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## **REACTION OF THE INHABITANTS TO GRAZING BAN : CASE STUDY OF ALASHAN, INNER MONGOLIA, CHINA**

### **Abstract:**

The grazing forbidden policy is an important ecological project that was implemented at the beginning of this century in different regions in China. Yet, various problems emerged during its implementation. At an early stage, majority of the farmers could not get enough subsidies because of the incomplete compensation system. The objective of this study is to investigate the ecological compensation of the grazing forbidden project and draw up criteria for the life-style of the farmers in the areas covered by this project. A questionnaire survey and follow up interviews were conducted in Alashan prefecture of Inner Mongolia. The results indicated that in a later stage the farmers received more support from the government by receiving compensation for the added value of losing the rights to use their lands as well. At the end, policies and measures to establish and fulfill the ecological compensation mechanism in the grazing forbidden areas are also discussed.

### **Keywords:**

Grazing Ban, Chinese Environment Policy, Inner Mongolia

## Introduction

This paper examines the results of China's national project aimed at environmental restoration through restrictions on the land use rights of farmers/stockbreeders, along with the issues surrounding this project. The examples considered are the Natural Forest Protection Project (NFPP) and a project for grassland restoration (from overgrazing) which are aimed at protecting forests and grasslands and preventing desertification. The purpose of the grassland restoration project is to restore grasslands by having stockbreeders stop grazing in return for "eco-compensation" in order to prevent desertification in dry areas where forest restoration is not possible.

In China, property rights do not always guarantee ownership. A common occurrence is that, for the sake of the public interest, the national government restricts the use of pasture or farmland owned collectively by local residents. Recent years have seen an increasingly notable trend that restrictions are imposed on property rights for the purpose of protecting the environment. The Chinese government has not only put restrictions on property rights with the aim to protect the environment, but also developed and has expanded a compensation mechanism for farmers and stockbreeders.

This paper examines a series of grazing bans which have restricted the use of pastures in order to prevent desertification. In such cases, farmers/stockbreeders are pressed to abandon the right to use pasture in return for compensation. The purpose of this paper is to examine, through an interview survey of local residents, whether the goal of preventing desertification has been achieved, whether they have adapted to a grazing ban, and whether they will be able to build a sustainable life.

The survey was conducted in Tiemuriwude village in Alxa, Inner Mongolia. In this village, the area of mountains, forests, and grasslands from which people were forced to leave due to a grazing ban is 350 thousand *mu* (1 *mu* equals 6.667 acres) and is largest such area in Alxa. The number of households and people that were forced out is also the highest in Alxa. Prior to the grazing ban, total household income in Tiemuriwude village was the highest in Barunbielizhen; however, it has been reported that residents have lost a source of income as a result of the grazing ban and have been experiencing financial hardship. The village was chosen to be the survey area for this research because it had been strongly affected by the grazing ban.

The author and colleagues stayed in a regular house in Tiemuriwude village from February 8 to 15 in 2008 and from September 12 to 17 in 2009 and conducted surveys. The first survey was for understanding the general situation of the village. In the second survey, interviews with a total of 51 households, which were selected through random sampling, were conducted to obtain information on household finances and various policies including the policy concerning grassland restoration. This paper summarizes the result of the surveys. The description of the history of the village in this paper is based on sufficiently reliable information obtained from consistent testimonies by village elders.

## **I. Background Information and Issues Considered**

### **1. Problems with Eco-Compensation**

Regarding the amount, duration, and standards of eco-compensation involving forest restoration (from overcultivation) or grassland restoration (from overgrazing), the following three main problems have been pointed out.

First, due to the uniformity of the compensation standard used for the forest restoration policy, there have been frequent instances of inconsistency between the amount of compensation and the actual situation of affected areas. In State Council Document No. 10 and the regulation on forest restoration, which were issued in 2002, the Chinese government stipulated that if farming was stopped in steeply sloped areas and other ecologically vulnerable areas, the government would provide compensation equivalent to the amount of lost output; and that the compensation standard was set at 1.4 yuan per kilogram of crops. Based on this standard, compensation is set at 160 yuan per *mu* in regions along the Yellow River and in northern regions and at 210 yuan per *mu* in regions along the Yangtze River and in southern regions. However, as land productivity varies across regions, the compensation rate is higher than the value of crops produced per *mu* in some areas while it is lower in others. Where the compensation rate is lower, people are naturally dissatisfied. There are many studies arguing that providing compensation based on a uniform standard in all regions is irrational.

Second, the length of the compensation period, which was initially set to 5 or 8 years, is also a major problem. Li (2009) argues that because trees do not fully grow in 5 or 8 years, it is difficult to create a forest even within 10 or 20 years; that most of the areas where forest/grassland restoration is necessary do not have a rich natural environment; and that since a period of 5 or 8 years is too short given the growth of living things, the compensation period needs to be extended.

The Hu-Wen administration, which proclaimed the slogans "socialist harmonious society" and "creation of new socialist villages," has implemented various reforms, such as abolishment of the farming tax and introduction of a public pension program for farmers and stockbreeders, in order to mitigate the so-called three rural issues. As part of such policies, the eco-compensation program has also been expanded. This certainly reduced the dissatisfaction felt by farmers and stockbreeders and made it easier for them to adapt to the government's policy.

Third, the issue of strained local government finances has been pointed out. Li (2003) considers the case of Guangdong Province where legislation related to compensation policy regarding public forests is said to be most advanced. He argues that although a local government's funds used for protecting public forests are stipulated to be 1% of its total expenditures, it is difficult for local governments in the northern and eastern parts of Guangdong Province and the Xinlin district, which lack revenue, to come up with that 1%. Moreover, Li argues that since districts with less revenue have relatively large public forests, their finances are strained because these forests require a large amount of spending.

## **2. Issue of Ecological Migration**

In the process of grassland restoration, there are cases where the policy of "ecological migration" is enforced: the residents of a certain area are forced to completely stop livestock farming and move to another area. In the survey area considered in this paper, there are residents who were forced to move out of a fenced, no-grazing zone, though the destination was relatively nearby. There are a number of problems that have been pointed out regarding such ecological migration policy.

On the basis of surveys conducted in various parts of the Inner Mongolia Autonomous Region, Mailisha (2004) reports that in new villages for migrants, where people's lives were supposed to improve, about a half of the heads of household must go elsewhere to earn income; that some "ecological migrants" cannot afford to send their children to school; and that heated disputes have arisen in migrant villages regarding access to water resources, which is a serious problem. Moreover, on the basis of a survey conducted in Daolundaba in Inner Mongolia, Ren (2005) makes the following argument: the anti-poverty plan for ecological migrants has been ineffective, and its economic and social effects are unclear; since displaced residents sometimes go into grassland after their migration, ecological migration is ineffective at protecting grassland; ecological migrants have contributed to ecological deterioration as the demand for water resources and energy resources has risen in new migrant villages; and discrepancies have emerged between the stated ecological migration policy and its actual implementation, which has led to rising dissatisfaction toward the government among livestock farmers.

Gegengaowa and Wuyunbayuan (2003) argue that the main problems associated with the implementation of the ecological migration policy are as follows: the policy does not show full understanding of ecological migration; the policy does not sufficiently reflect many social and legal problems such as falling incomes of livestock farmers, disappearing traditional methods of production, and irrational migration plans and implementation methods; and there is no mechanism or program created collaboratively by policymakers and migrants. In other words, the policy for protecting the natural environment through forced displacement and migration that destroys people's livelihoods without much consideration given to the state of livestock farmers' lives has resulted in negative outcomes such as the strained relationship between residents and the government and new environmental problems.

## **II. Environmental Deterioration in Tiemuriwude Village and Grazing Ban Development**

### **1. Periods around the Founding of the Country to the Reform and Open-Door Policy**

It is said that there were 10 households in Tiemuriwude village at the time of the country's founding in 1949; and that the village's population was less than 100. During the Chinese Civil War, many Han Chinese started to emigrate from the neighboring Ningxia Hui Autonomous Region, and their population gradually increased. The main constituent of the village is Han Chinese who immigrated from Ningxia Hui: 70% of the residents are Han Chinese, and 30% are Mongolian.

Before the founding of the country, the method of grazing followed Mongolian customs. Regulation at the time was not strict, and Han Chinese could easily start to engage in grazing. Han Chinese immigrants were allowed to engage in grazing independently as members of the village if they could earn trust after working for Mongolians and helping them graze animals. After becoming independent, Han Chinese could call themselves Mongolians. The grasslands in the Helan Mountains region may not be called an open-access resource, but it was relatively easy for people outside the village to gain access to the pasture.

Due to the creation of people's communes in 1958, private ownership of goats and sheep was replaced by collective ownership, and areas for grazing were demarcated. During the era of the people's commune, the number of grazing livestock was small, and therefore there was not a problem of overgrazing. After the start of Deng Xiaoping's reform and open-door policy, there was a shift in 1983 from collective ownership of livestock to private ownership. Just before the shift, the population of the village was about 500, and approximately 2,000 goats were collectively owned by the entire village. As the shift occurred, the goats were allocated to each individual at the rate of four goats per individual. Therefore, during the initial period of the reform and open-door policy, a five-person household was raising about 20 goats.

## **2. Emerging Problem of Overgrazing**

Overgrazing became a serious problem sometime after the start of the reform and open-door policy. One reason for the overgrazing was the institutional change from collective ownership of livestock to private ownership. Another reason, which is deemed more important, was a market condition: the demand for cashmere in the international market started to increase in the second half of the 1980s, which led to a jump in its price. As each household's desire to do well in livestock grazing increased due to the shift to private ownership, every household expanded its activity in response to the price increase. This resulted in overgrazing.

In 1983 the price of cashmere was 10 to 20 yuan per catty; however, as exports of cashmere to Japan and the United States increased, the price jumped to 100 to 200 yuan per catty in the second half of the 1980s. Because of the shift to privately managed goat grazing and the 10-fold increase in the price of cashmere, every household increased the number of livestock to graze. In the most active period, the number of goats in the entire village reached 14,000.

According to the interview survey of 51 households, as of 1999 the average number of goats owned by a household was 148.9. The number thus rose about sevenfold from approximately 20 goats per household in 1983. Residents of the village said that they had already noticed grass disappearing by 1990 to 1995, about a decade after the beginning of the reform and open-door policy. When droughts occurred in 1998 and 1999, it became clear to everyone that the grassland was in a critical condition. Although shrubs were abundant in the area in the 1980s, shrubs and grass rapidly disappeared, which was evidence of desertification.

### **3. Protection of Natural Forests and Grassland Restoration**

The implementation of the NFPP in the Helan Mountains started in 1999 when many people began to notice the critical condition of the grassland on the mountains. The NFPP began in 1998 to protect natural forests nationwide, and the Helan Mountains in Inner Mongolia was included in the project.

With annual average precipitation of 200 mm, the area has shrubs, but it is hard to call it a natural forest. However, since the Helan Mountains are in the administrative jurisdiction of the State Forestry Administration, the pretext for the project is protecting natural forests, no matter how inappropriate it may sound. In other words, the Helan Mountains are a target of the "forest" protection project due to administrative jurisdiction, but ecological circumstances.

The grazing ban in the Helan Mountains has been implemented over three phases: the first phase and the second phase began in 1999 and 2001, respectively, under the NFPP, and the third phase started in 2003 with the aim of restoring grassland. By 2003 all households were subject to a total ban.

In the first phase under the NFPP, only those who consented to the ban abandoned grazing in return for compensation. Many of the village residents had been producing corn as feed for goats at the foot of the mountains. Those who abandoned grazing expanded their production of corn, wheat, and sunflower after moving there and receiving permission to cultivate land.

The eco-compensation paid in the first and second phases under the NFPP was only for lost assets such as houses destroyed by the government as part of the migration process. During these phases, a total of 69 households that were located in the upper part of the mountains where grassland deterioration was relatively serious agreed to abandonment of grazing and relocation of their homes. The grassland restoration project, which began in 2003, completely banned grazing, and the remaining 57 households became subject to forced relocation.

In the third phase, compensation was paid uniformly for the pasture that was collectively owned, whereas in the first and second phases compensation was paid for only lost personal property such as a residence and fences used for grazing goats. The annual compensation is 4.95 yuan per *mu* of pasture. Since the village owned 97,860 *mu* of pasture, it receives 480,000 yuan annually and

allocates it equally to each resident. The compensation period was initially planned to be 5 years, but it was later extended to 10 years.

In the first and second phases, 69 households (362 people) were eligible for compensation; however, 170 households (670 people) actually relocated, including those who relocated voluntarily.

#### **4. Overview of the Grazing Ban in Tiemuriwude Village**

The population of Tiemuriwude village was 670 (170 households) at the time of the 2009 survey. In the Helan Mountains, the restriction on grazing began under the NFPP that was implemented from 1999 to 2003. All grazing activities were then banned under the grassland restoration project that was implemented from 2002 to 2012, and the households were forced to relocate their residences. Eco-compensation is still being provided to those who abandoned grazing under the policy for supporting and promoting the protection of the grassland ecological system, which was implemented in 2011 and is planned to continue until 2015. Even after that period, compensation is expected to be provided although the name of the relevant policy has not yet been determined. Some of these policies for protecting public forests overlap in certain years. In Alxa, compensation payments from each policy are received by the village committees before the money is distributed to each household in a fair manner.

**Table 1: The Forced Migration and the Coverage Option due to the Stock-raising Prohibition**

The first term	The second term	The third term
Stock farmers pasturing cattle on the crest of mountains	Stock farmers raising goats in the enclosure	Stock farmers and residents living in the foothills of mountains
63 households	6 households	57 households (10 households out of the above are farmers who were ejected from mountainous areas to the foothills of mountains during the first enforcement. )
Compensation for houses made with mud walls: 100yuan/m <sup>2</sup>	Compensation for houses made with mud walls: 150 yuan /m <sup>2</sup>	Tiemuriwude village received excessive money in compensation for its meadow of 90000 mu
Compensation for houses made with brick walls: 150 yuan / m <sup>2</sup>	Compensation for houses made with brick walls: 200 yuan / m <sup>2</sup>	the villager meeting compensated the households for their migration who were ejected during the third enforcement at the same rate as set in the first enforcement to keep the fairness. These compensations were made for the third migrants for 5 years, from 2004 to 2008, with respect to the meadows of 22300mu in total.
The fences for raising goats and the meadow owned by the village were based on the collective ownership 1000 yuan / household	The fences for raising goats and the meadow owned by the village were based on the collective ownership 1000 yuan /household	Therefore, the residual 70000mu was not divided among the households but the compensation money was allocated to each person. The amount was calculated by 100mu per person.
Compensation for wells: 1000 yuan / household	Compensation for wells: 1000 yuan / household	After the compensation to the third migrants was completed in 2009, the amount of 4.95 yuan/mu for the average grassland size of 130mu/person was paid as the compensation. Men of 18 to 55 years and women of 18 to 50 years are liable to pay a pension, over 55 years men and over 50 years receive women pension of 558yuan per month. Under this name, their



		meadows are expropriated.
Migration cost for eviction 500 yuan / person	Migration cost for eviction 500 yuan / person	

### III. Adaptation to the Grazing Ban

#### 1. Disappearance of Stockbreeding

The average gross income of the 51 households interviewed was 22,870 yuan in 1999 (before the grassland restoration project) and 37,530 yuan in 2008 (after the project)—a 60% increase. Between these years, crop prices rose by 40%. Taking inflation into account, one cannot simply say that the financial situation of residents improved. However, at the least, one does not see evidence of financial suffering due to the grassland restoration project.

Before the grassland restoration project, income from goat grazing including sales of cashmere was 13,226 yuan, or 57.8% of total income. In 2008, after the complete grazing ban, only one household was selling goats raised in a pen. Livelihood based on goat grazing effectively disappeared in the area.

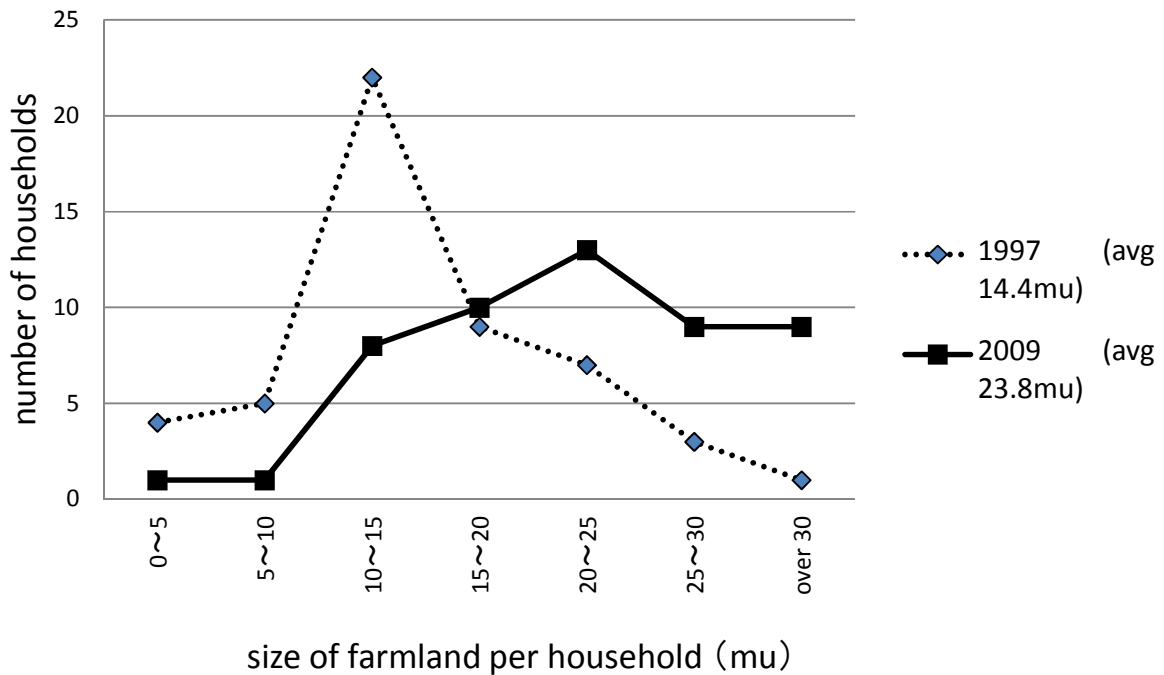
Although the income from goat grazing vanished, people adapted to the grazing ban by finding various sources of income such as farming, self-employment, and migrant labor in areas far away from home.

**Table:2 Mean annual rough income and these breakdown before the Grazing Ban**

Article	1999		2008	
	Gross income (yuan)	Rate	Gross income (yuan)	Rate
Corn	1,284	5.6%	12,418	33.1%
Wheat	779	3.4%	753	2.0%
Sunflowers and other	188	0.8%	4,836	12.9%
Goat	13,226	57.8%	294	0.8%
Sheep	2,433	10.6%	1,194	3.2%
Milk cow	396	1.7%	3,578	9.5%
Migrant worker	211	0.9%	6,168	16.4%
Self-employed	4,352	19.0%	8,288	22.1%
Total	22,870	100.0%	37,529	100.0%

## 2. Expansion of Farming

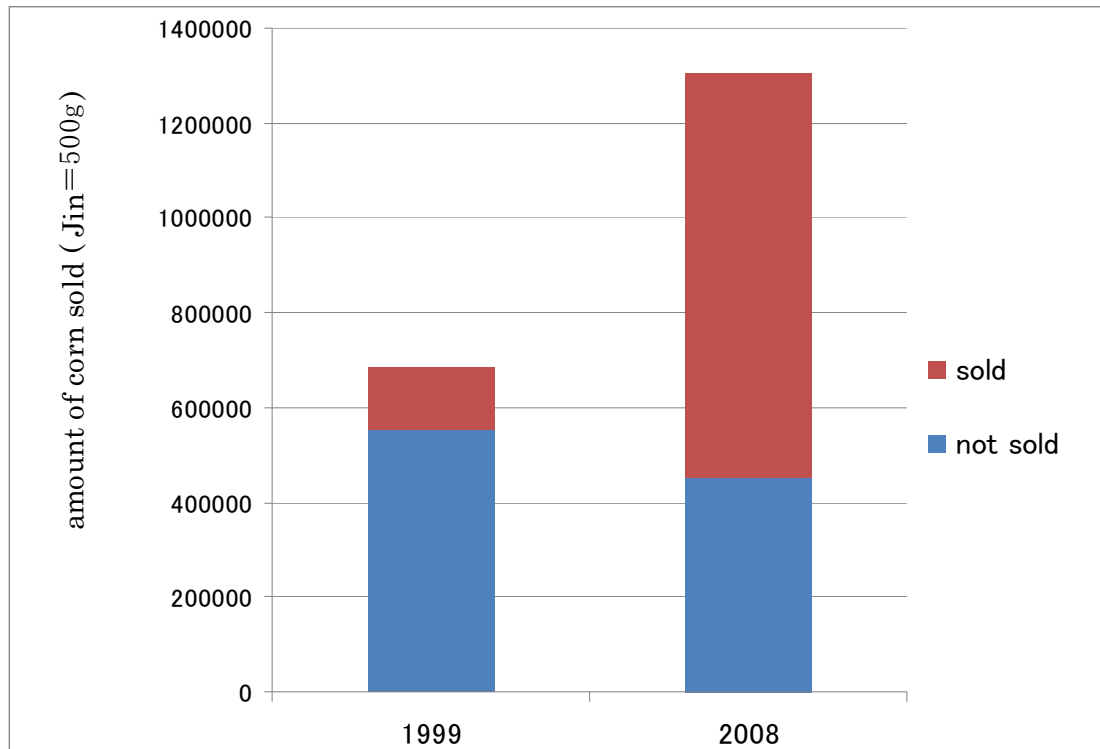
The main reason why people in the survey area did not plunge into economic despair was that land for cultivation was provided abundantly. The people who relocated from the pasture on the Helan Mountains to the foot of the mountains cultivated land actively, and the area of all farmland used by the 51 households increased by 67%, from 732.4 *mu* to 1220.2 *mu*. This translates into an average increase in the size of farmland per household from 14.4 *mu* to 23.8 *mu*. The expansion of the farmland came mainly from cultivation and partly from renting.



**Fig 1. Distribution according to the size of farmland**

Before the grassland restoration project, agricultural production existed at the foot of the mountain, but the corn produced at that time was mainly for feed for goats and was not intended for sale.

As of 1999, on average, only 5.6% of the corn produced by a household was sold, and the annual gross income from it was 1,284 yuan per household. After the grassland restoration project, 54.3% of the corn produced was sold, and the gross income from it rose 9.7-fold to 12,418 yuan. At the same time, the income from goat grazing, which was the largest part (57.8%) of annual gross income in 1999 before the grassland restoration project, fell significantly to 0.8% in 2008. Therefore, corn replaced cashmere as the main source of income.



**Fig. 2 Change of amount of production and the breakdown of the corn**

Outside of farming, more and more milk cows have been raised. This is attributed to a local milking house built with support from a nongovernmental organization. There has also been an increase in the number of people who become migrant laborers in areas far from home. Total cash income from such work and from wage labor performed nearby was on average 211 yuan per household per year, but it increased about 30-fold to 6,168 yuan by 2008. Jobs outside the hometown are found in Yinchuan in the neighboring Ningxia Hui Autonomous Region and other cities, in the mining industry (e.g., rock salt mining) and the transportation industry, and also at various sites of government projects including highway construction.

#### **IV. Residents' Assessment of the Grazing Ban**

##### **1. Reasons Why Residents Agreed to the Grazing Ban**

Asked why they agreed to the grazing ban, which designated their collectively owned land as a complete no-grazing zone, 36 of the 51 respondents (70.6%) answered that they had to comply with the government's policy. The answer suggests that they had practically no choice but to obey the

government. This reflects many residents' idea that they did not have a choice to oppose the ban using ownership rights as a shield even though their pasture was collectively owned by the village.

There are some comments of people:

HQF (M) Age: 53

I think the all-out Stock-raising Prohibition is rational. If we had left the land as they were, pasturing cattle would have become impossible by 2003 or 2004. There were about 20000 goats in 1999. If we had not done anything, pasturing the goats would have become impossible by now.

WZQ (M) Age: 51

I was thinking that pasturing would become impossible someday due to insufficient grasses. I was sure nobody would help us when the time came. I thought if I agreed the Stock-raising Prohibition then, the national government would help us.

CBP (M) Age: 42

The mountain was closed and I was ejected during the second enforcement. I gave up raising sheep. I wanted to take my sheep with me, but that was not allowed. I had no choice but selling them. Otherwise, I would be arrested and fined. The fine could be 1000 yuan, or 4000 to 5000 yuan. If I had not paid it, my sheep would be confiscated.

ZXQ (F) Age: 40

As this was a state policy, I had no choice but accepting it. All my efforts for carrying the feed in the autumn went for nothing. I was forced to move in the winter having no cattle shed for goats. I had no choice but moving out. I sold all my goats and sheep in the following spring. The normal average price for a head of cattle was 130 yuan, but the actual selling price was 70 to 80 yuan. The market price went down as everyone was selling their cattle in that spring. I did not intend to get a lot of compensation money in particular. There was unfair allocation in the first and second enforcement of the policy.

Many of these villagers went to make a statement seeking the fair treatment among the villages.

YZJ (M) Age: 40

The previous Protectionism for Natural Forest was forced by the nation and the compensation by the government was not enough, in my opinion. But it is useless to complain about it. I thought there was no hope to live due to the Protectionism for Natural Forest. However, in the Retreat live stock farming and Return grasses Policy, the period was extended by 5 years and also compensation money was continued, nobody complained about it.

HGB (M) Age:35

I agreed to leave because it was an enforced policy and I had no other choice. However, the compensation made in the third enforcement was reasonable. The farmers can have a stable life with Social Insurance Scheme which will be introduced after receiving the grant money for several years. However, the balance between the households with a large meadow and others with a small meadow should be kept with respect to the compensation money. More agricultural support is desired for nomads. At present, agricultural tax is gone and we get compensation money for cultivating corn, too. The government is taking care of us well.

**Table: 3 Reasons for Agreeing to the Grazing Ban**

	Number of responses <sup>*1</sup>
Impossible to defy the government's policy	36
Other people agreeing to the ban	7
Prevention of ecological deterioration	6
Little effect of the ban on my way of life	5
Difficulties in grazing due to lack of feed	3
For our descendants	3
For compensation	2

<sup>\*1</sup> The total number of responses exceeds 51 because multiple responses were allowed.

**Table:4 Is the Grazing Ban rational?**

	Number of responses	Rate
Rationally	32	62.7%
Irrational	18	35.3%
No idea	1	2.0%

Stockbreeders have traditionally emphasized the importance of the resource value of grass rather than land. This is based on the idea that land is useless without grass. Therefore, their adherence to land ownership seems to be weaker than crop farmers' adherence to their farmland. Grass was disappearing year after year due to overgrazing, and there was a risk of livestock grazing eventually becoming impossible. If the risk became reality, land would be useless. For this reason, a fair number of stockbreeders positively consented to relocation.

To a question asking whether the grazing ban was rational, 62.7% of the respondents answered "yes" which far exceeds the proportion of the respondents who answered "no" (35.3%). The response to the question discussed earlier shows people's reluctant consent to the ban. Nonetheless, many respondents answered that the ban was rational. Those who answered "no" did so because they were dissatisfied with a sudden relocation order or the loss of their livelihood or because the amount of compensation did not match the sacrifice that they endured.

When the NFPP was first introduced in 1999, compensation was paid for only lost private property (e.g., a house), and its amount was insufficient. The survey responses show that people were highly dissatisfied with these facts. Some petitioned the township and village government to raise the amount of compensation.

Many of the respondents came to think that the ban was rational after compensation started in 2003 to be paid directly to each household with lost pasture due to the implementation of the grassland restoration projects. As a matter of fact, 62.7% of the respondents reported that compensation paid in the first and second phases was "insufficient" whereas 47.1% reported that compensation in the third phase was "sufficient."

The duration of compensation was initially planned to be 5 years (until 2008), but was later extended to 10 years (until 2013). This mitigated the residents' dissatisfaction. People could feel that their lost right was redressed because direct compensation was introduced for the land that they no longer had a right to use.

**Table:5 Is compensation money enough?**

	First and Second Phase	Third Phase
Enough	8 (15.7%)	24 (47.1%)
Not enough	32 (62.7%)	19 (37.3%)
No idea	11 (21.6%)	7 (13.7%)
Not fare	0	1 (2.0%)

**Table:6 How long do you need the duration of compensation?**

Term	Number of responses
5 year to 10years	11 (21.6%)
10years to 15years	17 (33.3%)
15 years	13 (25.5%)
As long as possible	10 (19.6%)

As mentioned earlier, farmers and stockbreeders welcomed the abolishment of a farming tax and the introduction of a pension program based on a series of rural policies implemented under the Hu-Wen administration. This also eased resident's dissatisfaction toward the grazing ban. Although the abolishment of the farming tax and the introduction of a pension program were not directly connected to the grassland restoration policy, it in fact seems that many of the residents regarded them as evidence of the government giving serious consideration to their concerns; and that the degree of dissatisfaction was declining compared with that observed at the beginning of the grazing ban.

There are some comments of people:

GXQ (M) Age: 67

In Mao's days, we made a living by, fostered and protected the mountain.

Now, we protect the mountain but cannot make a living by it. However, it is a good policy as we can receive the compensation of 500 yuan and also a pension. By implementing the policy, the mountains would retrieve their verdure. Accordingly, we should protect ecological environment and water as we cannot survive without water

TQL (M) Age: 54

We used to complain that the Communist Party was a swindler before. However, as elderly people began to receive their pension, everyone began to trust the party again. As long as having a pension system, children would be kind to the elderly and live together. Consequently, the ages do not have to move to senior citizens' home.

WFH (M) Age: 69

The Retreat live stock farming and Return grasses Policy is rational.

People of younger generation are unwilling to pasture cattle and have no skills of it, either. Once the



elderly start receiving their pension, they do not have to pasture cattle which requires them hard work. When I was pasturing cattle, I was with goats from 7 o'clock in the morning to 8 o'clock in the evening. In the winter, I had to carry the feed, and when a goat bred, I had to bring the new born kid into the house. When it rained, the nomads would move with a kid on their back. We usually walked about 20 to 30 km a day. Our shoes got worn out in a couple of days. There is some easier way in pasturing, but it is not easy to raise goats. Farming is a lot easier.

## **2. Anticipation of a Possible End of the Ban in the Future**

The grazing ban has provisionally prohibited livestock grazing. However, the ban has not required a transfer of ownership. The pasture on the Helan Mountains has not been made part of the nationally owned land: on paper, it still is owned collectively by the village. Regarding this point, some residents said that when the grasslands were sufficiently restored, they wanted livestock grazing to be allowed again. Of the respondents, 35.3% thought that the total ban was irrational, and there was a persistent opinion for looser restrictions. At the same time, however, some mentioned that grazing less than 100 goats would not be profitable; and that they would reluctantly agree to the total ban if only a limited number of livestock was allowed to graze.

Focus is generally put on issues related to the amount of eco-compensation and its duration. But, as seen in the opinion of some residents, long-term stability of the lives of the residents seems to result from establishment of independent lives based on new livelihoods rather than from reliance on the compensation whose future duration is unknown.

WFG (M) Age: 74

The all-out Stock-raising Prohibition only made the mountain administrative bureau of Helanshan richer. It did not benefit general citizen at all. There are few people who gained a profit by making the nature reserves.

YZJ (M) Age: 40

I do not think the Stock-raising Prohibition is rational. At present, the meadows are owned by the nation. It would be better to limit the number of goats that a stock farmer possesses, such as 20 goats per farmer. Or, the farmers may hire workers and operate pasturing jointly.

ZXQ (M) Age: 40

I do not think the Retreat live stock farming and Return grasses Policy is very rational. Because there is no usage for the grown grasses and they may cause a fire. I think reasonable pasturing is necessary for the grasslands. As sheep graze the grasses, the grasses will grow more. The

government should allow the reasonable number of cattle be put to pasture, for instance, 40 to 50 of them per household. On the other hand, some said "Pasturing less than 100 goats does not make any profit." or "It would be better implementing the all-out Stock-raising Prohibition than allowing pasturing with the limit on the number of cattle."

There are some comments of people:

LXY (F) Age: 35

As the all-out Stock-raising Prohibition is a national policy, we have no choice. If we are allowed to pasture cattle in the future, I will do it again." Pasturing less than 100 goats does not make any profit. If they limit the number of cattle per household, such as 100 of them per household, it will be better not allowing it. Implementing the Stock-raising Prohibition is acceptable.

WXQ (F) Age: 34

In addition to the above, there were opinions as follows regarding the compensation do to the Stock-raising Prohibition. They focused on the long-term daily life issues that might occur afterwards, rather than the issues of the amount and period of the compensation money to be paid.

MSY (M) Age: 40

The compensation money could be small amount. The amount of money is not that important. I would like the government to take care of us in various ways by providing sufficient support to the new business.

CBP (M) Age: 42

The period of support is not important. The compensation money should be used to support the stock farmers to start new business. For example, subsidies and technical guidance should be given to enhance the stock raising. Once the Stock-raising Prohibition is implemented, the government should provide the stock farmers with financial support to start new business.

YHL (M) Age: 32

The income will be decreased as pasturing is prohibited and the farmland is small. I cannot get used to the new life as it has been changed a lot. I need a support in those issues. Through the support by an NGO working in this region, I participated in a training of organic agriculture in Beijing. I understood the method of the NGO and decided to work at the dairy cattle farm. This kind of support was very helpful and I really appreciate it.

### 3. Expansion of Farming and a Falling Groundwater Level

The analysis up to this point reveals that people's dissatisfaction subsided, and that the grassland was smoothly being restored. However, the total grazing ban has negatively affected another part of the local ecosystem in the form of groundwater depletion.

**Table:7 What is the positive effect of the Grazing Ban? (Plurality of responses)**

	Number of responses
Grass increased and sandstorm decreased	31
Recovery of the ecology	24
Come to get a pension	10
Get compensation money	7
Climate change (Increase in rainy day)	6
Reduction of the labor	2
Get the international aid	2
Landscape getting better	1
Nothing	4

There are some comments of people:

YZJ (M) Age: 40

The plants in the mountains began to grow thick and they can fix the sand now. The flatlands below the mountainous region also have grown grasses and the sand there is fixed. Besides, we are getting more rain falls recently. Last autumn, rain continued to fall for a month. It did not happen before the Stock-raising Prohibition.

YHL (M) Age: 40

I started pasturing cattle in 1986, and at that time, grasses grew to as high as 70 cm. In 1999, however, their height was shorter than 10 cm. After the Retreat live stock farming and Return grasses

Policy started, the ecological environment has been recovered. The grasses in the flatlands below the mountainous area began to grow thick and verdure has returned. The wind became weaker and the sand is not flying around any longer.

HQF (M) Age: 53

Since the Retreat live stock farming and Return grasses Policy was implemented, we have had less yellow dust. Before, the sand flew around with a slight wind, but now, it does not fly with the similar wind. The grasses have grown up and we have had more rain recently.

One of the reasons why people could adapt to the grazing ban was that cultivation was made possible with water from groundwater systems into which meltwater from the Helan Mountains flowed. As cultivation became active, the area of farmland increased by 66% as mentioned earlier. However, the groundwater level declined to 30 meter below the surface in 2009 from 14 meter (according to a record preserved by the village committee) in 1972 when farming started to produce crops for livestock feed. Although, as mentioned earlier, the policy to prevent desertification produced a successful result, rampant cultivation conducted as a response led to another environmental crisis in the form of groundwater depletion. That is, a solution to one problem turned into another problem. Taking the problem of the declining groundwater level seriously, the government banned new cultivation activities in 2003.

## **V. Conclusion**

In 1999 when the NFPP started, local residents of the survey area for this research were increasingly dissatisfied with a sudden relocation order and a lack of compensation. But, subsequent policy improvement mitigated their dissatisfaction. Initially, compensation was paid for only the houses lost due to the forced relocation and relocation costs. After the grassland restoration project began in 2003, compensation for the lost use of pasture was added, and the duration of compensation was extended.

However, the increased government compensation and the extended compensation period are not the only reasons why people considered the grazing ban as a reasonable policy. In the case of this area, fortunately people had opportunities to gain alternative livelihoods. This is another reason why people could adapt to the ban. There were abundant job opportunities in surrounding areas, and it was also possible to earn a living through farming as cultivation was permitted in the area that was provided as a substitute for the pasture. The reason for farming being feasible was that there was relatively

abundant groundwater which originated in the Helan Mountain; and that the groundwater could be used in expanding the farming operation.

The compensation associated with the grassland restoration is set to end in 2013, but the government has decided to continue to provide compensation through a policy for supporting and promoting the protection of the grassland ecological system. Taking into account the fact that the pasture is collectively owned by the village, and that local residents have the relevant possessory and use rights, one can regard the decision as a result of the government respecting the residents' right to use the pasture.

It is, however, unclear whether or not the above two factors will persist. As to the issue of compensation, if fiscal situations deteriorate in the future, or if a policy shift occurs, the government may stop providing compensation. With the situation of financial resources taken into account, it is uncertain whether the compensation will continue permanently.

With regard to farming as an alternative to livestock grazing, people already faced a limitation. A serious problem of potential groundwater depletion became apparent. Unless the amount of water pumped and used for farming is restricted to a level consistent with the amount of water flowing into the groundwater system, farming does not provide a sustainable livelihood.

In order to overcome this limitation, farmers/stockbreeders would have to explore further actions. Securing a sustainable livelihood would require introduction of water-saving technologies as well as alternative crops to corn that can be grown with less water. If these are not possible, it would be worthwhile to consider the option of permitting livestock grazing again as some people in the survey area actually anticipated. Of course, this would be conditional on the level of grazing being sustainable with a restricted number of livestock that is consistent with growth of grass.

The grazing ban was certainly effective in restoring grassland. However, both the compensation payment and the farming cannot be deemed sustainable as a source of an alternative livelihood. The policy to restore the ecosystem based on the total grazing ban ended up putting strains on other economic and environmental factors such as government finances and groundwater. Implementation of one policy gives rise to unpredicted problems. Residents of the survey area have begun to explore ways to adapt to this situation, but have not found effective solutions yet. Facing unpredicted results, the government also needs to modify policies in a more flexible manner by holding dialogues with local residents.

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