recent initiatives undertaken by different actors. The different periods described for each period can overlap other periods. There is no clear cut between the three periods. The schemes in each section of the analysis demonstrate the role played by different actors, in order to point out the special role played by the traditional leaders in enabling adaptations.

### **5.1. Different actions and decisions prior to external interventions**

“This first period broadly includes the time between the 1920s and the 1980s, corresponding to what the informants designated broadly as *good epoch*” (Onken Ingwen 2016: 15). It is considered as good, in spite of changes and troubles that threatened the indigenous political, cultural and ecological heritages. It is considered as good even if some of the authority or the leaders, the indigenous beliefs and customs were threatened or suppressed by the Belgian colonialists and missionaries; or even threatened by the first Congolese authorities who led the country after the independences. They rather consider as advantages the fact that most of the traditional practices prior to this period were still strong in people’s minds, the land produced much food, the traditional leader had influence over many villages, the colonial power provided them with some basic needs, and many Ambuun of the region lived around this villages.

There is no clear demarcation between the beginning and the end of this period. However, most informants consider the 1920s as a reference. It is a time when many Ambuun people were still living around the region of Yassa, and were under the strong influence of the traditional figures such as the chiefs Okwendel, Oke and Kitchang. It is a period marked by intense activities of the missionaries and the colonialists. This period can be portrayed mostly as a moment when the Ambuun people continued to enjoy harmony within their environment. The land was still productive to some degree. The major solutions often chosen by farmers to deal with problems they faced have focused on the indigenous mechanisms such as agroforestry, crop rotation, intensification or others. They also relied on life strategies like community solidarity to borrow or lend services.

The community linkages were strong among community members. The destructive process in the environment or the culture was prior to this epoch and continued even after. However, some of the cultural elements sustaining resource management had survived the changes. Farmers and their traditional leaders continued to perform rituals and other practices that encouraged people to use their land sustainably.

The customary leaders or authorities continued to play a major role in the society and in community natural resource use; they continued to influence individual people's way of managing their resources and their practices in order to ensure harmony in their land and in the society. It is during this period that the *chefs de terre* became chef de *chefferie/or groupement* (these are traditional institutions created by the colonial authorities; they are administrated by traditional leaders who are *chef de terre*). During this period, the chef de *groupement* received salary from the government. It is also during this period that Mr. Etienne Oke became the first black chief of *secteur* (the lower formal administrative entity above the *chefferie/or groupement* and village level).

It is demonstrated that during this period, no serious initiative for development was undertaken by the formal governments or other external actors to improve life and counter land degradation in this village. Some of the development efforts in this village were limited to education, which served colonial interests and objectives. However, their attempts failed. An example is the attempt in 1930s and later to establish a small school and a catechumenal center in Yassa-Munene.

While there was confusion in people's mind regarding which custom to adopt, as they faced some cultural constraints, farmers continued with the traditional way; and simultaneously, some of the adaptations and innovations were taking place in agricultural and social domains. For instance, to the Ambuun traditional crops such as Ambuun peanuts (*Ndzu Ambuun*) and millet, sorrel, cassava, maize or rice were added. The adaptive procedure of new crops and practices was always initiated by the leader who tried the crops first before allowing the community to adopt them. When a solution was identified, the chief sent his envoy to buy, borrow, or steal the new practice. He adopted and tried the practice on behalf of the community.

The discussions with different farmers provide the evidence that most of the successful adaptations that occurred during this first period were possible through the

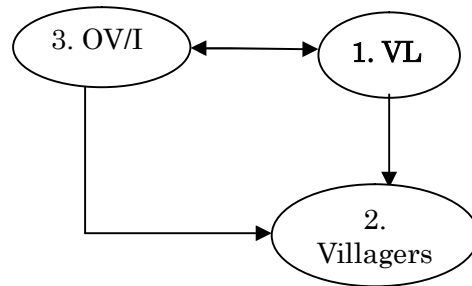
traditional leaders rather than the formal authority or the community individuals' initiative (see Figure 5.2). Rice cultivation and the domestication of cows were introduced in 1975 by the chief Ndandula (currently *chief de terre*) who intended to diversify the sources of meat production. Cows' manure would be used to fertilize the soil. This study demonstrated that when the practices proved successful, other people were then allowed to adopt them.

This study showed through the evidence in this section that that traditional and adopted practices in the first period have continued or have been possible because the leaders themselves promoted them to their subjects. Although the formal government has limited local leaders' influence, it did not succeed to suppress totally their influence on land management. Local leaders continued to enjoy people's support. In contrast with the two periods that followed, the leaders enjoyed larger political, social and spiritual authority on people and on their decisions; and they faced very little internal contradictions.

It is important to point out here that the other political role that the leaders played in Yassa-Munene and its surroundings is that the leaders were behind youth involvement in the insurgencies of Mulele and Kasong in 1960 and 1970s. It was with their encouragement that youth got involved. The particularity here is that the chief of the leading clan sent his nephew among the first people to join the insurgency. Seeing this, most of the youths joined. This made the situation very hard for the President Mobutu led army to re-establish order. The successful adaptation strategies mentioned above indicate a clear participation and initiatives by the chief rather than by outsiders or by the individual subjects. The analysis of different views and stories shows in Figure 5.2 that the authority or village leader (VL) has a comfortable position to implement decisions over the villagers. He is the center, and keeps relationship with external actors in other villages (OV/I) that can influence individual community members. The leader's relation and exchanges with OV/I is represented by double arrow. But the one-direction arrow explains the influence of the VL on villagers; the other one direction arrow used between OV/I and villagers represents the minor relationship between individuals. The actors such as government agencies are not represented in the figure because of their antagonisms and the insignificance of investment in the village during this period. The outcome was that during this period,

what the leaders enforced had been adopted by almost all farmers (100%). For instance, the ancient variety of peanuts and cassava had been adopted by all farmers. The figure shows also that some of village individuals developed private relations with OV/I, although their influence was limited (Onken Ingwen 2016: 16).

Figure 5. 2. Different actions and decisions towards land management in Yassa-Munene: Period 1 (1920-1980s).



Note: VL (Village leader), OV/I (Other villages/individuals)

Source: Author analysis of farmers' strategies, 2014.

The major problem in this period is that only traditional practices continued to be used. They continued in spite of their weaknesses and incapacities to provide adapted solutions to the problems of degradation in the village.

## 5.2. Different actions and decisions during the external interventions

The second period analyzing the role of different actors in Yassa-Munene village focuses on actions taken between 1980 and the 2013. There is no clear strict timing for the starting of this period. However, in the DRC and region of Yassa, the 1980s are associated with major traditional leadership struggles, and also with the campaign for the need to initiate rural development. During this time administrative reforms were initiated. In the 1980s many new *groupements* were created. The heads of these institutions were chosen by the political authority. These changes created conflicts between chiefs, and many disputes over power and lands. Chief Kalata (from the leading clan in Yassa-Munene), who was the *chef de groupement* of *Thsimangung* (To which Yassa-Munene belongs), lost his function of *chef de groupement* in 1985. To

recover it, he went to many tribunals, but in vain. So his political influence was reduced. However, even if his political responsibility was suppressed, the *chef de groupement* continued to be respected in the entire region, and continued to wear the symbol of traditional leaders; until 1984, the leader cooperated with the formal authority. And his authority remained strong in Yassa-Munene. He continued to receive his due from people.

During this period also (especially from 1996), the country experienced wars, the invasions by Rwanda and Uganda, and massive infiltrations from these countries. These caused the present political instability, occupation, pillage, mass killing and rapes in the country. The interventions, foreign aid and assistance undertaken by various agencies intended to respond to what the agencies identified as the ongoing political, economic and environmental problems in the country (Onken Ingwen 2016:17).

Contrary to the previous period, during this period Yassa-Munene village experienced some interventions and initiatives from diverse actors: the government, international organization, NGOs, and local associations. They focused on agricultural. The interventions were minor and not organized. These little interventions coincided with the period, when poverty and land degradation were identified as major issues to tackle by the national government. Funding, subsidies, seeds, tools were provided to farmers. Creation of local associations, and cooperatives were encouraged. The organizations below provide the names, goals, actions and outcomes of some of external or local associations in Yassa-Munene village:

- *DALU* (1990): An extension of a local association created in Bwal-Lakwa village; aimed to reforest the land with raphia palm trees. There was very poor adherence and no work was undertaken.
- *CPCO 30<sup>th</sup> members* (2005): Church members' organization to support community activities; raising traditional chickens; activities has stopped.
- *ACDR* (in 2007): Supported by UNOPS (United Nations Office for Projects); The association aimed to help local agriculture, provide subsidies, cassava, peanuts and maize seeds, and working tools; very low adherence; very low

harvest; disputes between UNOPS coordinators with the local farmers at the harvesting stage.

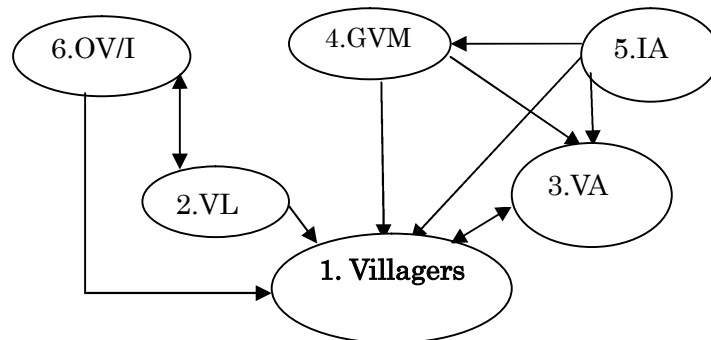
- *Mam sangol* (2010): Was an extension of an association based in Idiofa town; intended to work in farming activities; only four women participated.
- *Association of cow owners* (2011): to keep animals in a common kraal, to avoid animal roaming; and to use the kraal' surroundings for gardening. But, the organization failed.
- *Com a sol* (2013): Initiated by PALU (a national political party); intended to reinforce farming activities by lending services of tractors. Many adhered; but disputes between coordinators and farmers on working location. Enthusiasm at the beginning, but dropped later.
- *Village agricole* (2013): Initiated by provincial government; aimed at reinforcing farmers working capacity with lending the tractor services and seeds; it expected in return to receive 30% of the crops harvest. High adherence, but dropped. Good crop result, but no follow up. Project was abandoned.
- *Women association* (2014): the association organized by nine. It was organized by women themselves, under the direction Madame Ampii. It aimed at helping women to do farming activities together and keeping cash together. In 2014, it was still at the start-up stage.
- *Fish pond association* (2014): adopted as new activity to diversify the sources of fish production. A growing number of adherents.

The village local associations described above, were initiated either by agents of external organizations, NGOs or by some of farmers themselves. The associations directly involved people in community, rather than letting traditional leaders/authorities

take the lead. The initiators of the associations often considered the community as a homogenous unit. The social class distinctions were not taken into account. The initiators of the village's associations just considered the traditional hierarchy as an additional burden to local community, which they needed to break. This caricature was so strong that the traditional leaders were kicked out of any development initiatives. Thus, most of the outsiders' initiatives failed.

While the outsiders' initiatives and innovations were being tried, local people were still using the traditional practices such as agroforestry, mix cropping, mulching or others. The practices of rituals, ceremonies and enforcement of taboos continued. The traditional authorities in the village were still playing a role in the choice of working locations and activities and of the enforcers of the rules. Their role proved also to be important in the innovations that occurred. Almost all the informants insisted that during this period local farmers rejected most of the seeds proposed by some of the external actors; they adopted instead, squash crops and a new variety of peanut (*ndzu omboom*) in the 1980s, brought from a neighboring village by a female leader (Madame Eyen). Back into the village, she tried the crop for the first year. When the result was successful, she recommended the crops to all community members. During this period, the domestication of sheep was also introduced by the chief Kalata (chief of *groupement* in 1985). This evidence came to affirm what leaders themselves said about their roles.

Figure 5. 3. Different actions and decisions in Yassa-Munene: Period 2



Source: Author analysis of farmers' strategies, 2014.

Note: VL (Village leaders), VA (Village Associations), GVM (Government), IA (International agencies), OV/I (Other villages/individuals). This figure is based on farmers' and leaders' recalling the past events.



Farmers' strategies adopted during this period coincided with the aggravation of land degradation and with the different actors' attempts to promote development. There was a temptation to conclude that these were main factors in farmers' decisions to adopt new solutions. However, the analysis demonstrates that the reasons of the adoption of innovative solutions in this period were actually as in the above period. Farmers followed what the leaders advised and had tried themselves. The examination shows that the adoption of squash and a new variety of peanut in this period (by 100% of farmers) was not due to the government or its partners' campaign to improve the situation. But it was because the leaders had brought the crops into the village for all and had tried them before suggesting them to others. Culturally, it was through the leaders that new practices were supposed to be introduced, but not by ordinary farmers.

Similarly, it would be tempting to believe that the rejection of the new solutions necessarily happened because the actors failed in promoting properly new solutions or because the cash and subsidies were insufficient. The reality was that it is because the procedure was wrong. The indigenous way of transmitting decisions and implementing them was not followed. The external actors approached the community directly, but ignored the community leaders. Unlike in the above periods, traditional leaders were not associated in formal leadership; and they were challenged by national authorities who suspected them of encouraging rebellions. Thus, all gathering became suspicious. Their role was limited to mediating land disputes exacerbated by state's absenteeism and economic crisis or poverty.

Figure 5.3. shows the relation between the actors that operated in the village during this period. Villagers are considered as focus of the actions; but the decision for actions is taken by the external actors (IA, VA, GVM). The local leader (VL) is isolated, although he still keeps some relationships with the community and with the neighbors (OV/I). The one-direction arrow demonstrates the influence and supports of all the actors on villagers. The arrow shows also the influence and support of the GVM and IA on VA. The figure shows then that there was collaboration between the GVM, IA and local villagers, since the local associations were created or received support from the external actors. However, the actors' actions in the community were not coordinated. Consequently, the adaptations failed. As all informants repeated this issue, it become

evidence that the leader was a capital actor. Within the figure, the double arrow explains the mutual collaboration and influences between the OV/I and VL, and between the villagers with the VA.

### **5.3. Actions after the initiatives: development of new practices**

This period can be situated between 2007 and 2013, and after. It overlaps into the previous period described above. The previous period ends around the 2013, but there can be already observed some alternatives initiated around 2007. So, this period intervenes after the village experienced failures of the past internal and outsiders' development initiatives. As in the past, here the role of the traditional leaders in land management is still not fully acknowledged. However, contrary to the previous period, this role is being recalled. The decline of the local knowledge and practices did not mean the end of indigenous wisdom. There have emerged numerous innovations involving local strategies. In spite of the lack of serious investment in the village, local solutions worked with the help of the traditional institutions, through the leaders.

This study demonstrated that recently, more than six men have been trying to make fish ponds as a non-farming activity. Since 2012, several of them were involved in the cultivation of hemp and beans. When the harvest proved successful, other people joined the activities. The analysis shows that the activities were successfully adopted because the traditional chief was involved, through his nephew and son (considered as 'chiefs'). And because the chief decided on the working sites and on new species of plants and fish to be introduced. The nephew of the leader himself acknowledged that their presence in the activity was strongly recommended by Chief Kalata.

The above explanation confirms the importance of the village leaders' (VL) involvement in the adoption of new activities and practices during this period (seeds, plants, fish ponds, crafting and solidarity), as shown by the *cloud callout* in Figure 5.4. The big arrow used in the figure shows concretely how the role of the VL has once again been central, in spite of the fact that the external actors were not involved (as in the previous period). However, Figure 4 has not identified serious action initiated by the IA, GVM or VA in the village. During the last five years the actions and impacts of the IA, GVM and VA towards villagers have been so insufficient that in the figure no arrow

portrays the relation between them (Onken Ingwen 2016: 19).

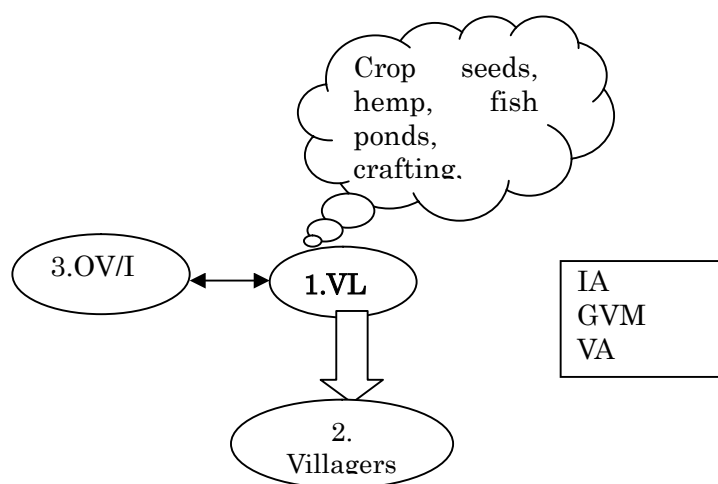
The figure also does not present the little knowledge transactions between OV/I and the villagers since most of the recent innovative attempts are not yet being adopted. For instance, in neighboring Kimpata-Lokwa village, farmers were using a solution made of goats' urine and waste to protect younger plants (raphia, banana) against livestock destruction. Since none of the leaders has tried it in the village, farmers have not adopted either. Instead, a double arrow in the figure, shows mutual exchanges between the leaders and other villagers. The analysis reveals then that the reasons why individual farmers do not take the major initiatives themselves is because they believe that new attempts can lead to adverse consequences like total crops collapse, disease or 'ancestors fury'.

From observing the way all people respect the leaders or fear leaders, and the value they give him, the chief always felt the obligation to work for his people. He had to take the risk for all. He is considered as 'well informed', 'educated', 'expert', 'sacred', and because he has been trained in land management more than any ordinary farmers, he knows the land, the crop history, and has been taught about past problems by the leading ancestor. Unlike in the two previous periods, the leaders play a very limited political role (Onken Ingwen 2016: 19). Meanwhile, previously the leader, namely the land owner (*chef de terre*) occupied a formal political function of *chef de secteur* of Yassa-Lokwa. For instance, during the first period the leaders (Chiefs Okwendel and Etienne Ipom) became even the *chefs de secteur* (formal administrative entity above *groupement* and village) and *chef de groupement* (half-formal entity led by traditional leaders, above village level).

During the second period, the leader remained *chef de groupement* and received a salary from the government. Later he lost this position. He remained only *chef de terre* (land owner) and influential only on land issues in the village, because the entity he governed as chief of *groupement* and *chef de terre* was given to other new *groupements* created. However, at the village level, he continued to be considered as chief. He remained a symbol of the community unity, a guardian of the customs and the natural land. The fact that some of the leader's power was taken away enforced the village's internal cohesion. During this period also the leader (referring to the deposed chief de *groupement* Mr. Kalata, to the current chief de terre Mr. Ndandula or to the woman

chief Madame Antuum) did not give any official view on last elections held in the country, in order to choose the deputies. But they are still very concerned with environmental problems and other social issue of the village. They are constantly in search of mechanisms that will improve food production and conserve the land around them. Thus the leaders participated in all stages of this field study because they were informed that we were concerned with land management issues and their contribution towards solutions.

Figure 5. 4. Successful innovations in Yassa-Munene: Period 3



Source: Author’s analysis of farmers’ strategies, 2014.

Note: VL (Village leaders), VC (Village Associations), GVM (Government), IA (International agencies), OV/I (Other villages/individuals); the *cloud callout* attached to the VL represent diverse strategies and options that the authorities/leaders (VL) have acquired and that they implement.

The village traditional authorities’ position as portrayed in Figure 5.4 is still open to receiving cooperation and coordination with the government and other actors. However, his position will not to be simply the role of intermediary as suggested by Agrawal (2010); he has also a role of initiator. It is the both the top-down and participatory approach that will be required in the recommendations to enable effective adaptations, and thus expect positive outcomes.

#### 5.4. Conclusion and discussion

This chapter analyzed the reasons behind farmer's decisions to choose land management strategies in Yassa-Munene, and examined the role played by local traditional leaders on farmers' choice of adaptive solutions.

The *framework for traditional local institution analysis in land management* has been used in this study to analyze the role of the traditional leaders in land management. The analysis used a chronological, historical and institutional perspective to understand the role of traditional leaders in the local strategies.

This study argues that local farmers' decisions to adopt or reject innovative strategies are mostly based on the local traditional leader's will and approach to implement the strategies. The traditional leader's role in land management and adaptations is even more than resources controller, mediator or the advisor proposed by other studies. Here he is rather the key player, and the first to try innovations before recommending them to others in the community (for instance in the making of fish pond, the chief saw the site and gave a lot of advice). He is the exemplar, the risk taker, the model, the 'well informed' and 'well educated' in resources management more than ordinary farmers. He is the only person allowed to introduce innovations like new crops and new practices. because from his younger age, the leader has been taught and transmitted local story, history, location and past problems and the solutions on land. He has developed ties with neighboring villages' leaders more than any ordinary farmers. Thus, he is expected to try any new practice before others. He is allowed to take the risk on behalf of all, because any innovation can have adverse consequences like failure, diseases or famine. The individual farmer's role is limited to dealing with minor land issues at the farm level.

The analysis demonstrated that all the major strategies have successfully been adopted with and through the leader's involvement and decisions; rather than through the farmers' own initiatives or that of the external actors. Concretely, in this study the leader's role has proved to be effective in enabling adoption of the strategies in the following ways.

First, the analysis showed that prior to external initiatives of development, people

relied on their local knowledge. Still, it should be acknowledged that they already experienced some sort of adoption of new practices to deal with the problems they faced. The major adoptions here were the introduction of crops like cassava or maize. In this period, the role of the leader was more central than the role of the external actors or the role of the community or individual initiative in land management practices. But, it should be noted that, in contrast with the next two periods that followed, the leaders enjoyed larger political, social and spiritual authority on people and their decisions towards the strategies to adopt; and in political domain the traditional leaders faced very little internal contradictions. But they saw constraints to their power.

Second, while the outsiders' initiatives and innovations were being tried, local people were still using the traditional practices. And the traditional authority was still playing a role in the choice of activities and their locations. The analysis demonstrates that the reasons of the adoption of new crops and practices in this particular period are actually as in the previous epoch or in the following one. Farmers followed what the leaders advised and practiced themselves. The examination showed concretely that the adoption of squash and a new variety of peanut in this period was not due to the government or its partners' campaign to improve the situation. It was because the leaders personally had introduced the crops into the village for all.

It should be clearly reminded here that the rejection of some of the solutions in the community were not due to the fact that the external actors did not properly promote the new solutions or because of the insufficiency of cash and subsidies. The rejection was caused by the fact that the procedure was wrong. The external actors dealt directly with the community rather than with the community leaders. During this period, in contrast with the previous one, here traditional leaders did not have a formal leadership; and they were challenged by national authorities who often accused them of encouraging insurgencies. Thus, the village gatherings and movement became suspicious. The role of the leaders become just limited to mediating land disputes exacerbated by state's absenteeism and economic crisis or poverty growing in the region.

Third, recently there have been numerous innovations evolving in the local people's management strategies. In spite of the lack of proper investment, local solutions continued working with the help of the traditional institutions and leaders. Various opinions among villagers gave evidence of the active role of leaders. They

showed that the role of the leaders is once again becoming central in the recent strategies and adoptions of crops. However, unlike in the two previous periods, it is noted that here they play a very limited political role. Still, they remained symbols of unity, and informal guardians of the customs and the land. Also, they are incorporating Christian and traditional rituals and practices into cultural practices. Presently they are resuming some of their customary tasks. They are being given enormous responsibility compare to before.

The next chapter provides the summaries of the findings and discussions of the dissertation chapters.

## CHAPTER 6. CONCLUSION

This chapter provides the summaries of chapters' findings, discussions and arguments, lessons from the study and the recommendations.

### 6.1. Summary of the findings

**Chapter 1** was an introduction. It presented the problem under discussion, the objective of the study, its significance, the research questions and argument, and the structure of the dissertation.

The objectives of this study were to examine local farmers' strategies to cope with land degradation in Yassa-Munene village; and particularly to analyze farmers' reasons and decisions in the adoption of management solutions; and try to understand the role played by local traditional leaders or authorities in people's choice for adaptive solutions.

In order to fulfill the objectives of this study, the study answers questions regarding:

- How local farmers manage their land (what are the management practices and strategies used to cope with land degradation?);
- What benefits do they obtain from managing land in the traditional way?
- What influences farmers' decisions to adopt or not some of the alternative solutions? And what specific role do the traditional leaders play in land management decisions?

These research questions have been respectively answered throughout:

- First, through the examination of farmers' strategies to deal with degradation in chapter 4. This documentation has enabled this study to ascertain the benefits resulting from each particular strategy enumerated;
- Second, throughout the analysis of the factors influencing farmers' decisions and reasons to adopt the solutions; concretely throughout the examination of the role of traditional leaders over three periods of time in chapter 5.



**Chapter 2** was a comprehensive overview of indigenous knowledge, land degradation cases as well as most of the strategies adopted by farmers to deal with degradation; the chapter reviewed the most common mechanisms used by indigenous people or rural communities to adapt to and control land degradation; it described the roles often played by local and external institutions in dealing with land degradation; and also described the role of traditional institutions. Resources management was seen as a complex knowledge-practice and belief; indigenous degradation indicators are provided by fauna and flora of field, and by observing social situations; common strategies were agroforestry, crop adoptions, solidarity, and abandonment of crops, and other strategies; external actors and local farmers played a significant role. Leaders are mediators.

**Chapter 3** provided the methodology followed to collect and analyze the data on indigenous TEK and land degradation issues. The analysis relied on the *Traditional Institutional Structure for Natural Resource Management* framework from Bonye (2011); Mowo et al. (2013: 1).

**Chapter 4** examined: (1) farmers' strategies to cope with land degradation in Yassa-Munene village, as well as presenting the role played by traditional institutions (the role of traditional leaders in particular; and (2) presented the village land management practices, land degradation issue and the role of traditional institutions.

In order to understand what strategies are used to cope with land degradation, and what benefits farmers obtain from managing land in the traditional way, the findings showed that the major strategies included: agroforestry, mix-cropping, mulching, rotation, manure; extending and diversification of plots, abandoning of traditional crops, new crop adoptions, fencing; destocking, adoption of new crops and practices, and off-farm activities. The land management system, land degradation situation and traditional institutions presented here help to understand the examination of the strategies outlined.

**Chapter 5** analyzed particularly farmers' reasons and decisions to adopt strategies to cope with land degradation based on the *Traditional institutional Structure for Natural Resource Management* framework (Bonye 2011; Mowo et al. 2013, p. 1). This

was to outline the role of traditional leaders in farmers' decisions to understand what influences such farmers' decisions, and the analysis demonstrated that farmers' reasons and decisions rely on the role of 'key actors', 'risk takers' played by traditional leaders.

The present concluding **chapter 6** is a summary of the dissertation's conclusions and arguments; it provided policy recommendations and suggestions for future research.

A completed list of **References** including books, journals, websites on indigenous people, land degradation issues and development initiatives and other has been provided.

The **Appendix** provides complementary information on:

- Informants,
- Household questionnaire used,
- Questionnaires,
- Photos.

## **6.2. Discussions and arguments**

The major argument raised in this study is that traditional leaders in indigenous communities play a central role in farmers' decisions to adopt strategies to deal with land degradation. The study agrees with most of previous studies that farmers' decisions to deal with degradation are influenced by a variety of conditions and factors. Previous studies have often associated farmers' reasons and decisions with various purposes such as: farmers' need for assets, cost and benefits of the solutions applied, habit, behavior (mistrust, laziness), tradition, biophysical condition or formal and informal institutions' influence, or rules. The role of the leaders in indigenous communities has often been limited to the simple role of mediators between the community and the external actors and advisors to enforce rules or new practices, and controllers of resource management of the community. And in other situations they have behaved as "patrons" who claim peasant resources.

However, this study argues that basing the analysis only on the availability of assets, the cost and benefits, habit, the rule, the participatory capacity of the local community, or basing the analysis on farmers' own will, may fail to identify the

decisive role played by traditional leaders themselves in the effort to cope with land degradation. Thus, this study suggests that in the village, the role of the traditional leaders has been crucial. In contrast to other societies, the leaders here do not only control or mediate things. They are rather key players, exemplars, models, risk takers and the first to try innovations before recommending them to others. They take the risk to try new practices or crops that nobody has ever tried before.

Meanwhile, in the other cases, the leaders are presented as those stay on their thrones. In this study leaders have been the only people to introduce innovations like new crops and new practices adoptions, because they are the ‘well-informed’ and ‘most educated’ in land management. From their younger age, leaders have been taught and transmitted local story, history, location and past problems, and the solutions about land. They have developed ties with neighboring villages’ leaders more than any ordinary farmers. Thus, people expected them to try innovations before others, and to take the risk on behalf of all. Because people believe that innovations can always have adverse consequences (like failure, diseases or famine), thus it is necessary that someone should be put on the front line and be accountable for the consequences.

In spite of the role played by local leaders, individual farmers should not be seen as passive actors who merely wait for leaders’ decisions. This should be seen rather as part of their cultural task of sharing and solidarity. There exist initiatives that farmers take at the farm or community levels that do not require the leaders’ decision in advance. And there are tasks conferred to leaders. In the village’s recent history, the most important land use adaptive strategies (among several) have been adopting new crops, new activities, new crops combinations, and the re-focus on the traditional practices. Leaders have played a central role to enable their adoption. This shows that each social class played its role without regret or suspicion.

Although there was broad agreement on the role of the traditional leaders in the three periods of time, different and specific aspects of the leaders’ role should also be noted in each period.

-First, the analysis showed that prior to external development initiatives, peasants relied on local knowledge and on adaptations that occurred. And the role of the leaders was more central than the role of the external actors or the individual villagers. The leaders themselves promoted and applied innovations before any farmers. However,

unlike in the other two periods that followed, the leaders still enjoyed larger political, social and spiritual authority on people and their decisions; and leaders faced very little internal contradictions.

-Second, while the outsiders' initiatives and innovations were being tried during the second period, local people still used traditional practices, and the traditional authorities were still playing a role in the choice of activities and innovations. Farmers followed what leaders advised and practiced themselves. The adoption of squash and a new variety of peanut in this period was not due to the government or its partners' campaign to improve the situation. Rather, it was attributed to the leaders who personally introduced the crops into the village for all.

The rejection of some of the solutions in this period should not be attributed to external actors' assets. The issue is that the procedure was wrong since they directly approached farmers instead of letting leaders do. Unlike in the above period, traditional leaders here face also formal authorities and were not associated into leading of the entities. The local gathering and other local activities were limited by the national authorities. Leaders' role was limited to mediating land disputes as the national authorities did nothing.

-Third, in the last period, there have been emerging of various innovative strategies. Even if there was lack proper investment, local solutions continued. They continue working with the support and initiatives of the traditional institutions and their leaders. The present situation shows that the leaders' role is once again becoming key players in the adoption of the strategies as demonstrated by most of the examples. However, in contrast with the two above mentioned periods, the leaders have a very insignificant political role to play. In spite of that, they continue to be the symbols of unity and keepers of the traditions and land. Besides that, they are allowing the incorporating Christian and traditional rituals and practices into cultural practices. Leaders are resuming some of their tasks. They are being given enormous responsibility. Since the past political, social and spiritual changes have not improved local situation, the state and the Church have failed to provide basic services. Thus, traditional leaders are being called to larger responsibilities: to educate, organize and resume traditional medicine provision and mediate conflicts.

### **6.3. Lessons from this case study**

From this case study some lessons can be learned.

First, the occurrence of land degradation, assets limitation, and deficit of external support did not mean the end of local initiatives. The socio-political changes did not necessarily suppresses all the local customs. Something from their culture has survived to boost innovations. Farmers have continued to rely on traditional practices to support their life. In reality, land degradation has been for people an opportunity to understand the traditional practices' values, and also an opportunity for new practices to evolve. Thus, this study far from being a mere romanticization of traditional societies and a call for return to ancient practices is rather a call for 'rediscovery' of indigenous wisdom.

Second, this study provides insight into the role of the traditional leaders to implement adaptive strategies within the community. Beyond the mostly known role of traditional African local leaders in natural resource management (sacred, controllers, mediators), leaders are also the major actors, risk takers, models farmers, the exemplars, or even servants.

Third, the promotion of the role of the leaders in the present case study can raise multiple critiques, especially on the consequences resulting from their roles. While this study acknowledges that the leaders' role can provide vital social insurance during crisis and encourages trust in the new attempts, it also acknowledges that in the future it may become an obstacle for peasants to voluntarily take initiatives without depending on the leaders. Besides that, the weakening of traditional institutions, the changing socio-political and ecological situation, and the inaccessibility to various assets, may not enable leaders to be up-dated and continue to play their historical role in the modern context. This could result in adverse consequences such as continual degradation of land, poverty, famine, or conflicts in the village.

### **6.4. Recommendations and ways forwards**

(1) Based on the problems and findings started above, this study makes recommendations directed to village, country and international institutional levels. These recommendations are technical and sociological.

There is a need to support local traditional institutions in general, and traditional leaders' institutions in particular. Since these institutions were identified as key players in farmer adoption of management strategies; they should be once again be given opportunity to exercise socio-political and religious functions. External actors such as national authorities, agencies or churches should contribute to the restoration of the local authority and enable cooperation with them.

There is particularly a need to provide local leaders with training and information on new practices, crops and technology; also on new ecological problems, causes and consequences, because they can influence other villagers' actions.

Strengthening local farmers' capacity and resilience at the community, individual and household level is necessary so that they may adopt and adapt new practices, increase productivity and food capacity. Development projects and initiatives that enable access to assets (which conform to the village customs, the ecology and economy) should be initiated. Here much investment should be put into infrastructure like irrigation facilities, drip irrigation, adequate seeds, limited use of pesticides or just using important quantities of natural organic pest controller (indigenous plant like *isang nzeem*, *onsunsus*) or intercropping with garlic, hot pepper or palm oil ash; and the adequate tools, loans, electricity and transportation to market. And farmers' training and information are necessary in order to enable needed alternative solutions such as making of compost, controlling pests and diseases. Similarly, local wisdom and specialties should be conserved. All these will help improve productivity, reduce poverty, protect the environment and conserve indigenous wisdom.

There is a need also to discourage villagers' unsustainable practices and behaviors such as: improper burning of the land for individual activities; neglect to practice forestation of land; less use of manure, mulch, leguminous cover crops or compost; disrespect of traditional rules and taboos; and absence of concrete punishment for land abuse.

(2) Based on the study's limitations, suggestions for future research include the following.

Since there has never been another study conducted in Yassa-Munene village to investigate the indigenous land management strategies, there is a need that other studies

be conducted to provide more information and quantitative data necessary for development projects, to protect local biodiversity, fight land degradation and improve life. This can help outside institutions, researchers, individuals and future local generations to understand the village TEK and problems. So, in order to conserve the Ambuun TEK, language and natural resources, more written documents and information are necessary.

Efforts are needed in order to describe what farmers do so that they may improve their work towards their improvement and application in other rural situations. For instance the use and function of local resources, local indicators of degradation problems or local strategies dealing with pests and disease, and interpretation of natural phenomena can be recorded.

More research is also required in order to know how local traditional leaders' institutions should be supported and reinforced. And studies should investigate how these institutions, local formal institutions and external actors may work together, without compromising the role and right of the traditional authorities.

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## APPENDIX. COMPLEMENTARY INFORMATION

### 1. Complementary information on informants

#### 1.1. Names of some of the informants

This chapter provides a short list of farmers questioned during the field work from March to September 2014. The interviews and discussions happened in farms and in the houses. The list is not exhaustive.

Table AP1. List of interviewed people

<b>Names</b>	<b>Sex</b>	<b>Average Age</b>	<b>Marital situation</b>	<b>No of children</b>	<b>Formal education Level</b>
Ad.	F	57	W	5	Primary
Ab.	F	48	Ma	4	None
Yo	M	80	Ma	8	Primary
Ob.	M	33	Ma	4	Under-graduate
Bw	F	48	Ma	6	None
Kia1	M	50	Ma	6	None
Kia2	M	42	Ma	7	Under-graduate
Kia3	M	39	Ma	3	Under-graduate
Os.	M	40	Ma	6	High school
Op	M	46	Ma	5	High school
K.M.	M	43	Ma	7	High school
An.	F	35	Ma	7	None
E	F	83	W	8	None

Nd.	M	82	Ma	7	Primary
Ob	M	86	Ma	8	Primary
K. B	M	85	Ma	5	Primary
Kia4	F	55	Ma	1	Primary
Yo2	F	30	Ma	5	Primary
Ng.	M	59	Ma	16	Primary
Ang.	F	34	UM	3	None
Ak	F	33	UM	4	None
Ngm	F	32	Ma	4	None
Nsb	M	45	Ma	5	Secondary
Osl	M	58	Ma	7	None
Kian4	F	48	Ma	7	None
Mu. E	M	36	Ma	5	Secondary
Be	F	40	UM	4	None
Ndz	M	46	Ma	13	Primary
Mu. La	M	43	Ma	4	Under-graduate
Lku N.	M	27	Ma	3	Under-Graduate
Nk. Lanten	M	27	Ma	3	Secondary
Mun.	M	36	Ma	4	Secondary
Kian. 5	M	44	Ma	2	Under-graduate
Et. Lube	M	46	Ma	5	Primary
Am	F	38	Ma	5	Secondary

*Source: Author's field study*

Note: **M**=Male; **F**=Female; **UM**=Unmarried; **Ma**=Married, **W**=Widow.

Names of the listed informants are coded.

## **1. 2. Household questionnaire used in the field work in Yassa-Munene village**

### **1) Question on indigenous knowledge and resources management**

#### *Farming activities*

1. What are the major crops grown in the villages?
2. What are the major utility for the farm products?
3. Are the crops planted alone or mixed? If mixed, what are the combinations?
4. What are the specific seasons for each crop?
5. What tools do you use to cultivate, harvest or process?
6. What are the major land management practices?

#### *Non-farming activities*

1. What products do you obtain from hunting, gathering, domestication and fishing?
2. How the resources from the hunting, gathering and domestication are are being managed?
3. What are these resources used for?
4. What specific role do local men, women or younger people play in the practices of the activities?

### ***Wisdom on activities and resources management***

1. What role do the traditional authorities play in resources management?
2. What is the traditional land management wisdom?
3. What does the environment mean to you?
4. What is the inventory of the local environment?
5. What do the worldview, religion, myth, stories and histories tell about the non-human worlds
6. What role do the taboos, totems, rituals play in the use of the resources?

### **2) Questions on traditional institutions**

1. What are the institutions that exist in your village?
2. What role do these institutions play in the resources management?
3. What are the nontraditional (external) institutions that operate in the village?
4. How do the external institutions work with the traditional ones?

### **3) Question on land degradation in Yassa-Munene village**

#### ***Local people's description of the changes***

1. Do you perceive on your area, land degradation problem such as : deforestation, fertility decline, crop yield decline or soil erosion in your area?  
(i) Yes ..... (ii) No .....

2. Do you feel a change in the yield productivity between last years and this year?  
Quality of products? Quantity? Land's size? Do you experience a natural phenomenon that destroys you land, harvest, livestock river etc?
3. If yes, what let you think that this problem exists?  
What differences do you notice in crops' size? Vigor? Within the field? High?  
Number of tiller? Size of root? Soil color? Texture?
4. What explanations are there for these differences?
5. Do you observe/hear of appearances of plants species/animal/insects that symbolize the severity of erosion (degradation) or signify the decline of soil fertility?  
(i) Yes ..... (ii) No .....

***Major causes of land degradation in the village***

1. Do you feel secured that the land you cultivate belongs to you?
2. Have you been subject to a political decision that limit your access to land  
Land redistribution policy? Transfer of local traditional authority to another villages?  
Civil war? Conflicts?
3. Is there any socio-cultural obligation that limit you access to resources use?
4. Have you experienced population increase in your village/family these last years?
5. Did you in the past abandon farm work for some years?  
Why? Has this abandon caused problems to resources uses practices?

6. Have other new activities impacted your principal activities?  
Cattle grazing? New species that require more time? Economic activities development like crafting?
7. Do you feel that the ideologies or the influence of the western religion and education have caused ecological knowledge lost?/How?

*Effects and outcomes of the land degradation in Yassa villages*

1. How are your livelihood and the land quality being affected by land degradation?  
Your skill? Your social organization? Resources access? Land tenure?
2. Do you see any reduction of the size of you forest land, grass land or river's flow? If yes  
What was the limit of forest area in the last years?  
Can you describe the former vegetation.....
3. How do you associate the fertility decline, low productivity with the appearance of sicknesses in the village?  
Infected tubercles? Over-harvesting?
4. Can you recognize the rare/ disappeared species (animal, birds, plants, mushrooms and insects) from your land?
5. Have you seen any trouble in your seasonal cycle or natural phenomena?  
If yes: heavy rain? length of dry season? coolness on dry season? heat? flood? insects?
6. How often have you experienced drought (famine) in the village?  
Once in 3 years? Once in 5 years/ Once in 10 years? Other?



7. Has the size of your cultivated land/land use area changed?
8. If your cultivation land has expanded, is the newly cultivated land as productive as the previous one?
8. Have you ever experienced conflicts over grazing right?  
If yes, who did it involved?
9. Indicate the time and distance you travel to collect the primary source of fuel?  
(i) Time.....(ii) distance .....

#### **4) Question on strategies to control the degradation and decision making**

##### *Villagers' response on degrading land situation and farmers decision-making*

1. Do you use some kind of measures or practice to counteracting and compensating for yield decline or control soil erosion, enrich soil fertility  
(i) Yes ..... (ii) No .....
2. If yes, what are the following measures do you practice?  
Abandoned your cultivated land? Expanding to marginal land? Change crop? new varieties? Off-farm employment? Farm more? fewer farms? Other? Fertilizer? Compost? Intercropping? Agro-forestry? Improved seed? New combinations? Destocking?
3. Do you think that the measures taken are rather costly or beneficiary for you instead doing nothing? If they are costly, how much time? How much money? Harvest lost? additional work?

4. If they are beneficiary, have they Increased yield? Soil/forest saving practices?  
Additional product? New techniques? Improve revenue? Time saving?
5. What role do your traditional authorities do play in the land management or in the adoption of strategies to deal with land degradation?
6. What are the decisions taken by the traditional leaders? And what are the decisions taken by yourselves on the land?
7. What are the reasons that drive farmers to opt for the decisions they take?

### 1. 3. Photos of Yassa-Munene village in 2014

Photo 1. Discussion with farmers in the village



Photo 2: drawing the map of the village's land



Photo 3: Map drawn by the informants

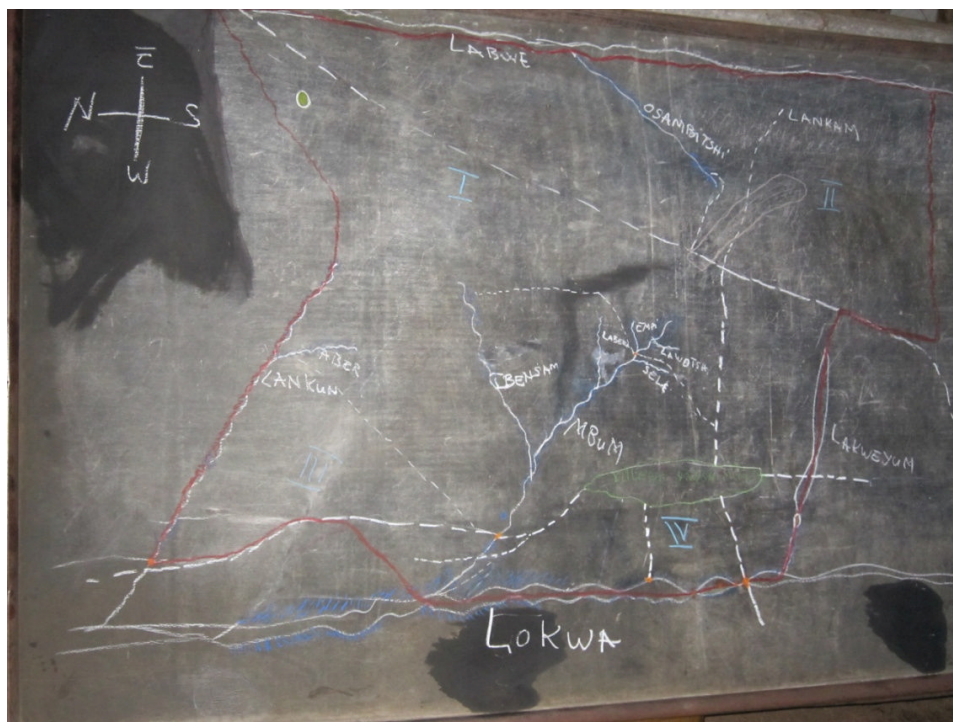


Photo 4: Savanna land visit



Photo 5: land burned by fire



Photo 6: Main view of farming land in savanna



Photo 7: degraded forest land



Photo 8: A farmer measuring bean's quantity



