

# ECOLOGICAL RESETTLEMENT OF TIBETAN HERDERS IN THE SANJIANGYUAN: A CASE STUDY IN MADOI COUNTY OF QINGHAI

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## Abstract

Ecological resettlement (*shengtai yimin* in Chinese) has been initiated by the Chinese government on a large scale and aims to help degraded landscapes to recover and to improve the living standards of local people in western China. Since 2003, the government has invested RMB 7.5 billion (Chinese yuan, over U.S.\$1 billion) in Qinghai Province to establish the world's second-largest nature reserve around the headwaters of the Yangtze, the Yellow and the Mekong rivers (*Sanjiangyuan*). The resettlement of Tibetan herders from the Sanjiangyuan grasslands to urban areas is one of the project activities. Resettlement and the grazing ban policy are understood to have profound implications for those being resettled, as well as for their home and host areas. In particular, its rationale and consequences need rethinking, from both an ecological and socio-economic perspective. This article draws on field research and a case study in Madoi County to argue the logic for resettlement, to examine its socio-economic consequences and environmental effects, and to explore possible solutions.

**Keywords:** ecological resettlement, Tibetan herders, Sanjiangyuan, Madoi, Qinghai

## Introduction

In China, the notion of ecological resettlement emerged to describe a tool for enabling the ecosystem to recover and alleviating rural poverty after the Chinese government introduced the 'West Development Strategy' (*xibu da kaifa*) in 2000. An early strategy of ecological resettlement was to establish an environmental programme for returning non-productive cultivated farmlands to forests (*tuigeng huanlin*) and restoring the grasslands (*tuimu huancao*) (Du 2006). According to the data from the State Council West Development Office, to reduce poverty, seven million rural people were scheduled to relocate by way of ecological resettlement projects, while seven hundred thousand were relocated in the context of ecological resettlement during 2000–2005 (Zhang et al. 2005). Particularly in China's western regions inhabited by ethnic minorities, resettlement has become an important means of preserving the ecological environment, improving people's livelihood, and promoting urbanization (Hao 2009).

However, can the goals be achieved? What are the consequences? In recent years, ecological resettlement programmes for pastoral communities have received great attention not only from governments, but also from NGOs, social scientists and conservationists. Western scholars looking at ecological resettlement in China interpret it as a government-initiated ‘permanent resettlement’ of nomadic herders and pastoral farmers from fragile ecological environments to new or existing settlements outside these ecologically vulnerable regions (Dickinson and Webber 2007, West 2009). Some researchers have indicated that its logic, benefits and costs need careful examination and discreet rethinking, especially in the Sangjiangyuan region of the Qinghai-Tibetan Plateau, where Tibetans have sustained their livelihoods in these grassland areas for hundreds of years (Yeh 2010, Qi 2011, Foggin 2011, Ptackova 2011).

This article will explore the above concerns through a case study from Tibetan resettlement communities in Madoi County (*Ma Duo Xian*) of the Sangjiangyuan. The author first argues that grassland degradation cannot simply be attributed to overgrazing and population growth, hence the idea of improving grassland by simply implementing resettlement projects may sound implausible. The paper then analyses the process and policies of resettlement and examines its socio-economic changes and environmental effects. Although the herders are provided with free accommodation and a certain amount of subsidies, many cannot adapt well to the new urban lifestyle and some have an identity crisis, while their quality of life after resettlement is in general not very satisfactory due to high living expenses. Finally, this article explores possible solutions. This paper is intended to provide some important first-hand insights into ecological resettlement from the herders’ perspectives.

## Data and Methodology

The Sanjiangyuan area is known as the ‘Water Tower’ of Asia because it supplies 60 billion cu m of water annually to lower lying lands of the region. The Sanjiangyuan is located in southern Qinghai at an average elevation of 4,000 metres above sea level. It has a total area of 363,000 sq km (50.4 per cent of Qinghai’s total area) and includes the four Tibetan Autonomous Prefectures (TAP) of Yushu, Golok, Hainan and Huangnan, 16 counties and 127 rural townships (see Figure 1). The nature reserve comprises 42 per cent of the Sanjiangyuan, covering an area of 152,300 sq km. It has been divided into three zones: the core zone of 31,218 sq km, 20.49 per cent of the nature reserve area; a buffer zone of 39,242 sq km, 25.76 per cent of the reserve; and an experimental zone of 81,882 sq km, 53.75 per cent of the reserve (Xun and Zhang 2007: 40). Figure 1.

Madoi County was selected as the fieldwork site, as it is the actual source of the Yellow River and a major part of the Sangjiangyuan area (see Figure 1). Two



Figure 1. *The Sangjiangyuan and Madoi County in Qinghai*

categories of ecological resettlement are seen there: ‘village group resettlement’ – a group migration between prefectures/counties; and ‘individual resettlement’ – an individual migration within the same county. Madoi County falls under the jurisdiction of Golok TAP (*Golok Zangzu Zizhizhou*). The average altitude of Madoi is over 4,200 metres above sea level. It has a total area of 25,300 sq km. The grassland is alpine meadow with a short growing period of about eighty days. The mean annual temperature is around  $-4^{\circ}\text{C}$  with a minimum temperature of  $-48^{\circ}\text{C}$ . There is no frost-free season and the climate is alpine steppe (Madoi County Annals 2001: 19–21). The county suffers from frequent environmental disasters, such as snowstorms, drought, sandstorms and hailstorms (ibid.: 69–72). The local economy is heavily reliant on pastoralism. According to data from Madoi County Statistics Bureau, in 2008 the county had a population of 13,471 (4,376 households) living in twenty-seven herding villages in the four rural townships of Machali, Huanghe, Gyaringhu and Huashixia. Of these, 95 per cent were Tibetans and 80 per cent (10,490 people in 3,285 households) were herders. The total head of livestock (yaks, sheep and horses) were 138,000.

From 2003 to 2008, in Madoi County, 2,334 people (585 herding families) were resettled from grassland to four new resettlement villages: Golok Xincun, Heyuan Xincun, Sanchakou Xincun and Yeniugou Xincun. Some herders resettled within the same county while others resettled across counties (see tables 2, 3 and 4). Why did they move? How was the migration organized? What were

their lives like after migration? Were they able to adapt to their new surroundings? The study team attempted to answer these questions by conducting fieldwork for two months in December 2008 and September 2009 in Golok and Madoi.

This article is a qualitative research based on sixty-seven in-depth anthropological interviews with Madoi County stakeholders individually, including one vice head of county, three directors of rural township governments (Machali, Huanghe and Gyaringhu), and six directors of county government bureaus for the General Office, Development and Reform Commission, Animal Husbandry, Land Resources, Religious and Ethnic Affairs, and Medical Care. Each interview with an official in Madoi lasted for about one hour and a half. More detailed interviews were also conducted with fifty-seven herder households: forty-five households from the four new villages, and twelve households from their original grassland home area. The interviews with herders lasted for about two and a half hours each and were conducted in December 2008 and September 2009. Interviewees in Madoi represent a heterogeneous group, providing a range of different perspectives for the research. Most interviews were tape-recorded and transcribed, while some were recorded in notes. The data of Table 2 and Table 3 are collected from fieldwork.

## **Background and Rationale for Ecological Resettlement in Sanjiangyuan**

The rationale for ecological resettlement is based upon the assumption that grassland degradation can be effectively prevented through this project (QECC 2003). Therefore, herders in Madoi County are encouraged to leave their grassland to migrate to towns.

### *Grassland Degradation and its Causes in Madoi*

From the 1980s to 2000s, grassland degradation in Madoi was serious, changing 'black sands' to bare and desertified bedrock (Zhou et al. 2003). According to the interview data, good quality pasture declined while poisonous weeds and rats spread. Grassland stocking levels and usable grassland both decreased. It is considered that degraded grassland in Madoi was about 46 per cent of the total area during the 1980s, increasing to about 70 per cent by the 1990s (Liu et al. 2004). Moreover, degradation was more serious in winter and spring pastures than in summer and autumn pastures. Thus it is clear that the trend of grassland degradation in Madoi is significant (see Table 1).

The officials in Madoi consider ecological protection of its grasslands as crucial to the environmental health of the Sangjiangyuan region as a whole. They proposed to restore grassland by implementing conservation and construction projects in Madoi. As the county head explained, by restoring grazing land to grassland, controlling the number of livestock according to the grassland's

**Table 1.** *Degradation of seasonal grassland in Madoi*

Period	Total		Winter and Spring		Summer and Autumn	
	Degraded (ha)	Percentage	Degraded (ha)	Percentage	Degraded (ha)	Percentage
1977–1990	896,285	43.3	455,414	53.8	440,871	35.9
1990–2004	1,079,757	52.1	504,178	59.6	575,579	46.9

*Data source:* Liu et al. 2004.

grazing capacity, and encouraging ecological resettlement, human activities on the grassland can be greatly reduced. When the ecology and environment of the grassland is improved, herders will be allowed to go back to grazing their animals on their original land. The government will implement grazing bans and provide compensation to herders and make preferential policies to encourage the smooth implementation of this plan (Dang Zhou 2006).

Both natural and man-made factors played a role in grassland degradation. A recent study shows that climatic changes near the source of the Yellow River (Madoi County), including increasing precipitation and evaporation, have caused thinning of the permafrost and a reduction in the number of days with sub-zero temperatures per year (Li et al. 2008). Decline in permafrost is generally regarded as the main reason for eco-environmental changes in the region (Wang et al. 2000). Human factors, such as excessive land exploitation through gold mining and overgrazing, have also destroyed vegetation and soil surface structure, making the land vulnerable to erosion from wind, water and slippage. Grassland degradation and soil erosion then makes the environment more prone to drought, leading to declining water tables and drying lakes (Li et al. 2008).

Madoi County is a major part of the Sangjiangyuan area. In order to restore and protect the ecological environment of the Sanjiangyuan, China’s government established the Sanjiangyuan National Nature Reserve in 2003, the world’s second-largest nature reserve. In 2004, the State Council approved the General Plan for the Preservation and Reconstruction of Qinghai’s Sanjiangyuan National Nature Reserve Area (‘General Plan’ for short), which states that ‘A ban on herding, less livestock, and ecological resettlement are the solutions to the restoration and preservation of the ecological environment’ (QECC 2003). However, the reasons for grassland degradation in Madoi County are complicated, and cannot be simply attributed to overgrazing and population growth. According to local herders and local officials, there are four main factors causing grassland degradation in Madoi.

First, global warming: since the 1990s, the effects of global warming have become significant in the Sanjiangyuan. It contributes to rapid evaporation from

the soil surface in the grassland and weakens the soil water-holding capacity, leading to desertification.

Second, unsustainable mining: for example, in 1986, when Madoi had a population of 9,466, more than 10,000 gold miners from eastern Qinghai crowded into the county and even fought for the gold-mine site, resulting in 231 people wounded and one dead (Madoi County Annals 2001: 12, 162). Moreover, mining generated large-scale waste and debris, disruption to the water-table, destruction of habitat, and general ruination of the traditional grazing lands (Zhou et al. 2003).

Third, improper management of grassland due to a change in the system of tenure: historically, pasture in the Qinghai-Tibetan Plateau was a classic common pool resource. From 1950 to 1980, in Madoi County, the grassland was owned by the Tibetan tribes or communities as a whole, and used by nomadic herders. However, between 1983 and 1992, Madoi County adopted the household-contracted responsibility system (HCRS), involving the privatization of grassland, which weakened the power of the community to manage grassland and contributed to overgrazing. After 1992, the regional government introduced the 'Four Infrastructure Activities Project' (*si peitao*): construction of permanent houses, animal sheds on the winter pasture, fencing, and grass planting. Under this project, settlement and fencing directly resulted in grassland fragmentation; and livestock was contained without transhumance, leading to overgrazing.

Fourth, damage caused by pika: grassland suffers serious damage from pika, which worsens the ecological system. In some areas, there are more than three thousand pika holes per hectare. Local herders attribute the increase in grassland pika to the killing of wild predators by non-locals who came to hunt wild animals in Madoi.

From the preceding analyses, overgrazing is not the only factor that has caused grassland degradation in Madoi. There are other reasons such as climate change, mining, and problems of grassland management. It is not easy to determine which factor is the most significant. Therefore, the idea of improving grassland by simply implementing ecological resettlement projects may sound implausible.

### *The Sanjiangyuan General Plan*

Ecological resettlement was the signature project of the Sanjiangyuan General Plan and it commenced in Madoi after the Sanjiangyuan National Nature Reserve was established in 2003. Herders in Madoi were encouraged to leave their grassland to better protect the Sanjiangyuan environment. Policy makers decided that given the harsh environment, primitive production methods, and the imbalance between livestock and grassland, it is necessary to achieve harmony between the economy and ecology, to better educate herders and to upgrade production methods. Ecological resettlement can contribute to the appropriate development of grassland, restoration and preservation of the grassland ecosystem,

productivity improvement, income increase, and the development of a wealthier society (QECC 2003).

The Sanjiangyuan General Plan was approved by the State Council in 2004, and it contained three main projects and twenty-two sub-projects. The ecological protection project was the first of these three main projects. It received funds of around RMB 4.9 billion that were designated for restoring former grazing land to natural pasture, restoring cropland to forest, treating land that had been degraded by pika infestation, launching fire prevention work in forests and on the grassland, initiating water and soil conservation projects, and protecting infrastructure. The second main project focused on building infrastructure. It includes the resettlement sub-project, the building of new towns and rural townships, other grassland preservation projects and drinking water infrastructure for livestock and human consumption. It received funds of around RMB 2.3 billion. The third main project focused on supporting ecological protection, and received funds of around RMB 0.3 billion to support projects for cloud seeding, providing technical support and ecological monitoring.

The Sanjiangyuan General Plan closely links eco-resettlement with efforts to restore grazing land to grassland. The plan called for the relocation of 55,774 people (10,142 herding households), the reduction of livestock by 3.2 million sheep units, the imposition of a ten-year grazing ban on the abandoned grasslands, and a period of off-season and rotational grazing (QECC 2003). Herders who agreed to be resettled would receive compensation. Data from the Ecological Resettlement Management Office of the Qinghai Development and Reform Commission indicates that eighty-six new settlement villages were built between 2004 and 2010. Small towns or suburbs were also established to house herders who left the grassland. As a result, eighty-six resettlement communities sprouted up in urban areas or rural townships, near markets along the state highway, and in neighbourhoods around fodder bases in the Sanjiangyuan. Four of these resettled communities were located in Madoi County (see Table 2).

## **The Process and Categories of Resettlement**

Ecological resettlement was implemented through government intervention. The resettled herders were not only heavily dependent on the government, but also had high expectations of improved livelihoods, hoping the government would support them to adapt well to new lifestyles in the relocation sites.

### *The Implementation of Ecological Resettlement*

The local government organized and implemented various projects to encourage herders to resettle. For instance, the importance of protecting the Sanjiangyuan ecology via ecological resettlement, preferential policies and advantages of resettlement, and the ideology of ‘sacrifice small families for our

**Table 2.** *Four resettlement villages in Madoi County (2007)*

New villages	Investment (RMB million)	Households	Population	Origin and altitude	Destination and altitude	Distance between origin and destination (km)	Resettlement types
Guoluo Xincun	20.83	189	747	Huanghe township, 4100m Heihe township, 4,200m	Tongde County, Hainan Prefecture, 3,200m	450	Village group resettlement
Heyuan Xincun	41.14	150	641	Gyaring Lake township, 4,300m	Tawo, Machen County, Golok Prefecture, 3,700m	340	Village group resettlement
Sanchakou Xincun	8.34	144	428	Heihe township, 4,200m, Gyaring Lake township, 4,300m	Capital of Madoi County, 4,300m	60	Individual resettlement
Yeniugou Xincun	4.11	102	518	Heihe township, 4,200m	Yeniugou, Madoi County, 4,300m	30	Individual resettlement
Total	74.42	585	2,334				

*Data source:* Author's field research in December 2008 and September 2009.



great country' were advertised among herders by the local government. During this tentative period, the major steps of ecological resettlement were as follows:

Based on the principles of governmental guidance and voluntary participation, herders are encouraged to resettle in towns and rural townships, to abandon their traditional nomadic life and to pursue stall-fed animal husbandry practices or employment in secondary or tertiary industries. The grazing ban on grassland is helpful to restore the ecosystem. After resettling, most herders could take up cattle feed-lotting, so it is crucial that we strengthen efforts to construct dual-purpose livestock enclosures which can help the former herders fatten livestock off-season and also cultivate vegetables. This will both increase the supply of vegetables in the local market and boost incomes (QECC 2003).

Each resettlement household was provided with a 45 sq m house (valued at RMB 800/sq m), a 120 sq m barn (priced at RMB 200/sq m), and a RMB 400 one-off taxi fare for one family to move to a new town. In addition, the government implemented a compensation policy of RMB 8,000 annually for families (regardless of family size) which continued to obey the ten-year grazing ban (QECC 2003). The ecological resettlement project started in September 2003. Gyaringhu rural township was designated as a test zone because the township was located at the source of the Yellow River in the core zone of the nature reserve. Experience and negative herder feedback from this test site did result in some changes to ecological resettlement practice. In 2003 a grazing ban was enforced across the whole rural township of Gyaringhu (372,000 ha). The number of livestock decreased by 110,000 sheep units and 388 households. About eighteen hundred people were relocated, making the area 'a depopulated zone'. The relocation project also started in September 2003 in Heyuan Xincun, Tawo town of Machen County, capital of Golok Prefecture. However, some herders were strongly against resettlement. A new policy strategy was adopted in 2004 to implement ecological resettlement on a voluntary basis, with the local government taking responsibility for guiding the relocation process. By 2005, 193 households (about half of the township population) had undertaken 'voluntary relocation'. Most of them were relocated in Golok Xincun, in Tongde County of Hainan TAP, about 450 km from their original grasslands. These relocation activities were not completed until the first half of 2007, indicating the difficulties local officials faced in the resettlement process. Meanwhile, from 2004 to 2007, a resettlement project intended to alleviate poverty was being implemented in two new villages, Sanchakou and Yeniugou, involving 946 herders from 246 households who had migrated from Heihe and Zhalinghu townships. By 2007, the Madoi government had invested RMB 74.42 million on ecological resettlement projects – 2,334 Tibetan herders from 585 households, 22.7 per cent of the total herders, had been relocated in four newly established

villages (Heyuan Xincun, Golok Xincun, Sanchakou Xincun and Yeniugou Xincun) (see Table 2).

*Types of Resettlement and Categories of Resettled Herders*

Tables 2 and 3 show that resettlement was of two kinds: ‘village group resettlement’ (VGR, *Zhengti Banqian*) – a group migration between prefectures/counties; and ‘individual resettlement’ (IR, *Lingsan Banqian*) – an individual migration within the same county. The costs of accommodation, subsidies and basic urban living allowances for the two kinds are different (see Table 4).

The herders in Heyuan Xincun and Golok Xincun, who took part in VGR, abandoned their grassland user rights. Their pasture was under a permanent grazing ban. Each household was offered accommodation (about RMB 80,000), and an additional annual subsidy of RMB 8,000 for ten years. Currently about half of the resettled herders in the two villages receive basic urban living allowances (about RMB 200 per month).

The herders from Sanchakou Xincun and Yeniugou Xincun undertook IR. They abandoned their pastures and moved to towns or rural townships of their own choice. Their pasture is under a temporary grazing ban for ten years. After the ban ceases, they are theoretically allowed to return to the grassland or to stay in their new location. There are two kinds of IR. One type is a household which holds its own certificate of grassland user right. The other is a household which shares a grassland user right certificate with parents and brothers. Accommodation arrangements and subsidies are different for the two types of IR (see Table 4).

Based on our interviews with officials and herders in the four new villages, the resettled herders could be divided into three categories: (1) the ‘families lacking livestock’ (below 20 standard sheep units per person) and ‘families without livestock’ (no animals). These families are considered as the poor in these pastoral areas. They accounted for about 70 per cent of the population in the resettlement villages; (2) the ‘rich families’ who had already accumulated some capital, who accounted for 10 per cent of the resettled population. They usually owned many yaks and sheep, or did business in the pastoral area, or obtained good incomes by working for the local government or teaching in school. The rich families hoped to become urban residents through the resettlement project; (3) ‘education-induced migrants’ who made up 20 per cent of the population. These families sold all their possessions and moved to town to seek better educational opportunities for their children.

Herders were pragmatic about the grazing ban and the ecological resettlement policy. Most did not want to give up the grassland which had supported them for generations, but the consideration of their children’s education significantly influenced their choice. The ecological resettlement projects involved the construction of primary schools in the new villages, the provision of free, good-quality education for the resettled children, and free accommodation for boarding primary school students. In spite of these benefits, herders hesitated to abandon

**Table 3.** *Types of resettlement in Madoi County (2007)*

Rural Township	Village group resettlement			Individual resettlement		
	Households	Population	Resettled village	Households	Population	Resettled village
Gyaringhu township	150	641	Heyuan Xincun	43	158	Sanchakou Xincun
Huanghe township	97	245	Golok Xincun	101	413	Sanchakou Xincun
Heihe township	92	359	Golok Xincun	102	518	Yeniugou Xincun
Total	339	1,245		246	1,089	

*Data source:* Author's field research in December 2008 and September 2009.

**Table 4.** *Differences between Village Group Resettlement and Individual Resettlement*

Types of resettlement	Free house cost (RMB/household)	Annual subsidy (RMB/household)	Subsidy paid period (year)	Basic urban living allowances (RMB 200/person/month)	Length of grazing ban
Village group resettlement	80,000	8,000	10	200	permanent
Individual resettlement					
Each household receives their own certificate of grassland user right	40,000	6,000	10	200 payable if herders choose to stay in the resettlement	10 years
Household shares grassland user right certificate with parents and brothers	30,000	3,000	10	village after the 10 years' grazing ban has expired.	

*Data source:* Chen et al. 2009: 198.

their grassland to relocate to unfamiliar areas. Some households were attracted by the offer of free housing and annual compensation of RMB 8,000 per household. Most herders did not want to depend on state subsidies and they realized that some households had become poorer as a result of resettlement. A few herders hoped the government resettlement subsidies would make their lives easier. Some commented that they migrated to protect the environment of the Sanjiangyuan in the national interest.

## **Socio-economic Changes and Environmental Impact**

Ecological resettlement in Madoi has transformed a traditional nomadic society into a settled urban society since 2003. This has had a profound impact on the environment, the socio-economic structure, and the traditional ethnic culture.

### *Socio-economic Changes and the Status of the Eco-migrants*

The eco-migrants experienced drastic changes in their livelihood security, identity and adaptation.

First, livelihood security: according to interview data, ecological resettlement, to some extent, improved the housing, education, medical care and transportation conditions of the migrants, but their overall living standard actually fell. The following are the comments made by interviewees.

Everything here costs money. A slice of meat costs 10 RMB, so does a bag of livestock dung [for household fuel]. We can't afford them. Yet when we lived on the grassland, we didn't need very much at all. We got everything from our livestock. Before we came here, we sold all our livestock, tore down our houses, and gave our grasslands back to the state. Now we can't find any jobs and we just stay at home doing nothing all day long. (Mr Dawa, 52, Golok Xincun, September 2009)

My family had about a hundred yaks and three hundred sheep. Our grassland was about 4,600 hectares. We were satisfied with our lives. However, after we moved to town my whole family [ten people] mainly relied on government subsidies. We received about RMB 10,000 per year, which was less than our income from raising two yaks on the grassland. What's worse, our expenses here are much higher due to inflation. My family seldom buys meat or milk nowadays. (Mr Jiayang Danzeng, 55, Heyuan Xincun, September 2009)

Most resettled herders interviewed had similar accounts. They relied on subsidies because few alternative job opportunities had been created for them. However, these subsidies were insufficient to meet daily expenses for food, water, electricity, clothing, transportation and religious activities. Moreover, the price of daily necessities was driven up by increasing inflation in China, but resettlement subsidies were not correspondingly increased.

Some resettlers undertook various off-farm activities, such as digging up caterpillar fungus, knitting blankets for sale, operating small businesses, or working as security guards, taxi drivers, or construction workers. The unstable nature of these low-income jobs resulted in their standard of living declining after resettlement. Local government invested funds and effort to provide technical training and jobs, but it proved hard to create alternative industries for the resettlers. Qinghai Provincial Poverty Alleviation Office tried to support the establishment of a Tibetan blanket manufacturer in Heyuan Xincun. Ecological settlers in the village held great hopes for the factory, but it went bankrupt in October 2010. A local official from Gyaringhu rural township commented that the cost of transporting raw materials from the provincial capital of Xining was very high, and the skills of the eco-migrants were generally poor.

Second, identity: eco-migrants faced unfamiliar surroundings after resettlement, and some experienced culture shock and social disruption (Li 2008). Migrants who moved to new prefectures had identity crises due to increasing marginalization. Some joked that by leaving their grassland, they had lost their identities as herders. Their new identity had not yet been formed. They did not hold urban resident registration identity cards to become citizens. Most of them could not adapt well to urban life. Instead, they were rather like the odd-looking *Père David's Deer* – neither deer nor horse, cow nor donkey. These frustrations and uncertainties further led to their dissatisfaction with the poor quality of infrastructure, land management, education and social security in the new resettlement villages.

Third, adaptation to urban life: herders who had experienced no difficulty in using a dried livestock-dung stove did not know how to use a gas stove safely. Most resettled people had little formal education and poor Mandarin Chinese language skills. These became major obstacles in integrating into urban society. Cases of crime and excessive alcohol consumption increased in the resettled communities compared with nomadic ones. Some interviewees showed their worries about the younger generation who seemed to be losing some Tibetan Buddhist values, which emphasize a harmonious relationship between human beings and nature, as nomadic culture began to dissipate (Nan 2002, Foggin 2011, Wang et al. 2011). Resettled communities cannot easily respond to urban life within a short period. This lack of experience with urban life may create serious problems for resettled communities and the Central Government in future (Ptackova 2011).

Finally, housing: the General Plan had provided free housing for all the herding households to be resettled. However, the government did not provide housing for the new nuclear families that appeared when sons and daughters of resettlers got married. Instead, most have continued to share flats with their aging parents. One interviewee had twelve family members in a 60 sq m flat. His old mother-in-law had to live in a tent that was built in his courtyard because the flat itself was too crowded. Similarly, another interviewee had ten family members

who shared a small flat provided by the government. He said ‘My 23-year-old son is going to get married without a place to stay’. Data from the Development and Reform Commission of Golok Prefecture show that over seven hundred new families have been formed in its communities since 2003, and more than three hundred were in Madoi County. Newly established households were not eligible to receive subsidies from the government and it was difficult to obtain jobs, so they lacked sufficient money to build their own houses. They either shared flats with aging parents or rented housing elsewhere. In general, families with more adult children faced greater pressures.

### *The Environmental Impact of Ecological Resettlement*

Field research and interviews with local herders and officials indicate that the 2003–2010 grazing ban in parts of the Sanjiangyuan has resulted in some grassland recovery, but no significant improvement in most areas. New problems have emerged, including problems with management of grassland under the grazing ban. Policy documents stipulate that the county government is responsible for imposing grazing bans on the grassland. However, insufficient funds were allocated for these organizations to undertake this work effectively. In addition, the retired pastures were scattered over a large area which further increased management difficulties. As a result, the abandoned grassland is neither well protected nor restored.

Although illegal, a few herders secretly continue herding on the banned grassland or utilize some banned pastures as fields for weak or sick livestock. In order to protect bad-quality grassland, fencing has been set up to keep livestock away. However, fencing prevents livestock from moving. Some good pastures are separated by fencing set up to protect bad pastures. Livestock cannot cross fencing to move back and forth to different good pastures, which leads to overgrazing on the same good pasture. Some banned pastures showed signs of recovery in the early years, but regressed after a few years as they lacked the necessary level of interaction with livestock to remain in good shape.

Interestingly, most interviewees believe that the best way to restore damaged grassland is to graze different livestock on the land for a year to improve its condition. The herders consider that grassland conditions have resulted from the long-term evolution of a relationship between humans and nature, and are closely linked to climate, rainfall, and the number, type and grazing patterns of livestock. According to the local herders, grassland grazed with an appropriate number of animals would be in good condition. Manure from grazing animals is scattered across the grassland, adding nutrients to the soil and stimulating the growth of microbes. Also, undigested grass seeds in manure are dispersed by livestock and winds. In this light, scientists suggest grazing can mitigate the negative warming effects on rangeland quality in the Tibetan Plateau, and grazing management may be an important tool to keep warming-induced shrub expansion in check (Klein et al. 2007). It is clear that the grassland under grazing ban lacks interaction with

livestock. Therefore, the way of protecting grassland by ecological resettlement is questionable.

## **Possible Solutions**

The case of Madoi in the Sanjiangyuan is an example of resettlement intended for ecological protection. As is seen from the above, the process is far from smooth and painless. Problems associated with ecological resettlement, such as hasty and inappropriate government interventions and the lack of job opportunities after resettlement, make herders feel insecure. Perhaps a more long-term stable strategy is needed. As a prefecture official suggested, the following solutions to the resettlement difficulties might be beneficial. First, support for the elderly should be provided. It is crucial to grant a minimum subsidy for all ecological migrants over fifty years old. Migrants who have registered as urban residents in towns could be entitled to receive basic medical insurance, while the others can receive rural medical insurance. Second, young and middle-aged migrants might be organized to form a government-funded grassland management. This strategy would encourage young generations to preserve pastoral culture and to better protect pastoral areas. Third, children from ecological migrant families would be able to receive better education and training in urban areas. However, as to solutions for supporting herders, this is worthy of further research.

## **Conclusion**

Ecological resettlement in the Sanjiangyuan was launched to protect and restore its grassland and to improve herder livelihoods. The rationale of ecological resettlement is that overgrazing is the main cause of grassland degradation. However, apart from grazing, local herders point out that climate change, mining, and problems of grassland management contribute to grassland degradation as well. In fact, it is hard to identify which factor is the most significant. Therefore, the idea of protecting grassland by simply implementing ecological resettlement projects may be implausible. Herders decided to resettle for various reasons such as economic benefits and educational resources for their children but their resettled life is accompanied by uncertainties. The implementation of ecological resettlement has raised several key quandaries. It dramatically transforms traditional nomadic communities into settled urban ones. Many herders adapt poorly to the new urban lifestyle and some have identity crises. Although they are provided with free accommodation and a certain amount of subsidies, their quality of life after resettlement is in general not very satisfactory due to the higher living expenses in cities and towns. Ecological migrants have difficulty obtaining jobs because of their low skills and the lack of industries in their

resettled communities. As for the results of grazing bans, it seems that these are not well managed, and the strategy causes new problems such as fragmenting grassland via fencing and the lack of necessary livestock activities on the grassland.

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