CHAPTER 4
Nomadic Livelihood and Impacts from Mining

This chapter mainly focuses on mining's impacts in relation to local livelihood, livestock and environment on rangelands in the Three Rivers Source area. Firstly, the herders' daily life activities and past history and current living condition of Rna Thang and Gser Thang pastoral areas are presented. Secondly, the historical changes on land property rights based on herders' rangeland management systems between common and private land are explored. Thirdly, herders' accounts give the perspective that 'mining activities' are the principal cause of rangeland degradation. Specifically, this chapter analyzes mining's impacts on grassland ecosystem, water sources, livestock, farmland, health, culture and herders' daily life. The chapter concludes with current responses of Gser Thang herders' response to the intrusion of mining development into their land.

4.1 Herders' lives in Rna Thang and Gser Thang

The Story of a calf and its carer

It is necessary to emphasize that most Tibetan herders passionately welcome the guests from outside and they are willing to make friends with them. I was invited by one of my female interviewees (XHR1) to her winter rangeland in Rna hang. I met this young woman before in the Sanjiangyuan Eco-resettlement Community when I was conducting group interviews in 2011. She remembered me and brought me to her hometown. Her family's rangeland is the nearest to its county, but because of the bad transportation, it still takes one hour from the town. The winter of Tibetan rangelands are beautiful with numerous mountains next to each other and the shape of some mountains appear as the image of humans, which lends itself to the cultural assumption that these are doorkeepers from ancient times. I observed different groups of yak and sheep eating gray grasses inside of the iron fences in such vast rangeland where I cannot see its edge. There were two simple earthen houses next to each other,

one for people and another for livestock. XHR1 told me that the earthen house is very good, because it can protect the baby animals from the cold weather in the winter. She further explained to me that one of her neighbor's families built their animal house by concrete, much less warm than the earthen house, so many baby animals could not bear the cold weather and died. During my stay at her home, I learned that she was feeding a calf and this calf has a special story, epitomizing her religious beliefs. She told me:

> In that year, an ordinary monk brought 160 calves to our community for saving their lives from the market. He then offered all of these calves to a Lama in our monastery, and then our Lama has benevolently donated calves to herders who want to take care of them. I just heard from that monk, he told me that all of these calves had lost their mothers when they born. They were killed in the slaughterhouse because they no longer produced the milk. I felt very sad when I knew this story; I thus adopted one calf who was the weakest one and nearly died among them. I think I cannot save her life at the beginning, but later she became stronger under my care and survived (Record of notes taken in interview with XHR1, September, 2014).

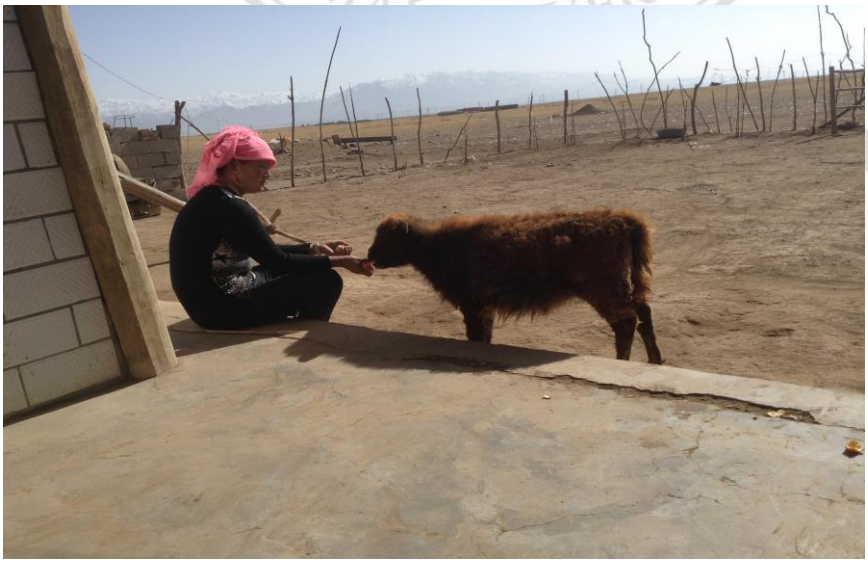

Figure 4.1 XHR1 saved this calf's life

A day in the life of a female herder

Dbang Mo gets up at 7 am to prepare the tsampa, butter and milk for breakfast. This year, she needs to milk five cows that delivered their calves in April. Because of calves' body condition, she can only use 40% of the milk for her family's consumption; the other 60% of the milk is for the calves. After finishing breakfast, she releases her livestock in the four groups of sheep, yak, cows and calves. She takes these livestock to the nearby community's tap water's side at 9 am. This spring water flows from underground of a mountain, which is near to her community. She has to wait there for one to two hours if other animals are waiting in front of her. The water is very difficult in her community, because there is only one tap water shared by 40 households and due to the number of animals; it is difficult to water the livestock every day. At 4 pm, she and her husband prepare barley powder for these livestock whose body condition is not good. Normally, they give the barley powder to cows and their calves and yak in their old age. They must do this as there is little grass on the rangeland in winter and weak livestock are at risk of dying from hunger. They herd their livestock into groups of four to keep them in the different locations to prevent the livestock from fighting between each other. Among the different types of animals, the stronger animals bully the weaker animals. Dbang Mo said, "the livestock come to her home around 5 pm on their own, because they know that we will provide food to them" (Record of field notes, April 2014).

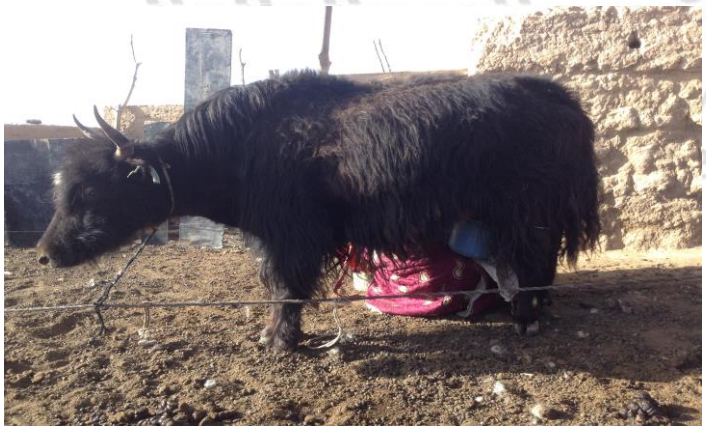

Figure 4.2 A female herder milks her yak in the early morning

Milking Regime

Not every woman can milk yak cows unless they build a good rapport with them. The yak is a wild animal, and sometimes will hurt people. Therefore, as a female herder, they must spend their daily lives with these yaks since they are around seven years old, so they master a special skill to understand their temperaments and interests. Particularly, a female

herder uses her body language to communicate with her livestock as she calls to the yak cows in a calm voice and offering them barley powder to get a yak cow's permission before she makes body contact with them.

Table 4.1 Herders' monthly activities (information gathered from field notes March/April 2014).

Jan	**New Year festival; Relax, be happy and enjoy.**
Feb	Stay in the winter area; feed the food and water to livestock; transport the water to home and take care of the livestock.
Mar	Stay in the winter area; Feed the food to livestock. There is no grass so there is the risk of death of livestock if they are not provided for well enough.
Apr	Stay in the winter area; take care of the livestock, which are growing stronger; go to dig caterpillar fungus; herding.
May	Cut sheep wool; go to fall area for herding and milking.
June	Go to Summer area; herding, milking. Saving milk to produce cheese, butter and yogurt. Then go to collect Tibetan medicines in their rangelands or others.
July	Return back to fall area; milking, produce butter, cheese and yogurt. Then, collect mushroom and Tibetan medicines.
Aug	Return back to winter area and herding.
Sep	Herding; feed the medicine and give the conjunctions to the livestock. Go to town to buy barley.
Oct	Grazing livestock in the winter rangeland
Dec	Grazing livestock in the winter rangeland
Nov	Grazing livestock in the winter rangeland

Historical and current living conditions of herders in Rna Thang and Gser Thang

The rangelands I visited are Rna Thang and Gser Thang. The English meaning of Rna Thang is silver valley and Gser Thang's meaning is golden valley. Some people from Gser Thang traditionally live in both valleys; their summer rangelands are in Gser Thang and they spend their winters in their winter rangelands located in the Rna Thang valley.

In this way, Rna Thang valley consists principally of three villages, namely Gser Thang's winter village, Mo Rdo and Tha ldong. There are 20 households living in Gser Thang's winter village, 180 households in Mo Rdo and 270 households in Tha ldong and also some outside villages' herders have made homes in this valley. As one of my interviewees disclosed, there are in total more than 400 households in this valley making their livelihood on animal husbandry. As stated above, some herders from Gser Thang have their own lands in the Rna Thang valley, so they move to Rna thang for grazing their livestock in the winter season; this area becoming their winter rangeland where they spend their most time. Mo Rdo herders are different because they are originally from Mo Rdo, the valley in which they did both agriculture and herding, and this valley is very near to Rna Thang. However, the local government built a hydropower station there in 2010, so they had to resettle in the Rna Thang valley as a compensation for the loss of their original land. The government also promised to give herders some financial aids, but until now, herders have not received this compensation. One herder from Mo Rdo told me:

We have no income except through herding in Rna Thang. However, our original life is not like this, because we could do both agriculture and herding in the past. For example, we could plant crops such as wheat and barley; we could also plant vegetables such as potatoes, onions and other. Our life was relatively peaceful, quiet and sufficient, but one day, the village leader announced that our homeland is to be a protected area, and the local government will build a hydropower station here and we need to resettle in Rna thang. This was a tragic accouchement for many herders but we had no choice except to accept it, because we uneducated herders cannot do anything against this

project since the local government used the name of ‘conservation’. The local government promised to give us eco-compensation for each household, but we still didn’t get any (Record of notes taken in interview with XHR4, September, 2014). Several other herders I interviewed from Mo Rdo expressed they are not satisfied with their current life. Many of them long to get the government promised ‘eco-compensation’. I did not have the opportunity to see their village leader as he was away while I was present. I wanted to ask how the hydropower project is related to the government conservation project. None of the villagers could give me a clear answer, only responding by saying, “the government said this is a protected area, if we resettled, they would give us eco-compensation”. Actually, the local government did give some money for ‘relocation payment’, but local herders said that it was too little for them.

The resettlement of Mo Rdo herders and their families is bemusing, because these herders from Mo Rdo seem in no way to be what the government calls ‘eco-immigrants’. As an eco-immigrant, the purpose of their resettlement is for protecting their rangeland, for which the government gives ‘eco-compensation’ annually for the improvement of their livelihood. However, in the case of Mo Rdo, they were resettled because of a hydropower project, not for environmental conservation.

The population of the herders living in Gser Thang valley is comparatively smaller than in Rna Thang. The stories they shared with me are tragic, because they are impacted by a mining project, which has created livelihood insecurity for these local herders. Two examples of this are the sinkholes that result from the mining companies digging under the mountains and hills as part of the mineral extraction process, and polluted water resulting from the mining run-off into the tailing ponds. Sinkholes are causing the mountains surrounding the Gser Thang valley to collapse at an alarming rate, and livestock are dying from drinking the polluted water. Both these examples are expanded upon in 4.3.2 below.

4.2 Issues Relating to Property Rights in Rna Thang and Gser Thang

Issues relating to property rights of the Rna Thang and Gser Thang herders is contentious. This research found that herders have systematically been losing their property rights to their rangelands since the early 1990s. From a majority of herders’ perspectives, they cite two main factors causing this loss – Government implemented

rangeland management systems and specifically in the Gser Thang Valley, Government appropriated mining leases to private companies. By far the most serious threat to property rights as well as significantly contributing to rangeland degradation cited by herders interviewed in the second field site of Gser Thang, is the impact of mining.

4.2.1 Rangeland Management Systems in the Rna Thang and Gser Thang Valleys

Currently, there is very little research available that focuses on herders' perspectives regarding rangeland degradation and rangeland protection. For this reason, I specifically interviewed current herders who shared with me their life experiences and daily observations of their rangeland conditions. One herder (2014) from Gser Thang shared with me that in 1953, in the Chairman Mao Era, the local government established many herding sites for different livestock and hired herders to collectively herd these livestock. They paid a monthly wage of around 60-70 RMB (around US$10 per month) and provided free meals of meat and barley. They mainly had sheep, yak, cows and horses at these herding sites, and all of these livestock belonged to the State until 1958. From 1958 to 1999, the system changed to a 'collective system era' whereby the herders worked as share farmers with some ownership of their land and stock.

In 1999, the Government reformed the system by abolishing collective management and replacing it with an individual rangeland management system, whereby the majority of the livestock and rangeland was divided to individual families based on family and livestock population size with only a small amount of land remaining under the community management system. Most herders claimed that their rangeland could be divided into fall, summer and winter rangelands while they spend most of time in their winter rangelands. Normally, the summer rangeland is reserved as a common land and winter rangeland is privatized in these three rangeland communities. The winter rangelands have been distributed to individual families after the Chinese land reform policy came into effect in the 1980s, which means common land was converted into private land. In effect the state holds the ownership rights of the rangelands and the herders own land rights in accordance with their contract note. Contrarily, the herders have commonly owned summer rangelands as a community land in which they applied their traditional knowledge and practiced their religious beliefs to

protect their rangelands. Generally, the state grants a 50-year's land usage right permission to herders, but herders and the state could negotiate for its extension once the land using right contract expired. A herder who was from Gser Thang stated that:

> Forty years ago, lambs could not be seen on the rangeland, because the grasses grew very tall. However, at present, the long grasses no longer exist due to change of land management systems. For example, when I was young, I can graze my livestock wherever I want and I also can graze my livestock with other herders in the shared land. I can do ten times of movements for per year in the common land, but now, I cannot even do three time's seasonal movements for per year in the individual land. In this way, the common land has created high mobility to the livestock and private land has created low mobility for the livestock (Record of notes taken in interview with XH3, March 2014).

Then another herder who is from the same valley said,

> The private land is not only reduced the livestock mobility, but also destroyed the good relationship between herders. In recent years, there are various disputes among the herders included neighbors, kinships and relatives under the private management system. For example, a son who is separated from his father's family, then both families' fighting each other for their individual land in my community, because their livestock go to each other's land. In this way, the private land has created the various conflicts at different levels (Record of notes taken in interview with XHR2, September 2014).

He further stated "the private land has created more opportunities to allow the private companies to occupy the local herders' land through these projects". One example is from Gser Thang in which a mining project has occupied the local rangeland after the land was divided to individual families.

These research participants expressed that the private land has created various conflicts while local herders' property rights changing when outsiders have more power

to access the natural resources. This leads to the next section which explores the impact of mining ventures on property rights and livelihoods of herders living in the Gser Thang valley.

4.2.2 Mining Ventures in the Gser Thang Valley and its Consequences on Property Rights and Livelihoods.

Herders' rights to their land and natural resources are very important for their life. However, since the land property rights changed from a common to a private land management system, private companies are now able to access natural resources. In the past, local Tibetan herders' land property rights were structured on kin relations and tribes. However under the current land management system, herders can use their private land to earn money through rent or sell to individuals and companies.

A direct result of this is the huge encroachment by mining development into both individual and community based land holdings in the Gser Thang Valley and its surrounding mountains.

The villagers of Gser Thang maintain their summer village in this valley. This pastoral village has 200 households and more than 2100 herders. A decade ago, the local herders grazed horses, cattle, and sheep. According to legend, the Gser Thang area belongs to one of the biggest and highest Tibetan Snow Mountains called Amyi Rma Chin, which is a holy mountain in Tibetan people's belief. Geographically, Gser Thang and Amyi Rma Chin are connected to each other; local herders explain that Gser Thang is the Amyi Rma Chin's table, meaning the holy mountain Amyi Rma Chin and Gser Thang cannot be separated. Within the area of Gser Thang, are countless valuable minerals such as gold, silver, and copper.

Figure 4.3 Qinghai Gser Thang Copper Company

Since 2001, these mineral resources are being mined by the Qinghai Gser Thang Copper Company. Above ground, the mining area under development as of 2014 is 3.4371 square kilometers with an annual production of 750,000 tons, though in reality, the area is much larger as the mining activities expand many more kilometers underground, encroaching on community owned land with the permission of Government, negating the local Gser Thang's community property rights. The minerals mined are include gold, silver and copper, realizing an annual profit of 1.4 billion yuan (Researcher observation of information signboard at entrance to Qinghai Gser Thang Copper Company).

These mining activities are causing large scale rangeland degradation impacts on herders' ability to maintain their traditional livelihoods. To some degree, Qinghai Gser Thang Copper Company admits its liability in this regard through its provision of annual compensation to the Gser Thang community.

> The mining company gives us 500,000 yuan per year as a 'subsidy for local living condition'. They also rent from us for 300,000 yuan three trucks which were given to our village under the government poverty alleviation project. But when this money is divided, it only amounts to about 200 yuan per person. This amount is not nearly enough to compensate what we lose (Record of notes taken in interview with XHG1, 25 September 2014).

In the interviews with herders and their families within this Gser Thang Valley community, the threat to the environment, livelihood and personal health was continually raised. These threats are now discussed under two categories: grasslands and farmlands and waterways. This is followed by the Gser Thang community's response to these threats.

Grasslands and farmlands

> Grass grew as tall as people's knees before this mining company arrived in our land. Now, the length of grass is no longer than a person's hand (Record of notes taken in interview with XHG1, 24 September 2014).

As the Qinghai Gser Thang company's mining project has expanded, they built many iron walls in which domestic livestock, such as cattle and sheep, are prohibited from grazing. In this way, these livestock cannot freely eat the grass inside the walls, and grass inside the walls is wasted every year.

Most dangerously, the company releases chemically mixed water into the tailings pond, When the water evaporates, a chemical powder is leftover, and is blown throughout the grassland. In the summer, where the powder blows into the rangeland, the grass turns yellow and dry within only a few days, and this impacts the next generation of grass as well. The polluted grass also harms herders and farmers' livestock of yak, sheep and cattle, who can become sick and die from eating the contaminated grass.

> Cattle and sheep have been consuming the contaminated grasses and many livestock in the area have died. When the locals open the dead bodies of the livestock for food consumption, they find that the internal organs have turned black and cannot be cleaned. Before the mining company, our family had 700 sheep and 200 yaks, but half of our livestock have now died (Record of notes taken in interview with XHG2 on 28 September 2014)

In September, 2014, I went on my second research visit to the Gser Thang's mining site. When we passed through the Gser Thang's farmlands, I observed that the crops still had yet to be harvested. According to the season, this time was approaching winter; snows usually begin in September. However, in Gser Thang, the crops were still green and not matured. I asked one local herder about this issue and he said that because of mining, their crops couldn't grow very well, even when the crops can be harvested, there are often no seeds inside. He further explained that the shortage of rainfall here

and spreading of the chemical powders everywhere by the mining company affect the normal growth of the crops (Record of notes taken in interview with XHM2, October 2014).

In the past, the Gser Thang community depended on these crops whose yield and quality are reducing every year. I interviewed another herder (XHG2) in order to get more information on this issue. He told me that when he was 20 years old, which was before 2000, crops like barley grew very well and 1 mu could produce 1000 kilograms, so they always had extra barley to give their livestock and to sell to outsiders. However, in the present time, 1 mu only produces 80 kilograms annually. Similarly, wheat production has declined. Before 2001, XHG2's 15 hectares of farming land, would produce up to 10,000 kilograms of wheat in a good season, but now the land struggles to even produce 700 kilograms. These herders' accounts highlight how crop yield in the Gser Thang Valley has dramatically decreased, causing many herders to rent out their rangelands and farmlands and seek alternate means of livelihoods.

Another form of livelihood directly affected by mining in the Gser Thang Valley is the cultivation of caterpillar fungus. Caterpillar fungus is a special herb that grows on the high plateau of the Himalaya region. It is said to have medicinal effects as well as nutritional functions, thus it has high market value. Normally, the caterpillar fungus market targets high-class people in China as well as export to foreign countries. This fungus can be divided into three ranks; a high ranked caterpillar fungus to be valued around 100-200RMB, a medium ranked caterpillar fungus to be valued around 50 RMB and a low ranked caterpillar fungus to be valued around 20 RMB. In many Himalaya regions, caterpillar fungus has become the main source of income, and many people, especially herders, depend highly on the caterpillar fungus picking season during April and May.

Caterpillar fungi have grown on the mountain slopes of the Gser Thang area for millennia. Before the arrival of Qinghai Gser Thang Copper Company in this area, many people came every season to collect the fungus; so one person could collect 200-300 fungi; enabling them to earn a good living. Local people not only dug caterpillar fungus themselves but also hired other people to dig to make more profit.

However, among the many problems caused by this large-scale mineral development, the caterpillar fungi are disappearing in Gser thang causing herders to travel more than 100 kilometers to another area called Guoluo to collect the fungi. A local herder stated:

> The number of caterpillar fungus in Gnas Chen mountains has also reduced just like the reduced size of the grass on the grassland. The grass is not good enough to produce fat animals for food consumption like before ... I hope the mining company can stop mining. If they compensate us money, we might be able to lead a wealthy and happy life, but what would our offspring do (Record of notes taken in interview with XHG4, September 2014).

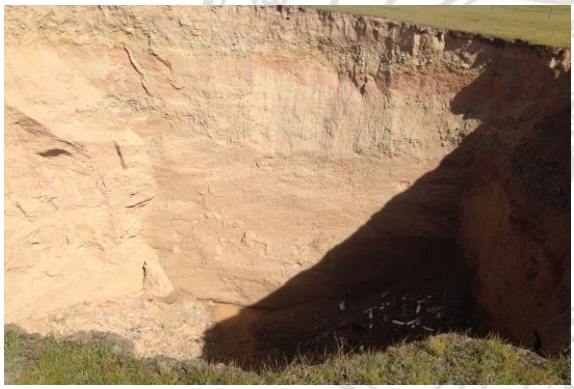

Figure 4.4 A sinkhole resulting from a collapsed mountain in a herder's rangeland

The Qinghai Gser Thang Copper Company extracts the minerals through a complex system of underground mining. Workers from this company explained there are three main tunnels and more than 40 sub-tunnels beneath the mountains surrounding the Gser Thang Valley; the longest tunnel reaching the foot of the holy mountain of Amyi Rma Chin. A direct consequence of these tunnels is the collapse of hills and mountains resulting in large sinkholes across the Gser Thang landscape. This is dangerous for both herders and livestock because no-one knows when these emptied mountains will collapse, trapping both herders and livestock in disaster.

> When the company take out minerals from the mountains, these mountains are only left with their skin, but are emptied inside, like a dead person, who is left only with his corpse … One mountain has collapsed, which was around 400-500 meters away from my home, so is very dangerous for our security … You can see that our mountains are like a person who is almost out of breath (Record of notes taken in

interview with XH3, March 2014).

These tunnels have destroyed the whole rangeland ecosystem and grass cannot grow well on these emptied mountains. Consequently, the grassland has been losing its balance year by year. Further, the underground animal life system is being effected causing a large number of wild species such as rabbit, pika and ants who normally dwell underground, to surface to the top of the grassland. A local herder explained that the population of pikas has dramatically increased since 2012; he sees an average of 40 pikas per day. This herder explained that one pika will become pregnant twice per year and on average will produce a litter of 7 to 10 babies each time; a hundred female pika producing as many as 2,000 young annually. With their natural underground habitat destroyed, this ever increasing population is causing major destruction to surface rangeland areas.

Another herder stated that frequent underground explosions for extraction of minerals have severally impacted wild animals' living systems such as the wolf, fox, apes, and Tibetan antelope. Additionally, the lives of domestic animals such as of cattle and sheep are under threat due to the conditions created by this mining company. In the past time, cattle and sheep could freely move, but now, herders need to keep their livestock close, otherwise, they are at risk of being killed by the mineral explosions.

Waterways

The mining development has also polluted the many waterways in the Gser Thang Valley. In the process of collecting and washing the minerals, water and chemicals are mixed together, after which the chemically affected water is released into the reservoir. In Gser thang's mineral extraction process, the company uses a large number of chemicals and uses spring water to wash the minerals and then release the wastewater into the Chu Rgas River. This river later confluences with the Yellow River.

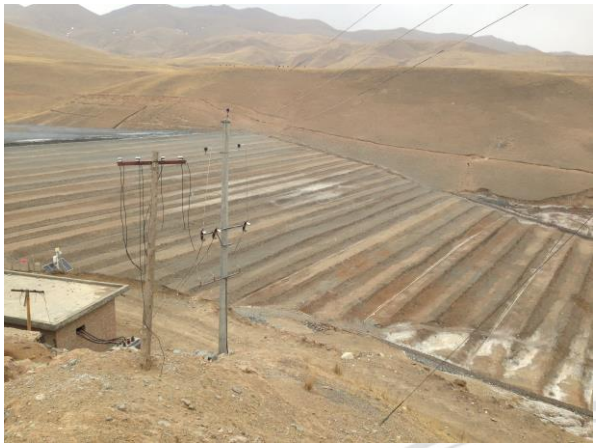

Figure 4.5 The tailings pond in Gser Thang Community

The company has both a large and small tailings pond; the large one is located in the valley and a small one is located inside of the mining operation area. When the chemical water fills ~~out~~ the small tailings pond, workers transfer that chemical water into the large tailings pond. Gradually, the water in the ~~big~~ large tailings pond rises higher and higher, so the company has to build a wall to make the tailings pond higher every year. However, when this area receives heavy rainfall or the company produces more minerals, then the chemical water leaks out from the tailings pond.

A local herder XHG6 explained that the chemically affected water frequently leaks out from the tailings pond and that company staff also secretly release water out of the reservoir in the middle of night. Due to Gser thang's geographical condition, when this chemical water leaks, it mixes with the Chu Rgas River. This river passes through several downstream villages, including a village called 'Kar sgang', which is administrated under the 'Vba rdzong' County, Hainan Tibetan Autonomous Prefecture. The villagers in this village drink the water from the Yellow River. The Yellow River is second largest river in China, third largest river in Asia and one of five largest rivers in the world (Record of notes taken in interview with XHG6, September 2014). A villager from Kar Sgang village told me,

> All villagers drink this water and so this water is our life. We thought this water streaming down from the Gser Thang area is the most clean and healthy water, because this is spring water. We never heard that the chemical water pollutes the river from the Gsar Thang's mineral development (Record of notes taken in interview with XHT1, September 22, 2014).

This account was supported by one of my key informants, a medical doctor.

> Gser Thang herders clearly know that the water is polluted by the mining, but people downstream still drink the contaminated water … when this chemical water enters clean rivers, then the quantity is not high enough to cause immediate harm, but people gradually will develop chronic disease. (Record of notes taken in interview with KP4, September 2014).

Further downstream, the Chu Rgas River flows into the Yellow River. Of China's 1.3 billion people, one quarter of the population depends on this river. Therefore, the water pollution poses a serious environmental threat, not only to the Gser Thang herder community, but also to a huge number of the Chinese population.

Back in Gser Thang Valley, the herding community and their livestock continue to be impacted by the polluted water exemplified in the following two accounts,

> When the mining company opened here, its chemical water tailings pond was built in the upper part of my home. In fact, this tailings pond occupies all of the rangeland here. Thus, the mineral company said that we need to resettle, because if the water leaked from the tailings pond, then our house and livestock would be affected. This forced us to move to an upper area. But we are still near the pond. If my yak and sheep go there seeking water, sometimes they die immediately after drinking the water; other times, they survive briefly and then die. Today, my 300 sheep decreased to 20 and my 20 yak decreased to 10, this is the problem created by this tailings pond (Record of notes taken in interview with XHG1, 24 September 2014).

> Most seriously, our streams have been contaminated by the poisons, which are used to mine these minerals, so when these poisons are released into the Yellow River, the consequences are unimaginable. I already observed that many fish have died from the contaminated water (Record of notes taken in interview with XH3, 20 March 2014).

During both field visits, many herders explained how their livestock die from having drunk from polluted waterways caused by the mining developing in this valley. Even those livestock who do not die, they gradually lose their hair and teeth. This eventually leads to their death as the lack of teeth prevent them from eating grass and their lack of hair causes them to be overexposed to the cold.

Gser Thang's mineral development has created some severe health issues among the local herders. According to a local doctor from Gser Thang, the majority of patients from Gser Thang have flu and lung disease. He also explained Gser Thang patients' condition is much worse than people in other parts of Xinghai County (Record of notes taken in interview with KP3, 25 September 2014).

Gser Thang's community response to Xinghai Gser Thang Copper Mine Company's proposed further expansion

On 24 August 2014, local Gser Thang herders learned that the mining company planned to expand their mining operations by digging under and along the mountains of Amyi Rma Chin. The company had already dug many tunnels underground encroaching on these mountains. Amyi Rma Chin is a holy mountain. It is also the summer home of Gser Thang herders; their summer pasture for their livestock. As Amyi Rma Chin is a holy mountain inhabited by a mountain deity, herders have never disturbed its rich store of mineral resources. It is a place revered by the herders who believe the mountain's deity is master and protector of the whole of the Gser Thang Valley and its surrounds; as such, the deity will protect the lives of those who live in its presence.

Before this time, protests against the expansion of the mining company were spasmodic and small in size. However, with the threat to their most holy mountain, the Gser Thang community united and formed a strong protest against this proposed expansion. In the words of one herder, "No amount of money could compensate for the loss of our holy mountain". More than 500 herders joined together. First, they met with company officials and stated their case why mining could not expand to Amyi Rma

Chin. They then sent delegates to the County government to lodge their complaint against the mining company stating their traditional property rights. Following this delegation with the government officials, the government provided a space for the company and local delegates to hold a three day negotiation. In this meeting, the mining company finally agreed to cease all mining activities along the area of Amyi Rma Chin, but stated they will continue to mine other surrounding mountains in the Gser Thang area over coming years.

Through the above accounts, it can be seen that mining development has severely damaged the Gser Thang Valley and its surrounding ecosystem and disrespected local herders' rights regarding land, livelihood and cultural issues. This has led them to attempt to negotiate their rights with local government through community action. This is in keeping with Vandergeest (1999) and Rose (1990) research findings which showed that people have the ability to negotiate their property rights with the state through the use of their own memory, communication and storytelling and highlighting the fact that "property is neither purely state, nor local, but a mix of both; and no state ever completely takes over the administration and enforcement of all property relations" (Vandergeest, 1999: 5). In the Gser Thang Valley, local herders culturally deem that winter rangeland belongs to individual families; however, summer rangeland belongs to whole communities. Although local herders are aware that ultimately, the land always belongs to the State, they still maintain a high responsibility to protect the land of their ancestors until they die.

This responsibility is now challenged by Xinghai Gser Thang Copper Company's intrusion into their traditional land. As the mining company has gained increasing land rights, local herders' property rights are diminishing, restricting their ability to protect their culture, livelihood and environment. For now, they have won the battle to protect their most holy mountain, Amyi Rni Chin. The question remains how long they can stand against their major adversary.

4.3 Summary

This chapter has explored the concepts of property rights and livelihood within the Rna Thang and Gser Thang rangelands. The nomadic way of life is led in a simple way, but valuable knowledge and skills maintain a sustainable livelihood on the Tibetan plateau. However, the changing of the land management system has excluded herders' knowledge and rights while opening more opportunities for outsiders to have power to access the natural resources.

There are three herding communities sharing the Rna Thang rangelands; Mo Rdo, Tha Idong and Gser Thang. Mo Rdo herders were originally doing both agriculture and herding, but due to a hydroelectric power project located in their former village under the false name of conservation by the local government, they had to resettle in Rna thang's rangeland with little compensation. Having lost their agricultural land, they have been forced to rely on herding to sustain their life.

For Gser Thang herders, the Rna Thang rangeland is the winter rangeland for only 20 households. The summer rangeland for this whole community is located in the Gser Thang Valley. A large scale mining development is creating a variety of negative social and environmental impacts for herders' lives in this place. Most seriously, the local herders' waterways and grasslands have become polluted by chemical waste resulting from mining production. Furthermore, explosions to extract the minerals in underground tunnels have also affected the rangeland ecosystem severely. For example, mountains collapse and pikas and other species are forced to surface from underground further eroding the grasslands. The pollution and explosions have resulted in a significant reduction in livestock on these rangelands through disease and death, as well as a rise in health problems of local herders and their families.

Further, the mineral development not only has negatively impacted the local environment, but also local culture. Generally, Tibetans are against the mineral development projects on their land. They believe that land needs those minerals for making a balance of rangeland ecosystem. Tibetans also believe that local mountain deities will send punishment if people damage the nature.

Therefore, local herders have united to negotiate with the mining company and local government stating how their land property rights and religious beliefs are essential to protect the mountains and rangeland in their environment.