

**Deconstructing ‘Community’ in Community-Based Natural Resource
Management (CBNRM): Investigating Traditional Method of Subsistence
(TMoS), Traditional Ecological Knowledge (TEK), and Ethnic Diversity
for more effective resource management in the
Kedougou Region of Senegal**

by
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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

This thesis seeks to highlight the importance of a geographic and culturally specific knowledge base to guide natural resource management and governance policy, particularly within the West African context. In order to demonstrate the level of complexity that may exist within this realm, the Kedougou region of Senegal is used as a case study. Traditional Method of Subsistence (TMoS), Traditional Ecological Knowledge (TEK), and ethnic diversity are considered in order to validate the need to go beyond a superficial involvement of community within models such as Community-based Natural Resource Management (CBNRM). Focus groups were conducted for this case study in order to identify areas of similarity and difference that exist along ethnic lines. Two areas of concern that all ethnic groups agreed upon was a depletion of water resources and a diminished growing season that leads to an annual food shortage in the region. Three primary areas of difference were found to coincide with traditional ethnic boundaries in the region: traditional religious belief, wealth accumulation and social hierarchy. The findings of this research demonstrate that while areas of cohesive community concern may serve as a focal point for CBNRM programs, it is also important to consider areas of ethnic difference which hold the potential to significantly influence sustainable and equitable resource management. For example, while traction methods for intensified agriculture are identified as important by all ethnic groups represented in this thesis: (A) traditional agricultural ethnic groups already have experience with these methods, and may only need access to assistance such as micro-credit opportunities, (B) the pastoral ethnic groups already have an abundance of traction animals, and so equipment may be what is primarily needed, while (C) the horticultural group may not have access to the land necessary for optimal traction agriculture. It is therefore suggested that CBNRM programs must be structured around community variables found along cultural lines in order to be of value to government and non-government conservation programs and policy formation in the region.

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List of Abbreviations

- CAMPFIRE - Communal Areas Management program for Indigenous Resources
- CBNRM – Community-based Natural Resource Management
- FAO – Food and Agriculture Organization of the United Nations
- GNI - Gross National Income
- MDG - Millennium Development Goals
- NEPAD - New Partnership for Africa's Development
- NRM – Natural Resource Management
- PNDL - Le Programme de Développement Local (Program for Local Development)
- PRSP- Poverty Reduction Strategy Program
- TEK – Traditional Ecological Knowledge
- TMoS - Traditional Method of Subsistence
- USAID – United States Agency for International Development
- WV – World Vision

Chapter 1: Introduction

Across Africa, a combination of factors is leading to significant pressure on the natural resource base. In particular, increasing populations and climate change combine with limited government coping capability, thereby leading to widespread land degradation, deforestation, and local-level conflict over resources (Touré, 1990). The formal structures put in place to foster socioeconomic betterment often reflect the partial interests and understandings of actors external to target regions (Hasler, 1995; Marshall, 2002). This is particularly the case in the remote region of Kedougou, Senegal. In this area, agriculturalists, pastoralists and traditionally subsistence-oriented hunter-gatherers are often at odds with each other and government policy over important questions of access, use and management of natural resources (Groelsema, 1998). Government approaches to resource governance and management are often ineffective, primarily because they lack the nuance required to achieve equity and sustainability of resource use in the region. Remote area programming often reflects the interests of external actors, such as donors interested in wildlife conservation or central government departments aiming to increase agricultural productivity, without considering the importance of existing land use practices in the region. Formal government administrative and organizational boundaries often continue to reflect colonial mapping and therefore remain at odds with existing geographies of land use among residents of the Kedougou region. For example, national park boundaries cut across the traditional territories of the Tenda and Mandë ethnic groups, thereby turning many of the former residents of the region into 'poachers' on their own lands. Only in recent years have government and nongovernment programs begun to consider the problems of natural resource conflict

through a participatory process (USAID, 2009). It is the intention of this thesis to contribute to the policy and program discussions surrounding appropriate participatory frameworks for sustainable and equitable resource use in the Kedougou region. Specifically, the involvement of community must extend beyond a cursory understanding of local populations, in order to identify the similarities and differences that have existed for millennia between ethnic traditions in the region. This thesis focuses on the importance of incorporating local peoples' world views and daily practices into programming. At minimum, a nuanced understanding of peoples' method of subsistence and traditional ecological knowledge (TEK) is required if resource degradation is to be abated.

Within West Africa, traditional methods of subsistence (TMoS) have historically remained closely linked to the land with a strong dependence on the utilization of primary natural resources. Methods of subsistence that depend upon primary natural resources hold the potential to significantly increase a people's retained understanding, or traditional ecological knowledge (TEK), of their natural surroundings. As a result, this strong connection to Africa's ecology holds the potential to serve as a valuable asset for natural resource management programs. Before the colonial era, TEK and local authority structures, or customary institutions, were often responsible for the management of natural resources (Hackel, 1999; Mazzocchi, 2006). However, factors such as population growth, diminishing natural resources, and the influence of globalization have increased the difficulty of large numbers of people subsisting upon a primary natural resource base (Adepoju, 1995; Adriansen & Nielsen, 2002; Homer-Dixon, 1994; Roquet, 2008). Traditional authority structures are also less capable of controlling demand on resources as methods of subsistence have often moved away from dependence upon

the land. Urbanization and the accompanying strain on surrounding resources have created external market pressures that have also undermined traditional authority structures (Astellu; Gough & Yankson, 2000). Finally, governance structures have changed across the continent, most recently with the shift to colonial authority and followed by the dividing of colonies into independent states (Crowder, 1967). Throughout this dividing of the land by past colonizers, ethnic boundaries were rarely considered to be important for final boundary decisions (Gough & Yankson, 2000). The lack of consideration for the importance of ethnic diversity, particularly within the African setting, has caused extended civil difficulty across the continent, beginning with the colonial period and often continuing to the present. However, diminishing resources, urban migration, and hindrance from past governance structures do not negate the important role that TEK and TMoS continue to play (Adnan, 1993; Miles, 2005). The knowledge base of local populations in relation to their environment is an important premise that can be seen in the extensive literature surrounding concepts such as TEK and Community-based Natural Resource Management (CBNRM) (Ellis, 2005; Landon, 1998; Mazzocchi, 2006; McGregor, 2004). Within many countries regional autonomy programs have increased in popularity as governments have moved, or been pressured by the international community, to decentralize their power structure, thereby giving more control to local levels of authority (Bernard, Collion, de Janvry, Rondot, & Sadoulet, 2008; Boccanfuso & Savard, 2008; D'Aquino, Le Page, Bousquet, & Bah, 2003).

1.1 Research goals and objectives

This study seeks to highlight the importance of a geographic and culturally specific knowledge base to guide natural resource management and governance policy. In order to demonstrate the

level of complexity that may exist within this realm, the Kedougou region of Senegal will be used as a case study. The country of Senegal provides a valuable environment for considering the importance of TMoS, TEK, and ethnic diversity as important elements that factor largely in the common values held by the local population.

Many countries in Africa are torn with civil unrest that follows distinct ethnic lines. “Ethnic cleansing” and “genocide” are terms that factor prominently in discussions relating to Africa as a whole. Senegal is often represented as a peaceful and stable country, relative to its surrounding neighbours (World Bank). The dominant ethnic group of Senegal, the Wolof, who dominate the national government and the northern urban areas of the country, hold a sense of pride in their diplomacy and ability to resolve conflict through dialog, as opposed to violence (personal observation). This has led to Senegal holding the distinction of being the first country in post-colonial Africa to allow multi-party elections, and the first to have a change of government that was not marred by bloodshed (Sharp, 1994). Senegal is not immune to the ethnic conflicts that plague Africa, however, and it should be noted that a long-standing civil war has crippled the southern province of Senegal, which seeks separation from Senegal based on ethnic delineation between the Wolof of the north, and the Diola ethnic group who dominate the southern Casamance region, which borders on The Gambia to the north, Guinea Bissau to the south, and the regions of Tambacounda and Kedougou to the east. My formative years were spent in the Casamance Region between 1979 and 1999. Violence between the ethnic groups of the region was commonplace throughout these two decades, culminating in 1999, at which point evacuation orders were enforced on all Canadian citizens by the Government of Canada. This experience provides first hand experience of ethnic-based conflict in Africa. Personal

observations from this time period underlie my focus and research on the pressing concern of ethnic conflict in Africa. These observations will be outlined as subsections throughout this thesis in order to identify auto-ethnographic perspective from my past experience (see Methodology chapter 4.5).

The importance of traditional knowledge structures is also well established within the Senegal government, albeit primarily within a philosophical context. Senegal's first president and well known philosopher, Leopold Sedar Senghor, was a founder of the philosophy of *negritude*, which underlies many elements of the country's original law. *Négritude* sought a dualistic approach of incorporating traditional values with occidental principles, "*un double mouvement de désoccidentalisation et de création nègre*" (Senghor & Liberté, 1964). In theory, this would have been an ideal aid to retaining the traditional knowledge structures and local approaches to governance, but like many optimistic goals that were part of the move to independence across the continent, a lasting dualistic approach to governance was not achieved. (see Galvan, 2001). Similar to the demise of interstate dreams for a pan-African union of governments, intrastate governance structures remained largely centralized across West Africa. It is hoped that the identified differences and similarities found along ethnic lines will prove to be of value to government and non-government (NGO) programs within the region, encompassing the tenants of *negritude*, and decentralization of governance that would allow community-based programming to gain credibility in the region.

Two questions guided the research this thesis seeks to address. 1) How do elements of TMoS, TEK, and ethnic diversity affect the perspectives of local inhabitants in relation to the utilization of natural resources found in the region of Kedougou? 2) How might ethnic diversity

and the attached variations of TMoS and TEK influence a NRM program, specifically a CBNRM approach that holds community involvement as a central component? The region of Kedougou, Senegal is used as a case study to identify elements of TMoS, TEK, and ethnic diversity that can be built upon to promote sustainable natural resource extraction.

I will propose that TMoS, TEK, and ethnic diversity are of continuing importance within the West African context. The incorporation of these entities is integral to the conservation of natural resources found in the region. Their importance requires an approach to natural resource management that is specific to the geographic context as a result of the significant variation found between methods of subsistence in West Africa (Drake, 2005). TMoS, which is often included under the concept of “livelihoods”, is not a new topic to the literature of natural resource management (Goldman, 2005; International Fund for Agricultural Development; Jones & Carswell, 2004). However, the importance of TMoS, in relation to the marked ethnic diversity found across West Africa, is less commonly found, with the exception of pastoral livelihoods (Adriansen, 2006; Fratkin & Mearns, 2003). TMoS does not stand alone in seeking to improve NRM practices, but rather it forms an integral, albeit often undervalued, point of consideration that should guide the implementation of community-based programming.

1.2 Methods

To achieve the research goals and objectives of this thesis, it is important to use a strong methods approach for data collection. A case study approach has been used, based on the approach used by Yin (Yin,2003). This approach supports the use of a triangulation of sources (Yin,2003). In keeping with this approach an integration of secondary research found in the documentation of

the region, is compared to primary research taken from focus group data, which in turn is influenced by my personal observations.

Documentation used for this study included Senegal government policy reports, non-government project reports and conceptual frameworks (particularly those of World Vision (WV), peer-reviewed academic literature and Anthropological books written on the region.

Focus groups were conducted in villages or locales identified by World Vision, and participants were included equally between genders and across a spectrum of age grades (youth, adults, and elders). Sessions were spread evenly across the three main ethnic groups found in the region, whose traditional livelihoods span horticultural, agricultural and pastoral ways of life. Collected data is de-identified in order to compare similarities and differences along ethnic lines, as opposed to focusing on individual responses.

My own perspective on this study is also important, having spent the majority of my life in Senegal, and in particular, my formative years, which were spent among the Mandë and Peule ethnic groups discussed in this thesis. Growing up with peers amongst these groups allows for observation that might otherwise be missed in a focus group setting. Personal observations are recorded throughout this thesis as footnotes or chapter subsections, and are titled as ethno-autography (see Methodology Chapter: 4.2)

This case study is meant to provide an example of one geographic and cultural location that demonstrates the importance of a detailed study of TEK, TMoS and ethnic diversity, on a broader scale across Natural Resource Management.

1.3 Organization of thesis

This thesis is organized into seven main chapters. Chapter 2 discusses a conceptual framework within which the thesis is based. TMoS, TEK, and ethnic diversity are defined for the purposes of this study, with consideration given to the literature surrounding these concepts. Chapter 3 outlines the current conservation paradigms that have been popularized in relation to West Africa. A brief history and overview of conservation initiatives in West Africa is presented in order to provide a review of the literature relating to popular paradigms within the region. Chapter 4 describes the methodology used for data collection. Chapter 5 presents a case study of the Kedougou region of South-eastern Senegal. A major goal of this thesis is to highlight the importance of geographic and culturally specific understanding before the implementation of a natural resource management plan. A case study is used to demonstrate this importance. Chapter 6 outlines the results of research undertaken through the medium of semi-structured focus groups among the main ethnic groups found in the Kedougou region. Suggestions for the future are considered. Chapter 7 summarizes the results of this study and presents concluding remarks.

Chapter 2 Conceptual framework of TMoS, TEK and ethnic diversity

Working definitions for the concepts of TMoS, TEK, and ethnic diversity are needed in order to qualify the context of this paper. For the purposes of this thesis the following definitions are used to form a basis for future conceptualization.

- *Traditional Method of Subsistence* will be used to denote the way in which a person or group of persons makes a living. The three main land-based, traditional methods of subsistence found in West Africa are horticultural, agricultural and pastoral ways of life (Harris, M & Johnson O, 2000).
- *Traditional Ecological Knowledge* is a term which will be used to represent the totality of what an individual “knows”, in relation to their ecological environment, through the longstanding practices and traditions of his/her community or locality (Kargbo, 2006).
- *Ethnic diversity* is used to define the heterogeneity of African society, based along cultural lines. The “tragedy of Africa” has often been attributed to the ethnic conflict that ravages much of the continent (Elana, 2005).

2.2 Traditional Method of Subsistence (TMoS)

TMoS, when based upon the fulfillment of the primary needs of an individual, holds significant influence on the conservation of the surrounding environment. Within the context of rural West Africa, the vast majority of methods of subsistence are still based upon small-scale farming or the harvesting of natural resources. For example, in the country of Senegal, 75% of the country's population is employed in the agricultural sector (Ndiaye, 2007). It is important to note that farming is not only a rural enterprise within Senegal. Many people caught in a trend toward migration to urban centers, are involved in urban or peri-urban agriculture. There is a general opinion held throughout rural Senegal that money earned through wages is not as dependable as a full granary. Cultural pressures validate this, with the end result that people move to the outskirts of urban areas during the growing season in order to plant crops. Many urban migrants also simply leave during the growing season in order to acquire what is perceived to be a more stable food supply than a dependence upon purchased food (Braimoh, 2004; Tacoli, 1998).

The three main land-based, traditional methods of subsistence found in West Africa are horticultural, agricultural and pastoral livelihoods (Harris, M & Johnson O, 2000). It is important to distinguish my use of the concept of livelihoods here, as the term has become largely identified with the currently popular Sustainable Livelihoods Approach within international development and conservation initiatives. This valuable approach is systems-based and seeks by definition to consider all the inter-related influences that may affect how a livelihood is created. These may include elements such as “natural resources, technologies, [personal] skills, knowledge and capacity, health, access to education, sources of credit, or networks of social support” (International Fund for Agricultural Development, 2011). My use of the term

Traditional Method of Subsistence in this context is meant to highlight its importance as one element of the entire picture that a Livelihoods Approach seeks to consider.

2.3 Traditional Ecological Knowledge

Throughout known history, within the West African context, traditional norms and mores have been passed down through generations to guide society and its relation to the surrounding environment. Within the last generation the effectiveness of these social constructs has been weakened by population growth, a decline of resources, and the influence of globalization. Diminishing control does not negate the importance TEK continues to play, however, and should not be underestimated. This is particularly important to a NRM program, which seeks to protect what TEK once regulated, as recently as one or two generations ago (Chenje & Johnson, 1996).

In West Africa, traditional knowledge is often an oral tradition passed down through generations. When considering oral traditions it is important to avoid juxtaposing oral history with written history as there tends to be a Western bias toward written records being viewed as a superior documentation of the historical record. An oral tradition is supported by action in the form of elaborate and extensive ceremonies that serve as a visual record of traditional values, norms and mores. Music, dance, pantomime and oration have all gained increasing acknowledgement in our society as forms of communication that are equally influential to the written record. While nothing in the historical record of our world's cultures is static or unbiased, an oral tradition, supported by ceremony and the mediums of music, dance, pantomime and oration, remains a viable force today. Traditional knowledge holds the potential to significantly influence current events, and in reference to the context of this thesis, a NRM program.

Dependence upon primary natural resources as a community's principle TMoS holds the potential to significantly increase a people's understanding, or TEK of their natural surroundings. I am not referring here to supporting the myth of the ecologically "noble savage", originally stemming from the writings of French philosopher Jean Jacques Rousseau, and continuing as a popular trope in Anthropology until as recently as the 1990's (Alvard, 1993; Boglioli, 2000). The viewpoints of any culture are rarely that of benign guardians of the forest (Alvard, 1993; Oates J.F., 1999). By contrast, a deep understanding of one's natural surroundings may hold the potential to cause greater detriment to a species or resource, particularly when extenuating circumstances cause a loss of economic security (Oates J.F., 1999). In the past, when resources were plentiful and external market potential was less prevalent, TEK may have been capable of upholding a sustainable harvesting of natural resources. However, the current decline of resources, increased population growth, and the influence of globalization has greatly exacerbated the ability of large numbers of people to make a living through the harvesting of primary natural resources (Caldwell & Caldwell, 1994).

Within North America and Europe, popular support for the protection and conservation of environmental areas of ecological importance has its roots in a burgeoning middle and upper class propensity for leisure activity, following the Industrial Revolution (Krog, 1984). Canada's interest in parks, for example, followed a pursuit of leisure, with government initiating the first parks as a way to encourage use of the new rail line linking east and west (Eagles, McCool, & Moisey, 2002). Given this basis of our western conservation ethos in the leisure pursuits of western middle and upper classes, we must ask ourselves how we expect populations living at a subsistence level, where large majorities of the population are dependent upon natural resources,

to support the conservation of a species or natural environment. There is little room for an aesthetic perspective of the natural environment when an individual's TMoS entails a struggle with nature at a subsistence level, or where level of income has not allowed for the opportunity to take an aesthetic or leisure perspective toward the surrounding ecology (Oates J.F., 1999). Dale has drawn attention to the fact that without basic income security, conservation will not be possible (Dale, 2001). Hackel draws a similar correlation to Africa, stating that "...Community conservation can work to produce a better relationship between people and wildlife, but only a vast improvement in the lives of rural Africans will ultimately produce a more secure future for the continent's wildlife" (Hackel, 1999). See also (Chambers, 1997; Chambers, 1983; Moyo, 2009).

It is important to recognize, however, that an aesthetic perspective on the intrinsic value of the natural world may potentially be replaced with alternative elements of a given culture, and which may be of equal value. In fact, in contrast to the western approach of viewing humankind as separate from nature, indigenous populations may not recognize a separation between nature and culture (Bateson & Bateson, 1987). As a result, TEK can be viewed as a multilayered construct in which a given culture is centered within their TEK conceptualization (White, 2006; Usher, 2000). Similar to nature, TEK and spiritual or religious belief may also be inseparable (Berkes, 2008).

As outlined by Berkes, it is helpful to consider a *Knowledge – Practice – Belief* complex or framework surrounding TEK. First, there is the local practical *knowledge* of a group's surroundings (Berkes, 2008). Second, this knowledge informs the *practices*, tools and techniques used for land and resource management (Berkes, 2008). Third, a traditional management system

required societal norms and mores and social institutions, which form the practices surrounding management (Berkes, 2008). Finally, a fourth level of consideration must be the *belief* systems or world view of the culture (Berkes, 2008). Therefore, identifying that a culture's belief system encompasses the inherent knowledge and practice of TEK, an opportunity is provided to incorporate this framework into resource management and policy formation. Rather than focusing on a western propensity for leisure to substantiate a conservation program, TEK systems may then hold the potential to assist in meeting the needs of a population living at a subsistence level and dependent upon the harvesting of primary natural resources. A concept of the "sacred" within the spiritual belief system of a culture may present an important opportunity to protect a species or designated region (Cocks, 2006; Posey & Posey, 1999).

2.1 Auto-ethnography: Example taken from past primatology research

An example of this was found as part of past primatology research conducted in the Kedougou region. Many primates, particularly the great apes, hold a liminal position in the natural order of African systems of belief. Liminal species, or those which seem to cross natural boundaries between family groups of a species, often hold a sacred position in traditional African belief systems (Hockings, 2007). Chimpanzees, for example, are not seen as members of the animal kingdom, but rather are seen as closer to humans (Kormos, 2003). The three main ethnic delineations of the region of Kedougou describe chimpanzees as "evolution in reverse" from human society, having once been human, but cursed and shunned, and therefore relegated to life as forest dwellers (Stirling, unpublished data). Despite this negative view of their history, chimpanzees are generally protected in Senegal, as a result of their sacred status. The sacred position of the chimpanzee may therefore be of value to the conservation of the species within

the Senegalese context. In this example, the lack of an aesthetic principle upon which to base a conservation plan has the potential to be replaced by a concept of the sacred in a more spiritually-oriented society.

2.2 Totem animals and sacred groves

The chimpanzee represents a species that is revered across ethnic delineations, in this case of all groups found in the Kedougou region. Other animal species may have a spiritual relationship relating to a particular family; most notably the concept of a totem species. The concept of animal totems is widespread across much of the world, and is particularly important to the people of Africa (McNeely & Pitt, 1985; Ntiamoa-Baidu, 2008). There are many similarities, but also variations of belief regarding the place of animal totems in society; however, one common characteristic is that human participants are brought into a close interconnected relationship with a given species of the biota. In West Africa, the totem animal of a family is considered to be a liminal median between the ancestral world and the present human world (Awuah-Nyamekye, 2009). The concept of totem animals has been well documented as a means of protecting a species based upon its sacred designation by local populations (Hens, 2006).

In addition, sacred groves may hold the potential to protect a geographic area (Anthwal, Sharma, & Sharma, 2006; Bhagwat & Rutte, 2006; Decher, 1997; Gadgil, Berkes, & Folke, 1993; Mgumia & Oba, 2003). Building upon the value of traditional sacred groves in Senegal has increased the potential to protect chimpanzees in a marginal environment where the most stable chimpanzee populations can be found in geographic regions that are held sacred by the local populations (Stirling, unpublished data).

2.3 Conceptualization of TEK

It is difficult to identify a term that incorporates the totality of what an individual knows about their natural surroundings. As such, many terms have been used to describe the concept of TEK, with the most notable being, indigenous knowledge, traditional knowledge and local knowledge. None of these terms are stable concepts for definition, as they are open to multiple interpretations (Agrawal, 2002). There are, however, nuances of popular understanding that separate these three concepts. The terms indigenous knowledge and local knowledge could be effectively used for the purposes of this paper, however my choice of the word *traditional* is based on context. Usage of the term *traditional* (note that the spelling is the same in French) has been commonly used in the literature relating to French West Africa. However, more importantly, the term is most commonly used to describe an esteemed element of culture by the local population of the Kedougou region (personal observation). As described by McGregor, an Anishnabeg member of the Whitefish River First Nation and Assistant Professor at the University of Toronto, it is important to find a word that the local people use to describe a concept within their culture, particularly within the context of TEK (McGregor, 2004).

I have chosen to avoid the use of the more general term *traditional knowledge*, within this context, as the focus of this thesis relates specifically to the ecological context within which particular cultures live. Local knowledge is perhaps the most exemplary term to identify knowledge from a specific geographic region; however it does not differentiate knowledge sets based on a time line. Traditional Ecological Knowledge, by comparison, suggests a knowledge that is rooted in the past.

One might argue that the term indigenous is as indefinable as traditional (Agrawal, 2002). I accept this point; however, for the purposes of this thesis my goal is to highlight knowledge that predates European colonial interests within the context of West Africa. I justify this approach in that it is we in North America and Europe who have taken it upon ourselves to develop the discourse surrounding concepts such as *conservation* or *natural resource management*. As such, we must consider in more detail the knowledge that is inherent to all societies. Whether these societies are identified as primitive, indigenous, third world, developing, or any other moniker that we so commonly see in the literature, existing knowledge within the traditional context deserves a more prominent position at the table of conservation initiatives or natural resource management programs. An acceptance of the need to incorporate TEK leads us to a dominant theme of this thesis, which is to recognize the importance of ethnic diversity, and the TMoS and TEK variations that exist at the local community level.

2.4 Summary

The term TEK is used for the purposes of this thesis to represent oral traditions, traditional norms and mores, and their understanding of the surrounding environment. TEK has been used in place of “traditional knowledge” in order to focus within the context of natural resources, as opposed to general knowledge. The terms “indigenous” and “local” cover a similar context, but the word *traditional* has been chosen given the term’s common usage by the local population of Eastern Senegal to describe their collective past¹.

¹ *Traditional* translates directly to French, and as sections of this thesis will be translated into French, in order to make it of use to the people of Eastern Senegal, I have chosen this term for the sake of clarity in the local context.

Development agencies need to fully consider the impact of TEK on development and conservation strategies. But further to the impact of TEK, it is important to recognize variations among traditions between different ethnic groups and the impact this has on CBNRM policy formation. Similarities and variations within the region of Kedougou will be discussed in chapter 6 in order to demonstrate the importance of traditional differences that may exist between ethnic groups. It is also consider the impact TMoS has on natural resource management planning in a subsistence living environment within rural West Africa. Traditionally, horticultural, agricultural and pastoral methods of subsistence are the main livelihood strategies found within the region of Kedougou, and across much of Africa. The research findings of this study would suggest that traditional methods of subsistence are still important today and should be considered as valuable tenants to the implementation of a CBNRM program.

Chapter 3 Popular Conservation Approaches in Africa: State Protected Parklands and CBNRM

The establishment of parks as a way to diminish human pressure on areas designated for environmental protection is a relatively recent phenomenon that gained popularity in Europe and North America at the turn of the century. Calvin Coolidge inaugurated the first park in the United States, followed by Teddy Roosevelt's campaign to set up parks across vast areas of the Western United States (Theodore Roosevelt Association, 2001). Historically, the initiative to protect areas of ecological significance occurred within the context of Western industrialization, and a consequent move away from direct dependence upon the land. The success of the initial establishment of parks came at a time when the safeguarding of a natural aesthetic gained support among middle and upper classes with a rising propensity for leisure, and the necessary capital to support their interests. Parks were soon being implemented in the colonies of Western countries, where they were often established as replicas of those found in the colonizer's home country (W. M. Adams & Mulligan, 2003; W. M. Adams, 2003; Ece, 2009; Hughes, 2008; Takforyan, 1994).

With only a few decades of history between the inception of conservation areas in North America and Europe and the transference of conservation area jurisdiction to countries of new-found independence, it is not surprising that a smooth cross-over of social and political conservation dynamics was not always guaranteed. Local populations were often forcibly removed in order to accommodate park lands, with little or no compensation. Establishing a sense of value in protected areas through education of local populations was also neglected.

Designated and controlled park lands have carried forward from colonial times in much of the developing world, and despite a recent trend toward community conservation programs, they have remained largely in effect, albeit with varying levels of financial commitment and personnel support. A commonly heard phrase relating to existing parks across Africa is “paper parks”, which suggests they have been kept on paper, but that there is little or no funding coming from the governments of the countries in which they are located (W. M. Adams & Mulligan, 2003). Financial support was more readily available during the 1970-80’s for large-scale efforts to keep the “barriers” in place to protect parks, but these funds have largely disappeared, as external funding entities came under pressure for supporting what was often a militaristic approach to conservation that does not take the needs of the local populations into consideration (Marshall, 2002). Consider the 1982 definition of a national park, as outlined by the International Union for Conservation of Nature and Natural Resources (IUCN), as an example of the dominant paradigm of the time, “. . .2) where the highest competent authority of the country has taken steps to prevent or eliminate as soon as possible exploitation or occupation in the whole area . . .” (International Union for Conservation of Nature and Natural Resources: Commission on National Parks and Protected Areas, 1982). Resulting from an initial influx of tied financial aide to countries that established extensive national park based on this protectionist approach, the ensuing void of donor support has allowed exploitation of park resources to go largely unchecked, with lasting damage to the surrounding ecosystem.

The *Parc National de Niokolo-Badiar*, spanning the borders of Senegal and Guinea, illustrates the potential conflict arising from recent park lands established within the West African context. The Niokolo district was a vast hunting concession for the French colonial

power of the time. The national park was established in 1954, shortly before Senegal gained independence. Andre Dupuy, a former French Foreign Legion officer, was given the task of creating a national park by Senegal's first president, Senghor. Dupuy was provided with 300 militarily trained men to serve as forestry guards, making Niokolo Koba one of the best "protected" parks in Africa, at the time (Douglas-Hamilton, 1980). Beginning in the 1970's, local inhabitants were forced to move from the area and relocate to villages along the peripheries of the park border (Ece, 2009). Not surprisingly, the people still see these areas as their ancestral homeland, and continue to use them accordingly (Takforyan, 1994). Middlemen fueled the black market trade in endangered species by employing and supplying firearms to local hunters who were familiar with the park's terrain resulting in quick and efficient decimation of certain prized species. The result has been frequent incidents in which violence has led to injury and/or death (Dupuy & Verschuren, 1977). The Senegal government's response to this conflict has been to install a military base within the park borders to assist with fighting against poachers. The military have stayed until the present, and confrontation continues, with a "shoot on sight" policy. The result has been frequent incidents in which violence has led to injury or death (personal observation).

TMoS, TEK, and ethnic delineation are important considerations within an effort to mediate lasting conservation initiatives with communities surrounding traditional park systems. If neighbouring communities are largely dependent upon the extraction of forest resources for their livelihood, particularly if they were traditionally a hunter-gatherer culture, this may result in the protected area falling under increased internal pressure as surrounding forest resources are depleted (Colchester, 1994). For agricultural neighbours the more dominant concern may take place beyond park borders, as wildlife leaves the protected area to raid nearby crops.

Additionally, lost access to land may affect the ability to practice traditional methods of cultivation, such as seasonal crop rotation (Larrue, 2008). Pastoral neighbours may experience conflict over resources between wild and domesticated species. This may take the form of preying upon domesticated species by the large predators commonly associated with Africa, or concerns relating to disease transmission between domesticated and wild animal species.

3.2 Community-Based Natural Resource Management (CBNRM)

The goal of achieving CBNRM is a relatively recent phenomenon that has gained popularity within the last two decades. In the 1980's, a paradigm shift toward community involvement began as a means of gaining local support and increasing economic development (Child, 2004; Infield, 1989). CBNRM, at its most basic definition, is an approach that “seeks to encourage better resource management outcomes with the full participation of communities and resource users in decision-making activities” (Armitage, 2005). This concept has been particularly popular in political or policy making institutions, but the intricacies of what community involvement entails are often ignored. CBNRM programs span significant power and knowledge disparity between the objectives or progress indicators held by a government or non-government funding agency, and local group interests (Duffy, 1999; Swatuk, 2005; Twyman, 2001). Most CBNRM programs across Africa focus on economically and/or geographically marginalized populations, thereby increasing disparity between entities which must co-manage a given resource (Swatuk, 2005). The involvement of community becomes increasingly complicated as one considers the number of variables in a given community situation, and must therefore be carefully studied for each given geographic region (Brydon & Coleman, 2008; Hasler, 2002).

The dynamics of local participation may also prove difficult as politics surrounding who represents the local voice must be considered (Agrawal & Gibson, 1999; Cash & Swatuk, 2011; Cornwall, 1998; Hasler, 2002). A significant number of factors including history, culture, ethnicity and contemporary transitions must be considered in detail if community-based programs are going to be successful (Cornwall & Gaventa, 2000). A systems approach, or the currently popular Livelihoods approach, is essential to establishing sustainable programs. The level of detail needed for such involvement should also lead to a precautionary approach when focusing solely upon CBNRM (Hackel, 1999).

The following Venn diagrams demonstrate the interconnectedness of several internal and external elements that must be considered in detail as part of the research process that support legitimate CBNRM program implementation.

Figure 1: Internal Influences on NRM

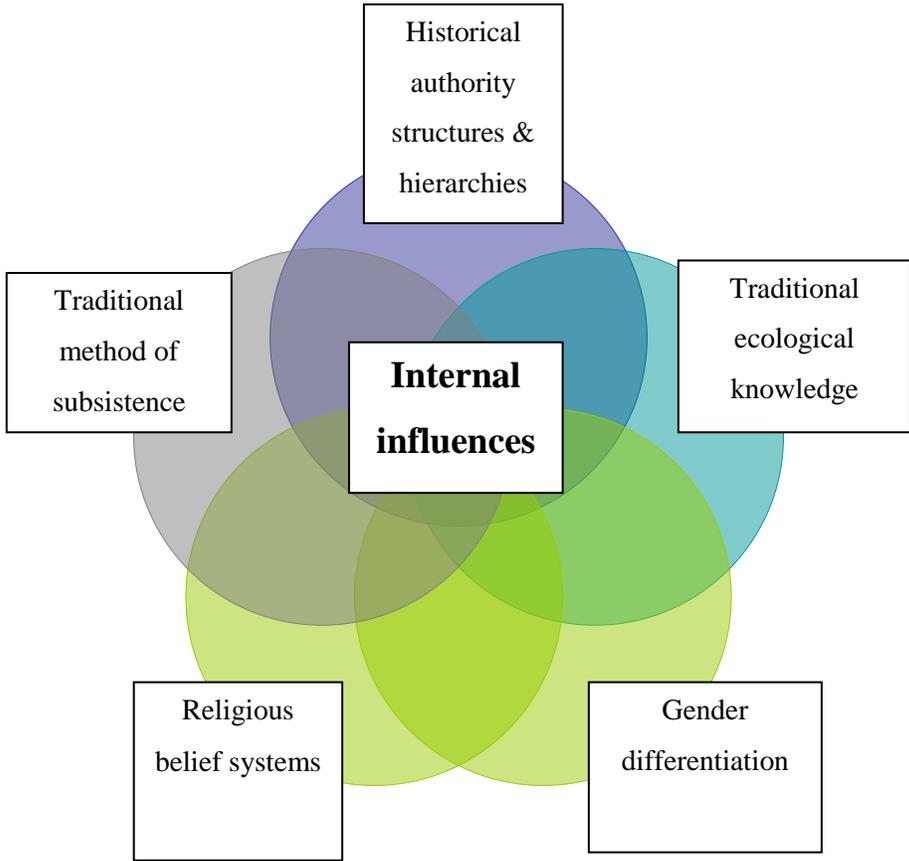
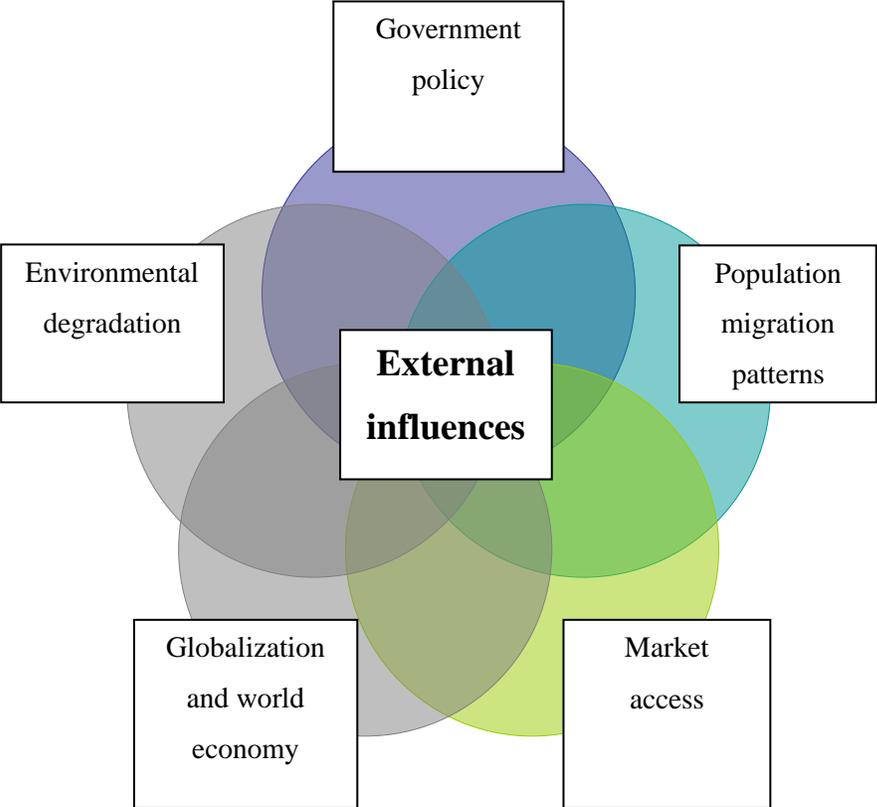


Figure 2: External Influences on NRM



A further concern relating to CBNRM is that conflict between wildlife and humans increases significantly in settings where both entities are dependent upon the same natural resources, particularly where overpopulations occur (W. M. Adams & Infield, 2003). Ultimately, humans (the community in this context) win in a situation where conflict arises, and wildlife populations are invariably affected in a negative way. One common theme for counteracting this concern within conservation programs today is to focus on offsetting the costs of resource competition by providing benefits or recompense in an effort to increase tolerance toward wildlife. Africa is a particularly volatile setting resulting from methods of subsistence that are largely dependent upon natural resources, and a high population of large and dangerous mammals such as elephants, hippo, lions and buffalo.

Gadd presents the successes and failures of conservation approaches as a means of diminishing conflict in the region of Laikipia, Kenya (Gadd, 2005). Laikipia has an economy that is largely based upon the raising of livestock and agriculture, but it is also of particular value to the tourism industry. Mammals such as elephants are important to the tourism industry, but they can be highly damaging to crops. Other species are also highly dangerous to humans, resulting in perceived concerns for human safety. Gadd addresses these concerns with unusual detail in relation to the social impetus that affects this fragile peace between wildlife and humans.

Variations such as TMoS, wealth and education are considered in relation to how they affect the local perception of wildlife (Gadd, 2005). Finally, Gadd considers the ramifications of placing a monetary value on wildlife populations. The question is forwarded that if the economic value of a species is diminished, is there a lasting conservation ethic that will protect the animal? Does

commercialization of wildlife also undermine historical traditional values that a species may have? Compensation schemes and wildlife-based benefit programs may also have the negative result of people coming to “expect financial proceeds or services, and resent species that do not provide them with a direct profit. The commercialization of wildlife may displace or override existing cultural values” (Gadd, 2005).

3.3 Summary

Today, the ability of Western science to encompass the knowledge set for a conservation program is being questioned (Clark, 2002; Infield, 2001). Beginning in the 1960s, shortly after the independence movements of many former African colonies, the physical constructs of strictly delineated conservation areas have taken a secondary position to community involvement in protecting their natural resources (Mbile et al., 2005). This concept has been particularly popular in political and policy making institutions, or paradigms such as the CBNRM approach, but the intricacies of what community involvement entails are often ignored, or their importance underplayed. For example, Hasler, in his comprehensive study of the implementation of a CAMPFIRE program in Zimbabwe, showed how resources devoted to ‘community conservation’ were quickly appropriated by powerful groups, and ended up reinforcing social inequalities rather than promoting conservation goals (see also, the similar case studies in Broch-Due and Schroeder, 2000). As a result of this complexity, an approach that considers multiple levels of community is essential for equitable and sustainable programs². TMoS, TEK, and ethnic delineation are important considerations within an effort to mediate lasting conservation

² See Hasler, 2002 & 1995, for an example of a consideration of resource capture within the proper social framework that considers political economies of scale.

strategies within communities surrounding traditional park systems, or communities involved in CBNRM programs. Understanding local TEK, the influence of TMoS, and the importance of ethnic diversity will assist in the formation of a sustainable framework for lasting and successful NRM programs.

Chapter 4 Methodology

Research for this thesis was completed in Senegal, over a six month period, in collaboration with World Vision Canada and World Vision Senegal (October 2007-March, 2008). To achieve the research goals and objectives outlined in Chapter 1, it is important to use a strong methodological approach for data collection. A case study methodology has been chosen, based on the approach of Yin (Yin, 2003). Yin defines a case study approach as useful in a situation that:

Relies on multiple sources of data, with data needing to converge in a triangulating fashion, and as a result, benefits from the prior development of theoretical propositions to guide data collection and analysis (Yin, 2003).

This approach supports the use of a triangulation of sources (Yin, 2003). In order to adhere to this approach, an integration of secondary research found in the documentation of the region is compared to primary research taken from focus group data, which in turn is influenced by my personal observations.

The primary question that my chosen methodology is intended to consider is how elements of ethnic diversity, TEK, and TMoS influence local population's relationship to the utilization of natural resources found in the region of Kedougou. This question aligns with an exploratory case study approach as Yin recommends when, "a 'how or 'why' question is being

asked about a contemporary set of events, over which the investigator has little or no control” (Yin, 2003).

The field work for this thesis was completed as part of a larger study implemented by World Vision spanning 7 months of intensive research before a decision was made to begin a new development program in the region. World Vision developed this approach as a means of adhering to the principles of a Sustainable Livelihoods Approach to be used as a template for developing their new Area Development Programs. Much of the information acquired was based upon community-based focus groups with the goal of meeting the stated needs of the population. A study of the variation between cultures was included as important to the completion of the research component, at my request. World Vision Senegal’s goal in supporting this research was to consider ways in which ethnic diversity can be taken into account for their development programs in Senegal. The first process of its kind, within the institution, was begun with a new program intended for the Region of Kedougou. World Vision Canada has taken a leading role within the World Vision community as a proponent of supporting sustainable initiatives that consider the environmental impact of their programs. World Vision Senegal has also recognized and supports the goal of seeking ecological sustainability for new ADP implementation; an approach that is in line with the government of Senegal’s resource management program objectives, and supported by donors such as USAID (Barro, 2011; World Vision Canada, 2002).

4.2 Methods

A mixed method case study approach was used in order to allow for the concurrent analysis of both quantitative, secondary data and qualitative, primary data.

Quantitative data was taken from previous geographic surveys and pre-existing studies of the region. Qualitative research, through the medium of semi-structured focus groups, was conducted in villages or locales identified by World Vision, as areas of primary importance. A structured set of questions was used to provide some structure to the focus groups, and in order to provide comparative data through the responses given. Focus groups were spread evenly across the three main ethnic groups inhabiting the area, whose traditional livelihoods span horticultural, agricultural and pastoral ways of life. Focus groups were conducted in villages or locales identified by World Vision, as areas of primary importance, however these areas followed ethnic lines, thereby allowing a comparison of similarities and differences. Interviews were spread equally between men and women, and across a spectrum of age grades (youth, adults, and elders). Collected data is de-identified, with the goal being to compare similarities and differences along ethnic diversity, as opposed to individual responses.

4.3 Past research and review of literature

A review of relevant literature has been used to support a holistic perspective on concerns relating to community interests in the region of Kedougou. A review of the published literature relating to TMoS, TEK, and natural resource management in West Africa has been completed, so setting the study within the wider ambit of CBNRM programs in Africa (see literature review found in Chapters 2 & 3). Documentation used for this study included Senegal government policy reports, non-government project reports and conceptual frameworks (particularly those of World Vision, peer-reviewed academic literature and the extensive Anthropological literature on the region, primarily documented in book format by French Anthropologists).

4.4 Focus groups

Community focus groups were used in order to acquire a deeper understanding of the history, TMoS and religious perspective of each ethnic group. A series of questions were used to determine the socio-cultural values of ethnic groups in the region of Kedougou and the adjacent District of Missira within the region of Tambacounda, and located on the eastern side of the Niokolo-Badiar National Park (see Appendix A). Questions were meant to act as a guide for conversations, but given the inherent fluidity of discussions within a group context, it was expected that there would be diversions from the outline. These questions also represent my opinion as the interviewer and outsider, so any reworking of a question on the part of participants was welcomed and recorded. Qualitative research, through the medium of structured focus groups and non-structured interaction, was conducted throughout the region. Focus group participants were spread equally between men and women, and across a spectrum of age groups. Each group contained a minimum of twelve participants, with four teenagers, four adults and four elders in each group, with equal representation of men and women across age grades. The selection of the groups was done in advance, using personal acquaintances in each district. Within Senegal most outside involvement in a village is organized through the Rural Council, government ordained representatives elected by the local population. As such, the process went from local acquaintance, to the village chief, who then past the organization of the focus groups to the Rural Council. The Rural Council is well versed in the process of ensuring that representation is spread across the family groups of a given village, and as such, I found this process to work well for the selection of candidates. Social interaction in Senegal is largely based upon networks of family and friends. As such, if one expects to receive open communication

with a given group, it is important to have a local connection with a known family in the region. Having spent the better part of ten years in the region, I was able to use past social networks to ensure that a broad spectrum of participants were chosen across multiple family lines. The chief of the village, as well as the religious leader or leaders of the community were also invited on each occasion to take part in the focus groups. While the goal was to include only medium-sized groups of fourteen individuals, it became apparent that this would not be possible given the communal nature of Senegalese rural villages. As such, it was not uncommon for groups to grow in number as the focus groups progressed. One drawback to working through World Vision as a means completing this research is that they are known to provide a tremendous amount of aid in the country. As such, people were quite focused on accessing assistance, but generally less enamored with the process of research that must come first. Resulting from this interest, it was very easy to gain the support of the chief, elders, and Rural Community in setting up the focus groups, but difficult to keep the groups focused on the research at hand. The general discussions invariably moved toward what World Vision could do for the village, and what they thought they needed by way of aid programs. None the less, the variation of responses relating to what was needed for aid, assisted with an understanding of ethnic differences based upon responses. These similarities and differences are discussed in Chapter 6.

Focus groups were spread across the three main ethnic groups inhabiting the area, whose methods of subsistence span horticultural, agricultural and pastoral ways of life. The following ethnic groups (or sub-groups) were included in the focus groups:

- Tenda - Bëliyan (District of Salémata)
- Mandë - Djallonké (District of Fongolimbi)

- Mandë - Mandinka (District of Missirah)
- Mandë - Malinké (District of Saraya)
- Peule (District of Fongolimbi)

The predominance of Mandë ethnic groups was necessitated due to their dominant population in the area. In two of the four districts studied, the Mandë were the only dominant group represented. For comparative purposes, only the Mandë-Malinké will be used in the Region of Kedougou to avoid bias toward one group. The Mandë-Mandinka group are found beyond the region of Kedougou, in the neighbouring region of Tambacounda, and the Mandë-Djallonké are predominantly found in the neighbouring country of Guinea. Their distance from the market centre, Kedougou, also resulted in different preoccupations due to remoteness and a lack of opportunity for markets. The three Mandë groups do provide a valuable example of the importance of factors within ethnic groups, albeit separated by language dialect and the spread of cultural variation over time. These will be considered further in Chapter 6 as part of a discussion of the results of this research.

Among the Mandë and Tenda ethnic groups, I am able to communicate sufficiently to assist in putting groups at ease, and to use the traditional language to supplement the trade language of French, which is the dominant language. This was particularly important, as a means of keeping men from dominating the conversation and influencing the women's responses, in what are traditionally male dominated societies. The use of the vernacular was not an option for "preparing" answers before a response was made to questions, as a result of my rudimentary understanding of the language. Among the Peule, with whom I have the least

personal experience, I orchestrated the focus groups through a Peace Corps volunteer, Robin D'Avignon, who spoke the local dialect. This proved to be invaluable for gaining perspective on conversations that I was unable to understand. Among the Mandë-Djallonké, whose dialect is also too distant for me to understand, a friend and local American missionary attended the meeting to assist in my understanding of the proceedings. The village imam was also present, in an effort to ensure that religious influence was balanced between the two dominant external religions in the region. Finally, I also requested that one young person from each village, who was fluent in the local language and French, also take notes. This provided a valuable opportunity to consider what the local scribe thought was important, as opposed to the notes written by the expatriate – myself.

4.5 Auto-ethnography

A consideration of my own perspective on this research is also important. I use an auto-ethnographic approach throughout this thesis, as a means of situating myself within the setting. Auto-ethnography has been defined as “highly personalized accounts that draw upon the experience of the author/researcher for the purposes of extending sociological understanding” (Sparkes, 2000).

In keeping with the personalized element of this approach, the method is as varied as the number of terms used to describe it. I have chosen to use the word auto-ethnographic for the same reason proposed by Ellis and Bochner, in that the term has been around for over 30 years (originally used by Hayano, 1979).

It seems appropriate now to include under the broad rubric of autoethnography those studies that have been referred to by other similarly situated terms, such as personal narratives . . . lived experience, critical autobiography . . . evocative narratives . . . reflexive ethnography . . . ethnographic autobiography . . . autobiographical ethnography, personal sociology . . . [and] autoanthropology (Ellis & Bochner, 2000)

Separated into subsections within each chapter, I have included the perspectives that my experiences bring to the research. I have referred to myself in the previous section as an expatriate; however, it is important to note that I have spent the majority of my life in Senegal as a permanent resident. My childhood was spent in the village of Fanda, found in the Casamance province of southern Senegal, between the years of 1979-85, 1986-1990, and 1991-1995. My parents were teachers at a mission school throughout this time. Two of the three ethnic groups discussed in this thesis, the Mandë and Peule, were represented in the village, and several members of the Mandë-Mandingue ethnic group remain my closest friends today. Growing up with my peers being among these groups allows for observation that circumvents the politics and agendas that come with adult discourse. Resulting from the inherent abuses that seemingly follow in the wake of Christian boarding schools across Africa, and much of the developing world, there was significant incentive to leave behind the confines of the Christian boarding school where my parents worked as teachers, whenever possible. As such, the local villages and communities became the dominant (chosen) influence of my formative years. Shortly after my graduation from secondary school, I moved into the village with a Mandë-Mandingue family, with whom I had been adopted (in their cultural context) during my childhood. Unfortunately,

after one year of living in the Casamance, the Canadian embassy required that all Canadians leave the province as a result of the escalating conflict and civil war in the region. At that time, I moved to the far southeastern province and the town of Kedougou in 1997, where I re-built a home and life in the foothills of the Fouta Djallon Mountains. At a distance of only 100 kilometers from the confluence of Mali, Senegal, and Guinea, this is arguably the most remote area of Senegal. Living in such an inaccessible location has led to an opportunity to consider the peripheries of a specific locale that has often been missed by blanket aid approaches to conservation or development.

World Vision took the first steps of any organization in the region, to my knowledge, of following a seven month rural appraisal approach to beginning their work in the region. I was privileged to be invited to take part in this process with the task of addressing what has become a primary question that this thesis is intended to consider: how elements of ethnic diversity influence a local population's relationship with and utilization of natural resources found in a particular geographic region. The desire to focus on this topic relates more to a realization that outside programs do not seem to recognize the degrees of variation found between ethnic groups in this locale. As such, this case study is meant to provide an example of one geographic and cultural location, thereby demonstrating the importance of a detailed study of TEK, TMoS and ethnic diversity on a broad scale across NRM programs.

Chapter 5 Senegal Overview and Case Study Region of Kedougou

Senegal is located on the most westerly point of Africa, situated between Mauritania to the north, Mali to the east and with Guinea Bissau and Guinea to the south. The Gambia forms an enclave within Senegal, following the Gambia River through much of the country. Located within the Sahel region of Africa, Senegal includes Sahara desert landscapes in the north, but also more tropical areas south of the Gambia River.

Figure 3: Senegal within Africa



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5.1 Politics

The people of Senegal hold a strong tradition of political participation, peaceful leadership changes and the resolution of conflict through dialogue (Maranz, 1993). This tradition has led to

a multi-party democratic system that has been widely recognized within the international community as a valuable example, given Senegal's position on a continent often characterized by militarized take-over and government dictatorships. Historically, Senegal enjoyed a relatively privileged status under French colonial rule with country representatives in France's legislature, and quasi citizenship offered to inhabitants of the capital city of that time, St. Louis. Noted philosopher and poet, Léopold Sédar Senghor, became president of Senegal in 1960, following a peaceful transition of power from France. Senghor, in turn, voluntarily handed over power to Abdou Diouf in 1980 (D. C. Galvan, 2001). Senegal remained under the Socialist Party of Senegal for the first forty years of its nationhood, until the peaceful democratic election of 2000. This transfer of power to the Democratic Party of Senegal, led by current president Abdoulaye Wade, has been commended as a rare democratic process on a continent plagued by political *coup d'états* and election fraud (see http://news.bbc.co.uk/2/hi/Africa/country_profiles/1064496.stm).

The only major source of conflict within the country has been a long-standing move for independence in the southern Casamance region. Hundreds of lives have been lost through more than a decade of conflict, but hostilities have subsided following a peace pact in 2004 (personal observation, having lived in the Casamance from 1979-1997, and now residing in the neighbouring region of *Sénégal Oriental*).

5.2 Economy

Senegal holds a Gross National Income (GNI) per capita of US\$840, as established by the World Bank in 2006. Poverty remains high, particularly in rural areas, with a current standing of 51 percent, although this is down significantly from 68 percent in 1994 (World Bank). President

Wade announced the formation of the first Poverty Reduction Strategy (PRSP) in 2002, followed by a renewal of the program in 2006 (Programme National de Développement Local; World Bank). Considered to be one of the wealthiest countries in West Africa, as well as the most politically stable, Senegal has attracted significant external economic interests. This wealth has brought immigrants and refugees flooding in from struggling neighboring countries, creating population pressures that have put additional stress on Senegalese infrastructure. Current concerns, such as the HIV/AIDS crisis across much of Africa are becoming more prevalent. Wildlife depletion is also a growing concern as a result of the bushmeat trade, which is plaguing many Sub-Saharan countries, and moving into Senegal as a result of migration to the region. Despite these encroaching concerns, however, Senegal is a land of relative peace and prosperity in comparison to other countries in West Africa. As a small country with limited natural resource markets, Senegal has had to depend to a large extent on its people's ingenuity to build their economy. The Senegalese people have shown repeated ability to meet this challenge, and have been designated as a model country by the United Nations, exemplifying the ability of an African nation to succeed within the current global economy (United States Department of Agriculture, Foreign Agricultural Service, 2009).

The following table outlines key social and economic indicators for the country of Senegal, based upon recent data from the World Bank's World Development Report (WDR) and the United Nations Human Development Index (HDI).

Table 1: Development indicators

Population (in millions)	12.5 (2009)	WDR
Human Development Index	144	HDI
GDP (current US\$) (in millions)	\$12,822.0 (2009)	WDR
GDP growth (annual %)	2.2	HDI
Income GNI per capita, PPP (US \$)	\$1,810.0 (2009)	WDR
Health - Life expectancy at birth, total (years)	56.2	HDI

(United Nations, 2011; World Bank)

5.3 Land Tenure

Given Senegal's predominantly agricultural economy, and the implications of land use change through programs such as CBRNM, it is important to review the land tenure system. Senegal's customary land tenure system for agricultural usage is based on formal allocation by a local customary authority, referred to as a "Land Chief" (Chef de Terre), who allocates land in the region (D. C. Galvan, 2004). Under these agreements, land must be productively used ("*mise en valeur*") for an extended period of time at which point access to this land becomes protected by law. Land may then be passed through family lineage from father to son, a patrilineal-based kinship system (D. C. Galvan, 2004). For women, access or rights to land run indirectly through their relationships with men (Jean-Philippe Platteau, Anita Abraham, Frederic Gaspart, & Luc Stevens, 2000). Land can also be accessed through loans or contracts (D. Galvan). During the

colonial period, attempts were made to change this system toward individual land ownership with the intention of increasing agricultural production, particularly the growing peanut industry. This largely unsuccessful effort led to the 1964 law on the “*domaine national*”, which sought to valorize customary land tenure while nationalizing most of the land, a test piece for newly elected president Senghor’s philosophical *negritude* approach (D. C. Galvan, 2004). Senghor’s *negritude* sought a dualistic approach of incorporating traditional values with occidental principles for moving beyond colonialism, “*un double mouvement de désoccidentalisation et de création nègre*” (Senghor & Liberté, 1964). While ideal in principle, particularly in relation to supporting traditional knowledge structures, the heavy involvement of state has generally caused the National Domain Law to present a bureaucratic hindrance that is generally avoided by local populations whenever possible (D. C. Galvan, 2004). Where socialism, within the context of Senegal as a new and developing country, may have hindered traditional land tenure systems, the current governmental shift toward decentralization holds potential to re-awaken Senghor’s philosophy of cultural values as important to shaping an important context such as land tenure. Decentralization, in place since the early 1970s and reformed in 1996 has changed the face of land tenure in Senegal, but the underlying importance of customary authority remains strong.

The national domain law can be subdivided into four categories:

- Urban zones (*zones urbaines*);
- Zones for special use (*zones classées*);
- Zones used for agricultural production (*zones de terroir*); and
- Development zones (*zones pionnières*), which remain under the control of the state.

(Vlaenderen, Hilde van, Tall, Serigne Mansour & Gaye, 2001)

Rural councils (“*communautés rurales*”) manage the use of agricultural land in rural areas. Rural councils are generally still separate entities from customary authority structures, however, and land allocation is rarely made without a prolonged dialogue between both entities (personal observation). Even in urban zones, where land is either purchased or allocated by the mayor’s office, there is an informal system of customary authority, through which it is best to receive accord. In my own experience, acquiring the blessing of the local customary authority for the purchase or lease of urban property for personal or NGO development purposes has proved to be invaluable to the smooth settlement of neighborhood concerns that invariably arise.

5.4 Decentralization and Local Development

Senegal has a long standing relationship with decentralized forms of government that date back to pre-colonial times. In fact, even before the French Revolution of 1789, the city of St. Louis, Senegal, had moved to demand that the King of France provide them with independent status as a municipality. This was successfully achieved in 1872, and the communes of St. Louis and Gorée were accorded, thereby initiating what has become known as the phase of *Communalization* (World Bank). The second phase of decentralization began in 1972, when Senegal adopted a system of elected representation based upon universal suffrage. This phase has become known as *Ruralisation* (World Bank). The third stage, know as *Regionalization*, was implemented in 1996, at which time territories gained financial autonomy and legal recognition. As part of these regionalization reforms in 1996, the government of Senegal enacted a local collective’s law which passed more control to local levels (regional, community and rural communities) (Bandiaky, 2009). Natural resource management was one of several functions

transferred to communities, as part of this law, with the goal of returning financial profits to the region from which they were sourced (Diaw).

At this time, Senegal also established the *Programme de Développement Locale* (PNDL), to oversee local development within their decentralization plan (Programme National de Développement Local). This program continues to serve as one of the main avenues for the achievement of the country's Millennium Development Goals (MDG) by 2015, and is in line with goals set out in the New Partnership for Africa's Development (NEPAD).

Senegal's second poverty reduction strategy paper (PRSP) was introduced in 2006, and targets highlight three priority areas:

- Double the per capita income by 2015 as part of a strategy for distributing wealth more evenly
- Generalize access to basic social services by accelerating the development of basic infrastructure for strengthening human capital by 2010
- Remove social barriers and promote equality, particularly gender equality at the primary and secondary level of education by 2015

(Programme National de Développement Local)

The PNDL, which is now backed by major funding stimuli associated with the Millennium Development Goals, has finally created an environment in which previous government legislation is now beginning to reach the outer limits of the country (Programme National de Développement Local). Despite such a long history of commitment to the concept of decentralization, a lack of economic (monetary) support has caused the empowerment of local

communities to grow at a slow pace across Senegal. This is most evident in the South-eastern corner of the country, the Region of Kedougou, which forms the case study for this thesis. The slow trickle down effect of monetary resources to remote areas is a common problem across much of rural Africa. Beyond social implications, this has been particularly detrimental to the Region of Kedougou, as Senegal's largest conservation area and arguably its most abundant natural resource base is found in the region.

The PRSP-II for Senegal outlines several difficulties encountered throughout the process of transferring competencies from the central government to rural communities. It should be noted that two of the four difficulties relate to a lack of monetary resources.

- Serious shortage of resources available to local bodies to cope with the demands and competencies transferred to them;
- Support organizations that do not function
- Poor understanding of the meaning of decentralization
- Government delay in making Local Government Investment Funds and Decentralization Funds available to local governments.

(Government of Senegal)

Government decentralization reforms began to influence practices closer to accessible centres of the country; however, evidence of these changes have been slow to reach more remote regions. Support has also been largely donor based. The German government through GTZ has worked to establish village protected areas to manage forestry resources (each community is required to set up its own protocol (*mise en defense*), which must then be accepted by the government). The World Bank has funded a program known as the *Programme de Gestion*

Durable et Participative des Energies Traditionnelles et de Substitution (PROGEDE). This project works in the Tamba/Kolda region and borders the north side of the Kedougou region (Bandiaky, 2009). The Canadian International Development Agency (CIDA) has worked on the Western border of the Casamance to encourage the co-management of classified forests (USAID, 2009). Recently USAID has begun to fund an initiative entitled “Wula Nafaa” a local Mandë term that translates as “The value of the forest”, which is the first major initiative for Community-based Forestry Management to work in the Kedougou Region. World Vision has also worked to support villages within their ADP’s in establishing “Mise en Defense” protocols, a costly participatory process that is necessary for community authority to be accepted (USAID, 2009). These new initiatives are important and should not be underestimated as a positive influence toward new direction. USAID represents the largest development agency in the world, and World Vision is the largest NGO working in Senegal today. It is imperative that these large donor organizations set the standard for respecting ethnic differences and incorporating local TEK into their programs.

5.5 Case Study Region of Kedougou

The Kedougou region of South-eastern Senegal might best be described as a crossroads of traditional ethnic boundaries and modern national borders. The town of Kedougou, which is the seat of government for the region, is the largest community found near the confluence of the countries of Senegal, Guinea and Mali. The town has a population of approximately 20,000, while the rest of the region’s inhabitants are estimated at 105,000. This is very low given that this translates to approximately five inhabitants per square kilometer (United Nations Capital Development Fund). In addition to being an important intersection of current national

boundaries, the region is also a crossroads of historical ethnic boundaries, which converged in the region, and were often delineated through conflict. The headwaters of West Africa's three greatest rivers, the Gambia, Senegal and Niger, descend from the Fouta Djallon Mountains of Guinea, and two of these rivers pass through the region of Kedougou, providing an abundance of natural resource wealth. This wealth also brought conflict to the region, in this case between Peule pastoralists and Mandë agriculturalists, who waged war along the fertile valleys of the Senegal and Gambia rivers as early as the 1500's (Diarra & Ghai, 1974; Sonko-Godwin, 1988).

Consider the following quote by Groelsema:

In Contrast to the Malinke, the intellectual basis of Peule identity is their claim to mainstream origin, their military conquest of the Fouta, and the subsequent establishment of a theocratic kingdom in middle Guinea...Combining their economic pursuits with religious zeal, they waged a series of *jihads*, conquering and enslaving some peoples, and displacing others – including the Susu – to the coast. For more than 150 years (from 1750 to the end of the nineteenth century) the Peule maintained a theocratic kingdom...

(Groelsema, 1998)

Added to this, the Tenda, traditionally a hunter-gatherer society who are accepted to be the original inhabitants of the region, were caught between these powerful invaders (Gomila, 1971). The Mandë historically brought surrounding indigenous populations of the Kedougou region into alliances. These smaller ethnic groups were forced to ally themselves with one or the other of the dominant and powerful invaders for protection. Remnants of these alliances remain today. Currently, the poorest ethnic group in the Kedougou region, the Tenda-Bedik, was

virtually exterminated by the Peule, having only survived complete ethnocide by allying themselves with the Mandë (Lalouel & Langaney, 1976). Numbering only approximately 1, 500 people today, Tenda-Bedik villages are generally either ensconced in inhospitable hilltop refuges, or alongside Mandë villages, where they continue to hold a subservient position. Tenda-Bedik villages are also still situated precisely between the line where the Peule and Mandë ethnic groups meet (Gomila, 1971).

The Peule-Malinké wars symbolize the long standing conflict that often exists between agriculturalists and pastoralists, in this case Mandë agriculturalists and Peule pastoralists, whose different methods of subsistence have led to conflict over resources throughout world history, in the search for better farming and pasture lands (Sonko-Godwin, 1988). While violent conflicts surrounding TMOs have diminished, particularly in Senegal, they are still evident in conflicts across Africa today (Blench, 1996; Campbell, 2004; Cocodia, 2009; Oucho, 1997; Suliman, 1999; Thébaud & Batterbury, 2001). For example, it has been suggested that the roots of the recent genocide in Sudan are originally based in conflict over pasturing rights between pastoralists and agriculturalists that resulted from times of drought or flood (Shazali & Ahmed, 1999). The focus of the media on the religious differences in the country between the Muslim north and the predominantly Christian south, albeit an important element of the conflict, are not the original instigating factors. While religious fanaticism is a major cause of violence across much of Africa, I would argue that religion frequently acts as a cover for more deeply rooted and latent tensions, such as conflict over diminishing natural resources.

5.6 Geographic context

South-eastern Senegal covers 59,602 km², or approximately 30%, of the land mass of Senegal (Pélissier, Laclavère, & Bâ, 1980). Despite this substantial land size, the area is only home to approximately 6% of the country's population (G. Pison, 1995). *Sénégal Oriental* can be divided further into the separate regions of Bakel, Tambacounda and Kedougou (Pélissier et al., 1980). Beginning in 2007, the Department of Kedougou was removed from the region of Tambacounda and given equal regional status. For the purposes of this study, I will focus primarily upon the new region of Kedougou. Kedougou is currently divided into the districts of Salémata, Bandafassi, Fongolimbi and Saraya.

Figure 4: Departments of Kedougou Region

- Tenda-Bëliyans (Bassari) (Region of Salémata)
- Djallonkés (Region of Fongolimbi)
- Malinkés (Region of Saraya)
- Peuls (Region of Fongolimbi)



- District
- Dominant Ethnic Group
- Town and Seat of Government

(G. Pison, 1995)

The region of Kedougou is the most remote location in the country, with only one paved road leading from the region to the capital city, Dakar, located approximately 700 kilometers to the North-west (see Map 1.2). South-eastern Senegal includes the only significant

variation in elevation in the country, with the northern ramparts of the Fouta Djallon Mountains forming the southern border with the country of Guinea. The Bademba Hills follow the base of the Fouta Djallon Mountain range and extend across much of the Region of Kedougou, with elevation ranges between 0-500 meters (Lalouel & Langaney, 1976; Péliissier et al., 1980). The land consists largely of laterite or bauxite rock covered with a thin layer of soil (Péliissier et al., 1980). This is particularly true of the plateau regions which extend through and around the hill country. Ecotone regions along the edges of these hills and plateaus are often more fertile and rich in vegetation, as they receive significant levels of water runoff during the rains (Pruetz, Marchant, Arno, & McGrew, 2002). Gallery forest is diminishing quickly, but can be found along waterways and in box canyons along the Fouta Djallon Mountains. This vegetation type is technically protected under Senegalese law as waterways fall under watershed management protection, although these laws are rarely enforced. The environment is harsh and dry with five major types of vegetation, as outlined by Baldwin, McGrew and Tutin, for the Asserik region found within the Niokolo-Badiar National Park and bordering the Bademba Hills (P. J. Baldwin, McGrew, & Tutin, 1982; P. J. Baldwin, 1979).

- 1) Gallery forest: tropical (or subtropical) semi-deciduous lowland forest.
- 2) Woodland: drought-deciduous lowland woodland.
- 3) Bamboo: flat-leaved savanna with isolated palms and deciduous trees.
- 4) Grassland: narrow-leaved savanna with isolated palms and deciduous trees.
- 5) Plateau: narrow-leaved savanna with isolated deciduous shrubs.

The following image demonstrates one of multiple threats to remaining gallery forest, in this case, a major waterway that flows through the Asserik region in the Niokolo-Koba National Park. Despite a protected status, grass fires encroach each year on the remaining gallery forests.

Figure 5: Forest fires (Niokolo Koba National Park)



Grassfires darken sky in Niokolo-Koba National Park (© Mark Cook, 2002)

5.7 Climate

The climate of South-eastern Senegal consists of two main seasons, a rainy season, from June to September, and a dry season, from October to May. Rainfall average from 1984-1995, documented in the Bandafassi region of the Bademba Hills, was 1, 097 mm per year, although this has declined rapidly in recent years (Pison, Guyavarch, & Sokhna, 2002; Pison, 1995).

The months of January and February are characterized by the influence of an annual Saharan wind known as the Harmattan, which descends from the East and has a drying effect on the rest of the dry season (Baldwin, 1979). This is followed in March, April and May, by hotter temperatures that rise to a mean maximum of 40°C in the shade (Baldwin, 1979).

5.8 Niokolo-Badiar National Park

A defining feature of the Region of Kedougou is the vast Niokolo-Badiar National Park that forms a ‘barrier’ along the Western edge of the province, descending south into Guinea as a trans-boundary park. This park is a significant natural resource to the region and has fared better than many parks across West Africa as it is one of the last remaining regions of West Africa where charismatic species such as lions, hippo, antelope and buffalo can be viewed to support tourist income generation. The park has also been designated as a World Biosphere and UNESCO World Heritage site, resulting in a continuation of limited support from governmental and NGO sources.

But these are external validations for the park, and local access for education purposes is extremely limited. As a result of this predominantly external interest, the protective infrastructure of the park has decreased significantly, since the 1980’s, as donor money and central government cutbacks have taken effect, and very little replacement income generation has been achieved. The greatest casualty of this time period was the decimation of the park’s elephants (Blanc, 2007). Organized crime was the main cause of this destruction, with the cost of ivory fueling the black market trade, and Senegal remains one of the last unregulated ivory trading centres in the world (Blanc, 2007).³ While the ‘middlemen’ were generally expatriates, local Tenda inhabitants were in a position to do the most damage to the region’s elephant populations. As the original inhabitants of the park area, who were expelled as recently as the 1970’s, and as a traditionally hunter-gatherer ethnic group, they were well equipped to both know the land and

³ With Senegal ivory no longer available, Senegalese craftsmen, now source ivory from other countries such as the Central African Republic. See Blanc et al., 2007, for further discussion.

how to take full advantage of a trade that depended on the hunting of an animal (personal observation). It is a classic case of removing a minority group with minimal population numbers from an area that is declared worthy of protection by outside parties, often influenced by NGO's working in the name of conservation (J. Marshall et al., 2002; Mutimanwa, 2001). Unfortunately a geographically marginalized ethnic group may also hold the potential to negatively affect the area due to their advanced expertise in the utilization of the resources found in the region. And who can blame them, as these are resources that they rightfully consider to be within their collective traditional control. Both of the previous citations given relate to the best known hunter-gatherer groups in Africa, the San of the Kalahari (see Marshall) and the Ba-mbuti of the Congo (J. Marshall, 2002; Mutimanwa, 2001). The Tenda of Guinea and Senegal hold many historical similarities to the San and Ba-mbuti, and the result of having their lands appropriated for conservation areas has had an equally devastating effect. In the case of the Senegalese side of the Niokolo-Badiar Park, violence has often led to injury and/or death. Senegal has even sent the military in to shore up the struggling park service, but this has had little effect in diminishing poaching within park borders, and has only served to exacerbate the conflict⁴. Unfortunately, within the context of the region of Kedougou, the park stands only as a barrier or fortress which the vast majority of local residents have only seen through the windows of public buses as they wind their way through the park on the only major road connecting the region to the rest of

⁴ While any documentation of these conflicts is hard to find, during the course of three months researching chimpanzee populations within park borders in 2002, two local Tenda men were killed within 15 kilometers of our research camp. Local knowledge of other lost lives is also widely available through the Tenda community (personal observation).

Senegal. It stands as one of the most important examples in the region of a need for community involvement in the management of natural resources.

5.9 Ethnic delineations of the Kedougou region

The Herskovitzian model, a popular anthropological paradigm, separates ethnic groups by TMoS, such as hunter-gatherer, horticultural, agricultural, and pastoral delineations (Harris, M & Johnson O, 2000). For the purposes of this research, my classification of cultural groups is based on Herskovits' concept of the following culture domains (Harris, M & Johnson O, 2000).

- **Agricultural:** This classification term will be used to refer to a TMoS which is largely based on agriculture using traction methods. The term also refers to a people whose historical TMoS depended upon crop yields to survive throughout the year. It is important to note, that it is becoming increasingly difficult to survive in Senegal year-round as crop yields are decreasing with the drying effect of desertification.
- **Pastoral:** This term will be used to refer to a TMoS which is largely based on herding livestock. Historically, these people generally followed a nomadic life but now they tend to follow a more sedentary lifestyle (Fratkin & Mearns, 2003). Today, as Africa's diminishing resource base no longer lends itself easily to a nomadic lifestyle, pastoralists increasingly tend to mix farming and herding of livestock, a phenomenon that is commonly referred to as "agro-pastoralism." Despite this livelihood shift, livestock tends to remain as central to pastoral tradition, often with livestock animals held in sacred veneration (Asiema & Situma, 2010).

- Horticultural: This term will be used to refer to a way of life that depends upon a mixed subsistence strategy. This method incorporates non-intensive animal husbandry, natural resource extraction, and a shifting cultivation practice resulting from a lack of intense farming applications (Keegan, 1986). Horticultural production is much more dependent on forest resources than other livelihoods in order to complete a limited agricultural harvest which often does not cover the whole year (Gomila, 1971). The term *Horticultural* commonly takes the place of *hunter-gather*, a fourth category that within the recent past would be included in a breakdown of cultures based upon TMoS. Today, a true hunter-gatherer method of subsistence is now generally accepted to be impossible within our current world of overpopulation, national boundaries and diminishing resources, a reality that is particularly true of Africa (Burch, 1998). Hunter-gatherer societies within Africa have also been invariably marginalized by the more dominant agricultural and pastoral societies that have spread across the continent. These marginalized environments have also caught the attention of conservation interests over the last century, often causing a counter-intuitive situation where societies that are most connected to their natural environment on a spiritual level find themselves forcibly removed from their homelands in the name of conservation (J. Marshall, 2002). It is relatively easy for an African government to relocate a minority, subjugated ethnic group that hold natural resources collectively, as opposed to holding a tradition of land-ownership. This has been seen among the San of Botswana, the Ba-mbuti of the Congo, and of most relevance to this study, it took place among the Tenda of Senegal. The Tenda were pushed from their homes within the government designated park as recently as the

1970's. Remains of these villages can still be found today, and the people continue to view the area as their own (personal observation). Sadly, the potential of these groups to contribute to a sustainable management of the natural resources found in their homelands is relocated as the people are. Use of the space by the original inhabitants becomes that of the "poacher" whose traditional ecological Knowledge now holds the potential to be deadly for the local wildlife populations.

Many societies which were considered to be hunter-gatherer societies, as recently as one or two generations ago, are now best considered as horticultural. During the course of this research, it was noted that the term "horticultural" was misunderstood when translated into French. As such, the term "mixed-agriculture" was agreed upon and substituted to describe a horticultural TMoS.

Of course, it is important to realize, particularly within the West African context, that these categories are based on more than just TMoS. TMoS is only one step in what must be a systems or Sustainable Livelihoods Approach that considers all past and present influences on a given environment. Other areas must be considered such as social structure, cosmology, gender relations, and inter-group relations. Current influences such as globalization, immigration/emigration and related economic remittance patterns that follow these migration patterns must also be considered. Many of these elements tend to be inter-related. We cannot take a TMoS, for example, without integrating information on the TEK or religious practices of the society, particularly in Africa where the two are often linked. Traditional religion in West Africa predominantly has its roots in what is known as animism, or the spiritual context given to everything in the natural world, including inanimate objects (Berkes, 2008; Idowu, 1973). For

example, a horticulturalist group may see the forest as the supplier of its needs and may therefore give it a spiritual significance (Turnbull, 1962). A natural resource that is harvested or collected, such as honey, may hold a strong spiritual significance (Berkes, 2008; Turnbull, 1962). By comparison, those who must clear significant areas of land in order to farm may hold elements of a negative perception regarding the forest. Cereals such as millet or fonio, occupy a particularly important place in the religious beliefs of groups who depend on agriculture or horticulture, a well known example being the Dogon of Mali (Griaule, 1975; Griaule & Dieterlen, 1986). A pastoral group may give more value to a given species of domestic animals, as seen among the well known Maasai of East Africa (Hovardas & Stamou, 2006). The relationship between spiritual belief and TMoS must therefore be studied together in order to acquire a holistic perspective on a given ethnic group.

The country of Senegal illustrates this diversity. The village where I was raised was situated in the Casamance region of Senegal, and had separate households that included seven distinct ethnic groups. While this context is not ideal, it is a growing norm in countries where colonial borders have created imbalances of power. Civil unrest has caused forced migrations resulting in mixed Diasporas, while economic development is creating focal points for better living conditions that disrupt traditional ethnic delineations. There are no easy answers for the implementation of cooperative programs in situations such as these, but taking the influences of various cultures into consideration is a first and important step. Within West Africa, TMoS remains closely linked to the land, with a strong dependence on the utilization of primary natural resources. This strong connection to Africa's ecology holds the potential to serve as a valuable asset for the regulation of natural resources within conservation programs. For this reason, the

three main ethnic groups found in the Kedougou region, the Tenda, Mandë and Peule cultures, should be considered in detail when implementing a natural resource management program that spans the interest of all participants.

5.10 Tenda, Mandë and Peule delineations:

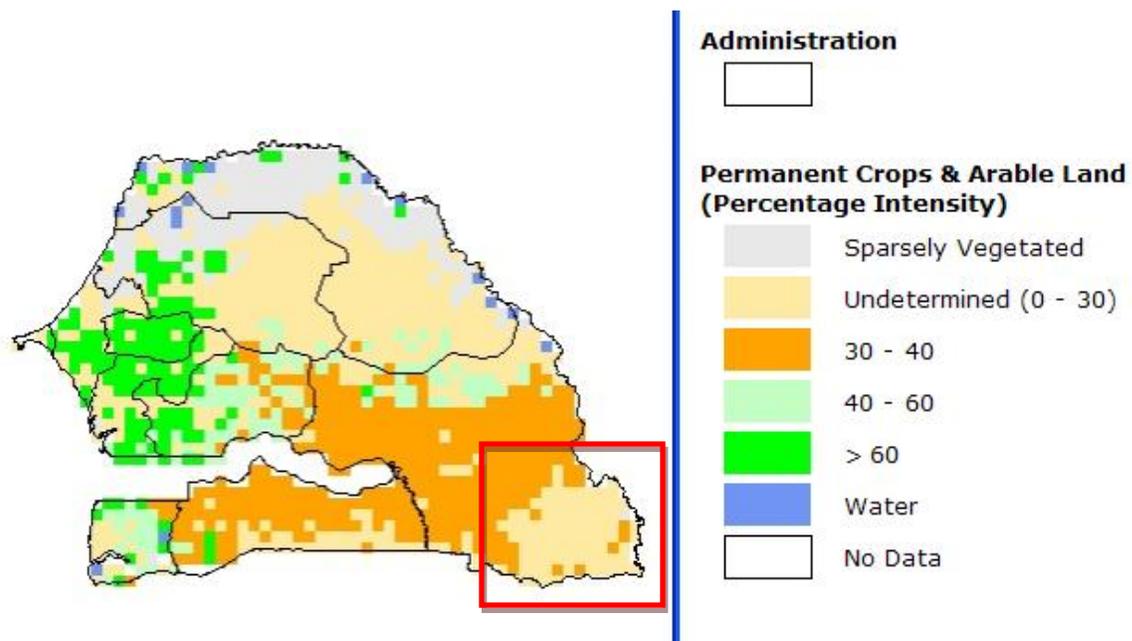
In the region of South-eastern Senegal, three different cultural groups live within the same territory. I am basing my classification of cultural groups on Herskovits' culture domains, delineated by TMoS, as outlined in the previous section (Harris, M & Johnson O, 2000).

5.11 Tenda

The Tenda include four subgroups: Badyaranké, Koniagui, Bedik, and Bëliyan (Bassari). The Badyaranké and Koniagui are found in the country of Guinea and in Senegal, east of the Region of Kedougou. As such they will not be considered in detail for the purposes of this paper. The Bedik are found in the Bademba Hills of the Region of Kedougou with a remaining population of only 1, 500 individuals. The Bëliyan live in the Fouta Djallon Mountains of Guinea and in the District of Salémata, within the Region of Kedougou. I have lived intermittently with the Bedik and Bëliyan for approximately six years, beginning in 1993. These people groups are generally accepted to have been the first inhabitants of the region, before the influx of the Mandë populations from present day Mali, to the East, and the Peule from the Fouta Djallon mountains of the South (Gomila, 1971). The word *Tenda* comes from the Peule language, but has become the accepted term of reference among the inhabitants of the region (Gomila, 1971). The Bedik and Bëliyan will be designated here as horticultural societies, although there are multiple interpretations possible for this TMoS. Perhaps in response to the difficulty of defining this multi-dimensional and changing way of life, the Tenda have recently been described as “hunters,

gatherers, gardeners, agriculturalists”, by Galat-Luong, a prominent ethnologist in the region (Vault & Messana, 1993). My use of the classificatory term *horticultural* is used here to refer to a lifestyle that is largely dependent on hoe agriculture, with limited use of plough and traction methods. Of course, the lack of traction agriculture is related in part to the inhospitable hillside country which is generally not favorable to agriculture. Cereal yield for the country of Senegal as a whole currently stands at 1,135 kilograms per hectare of harvested land, which is less than one third of the yield in a developed country such as Canada (World Bank, 2010). The following graph, provided by the Food and Agriculture Organization of the United Nations (FAO), demonstrates the lack of crop yield for the region of Kedougou. As demonstrated, most of the region remains below 30% for permanent crops and arable land, largely due to the inhospitable laterite terrain (see 5.2.1).

Figure 6: Region of Kedougou



(Food and Agriculture Organization of the United Nations, 2011)

The Tenda lifestyle is more dependent upon natural resources of the biota than other ethnic groups found in South-eastern Senegal, which helps to complete a limited harvest that often does not suffice for the whole year. Men are the main collectors of honey, and the sap of the oil and runyaa palm trees, which is used to make wine. These resources are of great importance in the tradition of this ethnic group. Women collect forest resources such as Baobab fruit, Tamarind and Shea butter. Bedik and Bëliyan men are also well known for their weaving and the women for their pottery.

Figure 7: Tenda man weaving a basket for use as a beehive



© Peter Stirling 1997

In addition to the gathering and harvesting of forest resources, most of the men are excellent hunters, in keeping with their hunter-gatherer heritage (Guenther, 1977). In the agricultural and pastoral sectors, a village often only has one or two hunters who sell bushmeat to others.

The Tenda have almost unanimously rejected Islam, although many have adopted Christianity to a certain extent, fusing it with their own animistic belief systems. The Christian church (Catholic and Protestant) has now been present in the Region of Kédougou since 1957. The Tenda have remained a relatively closed entity, and do not intermingle significantly with their close neighbours (Langaney & Gomila, 1973).

5.12 Mandë

The Mandë ethnic family group is spread over much of West Africa. Descendants of the Mali empire (approximately 800-1550), they are now separated into a myriad of smaller subgroups. The three main subgroups found in Southeastern Senegal are the Diakhanké, Dialonké and Malinké.

These groups are very proficient at raising field crops. Rather than requiring supplemental forms of income during the months leading up to the growing season, the Mandë are seldom short of food, and often sell excess food stores to the neighbouring Tenda. Fields can be quite extensive, and several hectares are not unusual for a family group. Traction methods with oxen are often used to enhance crop yield.

Figure 8: Mandë farmers



© Peter Stirling 1989

The Mandë ethnic groups of West Africa have virtually all converted to Islam, and this has significantly changed their traditional way of life. That said, Kedougou again presents a unique social crossroads within the Mandë realm, as some the connection to traditional religion remains strong in some areas and in relation to particular perceptions of their surrounding environment (Larrue, 2008). For example, the “Niokolonko Malinké” found in the hills of the district of Tomboronkoto have only converted to Islam in the last ten years. As such the strength of traditional practices is significantly more important to consider in this region than the neighbouring of Saraya, for example.

5.13 Peule

The Peule are also members of an ethnic family that extends across much of West Africa, more commonly known as the Fulani. The Peule-Fouta is the main subgroup found in Southeastern Senegal along the border with Guinea. They were originally a pastoral people, whose way of life centered on their cattle. The Peule have significantly more cattle per capita than other ethnic groups of the area, and because of this, they control their cattle's movements to a greater extent. Livestock still hold a central position in Peule society, and wealth is still measured by the size of an individual's herd (Sonko-Godwin, 1988). Pastoralists, similar to the horticultural societies of this region, are also now dependent upon agriculture, and are generally based in permanent villages. Diminishing resources, changing land tenure systems and access to water through year-round wells have led to more limited ranges for herding and a more sedentary lifestyle (Touré, 1990). It has been argued, however, that while the Peule are more sedentary now, their livestock is still quite mobile through the use of paid herders (Adriansen, 2008). Traction agriculture is common as they already own the required oxen for pulling the farm equipment, and the sale of livestock is readily sufficient to purchase the farm implements needed. Peule agriculture is generally not as developed as methods found among their agricultural neighbours, however, and remains a supplement to their income from raising livestock.

The Peule, like their agricultural neighbours, are predominantly Islamic. Islam has been the religion of the Peule for centuries, and they have no remaining traditional religious beliefs (Lhote, 1959). It has also been suggested by historians that the Peule may have migrated across West Africa from as far away as Ethiopia (Lhote, 1959).

A table helps to clarify the differences between ethnic groups:

Table 2: Ethnic historical diversity (TMoS, language, religion)

Ethnic Group	TMoS	Language	Religion
Tenda	Horticultural	Atlantic	Traditional religion - Christian
Mandë	Agricultural	Mandë	Traditional religion - Islam
Peule	Pastoral	Atlantic	Islam

Note that the only commonality shared by two groups in this table is the language category for the Tenda and Peule. While considered to be of the same language family group, they are significantly different, with no inherent intelligibility.

5.14 : Summary

Senegal provides an ideal case study for a consideration of conservation and development programs in general, and more specifically, CBNRM initiatives. As one of the first relatively stable countries in Africa, with a mastery of working with foreign interests, they have often been upheld as a model country for development. Senegal has a relatively strong economy, stable governing approach, and a unique decentralization process that provides an ideal environment for aid programs. However, this welcoming approach to conservation and development issues has also made the country a history book of the errors that have occurred as the West has sought to force their latest development or conservation agendas on the developing world. For example, one finds a series of antiquated park infrastructures ensconced within a CBNRM friendly environment, caused by an open approach to decentralization of government power.

Senegal is also a country with a strong sense of democracy, and ostensible ethnic cohesion; however, as has been outlined in this chapter, there remains strong ethnic solidarity and a rich cultural history, the influence of which I would argue is often missed by external observers (personal observation). Using the case study region of Kedougou, in South-eastern Senegal, a map of ethnic delineations quickly demonstrates the polarized lines that often divide ethnic communities in Senegal.

Figure 9: Ethnic delineations



(map created using ArcGIS software)

This map demonstrates that the smaller distinct ethnic groups of the zone are quite separated from each other with little or no overlap. They generally also fall within separate administrative regions. As identified in Table 5.1, language and religion also follow these lines of separation. The two dominant ethnic groups of the region, the Mandë and Peule are spread throughout the entire region and are interspersed with the minority groups; however, they generally remain in separate villages from the smaller ethnic groups. The Mandë form a dominant majority of the Saraya and Fongolimbi departments to the east and the Peule are dominant in the Bandafassi and Salémata departments in the west⁵.

While strictly delineated ethnic variances are not an inherent concern, as countries such as Senegal face increasing pressures from a diminishing resource base and surrounding civil unrest in the region, these ethnic divides become more apparent. Ethnic and cultural differences are surmountable; however they require acknowledgment and attention by any program that seeks to span ethnic lines as part of NRM policy formation and programs.

⁵ Note that I have included two minority groups of the Peule and Mandë, the Peule-Fouta and the Mandë-Djallonké, within the department of Fongolimbi that cross the border from Guinea to the south. The reason for this is that I completed separate focus groups in these regions to ensure I had a complete picture of the ethnic perspective in the region.

Chapter 6 Analysis

When considering the importance of TMoS or TEK, a significant range of variation between ethnic groups should be taken into account. Based on The questionnaire used in the focus groups to identify differences between ethnic groups, I will emphasize differences that were found within the following three primary areas:

- Religion
- Communal life and wealth accumulation
- Social Hierarchy

Two further areas of difference are also considered with the use of tables to highlight variations that were found in the following two subsections of the questionnaire.

- History
- Local authority

It is important to note that while these cultural areas of diversity were found to be important to the case study region of Kedougou, they are by no means exhaustive in their coverage. Neither do they complete a full picture of differences across cultures. They are used here to highlight what I believe are the most important areas of cultural variation found during the course of the research for this thesis, and specific to the case study region. While these areas of ethnic variation are not all encompassing in their coverage, they do serve to demonstrate the important differences that may exist within cultural parameters that are often overlooked or neglected in an NRM or conservation management plan.

Following a consideration of the variations between ethnic groups, I outline two areas of cohesive thought that were identified from the responses of all groups during the focus groups. Areas of common concern offer an important opportunity for programming as they hold the potential to extend across historical, cultural and religious differences.

6.1 Religion

It is important to note that religion follows the same distinct lines as the dominant ethnic delineations of the region of Kedougou. For example, the Tenda have never accepted Islam; a significant factor that has been suggested to be a major cause for the historic wars which took place between the Tenda and Peule. To the present day, the Tenda have almost unanimously rejected Islam, preferring to adopt a religious syncretism based on a marriage of traditional religion and Christianity (the Protestant and/or Catholic churches have been present in the region of Kedougou since 1957. (see responses in Appendix A)⁶

⁶ [Auto-ethnography] I found it revealing that the Tenda stated during the focus groups, before the pastor of the protestant church, that traditional religion still controlled much of every day life and their ceremonies. The location of that specific focus group was in the village of Oubadji, where one of the first five protestant missionaries to Senegal began to work in the 1950's. It is also one of the most remote locations in the country. I must also point out the influence that my own position could have had on an answer. While I am not involved in missionary work myself, The original missionary to the Tenda, Jim Stanley, and two of his sons, Jimmy and John Stanley who were born and raised among the Tenda, continue to use my home in Kedougou as a base for their work in the region. As such, I feel there was a strong potential for answers to be skewed in favour of a suggested devotion to Christianity based on my past. The fact that this did not affect their acknowledged commitment to their traditional religion demonstrates the importance that tradition holds with the Tenda. In 2010, while completing focus groups among the Tenda as part of a process for the implementation of a Community Forest program, I made a point of seeking out and receiving the blessings of the local traditional spiritual leader responsible for the region we were working in before

Among the Mandë, there is a more stratified commitment to religious fidelity. For example, although there is a close kinship between the Malinké of Saraya, and the Mandinka of the District of Missira, a distance of only 300 km between them exemplifies differences of commitment to Islam. Residents of the village of Nétéboulou, in the District of Missira, who were part of our study, accepted no relationship today with their traditional religion. By contrast inhabitants of Saraya openly declared, before a representative of the local imam (Muslim leader), that they have one foot in Islam, and the other foot in their traditional religion⁷.

The Peule consider themselves to be the most faithful to Islam, and are the self proclaimed vectors of Islam to the region. No Christian mission is currently working successfully with the Peule in the region of Kedougou today, following the abandonment of Catholic and Protestant

beginning work with the community. Focus groups were subsequently held at his compound, and in each case he began the session with his blessing, and an assurance the ancestors had also given their blessing. The increased involvement of the people and their continuing dedication to the Community Forest program stand as a testament to the value of respecting traditional belief structures in situations such as this where there is an acknowledged adherence to a system of belief (unpublished data).

⁷ [Auto-ethnography] In addition to the presence of the Muslim leader, the village in which this focus group took place was the site of a protestant outreach effort by Canadian and American missionaries throughout the 1980's and 1990's. As a child, our family occasionally spent school holidays in the region with a local missionary family, and as such I was recognized by some of the people as being affiliated to their past involvement with Christianity. I was also driving an old Land Rover that I had purchased from the missionaries after they left the region, which was instantly recognized by the people and was a source of much comment amongst them before the focus group began. However, the past establishment of a local Christian church in the village was not even mentioned during the focus group. beyond a surprising suggestion that they would like to see the twelve year old church building used for something else, such as a health clinic. Despite members of the focus group having been professed Christians within the last decade, they now only claimed their own traditional religion and Islam. The adherence to their traditional religion, while considering the more recent religious influences to be used on an 'as needed or beneficial' basis, is a remarkable consideration that should not be taken lightly by a program planning to work in a given region.

efforts in recent years⁸. An example of Peule devotion is illustrated through a focus group held among the Peule Fouta of Dimboli. One of the biggest stated concerns of the village elders was to have Arabic courses taught in their primary schools. This desire was expressed among a group of twenty persons which included only two individuals who were literate in French, and no one present knew how to write in their vernacular language. Among all other groups studied, socio-economic problems were the major concerns of the population, a divergence which demonstrates the importance of religious belief (in this case Islam) to the Peule.

The religious concept of that which is sacred to a specific ethnic group is suggested in this thesis as a potential replacement for the aesthetic basis for conservation held in the West (see introductory chapter). This may involve building upon the sacred designation of a specific species, such as the example given for chimpanzee conservation (see page 19). A sacred space may be a valuable place to begin a conservation area, with traditional authority structures already in place to protect the land and its resources. These examples are holistic in their value, in relation to the case study of the Region of Kedougou. Each of the three main ethnic groups discussed hold chimpanzees as a sacred species, and each also holds traditional sacred spaces as important (unpublished data). Other elements of a sacred concept are family or ethnic specific. The sacred protection of a totem animal is an example of a family related sacred species (Gessain, 2005).

⁸ [Auto-ethnography] As the son of Protestant missionary parents, I was aware of various efforts by missions in Senegal to work with the Peule, but in each case these missions eventually gave up and moved elsewhere. I also watched the Catholic mission slowly diminish their involvement with Peule communities in the Kedougou region during the 1990's. One final effort was made by a mission called "Global Harvestors" over the last decade, but this has also been abandoned.

Other elements of a sacred concept diverge along ethnic lines, however, thereby reiterating the importance of considering variations of TEK and TMoS for each group. For example, a horticulturalist group based heavily upon natural resource extraction may see the forest as the supplier of its needs and may therefore give it a spiritual significance (Turnbull, 1962). In contrast, an agriculturalist group who must clear significant areas of land in order to farm may have a more negative conception of the forest. Cereal crops such as millet or fonio may hold a more sacred place for an agriculturalist group, with the most researched example being the Dogon of Mali (Griaule, 1975; Griaule & Dieterlen, 1986). A pastoral group may designate sacred value on a given species of domestic animals, as seen among the well known Masai of East Africa (Hovardas & Stamou, 2006). These examples demonstrate the need to consider ethnic diversity, TMoS, and TEK, particularly the religious practices of the society, into consideration for developing a basis for NRM programs.

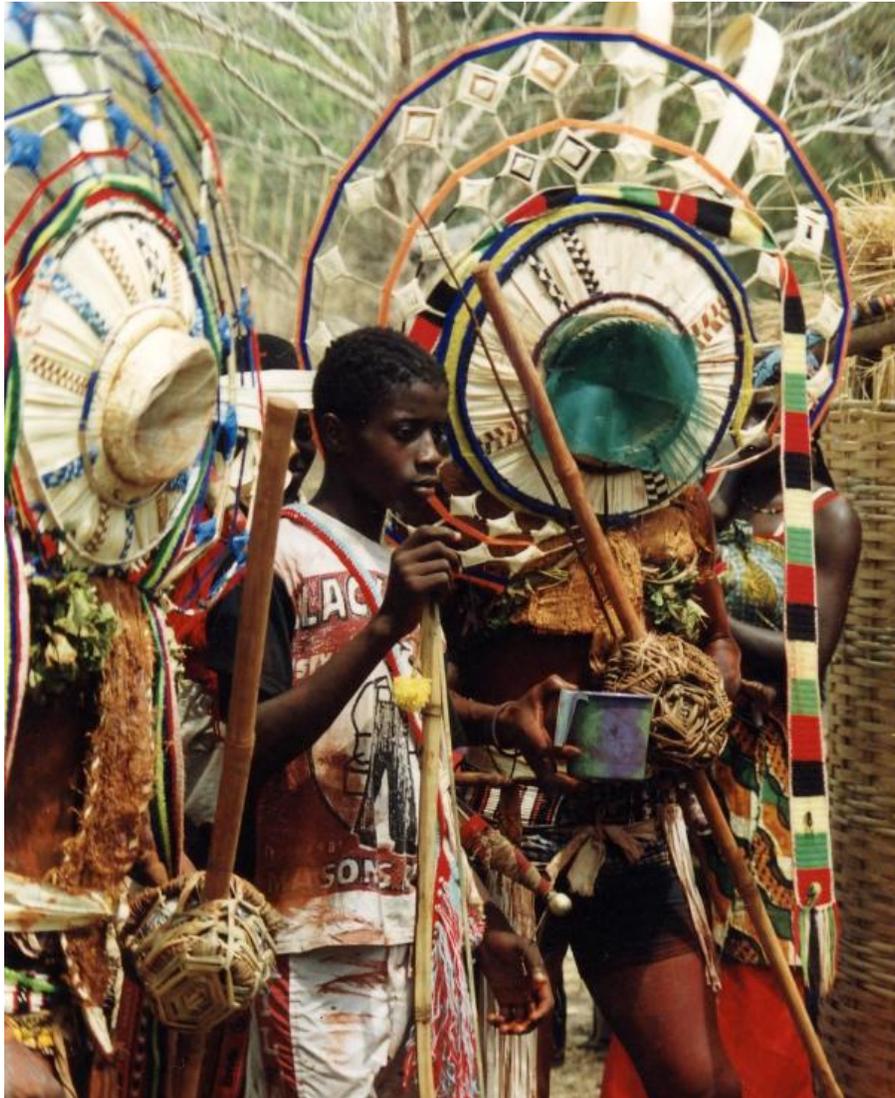
6.2 Communal life and wealth accumulation

There is a marked difference between the social ties found among the ethnic groups presented in this case study region. The Tenda, for example, regard communal ties as paramount to the individual⁹. The Tenda generally join collectively to complete field work, with groups working in a rotation to ensure that everyone's fields are successful, a practice that is not linked to monetary reward. The owner of the field provides a meal, cola nuts and locally brewed alcohol, to encourage the workers in attendance. Spirit dancers are often called from the forest to sing and dance, creating a rhythm that all those present use to time the movement of planting or weeding

⁹ This is often overlooked in the rush to equate "community" with people inhabiting a specific geographical space (Hasler, 1995; Vlaenderen, Hilde van, Tall, Serigne Mansour & Gaye, 2011).

by hand (personal observation). Among the Tenda there are also collective fields that are worked by young men for the chief of the village. The stated reasoning behind this practice is that the village chief is considered to have additional hosting responsibility, and therefore needs extra assistance to acquire enough food.

Figure 10: Tenda-Bassari Initiations



Forest spirits (*masques*) at a boy's initiation ceremony (© Peter Stirling, 2002)

Among the Mandë and Peule, collective fields are occasionally used, but this is done for monetary reward if the work extends beyond ones immediate family (see Appendix A). In

addition, there is more possibility for one member of a group to acquire wealth, a concept that is common to farmers and herders who depend more heavily on a single source of livelihood or TMoS. Dependence on a lifestyle based primarily on a monoculture, requires an increased measure of security. The farmer keeps his cattle today, with an idea that they will reproduce tomorrow for a profit. The farmer keeps a stock of seeds to plant his fields with the intention that the harvest is sufficient for the whole year. As such, projects involving the development of individual accumulation of wealth (e.g. micro-financing) hold the potential to be more successful among these groups.

It has been proposed in anthropology that societies based on horticulture or hunting and gathering have a propensity to be more communal and egalitarian in nature (Harris, M & Johnson O, 2000). The reason for this is generally thought to be that women's work is considered to be as important as men in terms of subsistence (Draper, 1975). While this is only a hypothesis, it seems to be verified among the Tenda, where women have more solidarity compared to other ethnic groups in the area. They enjoy liberties such as freedom to join the annual exodus in search of seasonal work (Nolan, 1986). They also have more freedom to refuse marriage, or seek divorce. How is this important for a NRM program? The solidarity of women suggests an opportunity for the success of community initiatives and women's groups. Personal experience and involvement in Tenda women community group projects, especially gardening, have been noted to work particularly well among Tenda.

By contrast, projects involving the development of individual accumulation of wealth, such as micro-finance, may attain less success. This can be identified today by the lack of traders and merchants among the Tenda, a role filled primarily by the Peule ethnic group. Another difficulty

arising from a communal way of life is a reduced freedom to accumulate goods resulting from obligations to share with the group (Peterson, 1993). This is true in most rural areas in Senegal, but is particularly important to note among the Tenda. Due to the communal and family oriented approach to personal property, the individual is expected to give grain reserves to extended family upon request in the event of a crop shortfall. This obligation may lead to times of famine before the seasonal harvest, as an entire village may find itself without grain reserves before the following harvest. One method to counteract this difficulty is through the implementation of cereal banks, a concept that has been particularly successful among the Tenda-Bedik. Grain is stored after the harvest and is kept inaccessible until the months of famine. The key is held by a person without family ties in the village to ensure that the system works well beyond the influence of communal ties (personal observation).

6.3 Social Hierarchy

It is important to note that inter-ethnic hierarchies continue to play an influential role in the social structure of the region of Kedougou. Minority ethnic groups rarely occupy important government posts within regional infrastructure, and as such, it is necessary to ascertain whether the needs of minority groups are taken into account (personal observation). One way to ensure opportunities for minority groups is to identify programs that are specific to their specialties. For example Tenda-Bedik and Béliyan specialize in harvesting honey. A beekeeping initiative is an example of an NRM program that supports a specialization in their locality. As indicated above, many Tenda villages are located in areas which are inhospitable to conventional agriculture, but this harsh terrain can be conducive to natural resource extraction of commodities such as honey, marketable wild fruit varieties or oils such as Shea butter. The Tenda are also specialists in

pottery, basketry and the weaving of fencing material. Finding markets for these products is an ideal and culturally specific way to meet the people’s needs within their homeland, while adhering to sustainable natural resource extraction. As noted in table 5, the Tenda men were the only group of respondents who chose market access as their most important assistance criterion.

The questionnaire used to identify differences between ethnic groups, also highlighted the following areas of differences, which should be noted. Tables have been used to highlight the variations that were found in the following two subsections of the questionnaire.

- History
- Local authority

Table 3: History of ethnic origins

Ethnicity	Stated origin:	Recorded origin:
Mandë	Mali	Mali
Peule	Guinea	Speculated to be Ethiopia
Tenda	Original inhabitants	Not known

Table 4: Local authority structures

E t h n i c i t y	Chief selection:	C a s t e s y s t e m :	Communal fields:
Mandë	Heritage	No	For youth group profit only
Peule	Heritage	Yes	For youth group profit only
Tenda	Consensus	No	For chief or youth group profit

Given these differences between ethnic groups, the social context of the three main ethnic groups in the department of Kedougou, the Tenda, Mandë, and Peule, I would argue that each group must be studied in detail. While reviewing the implementation of a program that covers the interests of several ethnic groups, one will find cultural similarities that facilitate the introduction of a program. But it will be necessary to qualify other aspects of the program in order to take into account the differences between TMoS, religion, social status and other differences between ethnic groups. There are no easy answers for the implementation of cooperative programs in such situations. But taking account of the influence of various cultures on the social context is an important first step.

6.4 Caveat of change

It is important to recognize that the previous outline of methods of subsistence, within the West African context, is a generalization that does not cover all activities carried out by a specific ethnic

group. Indeed, in recent times a lack of resources has resulted in a significant mix of TMoS, such as agro-pastoral or mixed farming approaches. As essential as individual cultural viewpoints are to understanding the dynamics of the people of Africa and their land, we must temper the tendency to perceive various ethnic groups from an isolationist point of view.

The influence of a burgeoning urban population and the effects of globalization are breaking down ethnic and cultural norms and mores. Foreign cultural influences are also increasing, often resulting from civil wars taking place across West Africa, thereby creating a forced cultural integration that leads to new pressures on stable communities. Foreign mining interests are also increasing migration from neighbouring countries, and bringing increasing contact with the dangers of prostitution and HIV/Aids. Tourism is also increasing in the region, particularly ethno-tourism among the Tenda-Bedik. In keeping with the premise of this thesis, however, the Tenda have been quick to monopolize on this trade to their benefit, as an entrepreneurial group who depend on multiple sources of income. They have established certain “picture perfect” villages in which those who wish to sell their crafts come together, while keeping other villages off limits to tourism (see www.senegalaisement.com). Eastern Senegal is somewhat remote from the large crowds of tourists who congregate along the tropical beaches of the coastline; however enough tourism comes to the region to warrant consideration as an important contemporary influence on the region.

Understanding traditional and contemporary methods of subsistence will assist in the formation of a sustainable framework for implementing lasting and successful programs that take these contemporary concerns into consideration.

6.5 Areas of ethnic cohesion

Variations outlined between the three main ethnic delineations of the area demonstrate that no single plan will work toward sustainable protection for the environment. A major focus of this paper is to identify differences between ethnic groups; however, the data also shows important areas of similarity. The analysis of these similarities is important because it assists with the identification of areas of cohesive concern throughout the region as a whole. Interestingly, primary areas of cohesive thought that were identified relate to concern over environmental degradation. This cohesion of thought offers opportunities for a unity of action that has the potential to extend across historical, cultural and religious differences. To demonstrate the similarities and differences in thought between the Tenda, Mandë and Peule ethnic groups, a table is useful to indicate their stated primary concerns. The following tables outline concerns identified by the participants throughout the course of interactive focus groups completed among each people group. These areas of cohesion have been outlined below and divided in respect to concerns respective to men and those to women.

Table 5: Men’s responses to questionnaire

Ethnic Group	Water	Better Harvest	Health	Other
Mandë	1	2 (TM**)	3	
Peule Fouta	1	3(Food Aid*)	2	
Tenda-Bëliyan	3	2 (TM**)		1 (market access)

Table 6: Women’s responses to questionnaire

Ethnic Group	Water	Better Harvest	Health	Other
Mandë	1		3	2 (grain grinder)
Peule-Fouta	1	3 (Food Aid)*		2 (grain grinder)
Tenda-Bëliyan		1 (VG)***		2 (grain grinder)

1 = Most important

2 = Second priority

3 = Third priority

*Food Aid = An unusual request for food handouts, as opposed to farming assistance

**TM = Request for mechanized farming equipment

***VG = Vegetable gardening assistance

Two dominant areas of cohesion were identified through the completed focus groups, and found across the ethnic groups studied: Concern over the depletion of water resources, and crops no longer being sufficient for the year.

6.6 Water Resources (concern relating to depletion)

The first identified area of consensus is a concern relating to diminishing water supplies. Each ethnic group in the Region of Kedougou and the District of Missira face difficulties relating to a lack of water. As represented in table 2.1, the Mandë and Peule ethnic groups are affected by the problem of water supply. This is not surprising given that the zones of Saraya and Fongolimbi,

where these groups are a dominant influence, are the driest in the region. The districts of Salémata and Missira are located near the Gambia River, where the water table is often higher.

Water provision, through the introduction of a well and pumping system, is arguably one of the more simple development programs to establish. A well can be used for generations if the technology used for the pumping system is relatively simple. General maintenance of the well can provide employment to at least one local person. As long as spare parts are available these wells can remain a long-term source of relief for the people. Providing water sources also has the potential to secure the health of local wildlife populations. A lack of wells often leads to competition for water between humans and wildlife populations. Disease transmission becomes a concern when water resources are shared, particularly when water is found in a stagnant pond of water, as is commonly found in South-eastern Senegal. The polluting of these water holes by humans and their domesticated livestock is also a problem. Cattle are generally herded through the countryside by herdsman, who search for any form of sustenance for the livestock. Cattle will turn a source of water into a mud hole with only one use, a concern as it carries with it the potential for disease transmission.

6.7 Auto-ethnography: Example of the importance of access to clean water

Without a secure source of water wildlife will often leave a region. For example, the village of Giringoto, in the region of Kedougou, is a situation where people, cattle, and chimpanzees were all using one source of water. Dr. Jill Pruetz, who has been studying the chimpanzees in the region since 2001, decided to run a series of tests after she and her research assistants, myself included, began experiencing adverse effects from drinking the water. The water was found to have a fecal coliform content that went beyond the measuring capacity of the test kit. At this

particular site, it was found that chimpanzees were actually digging separate holes in the mud, to gain seeps from which to drink (Jill Pruett, unpublished data). With chimpanzees and humans being susceptible to many of the same diseases, this was a serious cause of concern for both species. To remedy this sharing of contaminated resource, Pruett arranged the digging of a well for the people of Giringoto, funded by the chimpanzee research program.

6.8 Auto-ethnography: Importance of cultural diversity within well provision

The importance of cultural diversity must be taken into account, however, even for a relatively simple project such as a well digging program, as failure to recognize social inequality, when providing for basic needs, can aggravate underlying social tensions. By way of illustration, the following situation occurred in a village located in the District of Bandafassi. The village is inhabited by two ethnic groups who have lived side by side for the last century, following wars between the Peule and Malinké. The Tenda-Bedik ethnic group was driven into mountainous and inhospitable regions by the Peule. To avoid the complete extermination of the Tenda-Bedik by Peule they allied themselves with the neighbouring Mandë-Malinké who were also at war with the Peule. Today, Bedik villages are still generally ensconced in the hills or beside Malinké villages, where they are seen as subservient (Langaney & Gomila, 1973) . When a French well drilling program dug a well in the village, they inadvertently compounded a latent situation of inequality (Personal observation as I was living in an adjacent village (1993). When Bedik women came to draw water, they were expected to give way to the Malinké women. This awakened latent tensions that threatened the cohesion of the two communities. Fortunately, in this case, a local Catholic priest, Father Xavier, who lived among these populations for many years, was able to dig a second well for the Bedik, a mere 100 meters away, as a means of

solving the problem. This example demonstrates the importance that should be given to the study of culture itself, even for the implementation of what seems like a relatively simple aid program, such as the provision of water.

6.9 Food Resources (Crop yields are no longer sufficient for the year)

A second common concern for all ethnic groups, identified in the focus groups, is that field crops are no longer sufficient to last through to the following harvest¹⁰. In discussing primary needs relating to insufficient crop yield, men unanimously suggested a need for farming equipment to improve agricultural yield. Women, by contrast, requested assistance for gardening resources (e.g. fenced areas close to a water supply). From a natural resource management perspective, aiding farmers with the ability to farm larger tracts of land may not be an ideal solution. Not only will declining rainfall make the equipment for cultivation less useful in the future, but the slash and burn methods used for the enlargement of fields will only accelerate deforestation and

¹⁰ [Auto-ethnography] The stated reality, by the Mandë, that their crops are no longer sufficient to last between harvests is alarming given that only a decade ago, I recorded that the Mandë-Malinké people of the district of Bandafassi were harvesting enough from their fields, not only for the year, but also with a sellable surplus. Surplus stores were then sold at exorbitant rates to the neighbouring Tenda. When the monetary rates could not be paid, which was common, the debt was made payable by working in the Malinké fields during the following year. Not surprisingly, the cycle of paying off a previous year's debts, during the growing season when Tenda farmers should have been preparing for the next year, led to a cycle of indentured service that increased the difficulty faced by the Tenda, while substantially increasing the returns experienced by the Mandë. This situation reflects the combined effect of drought and human induced desertification on the region. Without a change in slash and burn agricultural techniques, forest degradation will continue, affecting the living conditions of the inhabitants of Eastern Senegal

drought. Traction agriculture also holds the potential to encourage mono-cultures that depend predominantly on one species, as opposed to encouraging diversification. Intensive farming techniques and diversification of crops is a more lasting solution to the problem of mono-cultures, and as such, the gardening projects requested by the women may be more conducive to lasting natural resource management and sustainable development.

6.10 Exception to consensus and resulting importance of the Niokolo-Badiar National Park

Despite a general cohesion of thought relating to concern over environmental degradation, one exception is apparent. It is interesting to note that the Tenda-Bëliyans of Oubadji were the only group who presented a primary source of importance that is not related to water resources. By contrast, they have specified a need to find markets for the natural resources of the region. It is important to note that geographical considerations play a role in this regard. Water may be more available in this region, with the Gambia and Koulountou rivers nearby. The road infrastructure is more limited, when compared to other regions, with a distance of 112 kilometers on gravel roads to the nearest market centre of Kedougou. An abundance of natural resources also make this a valuable opportunity as the remaining forest cover in this area is more substantial than anywhere else in the region. This abundance of natural resources is due partially to the proximity of the Niokolo-Badiar Park and the resulting protection by the Water and Forests department of the region. A program of assistance in the form of a community group of women to help control market prices and ensure market access would be an excellent opportunity in this area. Several resources, such as honey, tamarind, baobab fruit (used for cream of tartar) and straw for roofs, sell for 50% of the cost in Kedougou. The resources listed also hold the potential

to be sustainably harvested within the Niokolo-Badiar Park. The presence of an ethnic group along the park border, whose TMoS is largely dependent upon the harvesting of natural resources, provides an invaluable opportunity for NRM practices to diminish conflict over the protected parklands. Where the pastoralist faces concerns relating to cattle predation by large mammals, and agricultural use of park lands is not an accepted option, the harvesting of honey, fruits or straw remain viable opportunities for exploitation. Assisting organized natural resource extraction within the Niokolo-Badiar National Park would provide an important opportunity to both enrich local populations, while at the same time diminishing long standing tensions over the loss of traditional lands taken from the people in order to establish the protected area.

6.11 Summary

The region of Kedougou provides the reader with an example of TMoS, resource and religious conflicts that have occurred in the past as well as the present. The Tenda, Mandë and Peule differ in their methods of subsistence, as well as in their traditional beliefs. The Tenda are designated as a horticultural society and have incorporated Christianity into traditional animistic beliefs. The Mandë are very proficient at raising field crops and have only converted to Islam in the last ten years. The Peule have fully converted to Islam and are historically a pastoralist people group. If we take stated needs for assistance as an example, each ethnic group identified different priorities. The Mandë areas of development listed in order of importance were water, a better harvest and health. The Peule listed areas of importance as follows: water, health and food aid. Finally, the Tenda listed market access as the first priority, followed by a better harvest and lastly, water. Market access for natural resources was not considered important to the Mandë or Peule. Consequently, no single plan will work towards sustainable natural resource

management, but a combination of approaches, each tailored to the specific needs of the given ethnic group, may prove viable.

Chapter 7 Conclusion

This thesis has addressed two specific questions in relation to the Kedougou Region of Senegal:

- 1) How do elements of TMoS, TEK, and ethnic diversity affect the perspectives of local inhabitants in relation to the utilization of natural resources found in the region of Kedougou?;
- 2) How might ethnic diversity and the attached variations of TMoS and TEK influence a NRM program, specifically a CBNRM approach that holds community involvement as a central component?

In relation to the first question, it is clear that significant similarities and differences exist among the three dominant ethnic groups of the region. To consider them a ‘community’ based solely on geographical proximity is to undervalue the real differences that exist among them. Despite significant differences, it is clear that certain elements of TMoS, TEK, and ethnic diversity can be built upon to promote improved and sustainable natural resource management. Moreover, the findings of this case study suggest that a better and more nuanced understanding of a geographical region and its peoples will reveal opportunities for a localized application of conservation or CBNRM programs elsewhere in the world. A location such as the region of Kedougou, which incorporates multiple, ethnically delineated livelihoods or methods of subsistence, in addition to a long-standing historical conflict as recently as the last century, requires careful navigation by external entities that wish to work across traditional cultural boundaries. The Peule-Malinké wars symbolize the long standing conflict that often exists between agriculturalists and pastoralists, in this case Mandë agriculturalists and Peule pastoralists, whose different methods of subsistence have led to conflict over resources spanning the last several centuries (Sonko-Godwin, 1988). While violent conflicts surrounding TMoS

have diminished, particularly in Senegal, the residual animosity and disputes that remain from these conflicts should not be overlooked or minimized when considering the implementation of a conservation or CBNRM program.

The following two tables are meant to synthesize the findings relating to the second question this thesis seeks to address: How might ethnic diversity and the attached variations of TMoS and TEK influence a CBNRM program that holds community involvement as a central component? Elements such as specific resources (e.g. farm land, water, national park), issues (degraded, poaching, contested), government policy, and possible interventions, are all important elements of consideration for the implementation of a CBNRM program that recognizes the significance of ethnic diversity in a given region, as outlined below, for the Region of Kedougou.

Table 7: Factors affecting NRM in the Region of Kedougou

Natural Resource:	Arable Land	Water	Forest Resources	Protected Resources within National Parks
Issue/ Concern	Degraded / mismanaged (Ch. 6.2)	Diminishing water table (Ch. 6.2)	Contested rights to exploit	Poaching / illegal extraction (Ch. 5.2.2)
Government Policy	National Domain Law (Ch. 5.1.3)	Well programs (Ch. 6.2)	Limit with quotas	No extraction (Ch. 6.4)
Ethnic groups most affected	Mandë / Peule / Tenda (Ch. 6.2)	Mandë / Peule (Ch. 6.2)	Tenda (Ch 5.2.4)	Tenda (Ch. 6.4)

Table 8: Potential for change that accommodates ethnic diversity

Natural Resource:	Arable Land	Water	Forest Resources
Mandë	Primary dependence (agricultural society)	Needed for subsistence and garden projects	Limited dependence other than for charcoal and building materials
Peule	Secondary dependence (pastoral society)	Needed for subsistence and for livestock	Limited dependence, other than charcoal, building materials, and fodder
Tenda	Secondary dependence (horticultural society)	Needed for subsistence and garden projects	Significant dependence (honey, wine, sustenance, basketry weaving, building materials)

Arable land, the first element listed in tables 7.1.1 and 7.1.2, is a common concern expressed by all ethnic groups during the course of this research. Field crops are no longer sufficient to last through each year to the next harvest. In discussing primary needs relating to insufficient crop yield, men have unanimously suggested a need for farming equipment to improve agricultural yield. Does this suggest a common value for a potential program for implementing farming equipment across the region? Perhaps, but ethnic history and background still play a role here. Personal involvement in aid programs that address this concern has shown that among the Tenda, who are often relegated to marginal lands along hillsides, small single blade ploughs pulled by a donkey are more efficient than the larger common ploughs pulled by two oxen (demonstrated in Image 5.13.1). Where some ethnic groups may not be able to afford either the plough or the animal needed for traction, the Peule have quick access to animals for traction purposes, so access to ploughs may be a greater priority.

A second stated concern across all ethnic groups was access to water. Many government and nongovernment aid programs have addressed this concern through the drilling of wells, but as identified in section 6.6, ethnic disparities may cause tensions over who has primary access to a well. Community dwellings also affect issues of placement. While the agriculturalists live in centralized villages, those with a pastoral or horticultural background often live in widespread hamlets that are differentiated along family lines. Careful navigation of village history, family ties, and traditional social hierarchies are necessary in order to ensure equal access to all residents.

Forest resources are shown to be less important as a livelihood-based resource for agricultural and pastoral groups, relative to the horticultural ethnic groups. While the horticultural-based ethnic groups depend on forest resources to supplement an inadequate harvest, resource extraction by the agricultural and pastoral groups is predominantly for firewood and building materials. In addition, resource ownership also becomes evident as variations of thought again follow ethnic lines. When questioned, the Peule claimed to have a system of ownership in place for certain tree species that are valued for fodder, whereas the Tenda could not give a single example of a forest resource that could be owned by an individual. Diverse perspectives on resource ownership demonstrate an important consideration relating to wealth accumulation. For example, a micro-credit program at the individual level that involves NRM extraction may be more applicable with one group, whereas a community association-based approach may be more valuable to another.

These examples demonstrate the need for targeted CBNRM programs that take ethnic diversity, traditional TMoS, and TEK into consideration. It is imperative to consider the underlying detail of what ‘community’ entails, and policy options must coincide by offering a spectrum of target foci, if programs are to successfully reach the community as a whole.

It is important to conclude with a reiteration that this thesis represents a case study that seeks to fill a specific ‘geographical’ gap in the literature. The thesis is not meant to provide a working model for other regional programs across Africa beyond a demonstration of the need for ethnic and geographically specific programs across the continent. A central tenant of this thesis is to demonstrate the importance of considering each regional case individually with close attention paid to ethnic boundaries, traditional knowledge sets, and livelihoods that are present.

Only with detailed culturally and geographically specific research, will African conservation and CBNRM programs move beyond the ethnically homogenous approach that is commonly found today. As demonstrated in Chapter 4, such approaches often lead to resource capture by already empowered groups; rarely do they achieve the desired goals of widespread benefits to people, parks, forests and related natural resources. While CBNRM programs hold the potential to remove this counter-productive homogeneity, the ‘community’ in Community-based Natural Resource Management must be considered at more than just a superficial level. At the very least, a nuanced understanding of people’s method of subsistence and traditional ecological knowledge is required if resource degradation is to be abated.

Across Africa, a combination of factors is leading to increased pressure on the continent’s natural resource base. Increasing populations and climate change, combined with limited government coping capacity and internationally funded, homogenous development and conservation approaches have led to widespread land degradation, deforestation, and local-level conflict over natural resources. This is particularly true of the remote region of Kedougou, Senegal. In this area, thinly veiled conflict continues between agriculturalists, pastoralists and traditionally subsistence-oriented hunter-gatherers over important questions of access, use, and management of natural resources. International agencies and government approaches to NRM, even those that claim to be CBNRM approaches are often ineffective, primarily because they lack the nuance required to achieve equity and sustainability of resource use in the region. Remote area programming too often reflects the interests of external actors such as donors interested in wildlife conservation, or of central government departments focused upon centrally-planned goals. For example, national park boundaries cut across the traditional territories of the

Tenda thus turning these traditionally hunter-gatherer groups into 'poachers' in their own lands. It is the intention of this thesis to contribute to the policy and program discussions surrounding appropriate frameworks for sustainable and equitable resource use in the Kedougou region. These policy and program discussions then hold the potential to be considered beyond the region, as a template for considering the intricacies of ethnic and geographic locations across other areas of Africa.

Appendix I

Questionnaire used for focus groups and an overview of responses

Identity:

- What is the name of the dominant ethnic group in this village?
 1. Bambou: Mandë
 2. Fongolimbi: Peule
 3. Oubadji: Tenda

- What is the historical homeland of the people (movements of population)?
 1. Mandë: came from present day Mali
 2. Peule: came from present day Guinea, although their descendents are thought to have come from as far away as Ethiopia
 3. Tenda: original inhabitants. Their descendents are possibly from present day Ghana

- When was the village founded?
 1. Mandë: Bambou - 1500's – second oldest village in the region after Badioula
 2. Peule: Fongolimbi was founded after WWI, but before WWII, as the French came through to draft young men
 3. Tenda: Oubadji was founded in the early 1800's

- Has a war or battle taken place in recent times (within the last century)?

All were at war among themselves until the French stopped the conflict in the early 1900's

- Has this influenced their habitation (was the location picked to help protect themselves from attacks)?

1. Mandë: (Bembou) Yes, an area with lots of water and was just beyond the area in which the Peule had settled. Fighting took place but only south of the current location.
2. Peule: (Fongolimbi) No, established after arrival of French, and was chosen for the proximity of enough water for livestock. Conflicts with the Mandë-Diahanke took place in the region before the village was founded. Disputes continued until Senegalese independence in 1960, over access to water for grazing livestock.
3. Tenda: (Oubadji) Yes, during the times of intense war, the people were able to take refuge in the many caves that surround the area. These intricate cave systems were instrumental in surviving against a much larger opponent.

Local authority:

- Who makes decisions in the community (the leaders of influence)?

Elders (unanimously stated for all groups)

- How is the leader chosen - how are they installed?

1. Mandë: Heritage (in the case of older villages with a history that goes beyond recent economic reasons for the establishment of the village)
2. Peule: Heritage – in the case of Fongolimbi, the chief descends alternately between the family names of the two founding fathers of the village Diallo or Souaré.
3. Tenda: Heritage

- Is there a caste system here - what are the different castes and their function?

1. Mandë: no, but Tenda hold a subservient position to them in situations where the villages are closely linked geographically and historically.

2. Peule: yes. Fulbé are the nobles and the Rundë are the slave caste. There was disagreement on how important these distinctions remain, but the slave caste is still not allowed to kill livestock, orchestrate marriage or religious proceedings. A detailed study of these differences remains to be completed.

3. Tenda: no

• Are employment roles carefully followed or is there flexibility?

1. Mandë: There is some flexibility today, but generally important occupations follow family lines. For example the Samoura family are blacksmiths and Fofana or Doukoure were the traditional religious leaders

2. Peule: The Rundë, who often form their own villages, are generally more diversified in their methods of subsistence (blacksmithing, weaving and carpentry) than the Fulbé nobles, who focus on livestock and agriculture.

3. Tenda: The Tenda-Bedik adopted Mandë family names during their alliance with this larger group. Names like Camara are now common, and a sense of the occupational connection of these names remains. The Tenda-Bëliyan, who managed to hold their own against the Peule invaders, also divide occupations by family name. For example, the Bianquinche family is responsible for the ceremonies surrounding the circumcision ceremony.

• What kinds of things can people own (land, a tree, a forest resource)? Can women have the same possessions?

1. Mandë: Land – if you clear it then it belongs to you unless you leave it fallow for too many years then someone else may take it over. Natural Resources cannot be owned, but they are concerned about the Peule coming through and cutting trees for fodder for their animals.

2. Peule: Land – if you clear it then it belongs to you unless you leave it fallow for too many years (debate over number) then someone else may take it over. There is disagreement over whether natural resources can be owned. One exception is *Veine*, the most popular forage tree for feeding livestock. These belong to the owner of the field.

3. Tenda: Land – if you clear it then it belongs to you unless you leave it fallow for too many years.

• How do you acquire the assistance of a group of workers?

Mandë: You must pay for this, unless it is within the family

Peule: You must pay for this

Tenda: You call a “corvé” in which you must provide a meal, wine (palm, honey or millet based) and Cola nuts (a stimulant) your friends, neighbours and family will come and assist you, but you must then also assist them in their fields.

Social:

• What are the main forms of TMoS in the village?

Mandë: Agriculture

Peule: Livestock and agriculture

Tenda: Agriculture, supplemented with natural resource collection

• Are your crops sufficient for the whole year?

Unanimously felt that crops were no longer be sufficient.

• How are you influenced by climate change (lack of rain, depletion of natural resources)?

Unanimously agree that lack of rain and water are the result of climate change.

• What do you sell from the forest – which resources?

1. Shea butter

2. Bamboo

3. Honey

4. *Saba senegalensis*

5. *Butryospermum Parkii*

6. Baobab fruit – cream of tartar

7. Tamarind

- Is there an accord between villages relating to the use of resources (community forests, protected areas)?

Unanimously said no, but that this was becoming necessary due to abuses of collection and disregard for the government quota system

- How do you safeguard a sum of money for difficult times? (Livestock, bank accounts, rotating credit etc.).

- What are the predominant social needs of the village?

See chapter 4 for detailed differences.

Religion:

Islam

- When was your first contact with Islam?

Mandë: came from their Mandë-Diahanke neighbours a couple of hundred years ago. They freely admit before their Imam, that they have “one foot in Islam and one in traditional religious beliefs.”

- Which of the brotherhoods is most influential?

Mandë: stated Xadre, but the imam suggested this as there was some question of what this was and whether it was important to them.

- What can Islam do to improve socio-economic conditions?

Not accepted as a valid question.

Christianity:

Tenda: Bëliyan

- When was your first contact with Christianity?

1950's

- Which church or denomination?

Protestant and then later a Catholic influence. Stated before the pastor of the protestant church, that traditional religion still controlled much of every day life and their ceremonies.

- What can Christianity do to improve socio-economic conditions?

No answer.

Traditional religion:

- Do these rituals / ceremonies demand expenditure from the population?

Yes

- Is it an obligatory expenditure, and difficult (ex. cattle for sacrifices)?

No

- What can your belief system do to improve socio-economic conditions?

No answer.

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