The mechanism of poverty resulting from "ecological migration"

From case studies of herders in Minghua District, Sunan Yogor Autonomous County, Gansu Province

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Introduction

An area termed the "Heihe River Basin Ecological Preservation District" has been added to Chinese Government maps of Gansu Province in recent years. This district lies within the Gobi Desert, in the middle of the Hexi Corridor. Administratively, it is located within Minghua District in Sunan Yogor (Yugur) Autonomous County. Several different ethnicities live in the area, including Yugors, Han Chinese, Tibetans, and Muslims, with Yugors making up 89 percent of the population. In recent years, with the implementation of environmental conservation projects,¹ "national agr-
cultural development districts" has been established in these grazing lands, and a policy of encouraging herders to change livelihoods has been implemented. However, many ecological migrants have been produced as a result of these policies. Although ecological migration measures have ostensibly been implemented as measures for providing poverty relief to ethnic minorities and for improving the lives of pastoralists, implementation of these measures has also been motivated by the need to facilitate the above-mentioned projects. The incentives for inducing migration, particularly the migration of young families with children, include relief from poverty, the provision of wells, electricity, and water supply, and the construction of schools; however, while the relocated herders expect their lives to improve in the new migrant villages, it has transpired that approximately half of the heads of migrant households have to find work outside the village (Muliisha, 2004a). In addition, some of the ecological migrant families cannot send their children to school for economic reasons.3 Another serious problem is that violent conflicts have arisen over access to water supplies in migrant villages (Muliisha, 2004b). Consequently, numerous problems are emerging from the migrant villages that were previously intended to serve as dynamos for environmental conservation.

The villages have become the site of interconnected problems such as "resource plunder in the environmental conservation era" and "poverty caused by poverty relief policy."

Implementation of the migration policy has brought about great changes in people's lifestyles. Herders have been encouraged by the government to abandon their traditional forms of livelihood and to adopt the competitive attitude of free market economies. As a result, the herders have started to clear land for cultivation and have established livestock fodder bases ("man-made grasslands") to increase livestock production. As part of this process, resources that the herders had previously had little need of, such as natural resources, energy, and chemical fertilizers, have now become deeply incorporated into their daily lives. In seeking to establish a new livelihood by adopting a new lifestyle based on high levels of

3 When I conducted field surveys in 2012 and 2013, I encountered two instances of children leaving school before graduation. One was a case of two sisters and the other of a boy. The boy resumed his schooling after one year when local government officials called on his family and ordered him to return to school. The sisters, however, did not return to school and I was told that officials did not visit the homes of the girls to ensure when they would be returning.

Background to the implementation of the ecological migration policy

Minghua District in Sunan Yongor Autonomous County is located at the southern edge of the Badinjiang Desert in the central region of the Hexi Corridor. The district borders the major agricultural region of Gaoji County in the northeast and Jiayuan City to the southwest. The district is a remote enclave, far removed from the capital of the autonomous county. The average altitude is 1,281 meters above sea level, annual precipitation is 66 mm, and the average annual temperature is 7 to 8°C. Within the administrative district are two inland lakes. Administratively, the district is divided into three townships and 14 villages. The inhabitants of Liuxiang and Minghua Townships use the West Yongor language.

Up until the first half of the 20th Century, the people of Minghua District lived traditional lives as nomadic herders. However, in response to the steady expansion of "oases" in the surrounding areas, created by the clearing of land for cultivation, the herders began to live in settlements during the 1940s and the 1950s. The herders then engaged in the practice of grazing centered on their settlements and rotating their herds in the...
grazing lands of surrounding areas throughout the year. From early spring
until summer, they continued the practice of nomadic herding and traveled
to remote parts of surrounding regions and to desert zones. However, over
several decades, vast expanses of grazing land in Yagur Autonomous County
have been lost because of the large-scale clearance of land in surrounding
agricultural regions. In addition, with the introduction of the "contract
production" system in 1982, the ownership of land and livestock was pri-
vated. Since this time, the grazing lifestyle of the people, which relies
heavily on the natural environment, has become increasingly difficult.

A significant underlying component of the ecological migration policy
in Minghua District is the problem of environmental degradation of
grasslands.

Minghua District has been historically blessed with abundant
rainfall. The two townships of Lianhua and Minghai take their names
from the two lakes in the area. In addition, groundwater conditions were
also good. According to the accounts of elderly local herders, up until the
1950s groundwater could be found by digging to a depth of just one me-
ter and wild animals were also numerous at the time.

Partly because of droughts that lasted for several years, the "lakes" dried
up and groundwater levels fell. As evidence of this trend, many families
now use their dry wells as "refrigerators." Given the deterioration of the
grasslands, the area of usable grazing land in Minghua District is now
approximately equal to what it was in the 1950s.

It is said that the primary cause of this kind of environmental degrada-
tion is anthropogenic, rather than natural. In the agricultural zone along
the upper reaches of the Minghua District, large-scale irrigated agricul-
tural development has been pursued relentlessly for many years. Since the
establishment of the People's Republic of China, the government has
repeatedly relocated people for the sake of national resource development.
One of the principal destinations for these migrants in northwest China
has been the cases in the Hei Corridor, which have now developed into a
national-level "food base" and seventy percent of food production in Gansu
Province originates here. According to the herders of this area, excessive
extraction of groundwater in these agricultural areas is the main cause of
falling groundwater levels in Minghua District.

The mechanism of poverty resulting from "ecological migration"
Environmental conservation measures eventually implemented by the government. While the herders had high expectations of being able to regain their lost grasslands, the result was that they had to give up even those few grassland areas that they had somehow managed to maintain.

In the latter half of the 1990s, a “national agricultural development district” was created in the grasslands of Minghai Township, Minghai District. The herders in the area were forced to live together in concentrated settlements and contribute to agricultural development work. To date, large numbers of Yogens, Tibetans, and Han Chinese were relocated to the district from the middle and upper reaches of the Heihe River within the county and there are already three migrant villages here. One of these, Shuanghai Village, is inhabited by people relocated from Lianhua Township. It was in this village that I conducted a survey on the efforts of these people to change their means of livelihood.

Since 2000, Sanun Yogens Autonomous County has been implementing a policy of relocating some of the herders from the Lianhua Grasslands to the “national agricultural development district” to engage in agricultural development. The official aim of this policy was to reduce the burden on the grasslands and also to alleviate poverty among the herders. Through this policy, the government is seeking to reduce the population of the Lianhua Grasslands to enable the vegetation to regenerate.

According to a document related to the country’s “Ecological Environment Conservation Plan” (Sanun-Xian Renmin Zhongguo, 2000), the herders’ decentralized style of living and traditional extensive grazing methods place excessive pressure on the ecological environment. This has not only caused destruction of the ecological environment, but also significantly limited the economic development of the livestock industry in the area. The document states that, accordingly, the herders are to be removed from the degraded environment and relocated to a site with better environmental conditions and transport infrastructure. In addition, it purports that, in addition to being an effective mechanism for rapidly relieving the poverty among herders and helping them to live a better life, the plan will also be beneficial for the ecology of the environment.

To date, approximately 70 herder households, approximately half the Lianhua Township population, have been forced to migrate to the Shuanghai migrant village in the agricultural development district. Most of the migrants are young and middle-aged people aged in their 20s to 40s. Conversely, those who have not migrated are primarily the elderly, families with sick or mentally and physically challenged members, and families without male children. It is possible that households with young males were more positive about migrating because they wished to secure a house in preparation for marriage.

Efforts of ecological migrants to change their livelihoods

Changing from livestock raising to crop cultivation: Case Study 1

Family “A” (residents within an ecological migrant village in the “national agricultural development district”) consists of six members: Mr. A (aged 44), Mrs. A (37), their two daughters, and twin sons. In 2000, the family sold 150 goats and left the Lianhua Grasslands to live in the migrant village. Given their haste to relocate, they had to sell their goats at the low price of 80 yuan per head. They say that they moved because the area in which they lived previously was too remote, because they wanted to take advantage of the preferential government treatment given to the new settle-
ment, and to take advantage of schooling for their children. When the family lived in Lianhua, the school was so far away that Mrs. A lived with the children near the school, forcing the family to live apart.

To address the sense of dissatisfaction among migrants when the migrant village was built, the government promised that their standard of living would improve after relocation. To meet this promise, the government invested in basic services and facilities such as water supply, electricity, wells, and roads. In addition, the government has paid each migrant household from Lianhua 10,000 yuan to subsidize the construction of a house. This subsidy is not paid to households in the other two migrant villages within the agricultural development district.

Using the money generated by selling their livestock when they left the grasslands, the subsidy from the government, and borrowed money, families are expected to build themselves a house and clear land for cultivation. The migrants have already moved into their houses and begun to cultivate crops. Family A has cleared an area of 30 mu (1 mu = 0.67 hectares), and are now growing wheat, corn, wheat for brewing beer, and grass.

Income and expenses of relocated herders

From one mu of land, Family A earns approximately 200 yuan per year, however, it costs them an average of 170 yuan per mu to raise their crops. In addition, they are not self-sufficient and have to purchase food for consumption. Unlike the grazing of livestock, crop farming is very costly. In many cases, the investment in electricity, fertilizer, agricultural chemicals, and equipment makes crop farming unprofitable. For this reason, Mr. and Mrs. A have had to take on various additional jobs, such as becoming day laborers.

The government is developing the agricultural development district not only for the resettlement of migrants, but also to attract private industry from outside the region. For example, companies are currently developing a 10,000-mu grape plantation and a 10,000-mu medicinal herb farm.

I learned from representatives of the companies that despite the large areas of cultivated land they possess in the region, only management personnel are sent to work here. The actual farming work is undertaken by labor employed on-site. This shows that ecological migrants have inadvertently become a source of cheap labor for privately owned external companies. The family's financial situation means that the two daughters (aged 16 and 14, both junior high school students) had to quit school in 2003, and 2004. While the daughters had wanted to continue their studies, the money spent on their schooling could be used to buy substantial amounts of agricultural chemicals and fertilizer. Unless the family buys enough agricultural chemicals and fertilizers, they cannot produce enough from their land and the livelihood of the entire family is then threatened.

Thus, while family A came to the migrant village for the sake of their children's schooling, ironically, as a result of their relocation, their children can no longer attend school. In the grasslands where they had lived previously, children were never prevented from attending school due to poverty. Now, the two daughters are working away from home and send the money that they earn back to the family.

Most of the migrants from Lianhua Township are now burdened with debt. According to statistics collected by the County Agricultural Office (Sunan-Xian Nongye Bangongshi, 2003), the average debt per household in Mingfai Township is 6,500 yuan. Under pressure to pay off their debts, more than half of the heads of migrant households have either taken on outside jobs, or temporarily pursue livestock grazing in the grasslands where they had previously lived.

In the future, the A family hopes to save money and grow grass on their arable land and raise livestock. In fact, in this area, an "enclosed livestock raising" project has been launched, in which an area of grassland is fenced off to raise livestock. Some households in the migrant village have taken bank loans to raise cattle, and an increasing number of people are taking outside jobs to raise money for this purpose. However, the leadership of the migrant village is already worried about the market principles that govern the distribution of livestock products. There are currently wide price fluctuations in the Chinese market for livestock products; in times of excess supply, such products can be hard to sell, resulting in low returns. It is likely that for migrants to engage in "enclosed livestock raising", they would need to take on further debts, however, if they were to face unfavorable market conditions, they would experience even more severe financial difficulties, possibly beyond the point of recovery.

The biggest change for the migrants is that each house in the village has its own water supply. In terms of the ready availability of water, life is much more convenient that it was in Lianhua.

For farmland irrigation, there are deep mechanical wells (150 m deep) in the village for shared use. One of the wells is shared by 16 households. In summer, water is pumped from the well 24 hours a day. Deep wells like...
help them with their daily tasks. She receives 200 yuan per month from Mr. and Mrs. B.

At present, Mr. B keeps 150 goats, 89 sheep, 25 cattle, 3 pigs and 30 poultry. He has also expanded his farming land from 5 mu at the time that the "contract production system" was introduced to 52 mu. On his arable land he grows agricultural products and grass for livestock fodder. Mr. B has 35 mu of wheat under cultivation, 7 mu of corn, and 15 mu of feed grass. With a yield per mu for wheat of 350 kg, he produces a total of 10,500 kg of wheat per crop. Of this he sells 4,500 kg for a return of approximately 4,500 yuan. The corn is used for livestock feed, and the wheat and corn straw are used as coarse feed. Mr. B manages to rear two crops of feed grass per year and produces more than 5,000 kg of grass per year from 15 mu. In this way, using their farmland as a base for production, family B has attempted to expand its livestock operations. Mr. B can depend on natural grasslands to feed his livestock for only five months of the year. For two months, May and June, he grazes his animals in grassland near his home, and for three months, from July to September, he travels widely with his herd and lives in a tent, grazing in common grasslands. For the remainder of the year, he feeds his livestock with hay cut from natural grasslands, cultivated feed grass, straw from his crops, and corn. Most of the herders of Shangjiling Village follow much the same pattern of farming as that of Mr. B.

**Shift from extensive grazing to intensive livestock raising: Case Study 2**

I relate the case of the family B, who have decided to remain in an area from which people migrated. Shangjiling Village in Minhai Township is the largest village by area in Minhua District. Long ago, the herders of Shangjiling Village had the largest area of grazing lands in the region. With the establishment of the national agricultural development district, the herders lost a vast amount of their common grazing lands. As a result, they could not sustain a livelihood by grazing in natural grasslands, and were forced to change their method of livestock raising.

Family B has four members: Mr. B (aged 50), his wife (54), and two sons (24 and 16). The eldest son works in the municipal offices of the township as the accountant of the village and lives in the center of the township. The younger son is a high-school student who lives in a dormitory at his school. A niece of Mr. B's (15) came to live with the couple to
Some other households are also increasingly cultivating and grazing their animals in remote areas. One example is the ex-deputy mayor of Minghua District, who cultivates a total of 50 mu in three different remote areas and maintains a house and livestock sheds in each area. Since 2004, he has been growing feed grass at these farms and rotating his herd between them according to the season.

Most of the herders of Shangqing Village expanded their area of cultivated land during a land-clearance boom. Along with the development of agricultural land and an influx of migrants to the area, the inhabitants of Shangqing Village were encouraged to grow livestock feed crops. Seventeen households collectively cleared a large square-shaped area of land for cultivation, dividing it into household parcels of an average area of 25 mu. Mechanical wells were constructed for irrigation, with 71 percent of their cost subsidized by the national government.

All the herders of Shangqing Village now have large areas of land under cultivation. Using these large areas of cleared land to produce feed crops, they are seeking to run increasingly larger livestock operations. As they rely on irrigation to grow large quantities of feed crops, water resources in Shangqing Village are becoming increasingly exploited, as in the agricultural development district and the migrant villages. With the aid of irrigation, it has become possible to reap two crops per year: a summer crop and a winter crop. While irrigation increases livestock productivity, ironically it also works to undermine its sustainability. With the large amounts of energy invested in cultivated land, large amounts of water pumped from the ground, and the use of chemical fertilizers, the natural resources of the area are being increasingly abused and depleted. Already, Shang-er Lake in Minghua Township has dried up, and groundwater levels in the area are falling significantly.

Income and expenses

Mr. B's income from agricultural products for 2006 was 4,500 yuan and was earned entirely from the sale of wheat. Total income from sales of livestock was 9,000 yuan: 10 goats for a total of 2,100 yuan, 10 head of cattle for a total of 6,400 yuan, and 1 pig for 500 yuan. Total income from the sale of livestock products was 6,250 yuan: 5,200 yuan for cashmere, 150 yuan for sheepskin, and 90 yuan for sheep wool. Mr. B's total income for the year was 17,750 yuan, which is considered high and indicates that raising livestock on feed crops potentially offers significantly higher financial gains than herding on natural grasslands.

The herders of Shangqing Village have the highest income in Minghua District. As a result, it is expected that the production methods of Shangqing herders will be promoted among other herders in the district as a model of modern livestock-raising methods and ecological environment management. Since 2004, grazing has been banned in Minghua District. According to the document, "Strategic Plan for the West Development Project" (Suan-Xian Renmin Zhengzhi, Xianwei, 2000), over the next five years livestock production methods are to shift gradually from natural grazing to "semi-enclosed livestock raising" or "fully enclosed livestock raising," and high-productivity grasslands and fodder bases are to be established. The strategy aims to reduce the burden on grasslands caused by extensive grazing, to harmonize economic, social, and ecological factors, and to strive for sustainable development.

However, the cost of maintaining a lifestyle like that of Mr. B is extremely high. While his annual income for the previous year was 17,750 yuan, he had to pay approximately 11,600 yuan to cover the costs of feed crop production, including electricity, fertilizer, agricultural chemicals, and fuel for machinery. In addition, he paid 1,108 yuan in land tax and livestock tax, and approximately 2,000 yuan in wages to his niece. After subtracting all these expenses, his net income was comparable to that of most herders who continue to live in the traditional way, in some cases lower. In other words, while the scale of his operations expanded, it did not lead to a higher net income. For the B family, it appears that the more that they move away from traditional extensive livestock grazing toward modern livestock management, the tighter their financial situation becomes. In fact, to pay for the schooling of his children, Mr. B has had to seek additional work outside grazing and feed crop cultivation. He uses his own truck to help others to cultivate their land. Last year, Mr. B undertook a total of 200 days of such additional work in spare time between busy periods, earning a total of 5,000 yuan. In this way, Mr. and Mrs. B have expanded their sources of income by combining grazing, feed crop cultivation, and daily labor. Caught in a vicious circle of excessive investment and high workload, Mr. and Mrs. B are physically struggling to keep pace with the demands of their livelihood.
An alternative model for environmental conservation

In August 2004 I revisited Lianhua Township in Minghua District, from where many ecological migrants originated. With implementation of the ecological migration policy, many young people moved away from this area to settle in a new migrant village, and the herders who have remained have continued their traditional way of life as pastoralists. While the economic productivity of these herders, who live and work in coexistence with nature, is low, they are able to limit their expenses to less than 10 percent of their income and are thus financially stable. This represents a clear economic virtue of the traditional way of life. In the past two or three years, demand for livestock raised in Lianhua has been strong. Without becoming caught up in free market competition like those living in the development districts, herders here can sell directly to buyers who actively seek the livestock that they raise. Some herders have even cultivated their own distribution channels to get their livestock to market. Here I present one such example.

Mr. C (aged 49) is a herder with a family of five residing in Lianhua. Since he has only daughters, he chose not to relocate to a new migrant village. At present, he sells goats and sheep manure. One of his daughters who works at Minzu Park in Jiuzhaigou told him that the park wanted livestock manure from pollution-free grasslands to use as fertilizer. When he was transporting sheep manure in Jiuzhaigou for the first time, several people met on the way asked him about the manure and wanted to buy some. Although he couldn’t sell the manure he was carrying, the experience gave him a surge of confidence in his "product.”

Mr. C has now entered into contracts to supply his livestock manure to Minzu Park and Beijiao Park, both in Jiuzhaigou, and he now also collects manure from other herders. Given he pays more than other buyers, the herders are happy to supply him with their manure. Mr. C now has a network of friends in Jiuzhaigou from whom he receives information, including contacts who are seeking supplies of meat and livestock. Some of these people pay more than double the normal price he receives from commercial buyers. On the subject of these higher prices, Mr. C says: "If someone would buy all our products at such a price, herders could even reduce their livestock numbers but still have a more secure livelihood.”

The notable point here is that this kind of independent distribution network takes on a positive significance in terms of the environmental conservation of grasslands. By opening up suitable distribution channels, products created using natural production methods can be connected with consumers who are concerned with safety, thereby establishing an environmental conservation system of sorts.

China has entered into an era of market economies characterized by mass production and mass supply; even in livestock feeding, there is increasingly severe competition. The production of goats and sheep using feed rather than natural grass is placing pressure on traditional livestock-raising methods. At the same time, consumers are increasingly questioning the health implications of methods that force-feed livestock to fatten them over a short period of time. The psychology of Chinese consumers, who once bought only inexpensive products, is now changing, and there is a significant trend to valuing quality ahead of quantity. Reflecting this change in consumer attitudes is the appearance in supermarkets and shops of value-added products such as "pollution-free, natural grassland meat.” Amid the dominance of mass production, the value of livestock raised in natural environments is becoming increasingly recognized at a high-quality, precious commodity.

Despite these trends, the livestock products of herders are still bought at low prices by commercial buyers. This is not because the herders have been left behind by the market economy, but rather, because the market is unattainable. In this sense, there are still latent possibilities in traditional subsistence patterns that coexist with nature. If environmental conservation policy is approached from a different angle, it might prove to be more effective. For example, the government could become involved in distribution. If a distribution system were created that is mutually beneficial to both herders and consumers, the traditional system of grazing could be maintained. In this way, the herders could live a more secure life, and environmental conservation would also be possible. However, in Lianhua Township, a total grazing ban is expected to be implemented in the near future, in which case the inhabitants will likely be forced to move away.
The effectiveness of “ecological migration” in reducing poverty (1)

A case study based on the Tarim River Basin, Xinjiang

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Introduction

The Tarim River is the longest and largest inland river in China. With a total length of 2,349 km and a main course of 1,321 km, the river is widely regarded as one of the world’s great inland rivers. The total catchment area of the Tarim is 1.02 million km², of which 996,000 km² lie within China.

The Tarim serves as a life source for the people of southern Xinjiang and protects the ecological environments of oases (Fig. 6-1).

Fig. 6-1. Sketch of the Tarim River Basin and migrant distribution

Over the past 20 years, the effects of human activities and climate, along with poorly orchestrated development initiatives and inefficient utilization of water resources have resulted in a steady decline in the quantity and quality of water flowing in the Tarim River. Flow has ceased completely in the lowest 400 km of the river, causing Taklimakan Lake to dry up and large areas of poplar forest growing along the river’s main course to