

# The Household Responsibility Contract System and the Question of Grassland Protection

*A case study from the Chang Tang, northwest Tibet Autonomous Region*



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# Abstract

The implementation of the Household Responsibility Contract System (HRCS) for grassland is ongoing in the pastoral area of Tibetan Autonomous Region (TAR). The main purposes of the HRCS are to reverse the degradation of the rangeland, promote sustainable development of grassland and to increase nomadic production to transform traditional animal husbandry into a more modern development. In this thesis I have address two main questions:

1. Does the Household Responsibility Contract System really protect grassland?
2. Is HRCS compatible with the intended development of the Chang Tang conservation area?

HRCS implements a shift from a common management system to an individual management system. Thus, the starting point for this argument is the comparison of the two management systems and their suitability and adaptability to TAR's pastoral area in relation to my study area, the Shenchen township pastoral area. I attempt to demonstrate how common property systems have traditionally served and benefited the Shenchen nomads, and how they have traditionally co-existed with the wildlife using this system. I have compared my study area to those areas where the grassland policy has already been implemented in other pastoral areas in China. I analyze how HRCS is working in my particular area; especially in the Chang Tang conservation area and whether it is having an effect on nomad's culture and environment.



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# Chapter 1

## Introduction

### 1.1 Introduction

The introduction of the Household Responsibility Contract System (HRCS) for pastoral areas was adapted from China's rural economic reforms initiated in its cropland regions in the late 1970s [Banks, 2001], with the dismantling of the People's commune system. This has essentially increased rural residents' living standards above the poverty line in agricultural areas [Du, 1998]. This system was later implemented in all rural areas of China, assuming that these reforms would also improve nomadic living standards and modernize animal husbandry. Livestock were divided to individual households, but grassland was still used communally.

After the division of animals, population of humans and livestock have increased and nomadic livelihood has changed, but this has also brought strong pressures to the grasslands as evident in the degradation in China. According to official sources, some 90% of China's rangelands have already degraded to some degree 42% moderately to seriously [SDPC, 1996][SEPA, 1998](SDPC, 1996: 82-94; SEPA, 1998). The government claims that this is due to the 'tragedy of the commons' [Hardin, 1968] or the unsustainable use of the grassland resource. To ensure proper protection and rational use of the pasture resources, the government advises that pastures be allocated to individual

households, that livestock number be limited, that composition is adjusted, and seasonal rotation in the pastures be practiced.

The Household Responsibility Contract System for Protecting Grassland (New Grassland Reform) was started over 10 years ago in other parts of China, such as Inner Mongolia, Xin Jiang and parts of Gansu, Yunan and Qinghai provinces [Ao, 2004] [Banks, 1999] [Richard, 2003]. In consideration of Tibet Autonomous Region's (TAR) specific situation, the central government delayed reforms. At the beginning of the 21st century the new grassland reforms gradually began to be implemented in many parts of the TAR.

The Tibet Autonomous Region is one of five important rangelands in China. It is located on the Qinghai-Tibet Plateau, also known as; 'The roof of the world'. It has the most natural environment in the world and occupies an important position affecting environment changes around the world. The total area is 1,200,000  $km^2$ , of which 83,000,000  $ha$  is grassland. Among this, 70,770,000  $ha$  of grassland are usable<sup>1</sup>. The average altitude is 4,500  $m$  and the average annual temperature is zero degrees, thus it has cold, dry and windy climatic conditions and is a harsh environment. The grasslands belong to the arid or semi-arid alpine, desert steppe type in the high-altitude Frigid Zone. It provides grazing land for wildlife and livestock, and the region is one of the largest and the most important pastoral regions on earth [Miller, 1999].

Tibetan pastoralists have a strong indigenous land management system. Traditionally, most pastures were managed based on collective or group (kinship) tenure. Nomads maintained equilibrium based on a sustainable indigenous knowledge system in order to facilitate a renewable and lasting civilization. Major components of the indigenous system were mobile and flexible grazing strategies, veterinary care of animals, and a slow and sustainable population growth, which contributed to the conservation of wildlife and forests. Since the People's Republic of China was established in 1949, "pastoralists have experienced a number of policy changes affecting how livestock were managed and marketed, and pastures were distributed." [Richard and Tan, 2004]

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<sup>1</sup>See: [www.tibetinf.com](http://www.tibetinf.com)

Chinese grassland policy reform occurred in three stages in the TAR<sup>2</sup>

- 1965-1979 People's Commune System;
- 1980-2000 Household Responsibility Contract System for dividing animals among households;
- 2001-Household Responsibility Contract System for dividing grassland among households

According to official statistics, the contracting of grassland use rights to individual households is progressing in 16 counties<sup>3</sup> of the major pastoral areas. My study area, Shenchan township, is in the county of Gertse. Communal grassland has been distributed to each household with the contracting of grassland use rights based on people and livestock numbers of the household, and assigned to households of nomads for long-term use (50 years). "Policy prescribes the derivation of stocking rates for household pastures and the implementation of sanction to deter overgrazing" [Banks, 2003].

According to the central government requirements and guidelines of the new grassland reform, the nomads should gradually accept the advice that the number of stock be fixed in keeping with the quantity of grass so that the two strike a balance. Nomads who formerly had to roam for water and grass have now gradually settled or half settled. So far, forty eight thousand have been settled<sup>4</sup>. In addition, according to the documents of the Household Responsibility Contract System for grassland; Rangeland management system is gradually getting on the healthy track of independent management, resource evaluation, limited stock quantity, legislative protection, well-ordered transfer, and responsible construction, from the previous "boundless herding, limitless stock quantity, and irresponsible construction." The fundamental solutions of "common

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<sup>2</sup>See: [http://www.tibet-china.org/historical\\_status/chinese/c0902.html](http://www.tibet-china.org/historical_status/chinese/c0902.html)

<sup>3</sup>Outline of Chinese administrative structure under the central government there are twenty-six provinces, five autonomous regions and two special administrative areas. Province or autonomous region are divided into prefectures, the prefecture are divided into counties or township (Xiang). Each township is divided into a number of villages called (Cun).

<sup>4</sup>See: <http://xznm.agri.gov.cn/show.asp?id=7690>

pasture” and “communal pot” problems have triggered the pastoralists’ enthusiasm to build and protect the rangeland.

However, implementation in other parts of China has not been as successful as the new grassland reform has reduced the flexibility and mobility of the pastoral areas, especially in conservation areas. Unclear boundaries often creates conflict between each household, high fencing costs which can’t be met by the nomads and also reduced labor are all factors affecting the success of the reform. For instance: [Banks \[2003\]](#) found that common collective ownership under the new grassland reform in Xinjiang Autonomous Region, lead to inefficiency of individual tenure, a major cause of which was joint-use land and fuzzy boundaries

[Richard et al. \[2006\]](#) researched household group management under the new grassland reform in Gansu Province. They also noted that under the implementation of the new grassland reform, nomads could not benefit and in addition, it reduced labor.

In her study on small-scale co-management in Xilingol, Inner Mongolia, [Bijoor \[2006\]](#) noted that new grassland reform led to ecological degradation of grassland because of the increased costs of stock.

Little research has been done on the impacts of this policy in conservation areas. My study area, Shenchen township is located in the Chang Tang<sup>5</sup> conservation area, a huge area comprising of over 300,000  $km^2$ . The reserve is designated as a multi-use area supporting both nomadic pastoralists with their livestock and a unique assemblage of large

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<sup>5</sup> Chang Tang means “northern empty plain” in Tibetan; and refers to the north Tibetan plateau. It includes two provinces, Ngari and Nakchu.

It is bordered by Mt Kailash and Nyanchen Tangla in the south and Mt Kunlun in the north, close to India’s Ladakh in the west and Qinghai province in the east. Its land area covers 2/3 of the whole of Tibet. Its total area is more than 600 thousand square kilometers, with a density of 0.20 people per square kilometers, averaging about 4,500 meters above sea level. Cold, windy and dry, it is the second largest reserve in world.

Even though called an ‘empty plain’ Chang Tang has abundant nature resources. There are several hundreds plant species reported to occur in this region, about 470 species of seed plants found in the whole Chang Tang (Liu, W. 1999). The rangelands provide habitat for many species of wild animals, such as Tibetan antelope, wild ass, blue sheep, gazelle and wild Yak etc.

Within the last decade, the number of Tibetan antelope has dwindled; one of the main reasons for their decline is that people sell antelope skin in exchange for cash. In 1988, Tibetan antelope was listed as Class-A protected wildlife under China’s Wildlife Protection Law. In 1993, the government established the Chang Tang Nature Reserve in the TAR, so that large groups of animals would be state level protected.

wild mammals, of which several species are endangered and endemic to the Tibetan Plateau [Schaller et al., 1994] "The aim of the nature reserve is to maintain a healthy, productive, and diverse ecosystem with vigorous populations of all animal and plant species coexisting with the nomads and their livestock" [Schaller et al., 1994]. In the past years, increasing numbers of wildlife and livestock competing for grass is already apparent in Chang Tang. Today, under the new grassland reform, grassland is privatized and the nomads have to take care they limit the land for grazing. Also, the strategy of flexibility management has been reduced; this makes the conflict problem worse. Buildings and range improvements such as fencing, needs to be questioned in a conservation area because of its impacts on wildlife. However, shifting land tenure from communal grassland to more intensive commercial private grasslands is said to improve the nomads' standard of living. Figure 1.1.

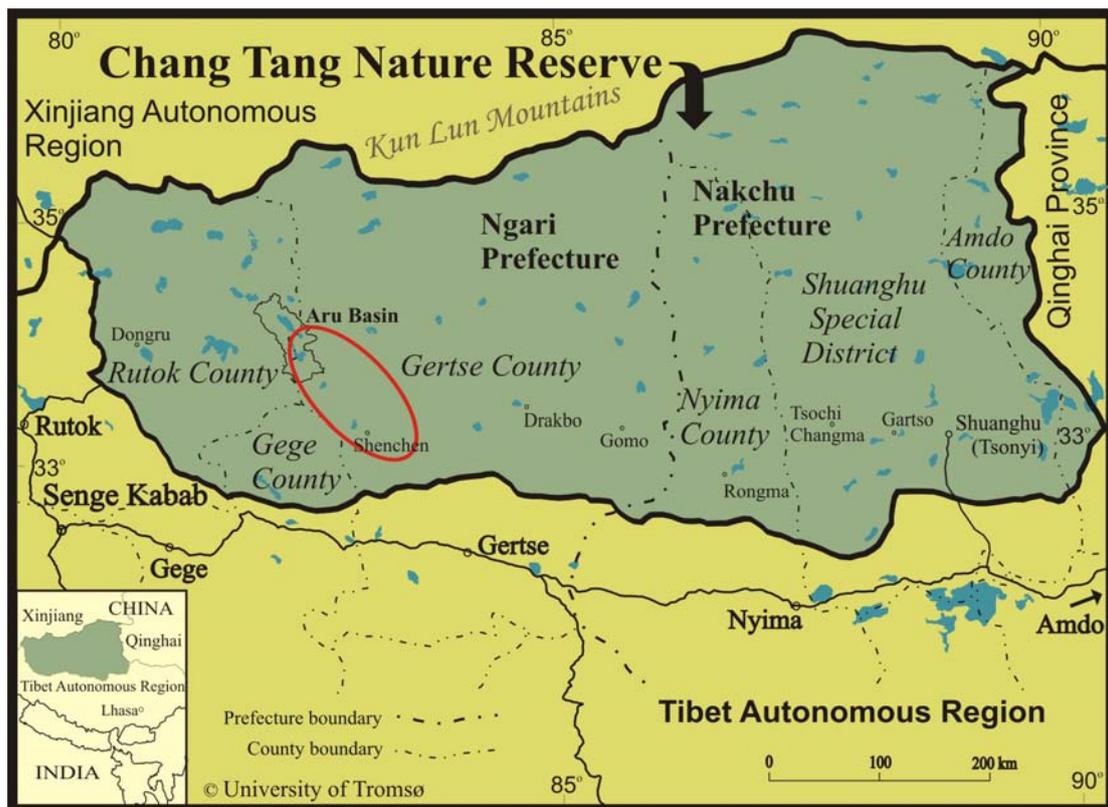


Figure 1.1: Chang Tang Nature Reserve and Shenchon township are encircled, showing my study area. Photo by Joseph L. Fox

## 1.2 Research Problem and Hypotheses

### 1.2.1 Research Questions:

In my research I will address two main questions:

1. Does the Household Responsibility Contract System for grassland really protect grassland?
2. Is the grassland reform compatible with the intended development of the Chang Tang conservation area?

**I mainly focus on the question: Does the Household Responsibility Contract System really protect grassland?**

The starting point for this argument is a conceptual framework which defines what is meant by 'common property', in particular differentiating common property from open access regimes. I clearly believe these conceptions are especially interesting in the case of Shenchen township pastoral area and I attempt to demonstrate how common property systems have traditionally served the Shenchen nomads. I will compare my study area to those areas where the grassland policy has already been implemented. From these cases I will analyze how it is working in my particular area and whether it is having an effect on nomads' culture and environment. Do nomads get any benefit from this grassland policy?

The government is required to settle nomads so that it is convenient to construct electric power, well water and other modern amenities. My question here; is this the only way to modernize? What is perception of modernization and sustainability from the point of view of both government and the local nomads? Protection of grassland in the Chang Tang conservation area is difficult because the grassland is so vast. Will the policy be adequate to protect this large resource? These questions will be addressed in Chapter three.

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## **Is the grassland reform compatible with the intended development of the Chang Tang conservation area?**

Since the government established the Chang Tang Nature Reserve in 1993, nomads lost their hunting rights which lead to the wildlife numbers increasing. Therefore, nomads and their livestock are coexisting with a growing population of wildlife and plant species and it is inevitable that there is growing competition for grassland. With reform, individual households are encouraged to protect their grassland, mostly with fences. This can cause problems for wildlife migration, especially for the Tibetan antelope. How can nomads best protect their grassland and at the same time maintain a co-existence with wildlife? I discuss these questions in Chapter 3.

### **1.3 Outline of the Thesis**

This thesis consists of four chapters. In Chapter 1 I will give the project background, describe the theoretical framework and describe my field methodology. I also discuss why I chose this topic and the main points for this thesis. In Chapter 2 I will give more information on my study area. History shows that pastoral nomadism is the main use of the rangeland resource, and has maintained the ecosystem and produce products for the nomads' livelihood. I will discuss people's perception of the land use, the traditional way to manage grassland and maintain ecosystems. Chapter 3 will be the main chapter for this thesis; it addresses my two research questions. In this chapter I will focus on HCRS policy on grassland and give a case study, presenting different perspectives of the policy. At the same time, I will compare other case studies in China to determine if the policy is appropriate to TAR. In Chapter 4 I will present future challenges and give some models that have already implemented new grassland reform in other pastoral areas which explain the HCRS is not the best path toward achieving sustainable management of grassland. Exploring the relevance of current pastoral systems and new perspectives could have important implications for the management of

the reserve. Also, sustainable development grassland and conservation of the Chang Tang Nature Reserve should consider more indigenous ecological knowledge systems and traditional pastoral strategies that could be used in the design of new development interventions for the Chang Tang.

## 1.4 Conceptual Framework

The concept of "common property" need the to be clearly defined from the outset. It often is explained by central government as a 'tragedy of the common'. They believe that extensive grazing leads to overgrazing, thus livestock numbers increase without limitation and consequently land falls to degradation. "Therefore this model leads to the conclusion that resources held in common should be either privatized or controlled by the central government to prevent the degradation of resource and ensure sustainable use" [Elias and Trench, 2001]. This confusion between common property and open access meaning the same has arisen from the assumption of an article by the very influential theory, the 'Tragedy of the common', from Hardin [1968]. This model has strongly influenced central government planning of most pastoral development policies.

This theory became too popular in China, as in many other countries, from the 1970's cropland reform to the 1980's in pastoral areas, particularly when livestock were divided among individual households and livestock numbers grew rapidly. Finally, the government resolved the 'tragedy of commons' grassland issues by dividing the grassland emphasizing the individual household over common use. That is to say; common property management shifted to private property management. Through this policy, the central government encourages people to take care of their own grassland within its carrying capacity to control overgrazing and protect grassland.

According to official statistics, the shift from common to private management gave the rights to individual households of about 79% of the total useable grassland in Inner Mongolia (Inner Mongolia Animal Husbandry Bureau, 1990 date), 94% of the total useable grassland in Xinjiang ( Xinjiang Animal Husbandry Bureau, 1990 date) and 58.4%

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of the total useable grassland in the Tibet Autonomous Region (Animal Husbandry Bureau, 2005 date). Some of the TAR area is still in progress of being established as it has fuzzy boundaries and complex livestock drinking water spots. For example, my study area Shenchen where there is high elevation and the climate is cold and dry. Nomads in Shenchen developed traditional management strategies for a resource collective or group (kinship) held in common management. Their livelihood and pastures depend on the natural water resources and are therefore of great importance to the local people.

Shenchen also belongs to a conservation area, thus the management system needs to be flexible and mobile. When the central government implements private management in Shenchen, grassland has to been reduced of both flexibility and mobility. Additionally, private management with unclear boundaries and very high fencing costs must increase the levels of conflict.

This theory is influential in other counties as well. Common property resource management is not considered a viable way of ensuring sustainable management of natural resource [Elias and Trench, 2001]. For example, Ethiopia has most of its rangeland tenure held by policy makers who often make the misconception between common property to open access property. In this view, the central government assumption is that common property is always of the open-access variety.

Recently, much of the evidence shows that common property is important in maintaining flexible and mobile land tenure arrangements in different situations, especially in high elevation pastoralism. Common property management may hold more benefits than that of private property management, it can easily encourage the realization of economies of size with respect to herding labor [Dahlman, 1980][Stevenson, 1991][Banks, 2001], particularly in the context of the high environments where it would better to access common property management.

## 1.5 Methodology

### 1.5.1 Selected topic of interest

My study is part of a larger project by the University of Tromsø, dealing with wildlife and nomads in the Chang Tang Nature Reserve [Fox et al., 2004][Fox and Yangzom, 2005]. Initially, I planned to study the history of the Chang Tang people and their pastoral situation as a background to conservation issues in the reserve. However, there are very rapid changes taking place related to rangeland management in western Tibet, including within the nature reserve, and while on the way to my study site, I spoke with many nomads who were attending a meeting in the grassland of Damshung (near Lhasa city). See Figure 1.2.



Figure 1.2: Gathering for Grassland Reform Meeting. Photo by Ciren Yangzong.

They were discussing grassland reform and expressed their worries about its imple-

mentation in their area. The government plans to divide the grassland to each household. Households will have the right to use that grassland area for 50 years. Once the grassland is divided to each family then nomads have the right to exclusively use their property. From the nomads' faces I saw that they have no idea about this "new grassland reform". Wherever I traveled in nomadic areas, they always discussed about the "new grassland reform" and they complained a lot, saying this reform is good for cropland but not for nomadic area. Gradually, I changed my primary perspective on grassland policy; that the new grassland reform is not easy for the nomad's life and their future. I found that this new grassland reform made nomadic areas like an "ant on the hot pan" so I decided to write about it.

### 1.5.2 Data Collection Methods

The basic steps to answer the questions outlined in this thesis were done through interviews related to research questions during summer field work, and collection of relevant information based on literature review.

The main fieldwork for this study was conducted in a traditional area called Shenchen township of Gertse County in Ngari Prefecture in the north-western part of the Tibet Autonomous Region, China. Shenchen is a pure animal husbandry region where locals raise yak, sheep, goats and horses. It is at a high attitude, with average elevation of almost 4,800 *m*. Most governmental institutions are in the settlement of Gertse County.

The data collection was done during June and July of 2005. From Lhasa (capital city of the Tibetan Autonomous Region) to my study area is 1,280 *km*, which takes five days. I conducted formal and informal interviews with governors in the administration. I conducted open-ended discussions and interviews with Animal Husbandry officials. They discussed this new grassland reform and were very friendly explaining to me that the central government pushed grassland policy mainly to prevent grassland degradation, while at the same time promoting living conditions of nomadic people. I went with the governor of Shenchen to see the division of grassland. I also read many gov-

ernment booklets and documents from Gertse County. In addition, I also extensively interviewed the Governor of the Nyima County (of Nakchu prefecture),

I interviewed nomads as well and heard many negative things about the new grassland policy. Most of the information that I got during my field work was directly from Shenchen but some was also from other townships in Gertse, such as Tapu township.

I spent more than one month observing the nomads' daily life and traditional grassland management practices. The usual distance between nomadic tents is about 200 *m* to 300 *m*, they are living very extensively. We stopped daily at their tents to make tea and eat our midday meal. The nomads were very friendly and appeared to still be living the traditional lifestyle. At night we pitched our tents nearby. I did interviews with as many nomad families as I could, a total of 36 families. Doing fieldwork is very hard work, especially in the TAR as the environment is very harsh and cold even in summer.

Because of natural hazards such as poisonous plants, snowstorms, and dry weather, tolerance of religious practice is more flexible in this area than in Lhasa. The local government organized a three day festival to practice religion while I was there. They invited a Lama (religion teacher) from Gertse Monastery to give sermons for people who came from around the Shenchen area. It was good to collect data during this time. I was able to interview males and females aged between 20 to 75 years, including local governors and chiefs of the nomads groups. I was able to interview a former communist party leader who is locally respected and currently helps resolve grassland conflicts. I also conducted open-ended interviews with nomadic families in the Aru basin, which is one of the villages in Shenchen.

One part of my study was library and internet research. Perhaps it is a new policy about grassland in TAR because while in Lhasa, I visited the Tibet University Library and the Tibet Library where unfortunately they had nothing on the topic of the new grassland reform apart from some propaganda reports from local newspapers. I also collected data from the 2000 Tibet population census, government reports and documents in Lhasa.

In Norway, I was able to access a few materials about Tibetan grassland policy at the

University of Tromsø library, but most materials are from the internet.



# Chapter 2

## Description of Research Area and Traditional Land Use Practice

### 2.1 Description of Research Area

#### 2.1.1 Geography

If you look at the Tibet Autonomous Region's map you will see the huge nomadic pastoral area located in the northwest that Tibetan people called the Chang Tang Plateau. Rangelands and wildlife on the Chang Tang plateau are unique as compared with the rest of the Tibetan plateau. They are living at 4,500 – 5,200 *m* elevation with domestic livestock. Yak, sheep and goats provide meat and butter for locals as well as for urban areas annually.

My study area is Shenchen township, located in the western Chang Tang Plateau, 136 *km* northwest of Gertse County, about 1,150 *km* northwest of Lhasa and 364 *km* southeast of Yutian County in Xinjiang Province. Shenchen is one of six townships in Gertse County in Ngari ("Ali" in Chinese) Prefecture. Average elevation is 4,800 *m* and the total area is 21,000 *km*<sup>2</sup>, of which 14,000 *km*<sup>2</sup> is usable rangeland. Animal husbandry is the main livelihood with sheep, goats, and yak. It is the highest elevation

grazing land in the world. Shenchen also is one of the biggest pure animal husbandry areas. The majority of local people depend on diverse livelihood practices, but livestock is most important for subsistence and development.

### **2.1.2 History of Shenchen Township**

In the seventeenth century, the first people to come to Shenchen were Kechuo and seven other family groups who came from Yushu, Qinghai province, which is north of TAR. After pilgrimage to Kailash Mountain, they decided to settle in the area, because taxes were cheaper than in Yushu. At that time they did not have livestock, and they depended on hunting and gathering. Later, they found salt in the lake, and then organized people to sell the salt in exchange for other food. By 1818 they had grown to 30 families with about 130 people, and gradually became the Gertse tribe. Since 1920, more people have come from the Chamdo region in eastern TAR and the Gertse tribe has expanded to more than 300 families of more than 1,100 people. There were 362 households and 1,599 people with 104,080 livestock by 2004. From 1999 to 2004 in Shenchen was increasing of household number 22%, population 12%, and total of livestock number 1297%. 2000 to 2003, increased death and consumption of livestock 55%. See Table (2.1).

In 1960, Central government established Gertse County.

In 1962, they founded four districts (Qu).

In 1970, established the commune system.

In 1999, they disbanded the districts and established townships. A new Shenchen government administration was set up in Drabok and it now has a total of six villages (Cun).

The name "Shenchen" comes from Chinese and means "advancing army". The name has historical significance. According to Gertse County Records, during the liberation of Tibet in 1950, the Chinese army general Li disan with his cavalry came to the Arou area (today Shenchen) from Yutian, in southwest Xinjiang Province. On 29, August he

Table 2.1: Growth of human and livestock population in the Shanchen township.

Year		1999	2000	2001	2002	2003	2004
Number of Households		296	299	323	340	352	362
Number of persons	Female	756	770	771	819	821	
	Male	665	687	711	726	751	
	Total	1421	1457	1482	1545	1572	1599
Number of Livestock	Sheep	45984	48773	47510	49461	49056	
	Goats	25510	26319	27478	25510	26319	
	Yaks	2653	2718	3233	3724	4143	
	Horses	301	308	342	362	385	
Total livestock		74448	78118	78563	83376	93739	104080
Number of death and consumption			17085		20929	26647	

Source from Tsechou Dorji and Shanchen's village leaders.

and the local Tibet government made a five points agreement. In 1951, many in the Chinese Liberation Army (CLA) became ill due to high altitude and harsh climate, as well as lack of food and medicine. When the local government heard of this situation they provided yaks and barley for the CLA. However, many more of the army became sick and died. The name of the area was changed to honor the men who were posted here and died. When the Gertse government was established Shenchen Township in 1999 they built monument 15 *km* from the Shenchen township administration office to memorialise this historical episode. See Figure 2.1

### 2.1.3 Levels of administration in TAR

The following diagram outlines the Chinese administrative structure under the central government. Tibetan Autonomous Region was established in 1965 and is divided into one city and seven prefectures at the moment. Prefectures are divided into counties (Xian); each county is divided into townships (Xiang), each township is divided into a number of villages (Cun). Each village is composed of several household groups (Tsho). Figure 2.2. Source from Gertse County government document 2005.

Currently Shenchen has six administrative villages: Bakrak, Kamrok, Margok, Drabok,



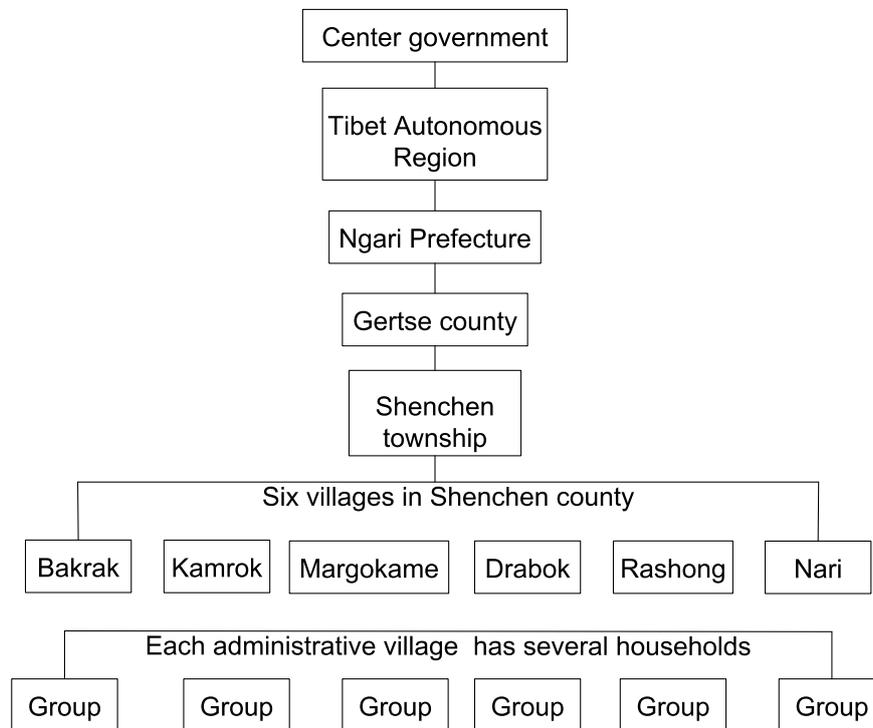


Figure 2.2: Source from Gertse County government document 2005.

Shencheng, as with other townships in Ngari, has abundant mineral resources, such as gold mines and salt lakes. The local government earns its extra income from mineral resources. Shencheng has six gold mine areas and several salt lakes. When I was in Shencheng, I interviewed one of the governors and according to his description, the local government derives 800,000 Yuan<sup>1</sup> profit every year from gold mines, of which 600,000 Yuan is split among the villages. The use of this money is different for each village. For example, Barak village's leader would like to divide it to give to each household and let them each decide how to use it, while Kamrok village's leader would like to use it for business.

It would seem that mineral resources could bring many benefits for the nomads, but what I have seen in this area has led to serious problems; because of long-term

<sup>1</sup>1USD = 8.2343Yuan(2004)

extraction of gold, much grassland has been destroyed. See Figure 2.3 and Figure 2.4.



Figure 2.3: A deserted small gold mine in Shenchen township. Photo by Ciren Yangzong.

Shenchen is also located in the Chang Tang Nature Reserve, which abounds with wildlife such as Tibetan antelope, Tibetan wild ass, Tibetan gazelle, argali, wild yak, lynx, wolves, brown bear and the snow leopard. Hunting was an essential component of the nomad's livelihood, providing economic reserves during lean times [Schaller, 2000]. Traditionally, the nomads hunted blue sheep, wild yak and antelope and they maintained that tradition until 1980 when the government prohibited hunting. Since the hunting stopped, the numbers of wildlife have increased but this has caused many problems for the nomads which should be addressed if wildlife and nomads are to coexist under increasingly crowded conditions and under this new grassland reform. I will discuss this in Chapter 3.



Figure 2.4: Destroyed Grassland by mining the gold. Photo by Ciren Yangzong.

#### 2.1.4 Pastoral Nomads and Their Environment

The pastoral environment in Shenchen is highly dynamic; the climate is cold, dry and windy with an annual rainfall of 189.60 *mm*, often in the form of snow and hail storms, and the annual snows fall for approximately 60 days. Growing seasons are short, just 120 – 180 days, and the land remains green for only a few months of the year. Even in the summer, snowstorms can often happen, and in one day, one can experience highly variable weather. In my study area, alpine steppe and alpine cold desert covers most of the area and it is an important grazing resource for yak, sheep, and goat, as well as for wildlife (Gertse County Record unpublished). Due to the high altitude and the harsh environment, agriculture is very limited, thus the overall productivity is low.

Nomadic pastoralism has existed for at least a thousand years in the Tibetan plateau, and represents one of the last great examples of the nomadic pastoral way of life, once

common in many regions of the world [Goldstein and Beall, 1991]. However, in my study area, settlement here is more recent, as previously mentioned, yet lifestyles are still very traditional like much of the Tibetan plateau.

Tasks of the daily management of livestock are divided by gender. Men conduct livestock, trade and herd animals. Women feed and water animals, do milking and gather dung. Children herd animals and a few go to school. Some of the families I interviewed do not agree send their children to school, but government has enforced them to comply. Two main reasons why they do not want to send the children to school:

1. Few can go to high school after they graduate from elementary school, due to high tuition fees. Most of them have to go back at home.
2. While at school, the children lose best time to learn herding skills from their parents.

Feeding and milking should be finished before the herd starts grazing. Supervision of livestock can be carried out by both men, women and young men, all can supervise and direct the herd to pasture and water [Liu, 2002].

In the summer, nomads are living in tents which are made from the yak hair. In the center of the tent is a stove made of stone, but recently, more households have started to use iron stoves. The fuel is mostly from yak and sheep dung. In the Aru basin, I observed Qimei (male 28 years old) living with his brothers; they have two motor bikes; mostly they ride them to collect drinking water from valley. At the night they use solar energy electricity to listen to music with a very old tape recorder. When I was there, his family helped me a lot especially him, he guided me to meet many nomad families for interviewing. Basang (male 56 years old), the village leader in Kamrok, told me he already has winter and summer houses. He wished he could also houses for spring and fall. Early winter is the best time for slaughtering. During this time nomads slaughter livestock depending on family needs. They sell surplus butter for cash. They have free time in the winter and go to Lhasa, Shigatse or other monasteries to do religious practice, after which they buy grain and other daily essentials before returning home. When

I was doing interviews, I observed the food consumption between older and younger to be different. In general, instant foods and the like are preferred and consumed by the younger generation.

However, a nomad's life is developing and changing rapidly. Only five years ago, nomads rode mainly horses but now most families have motorbikes without even a driver's license. See Table (2.2).

Table 2.2: 1999-2000 Gross National Product of Shenchen Township.

Year	Total In- come	Animal Hus- bandry	Trade	Transportation	Others	parergon	Per Capita Income
1999	2717334.8	2257959.8	21136	192637	235398	9904	1653.40
2000	3191378	2753936	12000	141785	272174	11484	1813.8

Source from Shenchen Township Government Document 2001

## 2.2 Traditional Resource Management prior to the Grassland Policy

### 2.2.1 Before 1959

Traditionally nomads managed their grasslands in a flexible manner to adjust to changing climatic conditions. Before the liberation of Tibet by the Chinese government, nomads' livestock, pastures and nomads themselves were directly controlled by landlords, monasteries and the government of Tibet<sup>2</sup>. Each household paid different taxes, such as wool, salt, or livestock tax, and provided labour, but the nomads were in charge of the management of the grasslands and their herds [Goldstein and Beall, 1990][Liu, 2002].

According to Goldstein and Beall [1990] who conducted research of Phala pastoralists (southeast of my study area), a Lagyab lhojang refers to a vast nomad estate that was controlled by the Panchen Lama. Phala was one of ten nomad groups that was part

<sup>2</sup>[http://www.tibet-china.org/historcal\\_status/Chinese/c0902.html](http://www.tibet-china.org/historcal_status/Chinese/c0902.html)

of this estate. Landlords within these groups divided the grassland among households and each could only use what was allocated to them and their herds [Goldstein and Beall, 1990].

*"The Panchen Lama's officials conducted a triennial household census of all adult animals excluding horses and stud animals to determine the distribution of animals in Lagyab. They allocated pastureland to households on the basis of this, each household having complete usufruct rights over their allocation of pasture until the next census. Taxes were calculated in accordance with a fixed schedule linked to the number of marke. Whether a family's herds increased or decreased during that 3 year interval, the tax obligation remained the same. However, when the next census was taken 3 years later, households whose herds had increased were allocated additional pastures and those whose herds had decreased lost one or more pastures. Taxes were also adjusted at this time. Households normally received multiple pastures appropriate for use in different seasons"*[Goldstein and Beall, 1990]

Livestock and grassland are nomads' livelihood foundation. Therefore, there is an integrated relationship between the major components of the nomadic life: nomads, pastures and herds. As Paine [1972] say "A prerequisite of successful herd management is the possession of three variables in commensurate proportion: herd, personnel and pasture." Through the Panchen Lama's office, nomads attempt to achieve the best between nomads, pastures and herds. See Figure 2.5

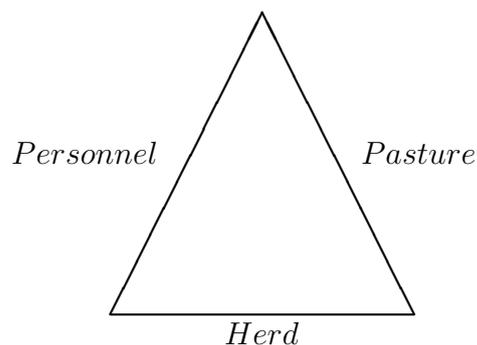


Figure 2.5: Optimal herd management. Adopted from Paine(1972)

Commonly, nomads managed livestock by their traditional system where families

raised livestock mostly for household use. They grazed in household groups, one group usually up to five households; each group had de-limited borders that were recorded in a local leader's register book [Goldstein and Beall, 1989]. Different livestock graze in different areas and different kinds of animals need different management, like when nomads herd yak in higher mountains, and they herd sheep and goats in level land or near their homes and camps. These examples shows an ecological basis for management. There have been traditional equitable uses for resources with a minimum of internal conflict. On the other hand, "poor households headed by an elderly male skipped the arduous fall migration because the household at his home-base encampment agreed there was enough vegetation to sustain the additional grazing entailed by his remaining there" [Goldstein and Beall, 1989].

These systems of traditional rangeland management are desired by herders and their animal husbandry skills are important to sustainable development in the future. Nomads use and maintain the rangeland ecosystem.

### 2.2.2 After 1959

Since China liberated Tibet in 1959, the central government gradually introduced the "socialist way" to Tibet. The first reform, called "Democratic Reforms", was implemented in Lhasa and the surrounding areas. In the June 1960, Gertse County implemented "Democratic Reform". According to Gertse County survey report in 1962, among the total 32 tribes in Gertse County 28 tribes had implemented the reform. The total population was 10,879 and the total number of households was 2728, among which 1,746 were poor households, 423 were middle class households and 85 were rich households. The total number of livestock was 450,502; 33,001 yak, 1,085 horses and 416,416 sheep [Ger, shed].

In the 1964, Gertse County implemented "mutual aid" into this policy whereby several "middle" and "poor" households mixed together into mutual groups. But pasture size did not change with herd size. During this time, economic decisions remained

located at the household level up until 1969. By 1969, the commune system began; livestock became the property of the commune and decisions were made by the commune leaders. That was to aid widespread poverty and subsistence. Nomads started to share equally the commune property and production which was equally wealthy and poor. In the "cultural revolution" the area of pasture basically remained the same, but the nomads' traditional way of live was destroyed [Goldstein and Beall, 1989]. Both during mutual aid and commune periods, grasslands were used communally.

In the 1978 the Central government ended the communal system and started a household based system of production in the rural areas in China mainland. The "living standards of urban and rural residents have increased dramatically and have been well above the poverty line. The establishment and popularization of the Household Responsibility System have made farmers independent operators, increased income and developed living condition" [Du, 1998]. Because of the success of rural reform in the agricultural areas, the government applied it to the pastoral areas and formulated the grassland law in the mid-eighties, with the key to create for nomads a "prosperous modern livestock base" [Longsworth and Williamson, 1993].

In the 1980s, the communes were dismissed and rural reform swept over China's pastoral areas, entire herds were divided among the nomads and they began to take responsibility for their livestock and became their owners. They have better skills in taking care of animals and were able to increase their productivity and cash income. Ownership of the grassland remained with the state and nomads only had rights to use the grassland. It implemented in Gertse county in 1984. That was the beginning of modern pastoral development in the pastoral areas [Schaller, 1998] [Wu and Richard, 1999].

Since livestock reform has changed at the household's economic level, human and livestock population has increased and there occurred both wealthy and poor nomads. Boundaries of communal land have led to conflicts over resource use and to subsequent overgrazing. The central government claimed that the traditional pastoral system and livestock management was "backward". It impeded modern pasture development and

also led to overgrazing, consequently grassland degradation. The solution to the problem was sought in a privatisation of animals and pastures.

The Household Responsibility Contract System for dividing grassland to individual households was implemented in Shenchen township in June 2005 during my fieldwork period. I will give more detail about this policy in Chapter 3.

## 2.3 Current Migration Route in Shenchen

The migration routes of Shenchen nomads follow the Tibetan lunar calendar; and also depend on indigenous experience. The pastoral system is designed around the movement of livestock to different pastures at different seasons of the year and tracking of favorable forage conditions, similar to what Liu [2002] found in Amdo county, Nakchu prefecture. The Shenchen pastures are used seasonally by nomads in groups from ten to fifteen households. They move a long distance from winter-spring season to summer encampments for the several months between mid-late May and mid-late October. Today, some families use the truck. They find good places for grazing and livestock, drinking water, and households move together and live closely. When one household lacks labour or some are sick, they always help each other with the herding. Some households have large flocks, and they choose to live away from other households because they need more grassland for their herd [Næss, 2003].

According to Goldstein and Beall [1991]; "In late August or early to mid-September Nomads make their major migration, leaving their home base for pasture areas, usually one to two-day's walk away which has been left ungrazed all season. The nomads reside at these fall encampments until late December when the forage is just about exhausted, and then they return with their sheep and goats to the original home-base encampment and use the remaining vegetation until the next growing season".

Since almost every area has roughly the same single growing season, pastures are limited so there is a need to undertake long migration, but they try to minimize travel, saying that too much movement weakens the livestock and increases mortality, espe-

cially during a bad year [Goldstein and Beall, 1991]. Livestock forage is enough for only eight to nine months in Shenchen [Naess, 2003], therefore in summer they fence grassland to reserve pastures for the shortages to come. Every nomadic group knows very well the pattern of seasonal change in their area and has carefully adapted its migration pattern to it [Barth, 1961]. However, inadequate pastures can not be optimal management. For example, when government established Shenchen township, there were more households moving to this area, the numbers of households and livestock were increasing, but the pastoral size was constant. Thus, unbalanced proportion between herd, pasture and nomad can be illustrated as in figure 2.6.

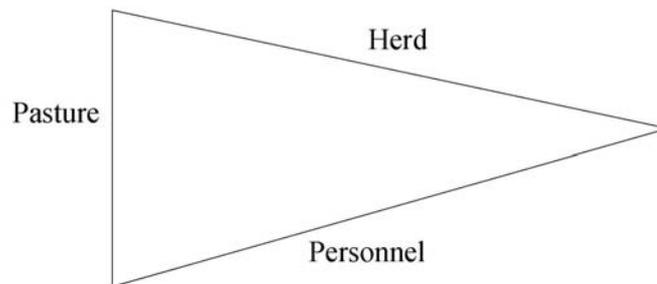


Figure 2.6: Unbalanced proportion between personnel and herd

## 2.4 Pastoral Economy -livestock

The pastoral economic system is based on livestock products in the TAR, but not many pastoralists depend only on their livestock. From domestic herds they get milk and meat. Milk can make other products such as butter and yoghurt and cheese. These products can be exchanged for other goods such as barley and others.

Traditionally yaks were used for transportation of salt and other goods, but today trucks do it instead. Yak hair is best used for weaving their tents, blankets, and ropes. Yak, sheep and goat dung is their main fuel source. Livestock such as sheep and goats provide meat and wool; goats particularly provide very good quality cashmere, how-

ever, "traditionally there was no market for this and it was of little importance to the nomads economy" [Goldstein and Beall, 1991]. Today wool and cashmere bring a high price, but the price depends on the market and every year is different. Trade is conducted with the Animal Husbandry Bureau (AHB) in Gertse County, through a system of contract sales. They collect those products two times per year. Other private traders offer more cash than the AHB, but nomads only have the right to sell to the government. In 2005, the AHB paid nomads 3.5 Yuan per Jin<sup>3</sup> of wool and 70 Yuan per Jin of cashmere (according to 2004 market price). Shenchen's nomads who sold wool and cashmere gained more than 100,000 Yuan last year.

Horses were important in nomad areas for transport and owning many horses was a sign of wealth [Goldstein and Beall, 1991]. But today, there are many reasons why nomads do not raise horses anymore:

1. they have motorbikes and trucks instead of horses for transportation;
2. horses, unlike other livestock, can not provide milk and meat;
3. horses consume much forage, which becomes more difficult when grassland becomes more limited.
4. 1 horse = 10 sheep<sup>4</sup>.

Nowadays, the main reason they keep horses is for the horse racing festivals held each summer. This is a big festival time in the Chang Tang. "At that time participants should dressed in traditional military attire, the nomads proudly display their riding skills. The horse racing festivals and fairs are the traditional occasion for horse trade. The buying and selling of horses at these fairs attracts Tibetans from near and far for celebrations during the colorful week of activities."<sup>5</sup>

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<sup>3</sup>1(jin) = 1/2(kilogramme) = 1.1023(pounds)

<sup>4</sup>Sheep Equivalent Unit (SEU) is Calculated: 1 yak=4 SEU; 1 goat=1 SEU; 1 sheep=1 SEU

<sup>5</sup>See <http://www.Tibetinf.com/Nakchu>

## 2.5 Environmental Hazard -Nature Disaster

### 2.5.1 Poisonous Plants

Currently, a major problem in my study area is poisonous plants, especially a plant locally called "tomza" (*Oxytropis tatarica*). On the way to my study area I saw many animal corpses on the roadside. I interviewed nomads about this. They said that this year was a very bad year, and in recent decades a poisonous plant has been growing and many animals died from it. They threw the dead animals on the side of the road to show this problem to the county governors who drive their cars this way. Poisoning by plants is the biggest problem, not only in my study area, but also in all of the Chang Tang. The poisonous plant usually buds in the early spring and then is followed by rapid growth in April or May. It bears fruit and then dries by the end of September or early October. When livestock eat fresh or dry grass mixed with "tomza", the poison accumulates in the bodies of goats and sheep for up to two to three months, then they die. See the cover picture shows, two of goats already dead, the third will probably die as like the other two, it has also consumed "tomza".

According to the sample survey conducted by Science and Technology Bureau of Gertse County in 2005, some areas are covered with "tomza", almost 70 – 80% in some townships, with 10 to 20 plants per square meter in 2004. Some areas with less "tomza" still have a covering of 5%. It currently occupies about 11% of the available grassland, about 682,000 *ha*.<sup>6</sup>

In the past three years, 90,553 livestock have died from poisoning, some families even losing all their livestock. Thus, it is increasing the percentage of households in poverty. See Table (2.3).

The economic loss caused by poisonous plants to nomads is serious. Every year the amount of livestock dying is high. According to Gertse County Animal Husbandry Bureau 2005 statistics, the average annual death rate of livestock is 27.8% with a total

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<sup>6</sup>1*mu* = 1/15*hectare* = 0.1644*acre*

Table 2.3: Harmfulness of Poisonous Plant in the Gertse County.

Town and Township	Year	Dead of livestock (head)	Loss of economic (hundred thousand)	Distribution and total cover of grassland(%)
Gumo Township	2003	2230	43.49	1) Distributed three administrative villages 15 groups area 2) Grassland area 10%
	2004	2661	51.89	
	2005	3805	74.2	
Wuma Township	2003	4760	92.82	1) Distributed seven administration villages 31 groups area 2) Grassland area 40%
	2004	9541	186.05	
	2005	23782	463.75	
Marmi Township	2003	2560	49.92	1) Distributed five administrative 33 groups area 2) Grassland area 40%
	2004	3105	60.55	
	2005	5650	110.18	
Tabu Township	2003	3110	60.65	1) Distributed ten administrative 34 groups 2) Grassland area 15%
	2004	2976	58.03	
	2005	8882	173.2	
Dongcu Township	2003	1613	31.45	1) Distributed five administrative 17 groups 2) Grassland area 15%
	2004	1305	25.45	
	2005	2355	45.92	
Gertse Town	2003	3517	68.58	1) Distributed two administrative 11 groups 2) Grassland area 30%
	2004	4211	82.11	
	2005	5325	103.84	
Total		91388	1782.08	

Sources from Gertse County Animal Husbandry Bureau,2005

number of 10,000 – 20,000 head, with an average annual economic loss of two million Yuan. Output of milk, meat and wool is decreasing due to livestock losses from poisonous plants, therefore, poor households are becoming even poorer. The government is trying to persuade those households who have lost most of their livestock to move. By the end of 2004, 140 households and their 44,654 livestock had moved. See Table (2.4).

7,407 livestock died of from poisonous plants in the Shenchen township.

Sources from Gertse County Animal Husbandry Bureau, 2005 Dunzhu, a male of 59 years said "when I was small this poisonous plant existed in the basin, but recently I feel it is increasing. I think it is because the weather is getting warmer and dryer, and strong wind blows

Table 2.4: Cause of Poisonous Plant Remove Household and loss Economic in the Gertse County.

Township	Reason of removed	Removed household	Removed population	livestock number(head)	Remove house and sheep fencing	Loss economic (hundred thousand)
Guma	poisonous plant	17	91	6350	15	28.05
Wuma	poisonous plant	12	45	5365	12	33.42
Marmi	poisonous plant	30	190	11205	26	37.7
Tabu	poisonous plant	45	203	15830	23	27.14
Dongcu	poisonous plant	36	144	5904	30	70.5
Total	poisonous plant	140	673	44654	106	196.81

Sources from Gertse County Animal Husbandry Bureau, 2005

*plants everywhere, thus you can find it everywhere. I lost 35 sheep and goats, and 4 goats and 2 sheep are still sick”.*

Zhuma, a 39 years old female told me; *“I have five people in my family. Since last winter I lost 69 goats and sheep due to ‘tomza’, out of a total of, more than 400 goats and sheep and 20 yaks.”*

Nomads have observed that antelope, gazelle, wild ass, horses, and wild yaks also consume ‘tomza’ but it does not affect them. They appear to tolerate the plant more than sheep and goats. On my co-supervisor Joe and his students’ second trip to Chang Tang, they saw many wild ass were dead, according to local people, it caused by ‘tomza’, but we doubted it.

As these poisonous plants take over the grassland, availability of good grassland becomes less and less every year. Most of the nomads mainly keep the traditional pasturing method which depends only on natural conditions. Under these conditions, the results brought on by poisonous plants are even more serious.

### 2.5.2 Blizzards

Nomads living in pastoral areas depend on livestock for a livelihood and this depends on weather. Frequently they experience heavy snowfalls or drought. In the winter of 1997-1998, there was unusually heavy snow in the TAR, and there was a lack of available forage. In the spring of the next year, an estimated three million animals were lost, with some townships losing 70% of their livestock. Economic losses were estimated at 1 billion Yuan [Miller, 2000].

Tenzing (male 45), who suffered from the harsh winter of 1989 in Bakrak village, lost over half of his total livestock numbers due to a lack of forage availability, and consequently, he, along with other nomads, faced dire poverty.

Basang (male 49), from Kamrok village, during this time lost half of all his animals.

Tseten (male 54) from Kamrok village also lost around 1,200 at that time. The impacts of animal mortality from snowstorm disasters are a major cause for rural poverty in the region. Maintaining livestock numbers and increasing them whenever possible becomes an important survival strategy in nomad areas [Miller, 1999].

### 2.5.3 Pika

Pika is the dominant small mammalian herbivore and widespread in TAR. "The role of pika in the degradation of pasture is debated".<sup>7</sup> Smith and Foggin [1999] noted that "rangeland degradation was mainly caused by pika and there are negative effects on rangeland habitat by pikas". This perceived tragedy has led the government to launch a rodent control campaign in which poison bait is applied directly into or very close to pika burrow holes [ICMOD, 2001]. In 1958, the central government started a "rodent control" campaign on the Tibetan plateau. Large-scale control efforts were initiated in 1962, between 1963 and 1965 13,000,000 *ha* poisoned; [Smith and Foggin, 1999], between 1986 and 1994 nearly 7,500,000 *ha* of grassland were controlled to eradicate plateau pika.

<sup>7</sup>See <http://www.tibetjustice.org/tringyiphonya/num15.html#2>

But control of plateau pikas has been affecting many functioning aspects of Tibetan plateau ecosystem. For instance, pika is keystone species in plateau ecosystem, loss of pikas and thus the habitat they create and share with other species, negatively impacts many species and reduces native biodiversity, also disruption of ecosystem-level processes [Smith and Foggin, 1999][Smith and Foggin, 2000]. Luckily this is not a big issue in my study area.

#### **2.5.4 Predation**

In Shenchen nomads and their livestock constantly were attacked by wolf, fox, brown bear and snow leopard, many of which are protected animals, but nomads can not kill them because it is against the "state protected animal law". Wolves especially attack and kill sheep and goat every year, it is more dangerous than other predators.

Takbu (male 27) from Aru<sup>8</sup> basin said: *"three years ago, when I was herding in summer pasture area I was attacked by a wolf. It killed 5 sheep and nearly killed me"*. Brown bear occasionally destroy the nomads' houses and attack people.

Basang (male 32) additionally told me that in the Aru area, these kind of things frequently happened, but people can not kill them due to state laws.

#### **2.5.5 Grassland Degradation**

From 1989 to 1997, China's rangelands had degraded by about 30%: 90% of this was degraded only to some degree, according to Northwest Plateau Institute of Biology in 1996. Scientists surveyed over 22 counties in pasture areas of China and concluded that the major cause for grassland degradation was overgrazing. Causes of grassland degradation have many factors, two main ones being; human behavior and natural causes. As an example of human behavior, in Shenchen, the numbers of shops are increasing and most families have motorbikes or trucks, which makes transportation

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<sup>8</sup>Aru basin is located in the west of the Chang Tang reserve, the basin around 2,200 km<sup>2</sup> shares by Gertse and Rutok county. You should put this in Chapter 2 when you first mention Aru

more convenient. Thus, degradation along roads and trails and in river valleys is very serious. Also several small gold mines have destroyed this area's environment. These gold miners mostly are from Guansu and Qinghai provinces of mainland China. No local people work in these mines. Degradation is high around the mine sites. See Upper Figure 2.3 and Figure 2.4.

Natural factors such as global warming have a big impact on grassland, because the weather is getting drier. In the Tibetan Autonomous Region, about 11 million hectares of grassland are degraded due to poisonous plants, 12,000 ha due to desertification, 50,000 ha due to pika, and 500,000 ha due to insect pests (500,000 ha). The total grassland that is degraded is about 18,000,000 ha, which has directly affected grassland quality and production [Di, 2000].

Today's environment is highly variable and animal husbandry is increasingly risky, because nomads must depend mainly on the weather. This makes the livestock economy unstable. With the implementation of the grassland policy, what will be the impacts of the policy given the precariousness of animal husbandry in the region? I will describe this policy and discuss the major issues that relate to its implementation in the next chapter.



## **Chapter 3**

# **The Household Responsibility Contract System and the Question of Grassland Protection**

### **3.1 Introduction of New Grassland Reform Policy**

The Household Responsibility Contract System for dividing grassland was implemented after the livestock were divided to households. The main purposes were; to reverse the degradation of the rangeland, to promote sustainable development of grassland and to increase nomadic production in order to transform traditional animal husbandry into a more modern development. This is the goal for the new reform policy. It transfers complete responsibility of winter and spring pasture to each family with individual nomads taking care of their own grassland area. Fences are optional to demarcate boundaries between the pastures belonging to different nomad households.

Characteristics of the New Grassland Reform in Shenchen Township:

1. All grasslands belong to the state. Rights to use the grassland belong to individual households, and rights are assigned with a long-term (at least 50 years) contract with the state. It is essentially a privatization of the grassland.

2. Local government allocated the pasture based on the 2004 human and livestock population. The size of pasture is determined according to a formula based on 70 percent of the total number of people in the household and 30 percent of the total number of livestock. The area of grassland stays constant, even if there is growth or decline in population of either livestock or family members. New families have to share the limited grassland by dividing the land among the newly married husband's or wife's parents' households.
3. Grassland rights are allocated to each household by a lottery.
4. Five to ten percent of the total grassland is reserved as common land for use during calamities.
5. Each household receives a grassland contract certificate and a register form of grassland use certificate.

Since implementing the new grassland reform from 2001, 22,600,000 *ha* of usable grassland have been divided among each household; this occupies 89.2% of the useable grassland of Tibet Autonomous Region. In total it covers 94 townships and 890 administration villages, and it occupies 82.46% and 69.37% of all the townships and administration villages respectively; moreover, it involves 265,000 people and 6,300,000 livestock which respectively occupies 76.49% of the population of animal husbandry and 82% of total livestock of TAR. There are 40,356 households that make up 64.85% of the animal husbandry households who have implemented the grassland reform contract, [Dolka et al., 2005].

The central government believes that breaking down the idea of "eating from the common pot" and giving individual household rights to grassland as the best way to improve the poverty conditions of the nomads and maintain sustainable development of grassland.

## 3.2 Conceptual Framework

### 3.2.1 Common Property, Open Access and Individual Property

The argument for the new grassland reform draws upon differences in definitions between 'common property' and 'open access'. However, these two concepts need to be clearly defined from the outset as most definitions of 'common property' are confused with 'open access', in which the resource is available to anyone one who can access and use it. 'Common property' implies a management system with resource rights that are held by a group, but 'open access' resources have no management system. Policy makers often take 'common property' to mean 'open access', such as communally owned natural resources, grazing lands, community forests and community fishing and in turn claim they are doomed to over-exploitation and consequently land degradation.

In China, similar to many countries in Africa [[Elias and Trench, 2001](#)], the government does not consider common property resource management to be a viable way to sustain-ably manage natural resources. In the 'Tragedy of the Commons' [[Hardin, 1968](#)], state owned land is used communally, and resources have no private owner. People have no interest to restrict and protect their use of it, therefore leading inevitably to the abuse of the resource. He emphasized the situation of private animals being grazed on common land. People lack incentives to conserve the pasture resource and thus it becomes rational for users to over-exploit the common natural resource. According to [Banks \[2001\]](#), "an individual had the incentive to over-exploit the commons because the benefits of him using the commons accrued wholly to himself, but the costs were borne by all users." According to this theory, common pool resources need to be either privatized or controlled by the central government to ensure their sustainable management [[Banks, 2001](#)].

Table 3.1: Comparative Three Properties System.

	Right to resource	Advantages	Disadvantages
Common property	Individuals or group tenure have claim	Equitable sharing Nature and labor resource. Benefits get from their pasture. Optional livelihood.	Often mix with open access.
Open Access	Everybody or nobody has a claim	Free resources, no cost of management	Maximum to use Resource. No control, more conflict.
Individual Property	Individual Right	One decision maker Self-management	Isolated management; High cost fencing Lack labor; More conflict.

### 3.3 Impacts of the Individual Management Policy in Shenchen

#### 3.3.1 Improper Land Survey and Allocation

Dividing grassland is a hard, vast and complicated work. The government organized the employees (these come from different departments of government) for a ten day training to study policy documents and technical skills on how to divide the grassland. However, many of the employees had practical problems using the techniques taught such as; the survey instruments (GPS) for location and calculating grassland area.

The local government claims the process is random and fair, but in many areas people who have good relationships with the governor were allocated quite good grassland compared to others.

#### 3.3.2 Unclear Boundaries

Private grassland should have fencing to clearly mark boundaries, according to new grassland reform. However, in my study area I saw boundaries between two households demarcated by only big stones and hills. That makes boundaries unclearly iden-

tified. If we look at pastoral areas in northwestern China under the new grassland reform, many conflicts are related to boundaries, many often violent. According to [Bijoor \[2006\]](#), who conducted research in Inner Mongolia, there were greater conflicts between herders after the transition to the new grassland system. [Yeh \[2003\]](#) conducted research in Gannan Tibetan Autonomous Region, Gansu Province, and found that grassland conflict resulted in the deaths of at least 29 Tibetans between 1997 and 1999.

Nakchu County in Nakchu Prefecture is so far the only area which has completely finished implementing the contract of grassland reform in TAR. According to a Nakchu Prefecture government document published in 2005, it has now has 1240 greater conflict cases solved by the government since the reform was implemented from 2002 to 2004. Usually grassland conflicts are between townships, only a few conflicts are among villages and households in Shenchen. Nomads in the Aru basin (Bakrak village) are in conflict with nomads in Rutok County because they are from two different administrative counties sharing the Aru basin for grazing.

According to Dorji (male 59 ), *"this policy makes it more complicated to use grassland, since most herders are children and with unclear boundaries between neighbors, it is easy to incite fury"*.

Tenzen (male 66): *"I agreed to this policy; it is good for me to manage individual grassland, but I also worry how to take care of my grassland if other livestock attack my area?"*

The rise of crime and violence since the beginning of land privatization has led to a new social crisis and I wonder if this kind of violence will be increasing in Shenchen in the future.

### 3.3.3 Lack of Funds to Build Fences

According to a Shenchen government grassland document 2005, at present, the government lacks financial support for nomads to build fences, thus fencing is optional due to the high costs. But they agreed that after some years, if the nomads want to build fences, the government will pay 50 percent of the cost for each household, the nomads will pay

the other 50 percent themselves. Nyima County (Nakchu Prefecture) is nearby Gertse County where the grassland has been divided since 2002, recently in some of these areas nomads have built fences. However, even with the government paying half, many nomads still do not have enough cash to pay for their half. This is very complicated for the nomads who have to implement this policy in Shenchen.

### **3.3.4 Lack of Drinking Water spot**

Another major issue for nomads is drinking water for livestock. During common management of the grassland, they used to use common drinking water holes that several households shared together.

For example; when I was in Bakrak village I heard a very touching story. Tenzing (male 72) is a veterinarian. His right eye has problems with infections from animals. According to him, this village used to have 16 households sharing a water resource and this village, like other villages in Shenchen, usually lacks sufficient water especially in the winter. Recently more families moved there and now there are almost 30 households. They shared one water hole and it has created a situation whereby it is extremely difficult for them to live through the winter period. He reports it to local government frequently, but they do not give any support. To solve the problem he decided to build water hole himself. He and his family spent three years building one small private water hole. The village people are very proud of him.

Under the new system, access to water is very strict and controlled by the individual who allocates the water resource. Unfortunately for Tenzing, his private water hole will not be located in his winter pasture after the distributed individual grassland. Finding drinking water for livestock has given the nomads a headache since the implementation of this new policy, it seems to be forcing them to travel long distances, often across other nomad's grassland, to riparian areas. See Figure 3.1.

In grasslands without unclear boundaries, often conflicts will arise over the attempt of one neighbor to use another's grassland for his own enclosure or for water.

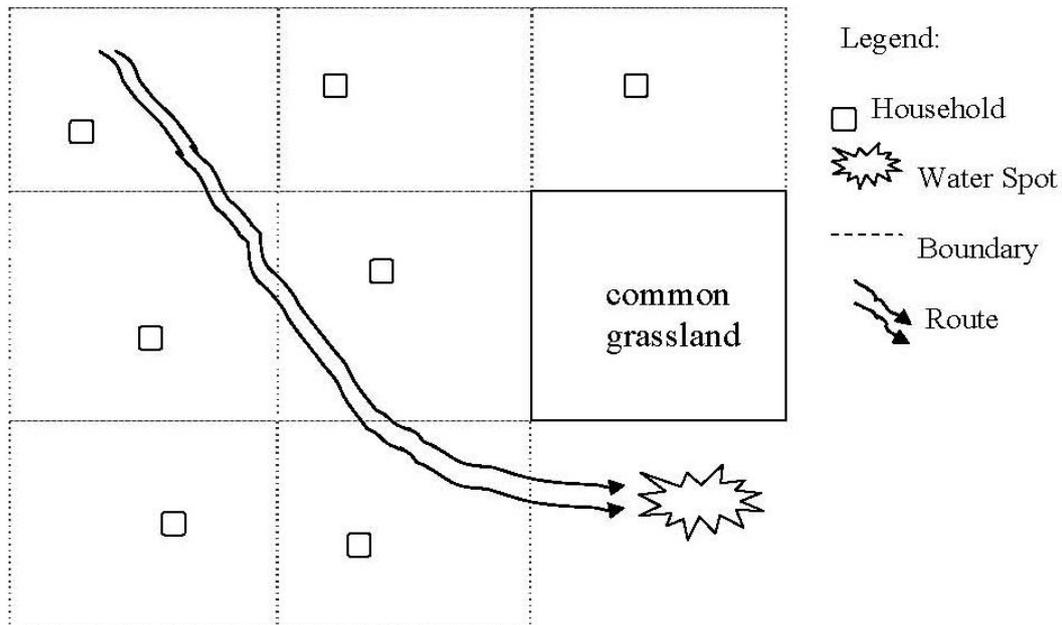


Figure 3.1: Individual Household Tenure Management

I also interviewed the local governor who said it is very expensive to build one little reservoir; it costs about 35,000 – 40,000 *Yuan*. At present the Shenchen government does not have the funds to build such infrastructure.

### 3.4 Does the Household Responsibility Contract System Really protect Grassland ?

In the development of pastoral policies, natural resource management schemes reflective of Hardin's findings will likely lead to privatization or a strong government role [McCay, 1997]. Central government feels that traditional nomadic practices are 'backward' and should be improved, or as they say all the time, the 'liberation idea' will deepen reform and bring them towards a modern developed life. The state believes that privatization of pasture is an incentive for the herders to protect the grassland.

The Household Responsibility Contract System is reducing grassland to individual

management and common property to individual property with the resources use right being held by private individuals. I shall argue the question; does HRCS or private individual management systems prevent grassland overgrazing or degradation? Is it appropriate to Shenchen's grassland conditions and environment? Do nomads get any benefit from this policy?

"Globally extensive areas of both private and state managed grassland have been found to be highly degraded, often more than communal lands" [Richard et al., 2006]. Many researches have shown that since the break down of communal management systems and implementation of private management systems, grasslands have become more degraded in China's pastoral area, as well as in other countries.

The central government implements new grassland reform in other pastures areas of China over past ten years. The final result was that HRCS has been criticized as increasing, rather than decreasing the problem of overgrazing in Inner Mongolia [Williams, 1996][Thwaites et al., 1998][Sneath, 2000].

Bijoor [2006] also found that degraded grasslands account for 81.7% of the total land area of Xilingol Biosphere Reserve of China; the main reason for degradation being related to unsuitable governmental policies [Longworth and Williamson, 1993]. These researchers have studied and observed that under the new grassland policy, different areas have different management models and legal rights in China. The "tragedy of the commons" theory did not consider the fact that common property resource management can work with local negotiation between different users. Even though the grassland policy has been implemented in other provinces, such as Yunnan, Gansu and Xinjiang, Qinhai many areas still practice common property management systems which are legal under the policy [Banks et al., 2003].

Central government priority on grassland reform is a big challenge for the Tibetan nomad. TAR's pasture can not compare with other in pasture areas in China; the higher elevation, colder temperatures, and changeable climatic conditions even compared to the eastern Tibetan Plateau is still highly mobile. Especially in my study area, I have been to six villages in Shenchen and tested the elevation, most areas over to 4800 m,

some areas are up to 5000 m such as the Aru basin (Bakrak village) elevation which is 5017 m.

Shenchen is an extremely dry and cold desert area, the annual rainfall is 180 mm, the vegetation type is desert steppe, non-equilibrium environments and stocking rates are a mere 0.13 in terms of the statistics of Gertse County Animal Husbandry Bureau in 2004. Therefore, grassland and livestock productivity is much lower than others. In addition,, fencing in relation to grassland improvement is difficult because the pastures are large and of very poor quality. The building of fences has serious economic implications as well as reducing household labor as it decreases the man's grazing responsibilities transferring them to the women and children [Richard, 2003].

Some interviews notated below:

Tashi (male 68) says, *"Before the "Democracy reform" the land was large, in 400 – 500 km you could see only one or two households and with out "tomza". We had 300 households using this large land, but today, the same size of land holds 1,200 households. This creates conflicts between the nomads, herb and pasture, many security problems take place and production is low. We don't like this saturation."*

Dorji (male 47); *"During 1996 and 1997 the government encouraged us to settle down and build houses, most nomads have a winter house now. To build one house costs 2500 – 3000 Yuan. But we just need to pay for the materials not for labor because we were the same groups usually grazing together and helping each other. Today following the government that policy means we have to give up our houses. We can not understand it."*

Lhaba (Female 56); *"I do not know much about this policy, I heard about it from my husband. My family has 1,500 sheep and goats, and 700 yaks, with 10 households grazing together. We have a good relationship with each other. Our livess depend on the weather, this area frequently has some snowstorms, if things happen like they did in 1998, then you will suddenly become poverty stricken. This year, because of "tomza", I loss 65 sheep and 27 goats. So, can that policy really help us?"*

Many cases show that the common property management system is a viable alternative; it is more stable, of low cost, it provides for the resolution of property rights

disputes, it maintains flexibility in accessing land for sustainable management and is more adapted to variable climate.

The concern for the current situation is that the new grassland reform in my study area is not suitable as it can not provide enough flexibility for herder to move with their livestock. Implementation of this policy runs the a risk of increasing conflict, reducing access to resources and having a highly negative impact on sustainable grassland and livelihood opportunities. This is in comparison to research about individual tenure and its impacts.(See Figure 3.2)

So far, there is little evidence in government documents to say increasing numbers of livestock lead to overgrazing. Based on my interviews, nomads are frustrated with this new grassland policy and worry about their survival especially in event of natural disasters.

Table 3.2: Impacts of the New Grassland reform where tenure and management has been at the individual household level. Taken from Richard and others 2006.

	Positive	Negative
Allocation Process	On paper the process is perceived to be fair and equitable	In reality, poor allocation of pastures in many areas; some receive good quality land and others poor land
Size of Pastures	Base on number of livestock and family	Individual pasture often small; herders liquidate herds/rent pasture from those with excess land
Water Availability		Lack of water on individual pastures and lack of access to neighbor's water sources; high cost of water development
Risk Management	Where fencing is used for reserve pasture, livestock mortality is reduced	Costs per household too high for improvements; high subsidies required by the government
Social Services	Better access to veterinary care and government services where holding pens constructed	Greater isolation of individual households
Household Labour Distribution	Reduced labour for overall household; gaps between men's and women's labour has increased as men spend less time long distance herding	Increased labour for children; partents find time for employment in towns, children required to maintain herds and have less opportunity for school.
Market Access	Increased access to markets where fencing used for holding pens and feedlots	None document.
Ecosystem Protection	Improved productivity within the fence due to protection during the growing season	Degradation of "commons", no communal responsibility for landscape amenities, such as riparian area, which are heavily grazed "outside the face"

## 3.5 Is the New Grassland Reform Compatible With the Intended Development of the Chang Tang Conservation Area?

### 3.5.1 Protection Area: The Chang Tang Nature Reserve

As I mentioned in Chapter 2, Chang Tang conservation area was established in 1993 by the Tibet Autonomous Region government. The purpose of the reserve is "to maintain a healthy productive and diverse ecosystem with a vigorous population of all animal and plant species coexisting with the nomads and their livestock." [Schaller, 2000] Traditionally nomads killed wild yak and antelope (See Figure 3.2) and other species for extra food and for a little cash income during the hard times; they systematically hunted at a subsistence level without markedly decimating any species [Goldstein and Beall, 1990][Næss et al., 2004]. In the past couple of decades, large numbers of wildlife, especially the Tibetan antelope, were slaughtered and numbers were drastically reduced due to both domestic and international demand for wildlife products. Tibetan antelope skins have a high economic value, and could provide enough cash to purchase a used truck and motorbike in the nomad areas. The very fine wool is woven into *shahtoosh* shawls by Kashmir Indian and Nepalese, who in turn sell them to Hong Kong, France and Italy and other international markets [Schaller, 2000][Fox and Tsering, 2005]. Tiger, snow leopard and lynx skins, even though illegal, are used by Tibetan city people to decorate clothing, it is very fashionable in the Tibetan plateau. Due to these reasons, the Chang Tang nature reserve was established and it received national level protection area status in 2001. The government ordered a ban on hunting to protect these species as well as to preserve ecological balance.



Figure 3.2: Tibetan Antelope. Photo by Joseph L. Fox

### 3.5.2 Wildlife Population

Since establishing the conservation area and the protection law of wildlife, the number of wildlife has increased. According to wildlife conservation officers of the Forestry Bureau in Ngari Prefecture, the Tibetan Antelope population increased from 10,000 to 30,000 in the last five years. The Tibetan ass increased to 10,000 in Gertse County, and 60,000 in Ngari Prefecture. Wild yaks increased to 30,000. The office conducted the wildlife survey from 1997 to 1999.

According to Schaller [2000] based on a wildlife census done in the southeast part of the Chang Tang reserve from 1993 to 2003, the Tibetan antelope increased 61%, the gazelle 76%, the wild ass (See Figure 3.3) 85% and the wild yak 17%.

Also according to Fox et al. [2004] during surveys in the Aru basin from 2000 to 2002, there were about 11,000 Tibetan antelope in summer, about 250 gazelle, 150 wild ass and 350 blue sheep and less than 200 wild yak. More than 20,000 nomadic pastoralists depend on rangeland for livestock grazing in the Chang Tang Nature Reserve [Fox and Tsering, 2005].



Figure 3.3: Tibetan Ass. Photo by Joseph L. Fox

Between 1991 and 2000, 26 families and 9, 245 of their livestock moved into the Aru basin. "In the summer there were about 230 people and 15, 000 livestock using the Aru basin for grazing, whereas during autumn of the same year there were about 105 people and 8, 000 livestock." [Fox et al., 2004][Næss et al., 2004].

### 3.5.3 Wildlife, livestock and grassland conflict

Interaction between increasing numbers of wildlife and livestock is a complex issue in Shenchen as people continue to move into the conservation area for livestock production. Nomads often get problems from wildlife such as wild yak, which are very dangerous. Wild bulls attack jeeps and trucks, wild male yaks mate with domestic female yaks. Some families may have two or three hybrids of the wild yak in their herds. When those grow up they will not behave like the domestic yak, they run away to the mountains and the nomads suffer the economic losses.

During 2001- 2004, in Drabok village, four families Panba, Dunzhu, Tsedian and

Danchu reported to the government that one particular wild yak often attacked people and livestock. These families already have two to three hybrids and the women are very scared to milk their animals because they can not tolerate the wild yak. The local government considered this issue and gave permission to the nomads to shoot these troublesome animals. (See Figure 3.4)



Figure 3.4: The head of Wild Yak. Photo by Ciren Yangzong

From my interviews, the brown bear and snow leopard are both dangerous animals. Bears kill livestock and break into nomads' huts to search for supplies stored and also attack people.

Tseki (female 55) told me her house was destroyed by bears one week prior to my visit, she can not go back, she is afraid the bear will come again.

The Tibetan ass is a more common animal in the Chang Tang area and one that locals feel competes with livestock for grassland. It can also run into and break fences

around winter pastures [Schaller, 2000]. Both researchers (Schaller and Fox) and local people observed that the Tibetan ass number has increased in recent years. During my fieldwork I also saw thousands of Tibetan asses.

The wolf is another predator that attacks and kills the nomads' livestock. These animals have created problems between wildlife and livestock and increased competitive pressures on good grazing land; they compete for water and space. The impact of livestock grazing also can influence wildlife food resources by destroying of the structure of their habitat.

Today, under the new grassland reform, the nomads have even more limited land for grazing and the strategy of flexible management has been reduced which makes the conflict problem worse. Buildings and range improvements such as fencing, needs to be questioned in a conservation area because of its impacts on wildlife. However, a shift from communal rangeland to more intensive commercial private grasslands is said to improve the nomads' standard of living. But how can the livestock and wildlife coexist in this area? How sustainable is this kind of development of rangeland? If nomads do not build long fences then they cannot protect their grassland from wildlife. If they build them, they may impede the movement of wild animals.

Maintaining the mobility of pastoralism, in contrast to moving nomads from conservation areas, may be an important means in insuring compatibility between wildlife and nomads in the reserve [Fox et al., 2004]. I had the opportunity to discuss this case with Professor Joseph L. Fox, who is teaching in Department of Biology, University of Tromsø, and who has several times been in the Chang Tang conservation area, and is one of the people in of charge large project; "Biodiversity Conservation and the Maintenance of Pastoralism in Western Tibet".

He says, "*Chang Tang is very special case, traditionally wildlife and livestock have been co-existing because of non-equilibrium environmental conditions in the Chang Tang. And in this area frequent snowfalls induced livestock mortality and kept pastoralist livestock density well below forage carry capacity, which is maybe the reason why this area allowed a coexistence with abundant wild herbivores. Recently, nomads on the move to reserve area are increasing making*

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*way for the Tibetan antelope to dominate the area. In addition, the new grassland reform even makes wildlife, livestock and grassland more complicated”.*

Currently, the Shanchen township government has a future plan to move nomads living in the northern part of the conservation area, to the south. I asked one man living in the Aru basin, which is in the core zone of the conservation area, about the new grassland policy and Gertse County’s future planning. He very self-confidently said *”I have been here almost all my life and I do not want to move from my place. I will be here until I die. About policy I do not know how the government will divide the grassland, but for sure it will lead to increasing conflict.”*

*That policy wants to divide up the winter-spring pastures, my winter-spring pasture is always occupied by wildlife animals. Who is going to take responsibility for this? The kelsang asked.*

I have also discussed a little about Shenchen and its future with my academic advisor, Professor Per Mathiesen, he was also one of the people in charge of the above mentioned large project. Although he did not say anything about this situation, from his face I got an answer. He just made the comment to me; *”show these issues in your paper, make people think”*. This is maybe the anthropologist perspective I think.

My interview shows most residents do not want to move from there current living areas as the policy reduces the size of their land.



# Chapter 4

## Future Challenges and Conclusion

### 4.1 Main Development Issues in Shenchen

#### 4.1.1 Widespread poisonous plant

Pastoral nomads in Shenchen are the poorest nomads in China. The nomads depend heavily on the weather and because of this, their production is inevitably low. Recently, they were assigned grassland abundant in poisonous plants making it in their eyes, almost unuseable. Because of the lack of knowledge on how to control these plants, good quality grassland assigned to households in Shenchen is decreasing and many nomads are suffering from poverty. Many of these nomads observed that "tomza" spreads very quickly and there have been incidents of sheep and goats dying, but right now there is no evidence to show that wildlife animals are affected by "tomza". The nomads however, consider it a serious livestock problem and a severe obstacle for future economic growth and regional stability.

#### 4.1.2 Unstable livestock and poor market

Livestock production is generally low because of the pastoral area's unstable climatic conditions and frequent natural disasters severely inhibit plant growth. The sheep and

goats can only provide poor quality wool and cashmere because of poor nutrition over winter. Butter, milk and meat are consumed by the nomads themselves, livestock production markets in Shenchen are not open. The goats provide the cashmere, and sheep the wool. These two productions only can make cash income for nomads. But the nomads can only sold to the government organization AHB, the price is a little low, even the cashmere price is dependant on the international market.

## **4.2 Challenge to sustainability**

Sustainable grazing management is a key issue of concern in high elevation and harsh environments of the world. This challenge is particular existent in such places as Chang Tang conservation area. To put the new grassland reform into nomadic pastoral areas in the Chang Tang, especially in Shenchen township is a complex and long-term task. Implementing new grassland policy is challenging for Shenchen's social, cultural, economic and sustainable grassland development. Nomads in Shenchen have to force themselves to change their social and cultural structure.

## **4.3 Challenges to the Policy**

The major implication of this new grassland reform is to achieve private ranches. Individual right management systems in Shenchen, even though the grassland policy has been implemented in other provinces in China, have not been implemented strictly. Instead, nomads prefer common management systems, many pastoral areas still carry out common management systems which are legal under the new grassland reform [[Banks et al., 2003](#)].

Many researchers such as Richard, Yan, Du, Xie, Bank and others found household group management in Maqu County in Gansu Province where local people held individual tenure grassland contracts as individual households, but the resources were shared communally based on household and livestock population. According to Richard

and others, group tenure management has delineated household boundaries in winter pastures. More than ten households in size have been allowed to pool their pastures together and fence the outer boundary. The benefits are directly gotten from the pastoralists themselves.

In Zhongdian County, Yunnan Province, and Altay Prefecture in northern Xinjiang-Uygur Autonomous Region, local people hold village collective management under the grassland contract with an individual household cooperative for pasture or landscape management. The resources are shared communally based on household livestock population; each household derives benefits from their own land.

In Xilingol, Inner Mongolia Autonomous Region, local people operated a co-management system. According to researcher Bijoor, "it may involve partnerships and various degrees of power-sharing between stakeholder, local and centralized government systems. They together promote economic efficiency and the herders have the ability to take initiative and cooperate amongst themselves."

These models reflect that despite central government claims of over 90% allocation of the grassland reform to individual households [Banks et al., 2003][Richard et al., 2006], common management systems rather than an individual household management systems dominate as they are more stable and accepted by the nomads. By common management, the local people get the benefits directly themselves; for example, the cost of fencing is significantly lower than in individualized tenure.

Researchers have found the model of common management has gained great success under the new grassland reform in other pasture areas in China, although, in these areas the environmental conditions are quite different from Shenchen; there is good growing grassland at low elevation. By contrast, the Shenchen has bad quality grassland with high elevation, dry and cold temperature. These models are still a viable suggestion and will be helpful in the grassland management in Shenchen township.

I have interviewed one of the key governors in Shenchen, he said: *"We have to follow the new grassland reform, in my opinion its starting point was very good for improving nomads living standards and grassland sustainability development. The state also spends a lot of money*

*and manpower to implement it, but in the case of Shenchen, because of many practical issues, I think it will not be successful. Even though we have finished the assignation of grassland, we personally agree to allow the communal management system to carry on as before under the new grassland reform”.*

Currently in Shenchen, some households’ manage pastures communally under the new grassland reform with legal rights given to groups. Before the new grassland reform, some families had more livestock, some families fewer. They shared pasture by carry capacities. Thus, it was unfair to those families who owned fewer livestock. Today, herding groups make special agreements between five or more households to share the pasture under the new grassland reform. The families with fewer livestock could earn supplementary income by leasing their land to the rich households with more livestock families.

“Developing countries policies are general base on political consideration and economical benefits, so strengthening the political representation of local pastoral communities will also transfer the benefits of development project to local pastoral people.”[Umrani, 2004] Common management approach concerned with social justices, equity, flexible and sustainable use of grassland, reflects indigenous ecological knowledge, common management right is more adaptive and has efficient goals of grassland sustainability development.

## **4.4 Development of the Conservation Area**

“Ecological environments are constructed and transformed by complex and reciprocal interaction between human population, animal population, and the physical forces of nature that occur across local, regional, and global scale.”[Williams, 2000] In recent years the human population has increased, economic systems have been modified, and cultures have changed. Strict implementation of new grassland reform and development will be an increasingly difficult task in the conservation area and will also be very difficult to achieve the goal of Chang Tang Nature Reserve which maintains coexistence

of diverse populations of all wildlife animals, plant species with the nomads and their livestock.

Maintaining and improving rangeland productivity for livestock and wildlife is a primary concern for the Shenchen government. Currently, Shenchen township government has a future plan to move nomads living from the north of the conservation area, to the south. In fact, early in 2002, Shenchen and Tapu townships "volunteered" to give up 70  $km^2$  of grazing pasture to wildlife animal usage.

In designing a new conservation development program for grassland that will protect sustainability of herds of wildlife animals to achieve long-term conservation, many biologists, anthropologists, environmentalists, and community development workers of different perspectives found the most important consideration to be "putting people first".

Like [Wilson \[1996\]](#) notes:

*"The bottom line is that effective, long-term conservation of biodiversity can be greatly assisted by 'putting people first.' This means listening to their concerns, encouraging their ability to organize themselves, and then addressing their needs. Actions taken at the community level are becoming the keystone of global efforts to conserve biodiversity."*

Also [Blench \[2001\]](#) notes:

*"The perceptions of rangeland dynamics and the emergence of more community-oriented conservation philosophies have focused attention on the potential benefits of livestock and wildlife co-existence"*. Protection and construction of Chan Tang Nature Reserve is a long term task. Wildlife animals need sufficient flexibility and I suggest that the unique characteristics of Shenchen's situation need to be addressed with an adaptive policy by the central and local government. This is necessary in order to design a management plan that will address the requirements of both the livestock and wildlife. In addition, illegal hunting still exists in this area; I strongly suggest this must be stopped. Like Professor Fox said "protection Chang Tang rich wildlife, Tibetan generation will get a chance to see their heritage in the future".

## 4.5 Conclusion

When the central government implemented the Household Responsibility Contract System for grassland in Shenchen in June, 2005, it brought social and economic changes to the township. The ordinal intention of central government to Household Responsibility Contract System for grassland is to control the degradation of grassland, achieve modernization of animal husbandry and protect sustainable development of grassland.

The implementation of the Household Responsibility Contract System brings many problems, especially in reducing herders' flexibility and mobility for management of livestock and wildlife migration. It creates more conflict issues such as grassland competition between livestock and wildlife. Fencing has precipitated new conflicts by increasing inequality of access to pasture. Areas such as Shenchen, need to be flexible to cope with climatic variability and multiple resource use.

It can be concluded that the Household Responsibility Contract System is not acceptable and adaptable to pastoral area, especially high and non-equilibrium environments. Much evidence from other pastoral regions in China shows that a common management system assures access to important natural resources by all members of a community and fulfils social function such as conflict resolution as well as conservation of natural resources and bio-diversity. The new grassland reform can not protect grassland and is not compatible with the intended development of the Chang Tang conservation area, in some cases it is against the law of conservation by the state itself.

Sustainable development of grassland and the conservation of the Chang Tang Nature Reserve should consider more flexibility and mobility of rangeland management, it is very useful tool in harsh environmental area, also consider indigenous, ecological knowledge systems and traditional pastoral strategies in the design of new development interventions for the Chang Tang.

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