EACH-FOR
Environmental Change and Forced Migration Scenarios

Specific Targeted Project
Scientific support to policies – SSP

Deliverable reference number and title: D 2.3.2.5
China (Inner Mongolia)
Case Study Report

Due date of deliverable: 31.12.2008
Actual submission date: 31.3.2009

Start date of project: 01.01.2007
Duration: 2 years

Organisation name of lead contractor for this deliverable: CEDEM

<table>
<thead>
<tr>
<th>Dissemination Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU</td>
</tr>
<tr>
<td>PP</td>
</tr>
<tr>
<td>RE</td>
</tr>
<tr>
<td>CO</td>
</tr>
</tbody>
</table>

EACH-FOR is a project funded by the European Commission, by SERI (Austria) and by ATLAS Innoglobe (Hungary)
Project website: www.each-for.eu
1. INTRODUCTION

1.1. Synthesis of context

Inner Mongolia is a vast steppe historically occupied by different minority groups who were all involved in pastoralism. Although large-scale immigration of Han peasants and reclamation of rangelands since the end of 19th century have fundamentally transformed both the demographic features and landscape in this area, there are still around 78.8 million ha of natural grassland, about 68.8% of the total area of the Inner Mongolia Autonomous Region1 and 171,500 people in the pastoral area, around 13.6% of rural population and 7.2% of the total population in Inner Mongolia.2 Animal herding remains the main kind of livelihood for people in the pastoral area.

1.2. Brief overview of environmental problems

Inner Mongolia is the focus of this study, particularly because of the sand-storms stemming from this area. Many resources and efforts have been committed to mitigating environmental problems including the sand-storms. By 2005, the state had invested RMB2.443 billion in environmental protection.3 In Inner Mongolia, the central government pledged RMB 4.7 billion over the ten years since 2002 to mitigate grassland degradation (Bijoor et al. 2002: 30). Desertification in this area is caused by a complex combination of historical, social and political factors. The United Nation’s top climate official commented in 2007 that, although growing populations in dry areas were putting serious stress on the environment through over-grazing, water demand, deforestation and other activities, climate change has become the prime cause of an accelerating spread of deserts.4 However, the prevalent discourse on desertification in China focuses on human activities.

---

Accordingly, two big programs have been carried out in the rural area of Inner Mongolia, emphasizing “returning farmland to forestry” and “closing rangeland and resettling pastoralists,” which involve resettling a large number of people. Peasants and pastoralists were encouraged, organized and subsidized to stop using their household contracted lands and to resettle in towns or urban areas. In this way, the lands are expected to regenerate without cultivation or grazing activities and the affected people are also expected to become better-off in other places. Thus, the resettlement programs in practice have integrated several other functions like urbanization and poverty alleviation. Starting in 1998 and accelerating in 2001, more than 6000 people have been removed from environmentally vulnerable areas in Inner Mongolia. It was planned that altogether around 650,000 should be resettled between 2002 and 2008 within the province, with the governmental budget of more than RMB100 million (Chu & Meng 2005). In Xilingol league (prefecture) where this case study was done, 12,859 households and 56,535 persons (about 5.66% of the total population) had been resettled through projects by 2006, of which 9,227 households and 41,081 persons are through ecological resettlement projects. In the ecological resettlement projects, 7,927 households and 37,172 persons are pastoralists.

1.3. Brief overview of migration processes

Although land degradation and unfavorable climate change have greatly affected livelihoods, environmentally forced migration has not become a major pattern above labor migration. Few studies have examined the obstacles preventing migration or their adaptation and coping strategies in the deteriorating environment. Generally speaking, scholarly explorations of the environmental hazards as cause and consequence in relation to migration are few regarding this area. Furthermore, focussing the study on a previously nomadic society setting may give an inspiring insight into how people adapt to environmental change through migration. On the one hand, the pastoralists used to utilize migration as the main way of avoiding or recovering from natural hazards. However, nowadays the nomadic way of life is constrained by land ownership, social relationships and household demographic change. On the other hand, in the present context, they have undertaken another form of “migration” as an option for achieving better livelihoods. Their interpretation of migration behaviors and perceptions of the environmental change are significant for projecting the future of population flows and its impacts upon environment in this area.

2. METHODS

In this case study, expert interviews have been conducted with scholars, NGOs and governmental officials in order to get a general overview of environmental

---

Migration in China, to discover the causes of migration in relation to environmental change and to explore their association with other social, political and economic phenomena in Inner Mongolia.

Further, a border city with its neighboring pastoral area was chosen to carry out questionnaires with 15 migrants and 15 non-migrants. The aim was to find out whether and to what extent environmental change affects an individual’s or a family’s decision to migrate. The specific objectives were:

- to identify who have been migrating away from the place with environmental problems;
- to find out the origins and destinations of the migrants;
- to find out why some people migrate and some people stay;
- to identify people’s perceptions of environmental problems;
- to understand how environmental degradation interplays with other social, economic and political factors in migration decision-making;
- to find the obstacles that prevent people from migrating and the non-migrants’ coping strategies in the environmentally degraded area;
- to find out how do people choose destinations and the role of social networks.

Migration has been described as “an extremely varied and complex manifestation and component of equally complex economic, social, cultural, demographic, and political processes operating at the local, regional, national, and international levels” (Castles and Miller 1993). As complex as migration is, the environment is equally so. Hence, this study does not aim to give any deterministic conclusion but to contribute some empirical insights to this new field of research.

### 2.1. Justification of the selection

Erenhot (see Figure 1) was chosen as the case study area. It is located on the border with Mongolia in the northern part of Inner Mongolia Autonomous Region, belonging to the Xilingol league(prefecture). It is a stop on the Trans-Mongolian railway and is the biggest inland railway and highway port in China. The city has grown rapidly over the past fifteen years because of cross-border trade with Mongolia and Russia. Particularly, many small scale traders travel frequently across the border. Growing economic activities increase migration and population mobility including cross-border movement in this area. Its permanent residents have increased from 8,000 in 1992 to 24,557 in 2007 and registered...
residents have increased to 51,726. There is still 55,387 considered to be a floating population\textsuperscript{7}.

The composition of the population of Erenhot is considerably diversified in both origins and ethnicities. 34.83\% of increased immigrants are from other provinces of China and 20.85\% are from other places within Xilingol league. In 2003, Erenhot’s administration expanded from the city area to include a neighboring pastoral sumu (township). Its area increased from 162.8 km\textsuperscript{2} to 4015.1 km\textsuperscript{2}. This area is in a typical temperate desert grassland with an average elevation of 966 meters. Geriletuadu sumu (township) is the only pastoral area under the administration of Erenhot. It is composed of four gachas (village) and one milk-cow-raising village. Sumu administrative center moved from He’re to Qiha in 2003, where there is better transport and underground water. The four villages are Erdengobi, Hujiletuya, Suji and Taoli. The population density is very low in this area. Its administrative area is 3,848.3 km\textsuperscript{2}, with 649 households and 1,828 persons (916 male and 912 female), of which 519 households with 1,543 persons are pastoral, equaling, about 84.41\% of the total population.

Two resettlement programs were launched in 2001 and 2006 to move pastoralists out of the area. The first program organized pastoralists to raise milk cows in a newly built village near Qiha town and the second one subsidized pastoralists to move to Erenhot city. The contracts were both for five years.

\textsuperscript{7} Retrieved at \url{http://gb.cri.cn/25364/2008/08/01/3865s2173633.htm}, source: Erenhot Local Government Website, November 2007.
During the contract period, the pastoralist accepts the year-round grazing ban on his contracted rangeland. In Qiha a milk-cow-raising village, pastoralists were allocated with one single house or semi-detached house and one shed, subsidized with loans to purchase milk cows and allocated with 20 mu land for cultivating silage. Silage was also provided for free for more than one year at the beginning. However, most pastoralists were not good at cultivation and the land was taken back in 2004. Instead, each milk cow is provided with 7,500kg of silage at the price of RMB0.06 per kilo per year. Since 2004, many pastoralists who could not sustain their business in the milk cow village chose to move back to their original home in the pastoral area to restart herding livestock. The number of households in the village has dropped from nearly 158 households, 526 persons to 94 pastoral households with 71 raising milk cows and 28 households. Some others who stayed also started to employ a shepherd to continue herding animals on their pastures because of no governmental monitoring during the regional administrative transition from Sunite right banner to Erenhot. It is estimated that this project involves a big investment of an average RMB0.16 million for each household. The failure of Qiha milk-cow-village was explained by local leaders by the lack of modern management, operations on a small scale, and the disadvantages and vulnerabilities of individual household-based businesses in the market system. For pastoralists in Qiha, most people have animals in the pastoral area, Only 5% of people have no animals in the pastoral area. From the above figure, we find that only 39 out of 94 pastoral households have renewed their contracts after the first five years.

The second resettlement program promotes pastoralists to transform their livelihoods from herding animals to working in the city. They are facilitated with housing, professional training, job seeking and starting their own business; and their children are exempted from any school fees and are provided with free accommodation and some subsidy. A new district, Xingguang district, has been built up for migrant pastoralists in Erenhot in 2006. The plan is to accommodate 196 households, while so far only 30 households have moved in. Many other pastoralists choose to rent small rooms or apartments in private housing. This is mainly caused by a subsidy difference.8

There are also some pastoralists who initiated movement to the city on their own since 2001. They were given a subsidy of RMB4,000 per person one year later. This group of people is categorized as the “second and third industry migrants”.

Thus far, there are 180 households with 580 persons who signed the contract for a grazing ban in Geriletuaodu sumu, of which 30 households with 86 persons moved to the resettlement district in Erenhot, 96 households with 312 persons move to Erenhot or other places, 39 households with 134 persons in Qiha milk-cow-raising villages and 15 households with 48 persons move as “second and third industry migrants”. This means there are still 339 pastoral households,

---

8 If a person chooses to move into the city without living in the provided apartment, he can get a subsidy of RMB1.2 per mu, which is higher than RMB0.8 per mu otherwise.
around 65.3% of the total who use their rangelands, with population of 963 persons, about 62.5%. However, other data shows that only 260 households are actually herding animals. There are 5.77 million \textit{mu} rangeland, of which 4.41 million \textit{mu} are contracted to pastoralists and 1.36 million \textit{mu} are village collective rangelands. At present, a grazing ban has been applied to 2.073 million \textit{mu} contracted rangeland, which is 47% of the total contracted rangeland area.

\textbf{2.2. Discussion of methods}

The selection of non-migrants is a random sample. The number of female interviewees is greater than that of male, which helped to integrate a gender perspective. Furthermore, women shoulder a major part of work in pastoral area and thus their opinions especially express their daily concerns in making a livelihood. Notably, the family in Mongolian culture is not patrilineal. It is common that a man moves to a woman’s place after marriage. It is also normal that a woman lead a conversation, even in the presence of her husband. It is important to note however, that collecting more responses from women than men, may have led to a bias in the data.

Finding migrant interviewees started with a visit to the migrant district, Xingguang district, in Erenhot city and proceeded from there. A map below (Figure 2) indicates the places of non-migrants and the locations of several important places and sites that were visited during the study.
2.3. Environmental issues in the studied area

Pastures located in this arid area are characterized by: little precipitation, intensive evaporation, water shortage, strong wind and sandstorms as well as a fragile ecological condition. The primary natural hazard in this area is drought. The average precipitation in Erenhot is around 140mm and its distribution has been very uneven over the years. From the Figure below (Figure 3), we can see that annual precipitation fluctuates between three periods, 1985 and 1991, 1995 and 1997, 2000 and 2006. Extreme droughts occurred in 1989, 2001 and 2005. Since 2000, the fluctuation of annual rainfall became even stronger. The probability of spring drought is 60% and that of spring extreme drought is 40%; the probability of summer drought is 53% and that of summer extreme drought is 27%. The probability of continuous drought from spring to summer is 37% (Liu & Wang 2006).
Drought has very negative impact on the growth of forage. Drought in spring delays the regeneration of grasses and reduces the coverage of vegetation. Summer rainfall is detrimental to the production of vegetation. Summer drought not only reduces the production of grass but also reduces the forage for winter grazing. Therefore, drought is harmful for both rangeland conditions and animal husbandry in winter.

Dust storm occurs frequently in the spring and autumn. Poor vegetation coverage from droughts increases the effects of dust storms. Dust storms then cause further soil loss, land degradation and the expansion of desert. Dust storms also bring about economic loss, health problems and even loss of life. Locust invasions can also take place after a continuous drought with high temperature, which severely destroys the rangeland vegetation. The most recent locust invasion took place in 2002.

Snow disasters seldom occur in the Erenhot area, which is very exceptional, compared to other areas in Xilingol league. When it does occur, a bigger loss is involved. Deep snow makes it difficult for animals to graze. Without enough preparation of fodder grains and better conditioned sheds, animals are exposed to dangers of starving and freezing to death. For example, in the snow disaster in 1999, many pastoral families in Erenhot lost a large number of their animals, especially larger ones.

Land degradation is the most conspicuous environmental problem in this area. According to Erenhot official statistics, 59.96% of the rangeland is severely degraded; 29.98% of it is medially degraded; and 10.06% of it is lightly degraded. Global warming in recent years has worsened the interwoven problems of drought, dust storms and land degradation.
Nevertheless, the dominant explanation of land degradation, which is overstocking, faces increasing criticism. Some scholars argue that the semi-private property right arrangement, the Household Production Reasonability System, which was started in 1980s, constrains the temporal and spatial dynamism of pastoral movement. As a result, this arrangement has exacerbated rangeland degradation (Li et al. 2007). Zhang et al. (2008) use case study data based on current rangeland use patterns and livestock distribution on a village scale to reveal that besides “quantitative overgrazing” (too many animals), “distributed overgrazing”, which increases grazing pressure at the household spatial-temporal scale, is also significant in shaping the present land conditions. Theorists of Non-Equilibrium Rangeland Ecology argue that in arid and semi-arid areas with high rainfall variability, the stress-response is determined by a rich set of concepts indicating that its development is non-linear, irregular, unpredictable, and multi-valued (Taylor 2006). The ecology is determined by climatic and not biotic factors, which implies “rangeland degradation and desertification are not caused by overgrazing but are part of a natural process of vegetation decline and growth in response to rainfall, which ruminant numbers merely follow” (Ho.2001). The failure in understanding the nature of such a system has led to inappropriate government policies based mainly on fixing the problem as they see.

In addition, water scarcity and poor water quality are also problems in some pastoral areas. Furthermore, development activities, including road construction, oil exploration, mining, and expansion of urban areas have created and have more potential to produce conflicts in terms of land use.

To explore the role of environmental factors in migration decision-making, it is very important to know how the local inhabitants perceive the change of the environment and how vulnerable they are to different environmental factors. Their vulnerabilities are connected with the risks involved in different environmental problems. However, it may be surprising to find that disasters, which are connected in the minds of the public with natural hazards, are not the greatest threat to the local inhabitants (Blaikie et al. 1994).

It can be useful to categorize environmental stresses in two groups as classified by Lonergran (1998)- cumulative and slow-onset environmental changes and drastic ones. The category of cumulative, or slow-onset change, may be more important in terms of potential magnitude and permanency of migrants.

3. FIELDWORK FINDINGS & ANALYSIS

3.1. Insights from expert interviews

Experts offered their insights about the relation between migration and environmental change in China, the origins and destinations of migrants, the characteristics of migrants, the motives and mechanisms of migration, the relevant social, economic and political factors at the local and national levels, and the future scenario of the environmental migration.
There are increasing numbers of environmental problems impacting China at local and national levels, including land degradation, air pollution, climate change, natural disasters, water shortage and pollution, development projects and human-made disasters. A fundamental problem is land degradation which involves the basic livelihoods of the majority in rural areas. Land degradation is exemplified as soil salinization and alkalization of cultivated land and desertification of grasslands. On the one hand, it is a result of overuse of fertilizers and modern technologies in the agricultural area, and on the other, it is an outcome of a complex historical interaction between human beings, land and climate change.

Several scholars emphasized at the beginning of interviews that environmental migration in China can refer to two types of processes. One is that the environment has degraded to a level where the people living there can no longer survive and are therefore forced to move. The other is that the local government thinks that the environment is not suitable for human beings and thus organizes resettlement. Both of the actions are ascribed to environmental degradation, but their mechanisms are very different. According to several interviewed scholars’ observations in the fields, the first type of environmental migration happens much less nowadays. Most recently, large numbers of migrants for environmental reason happened at the end of 1950s during the Three Years of Natural Disasters. Migration caused by severe environmental degradation happens now on a much smaller scale in most areas. For example, in Gansu province, where desertification has encroached into the peasants’ subsistence properties, people move back and forth to a neighboring pastoral area in Inner Mongolia.

There are two reasons for less self-initiated migrations. First, in contemporary Chinese history, especially since 19th and 20th centuries, extensive development activities have left few human-friendly places without human occupation. Second, the planning economy and registration system made any individual- or household-based free migration very difficult and after the economic reform of the 1980s, rural-urban migration mainly for economic reason has become the dominant migration pattern.

In addition, development projects, such as dam construction, have been the dominant reason for organized resettlements, which have displaced 45.1 million people since 1949 (Fruggle et al. 2000). The second type of environmental migration, governmental organized resettlements, started in 1982 when people were moved out of a mountain destitute area in Southern Ningxia province where the people could hardly make a living in the extremely degraded environment. Notably, poverty-alleviation was more emphasized than ecological protection at the beginning. Yet, the ecological protection purpose of such resettlement projects became prioritized since 2000 as one of the necessary responses to more frequent and disastrous natural hazards. For example, the flood of the Yangtze River in 1998 caused a direct economic loss of more than RMB200
billion and dust storms in 1999 extended to neighboring countries (Xinjiletu 2007). “Ecological resettlement” is used as a general technical term to refer to government organized resettlement of people from ecologically fragile areas or nature reserves. However, in practice, the poverty relief or development dimension never fades in this type of environmental migration.

Ecological resettlements are mainly carried out in the northern and western arid and semi-arid areas of China ranging from Inner Mongolia, Gansu, Qinghai to Xinjiang. Natural grassland area accounting for about 41.7% of China’s domain, and pastoral area accounting for 37%, are mainly located in the middle-western part of China. This region is very rich in natural resources and has a very significant ecological function for the bigger area. Economically however, it lags behind the eastern area of China. Most ethnic groups live in the western region and their livelihoods are generally very dependent upon natural resources.

The Western Region Development Strategy launched in 2000 is the general political framework for promoting its economic development and its ecological rehabilitation. Started in 1998 and accelerated in 2001, ecological resettlements in Inner-Mongolia have removed more than 6000 people from environmentally vulnerable areas. It was planned that altogether around 650,000 should be resettled between 2002 and 2008 within the province, with the governmental budget of more than RMB100 million (Chu & Meng 2005).

The destination of resettlement has changed over the years. In the 1970s and 1980s, undeveloped places were usually the destinations of resettlement in dam construction projects. In the 1990s, some comparatively spacious places, typically deserted state farms, were used to construct migrant communities. For example, peasants from Xihaigu, Ningxia province were mostly resettled to previous state farms surrounding Yinchuan, the capital of Ningxia province. In another resettlement project, peasants from Haidong prefecture of Qinghai province were resettled to previous state farms in Haixi prefecture. At the end of the 1990s and the beginning of this century, the above kinds of places became rarely available and at the same time another process, urbanization and development of small towns, made small towns become the destinations of resettlement. Policy makers consider small towns, with “five facilities” (electricity, water tap, highway, telephone and post service) as an ideal destination for ecological migrants. Ecological migrants were usually resettled to a new location as a whole group at the beginning. Presently, ecological migrants from the same origin are also resettled to different places.

The motives for migrating or joining a resettlement program are rather complex and vary from household to household, as well as from individual to individual. Environmental problems are usually not the determinant motive in the decision but are a more important factor in self-organized migrants’ motives than in government-organized ones’. It is wrong to generalize that migrants are forced in

---

resettlement projects and voluntary for a self-organized migrant since the latter can have no option but to move and a government-organized migrant can be willing to join a resettlement project. However, the findings of this study indicate that resettlement is often “forced.” In the ecological resettlement case of Xianghuang banner, 64% pastoralists were forced to move and 36% voluntarily migrated (Geng 2005). According to a Japanese scholar who did research in Alashan banner of Inner Mongolia, if people are in good health and also can sustain their present living standard, nobody would like to migrate to other places (Xiaochangguyouji 2005). Yet, we can see several differences between self-organized migrants and government-resettled migrants. Self-organized migrants tend to have stronger survival abilities and social capital in the destination. Resettled migrants usually have a lower position in the destination. People with low social status and weak social capital in the original community are usually easy to be resettled.

Livelihoods in the destination are also considered by the local governments. For peasants, they were provided with lands to cultivate in 1990s. For herders, they are facilitated to start milk-cow raising businesses. In some cases herders were supposed to start farming in the destination. People who are resettled to small towns must adopt new modes of production and livelihood often within secondary or tertiary industries. However, work opportunities are usually few, especially in less populated areas. Some people may find jobs in the limited numbers of transport, grocery, restaurant or small hotel businesses in the town, or start a small businesses. Often, some of the family members need to migrate further to a nearby city to look for jobs.

The outcomes of ecological resettlement are very complex and can hardly be generalized. Case studies of ecological resettlement in several places show that resettled migrants’ living standards are not improved and they become rather dependent on the subsidies from government (Dickinson & Webber 2007; Ma 2007; Gegengaowa 2006). Community conflicts also occur in some areas and they are often solved by elite coordination. Migrants face main difficulties in the new places including change of livelihoods, change of life style, language barriers and cultural inadaptability. New migrants also create new pressures on the environment in the destination area. For example, in Ningxia province, channeling water from the Yellow River for irrigating newly developed farmland for new immigrants has caused the expansion of soil salinization and alkalization; development of cultivating silage on rangeland in arid areas has the potential to decrease the groundwater.

Return migration between the destination and the original place are frequently found. A typical case happened in the eastern forest area of Inner Mongolia, where most Evenki reindeer herders returned to the forest from the new village soon after being resettled because they could not get used to the life. In another example, migrants from Haidong prefecture of Qinghai province farm both in the destination place and their original place. Resettlement in this case provides an
additional source of income instead of reducing the human pressure on local environment. Moreover, many herders in Inner Mongolia chose to migrate back to their places of origin after the resettlement contracts expire (Taogesi 2007). This type of migrant is expected to increase if they are not satisfied with the lives in destinations.

The prevalent explanation among policy makers points to the overexploiting activities of the locals like overgrazing that destroys the environment. Accordingly, evacuation of “the destroyers” is the fundamental method for rehabilitating the environment. Several scholars emphasize that internal migration has a rich history in China and the environmental problems are partially an outcome of this history. For example, reclamation of grassland in Inner Mongolia and Xinjiang by migrant peasants has led to land degradation, including desertification. Increase of population, migration and the relevant expansion of agriculture are therefore seen by some as keys in explaining land degradation problems.

In contrast, many scholars reflect upon the relationship between humans and nature, saying they are not necessarily antithetical. Therefore, to restore the environment, we do not have to move the people out but to reestablish a healthy interaction, for which we can learn a lot from the indigenous knowledge and cultures. Several scholars emphasize the importance of seeing from the perspective of the locals. For instance, they may have alternative strategies of adapting to environmental change instead of migrating permanently to other places. Ecological resettlement ignoring such strategies may result in unexpected return flows in the future.

Nevertheless, in practice, ecological resettlement shoulders many other tasks beyond environment protection despite the fact that the outcomes are often much more complicated than what the policy makers could imagine. In some areas, resettlement in the environmental degradation area is not a direct response to environment but to demographic pressure. It is often found that local governments consider resettlement as the most effective approach in pursuit of a win-win result - protecting environment and raising rural people’s incomes. Notably, local governments can gain from the influx of migrants through attracting business investments and obtaining finances for national projects. Pursuing such a “project economy” has gradually detached ecological projects from solving ecological problems.

3.2. Findings from questionnaires

Characteristics of the interviewees are presented in the Figure 4 and Figure 5, based on their gender, age, education, homes and destinations of residence and family size.

The category of non-migrant interviewees is composed of six male and nine female herders. All of them are married and live in their homes on their contracted rangelands. However, eight persons were born in their present places
while five persons settled down in their present places after the rangelands were contracted to them in the 1980s or 1990s. One female interviewee came to the present place through marriage. Rangeland contracting has generally terminated the nomadic way of life in this area. Most people settled on one pasture instead of circulating between different camps throughout the year, except those who have two pieces of rangeland with a distance no more than 30 kilometers in the same administrative village. Regarding migration for marriage, it is not unusual to find that a man moved to the woman’s place after marriage, which is socially and culturally acceptable.

The category of migrant interviewees includes nine male and six female persons, who were all herders, except one student, before migrating to the present place of residence. All of their migrations have something to do with governmental development projects and they happened in two periods: between 2001 and 2003, and between 2006 and 2007. Other than two persons who migrated within the pastoral area, nine persons migrated to Erenhot city and four persons migrated to the Qiha milk-cow-raising village.

| Items                | Indicators | Frequency | Percentage (%)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td>Age</td>
<td>20-30</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>41-50</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>4</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>61 above</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Average age: 47.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td>No schooling</td>
<td>8</td>
<td>53.4</td>
</tr>
<tr>
<td></td>
<td>Primary school</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Secondary school</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Beyond secondary school</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>Home village</td>
<td>Erdengobi</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Hujiletuya</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Suji</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Taoli</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Family size</td>
<td>2 persons</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3 persons</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>4 persons</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>5 persons</td>
<td>3</td>
<td>20</td>
</tr>
</tbody>
</table>

Figure 4: Basic information on the 15 non-migrant interviewees
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Contents</th>
<th>y</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Age</td>
<td>20-30</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>41-50</td>
<td>5</td>
<td>33.4</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>60 above</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>Average age</td>
<td></td>
<td>44.7</td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td>No schooling</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Primary school</td>
<td>10</td>
<td>66.7</td>
</tr>
<tr>
<td></td>
<td>Secondary school</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Beyond secondary school</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Home village</td>
<td>Erdengobi</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td></td>
<td>Hujiletuya</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Suji</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Taoli</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>Destination</td>
<td>Erdengobi</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Taoli</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Qiha milk-cow-raising village</td>
<td>4</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>Xingguang district in Erenhot city</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Private housing in Erenhot city</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Family size</td>
<td>2 persons</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>3 persons</td>
<td>4</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>4 persons</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>5 persons</td>
<td>2</td>
<td>13.4</td>
</tr>
</tbody>
</table>

Figure 5: Basic information on the 15 migrant interviewees

The responses of the interviewees to the questionnaires are analyzed and grouped in five themes in order to investigate:

- why some people migrated and some people stay;
- the obstacles that prevent people from migrating and the non-migrants’ coping strategies in the environmental degraded area;
- how people choose their destinations and the role of social networks.

3.2.1. Perception of environment
In describing the environmental situation in his/her place of residence, nine non-migrants think the current environmental quality is better than some years ago. The other six provided the following comments:

Interviewee no.1: The environment has changed a lot, mainly because of droughts.

Interviewee no. 2: Without rain, the rangeland was in bad condition for years. There were several disasters, like snow storm, sand storm and the locust disaster.

Interviewee no. 7: The rangeland does become worse than before but the main reason is drought not overgrazing. If we have a heavy rain before August, just one is enough, the rangeland will be good and we will have a good harvest year.

Interviewee no. 9: The ecological system here has changed a lot. The climate has changed a lot. The activities of human beings and animals definitely have some impact on the system but they are not determinant. The system has changed by itself.

Interviewee no. 14: The rangeland is not in good condition. It has been like this since 1997 because of lack of rainfall. It was worst in 2000. Afterwards, in 2002 and 2003, there was continuous droughts and a locust disaster. Small puddles have also not been seen for more than ten years.

Interviewee no. 15: The rangelands are not as good as they used to be. I think it is because rangelands are contracted to households and we can not move around with herds as before.

The differentiation of opinions may be considered to be caused by different understandings of the concept “some years ago.” Those who agree that “currently it is better” compare the present situation to the disaster years between 1997 and 2003. They generally think that because of good rainfalls in the last three years, the rangelands have good vegetation. If the time scale is extended to twenty or thirty years, the present environmental situation is worse than before as indicated by several interviewees. Drought is commonly blamed for rangeland degradation. Interviewee no.7 and no.9 especially point out that the environmental problem is a result of the change of the global ecological system and herding activities are not responsible for it. Nevertheless, none of the interviewees included environmental factors other than climate change and land degradation.

Migrants’ answers to the present environmental problems in the places of origin have echoed similar opinions. All of the thirteen persons who have such relatives indicate that they face environmental problems. They name a list of problems including: climate change and lack of rainfall, droughts (but not in the recent two
years), forbidding herding activity, encroachment of rangeland by oil exploration, mining, road construction and transport activities, general environmental degradation, and poor water quality in some areas.

3.2.2. Perception of migration

It is confirmed by most non-migrants that very few people migrated to urban areas before the first resettlement program was launched. The question remains therefore, was migration an option for coping with environmental degradation in this pastoral area? The answer is positive. Mongolian pastoralists have a long tradition of mediating the balance between herds and rangeland, and coping with extreme weather patterns through spatial mobility (Zhang 2006). They have a special term for migration with animals to other pastures, named “Going Aoter”. Although the practices of “going Aoter” have been constrained to narrower and narrower designated boundaries, especially since rangeland was contracted to households and most pastoralists settled down in 1980s, it is found through studying the interviewees’ migration histories that migration to a rangeland with better vegetation has still been the most often used coping strategy in disastrous years. To some extent, pastoralists were settled but not sedentary.

Nevertheless, interviewees also indicate that this strategy becomes increasingly opportunistic and expensive and its availability depends strongly on one’s social network. Although the other type of migration, movement to the urban area, was alien to pastoralists in this area until the first resettlement program started, flows between pastoral and rural areas have become a frequent phenomenon. Further distinction between program-based migration and self-motivated migration is meaningful for understanding their interaction and forecasting migration patterns.

Discussing migration in relation to environmental problems in such a context has is not without its limitations. The respondents’ understandings of the term “migration” are varied. For example, in some answers, some refer it both to “going Aoter” and movement to small towns or urban areas; while in other answers, they confine it to the latter meaning. Migration in the questionnaires should thus be interpreted carefully in light of the specific context.

3.2.3. The role of environmental problems in migration decision-making

Have environmental problems triggered migration? All fifteen migrant respondents think that environmental problems affected their decisions to move at some point in their lives. Eleven stated that they moved from their original homes in part because of environmental problems, which means it was the impetus behind the initial decision to become a migrant. The migrant who moved more than one time when environmental problems started to affect him explained that he had several temporary migration experiences with his herds during the disaster years. Three other migrants also used to migrate temporarily with their herds to avoid disasters. Only one migrant who married into the pastoral area
has several migration experiences but environmental problems were not the reason that motivated the movement.

Generally speaking, nearly all pastoral migrants in this area have had temporary migration experiences with herds during the disaster years. However, for twelve of them, it is the resettlement program which affected their decision to move away from their initial homes. Only two out of fifteen migrant interviewees indicated that they migrated to Erenhot by themselves because rangeland degradation was so severe that herding became impossible. They moved slightly prior to the implementation of the first resettlement program in 2002.

When non-migrants were asked to comment on their opinion upon villagers’ migrations, none of them gave positive answers. On one hand, they describe migrants’ unsuccessful experiences in milk cow villages and emphasize the difficulties in living in the city and, on the other hand, they affirm that their best choice is to be a herder. Two non-migrants indicated that some families with a large area of contracted rangeland moved because of the large subsidy given. Another interviewee indicated that poor families with few animals chose to move. However, two others also expressed that younger generations may prefer to stay in the city and the future trend for young people may be to live in the city. Environmental problems are not mentioned at all in their answers.

If migration to an urban area was not originally an option for coping with environmental problems, do resettlement programs enable this option or do they enable people’s other reasons for migration despite the fact that the resettlement programs are in the name of environmental protection? From the responses received, some specific reasons for moving away from the place with environmental problems or being resettled were commonly noted (factors mentioned by at least two migrants):

1. illness of family members, which causes lack of labor for herding on the one hand and the need for medical treatment in the city on the other hand;
2. accidents like a car accident or loss of animals;
3. land degradation and loss of animals in the preceding disastrous years;
4. a high expectation of becoming better off in the city;
5. advocated governmental support through subsidy, education fee and job seeking;
6. encroachment of rangeland by highway or transport and grazing ban policies.

Obviously, voluntary participation in a resettlement program does not mean that one believes that environmental degradation is intolerable. Instead, it is argued...
here, voluntary resettlement is an action based upon an evaluation of the consequent pull and push factors, which will be further analyzed later. Avoiding environmental problems is rarely determinant in the migration decision itself but is usually a byproduct of the migration action.

Timing is also very important in evaluating the role of resettlement programs in migration decision-making. The first resettlement program, launched just after a series of hazardous years, opened another door for many people who had heavy economic losses and had low expectations of environmental improvement. When the second resettlement program was launched, the climate and rangeland conditions had returned to a favorable situation and people had heard of stories of migrants after resettlement. Therefore, different factors and their importance were given different values in each round of decision-making.

3.2.4. Migration motives, migrants’ decision-making and non-migrants’ perceptions

To further understand how environmental factors interplay with other social, economic and political factors in migration decision-making, migrants were asked to identify how important certain considerations were in their original decisions to migrate and non-migrants were asked to identify what they believe to be the main motives for those who moved away.
Figure 6: Important factors in a migrant’s original migration decision

Figure 6 shows the factors that are important to at least one migrant. It reveals that the factors in migration decision-making are rather diverse but there are also a few top recognized factors. “Development plans” is important or very important to eleven migrants and important to four migrants; “not enough income” is very important to four and important to three; “drought/water shortage” is very important to one and important to five. If the factors are aggregated to social, political, economic and environment groups, we can find that the grouping of “environmental factors” is the top ranked one, economic factors are very important, social factors are important and political factors are few.

Figure 7: Non-migrants’ perceptions of main motives in migrants’ migration decisions

Figure 7 indicates the main migration motives from the perspectives of non-migrants. Nine non-migrants think that “development plans” is a motive for some to move and six non-migrants think it is a motive for many to move; all non-migrants agree that “no/insufficient public provisions” is a motive for some to move; thirteen non-migrants think “unemployment or not enough income” is a motive for some to move and one thinks it is a motive for many to move; ten non-
migrants think “water shortage/drought” is a motive for some to move and three think it is a motive for many to move; eight non-migrants think that “not satisfied with their livelihood” is a motive for some to move. Thus, the aggregated importance of social, economic, environmental and political factors shows the same pattern as found in migrants’ opinions: environmental factors are most important for people to move away, economic factors are very important, social factors are important and political factors are few.

3.3. Analysis of Findings

Inspired by the behavioral approach in migration research, the following analysis gives an evaluation of important factors in pastoralists’ migration decision-making processes. The behavioral approach stresses the importance of the mechanisms behind individual acts of migration. A migration decision is brought about by a combination of push and pull factors in both origin and destination but there are obstacles and barriers which may prevent migration from occurring. Environmental problems contribute directly or indirectly to some factors and not to others. In this way, they affect the migration decision. However, it is important to note that different person have different judgments on whether a factor is pull or push; and push factors can turn to pull factors over time and vice versa.

Factor 1. Development plans

There is a high recognition of “development plans” as an important migration motive both among migrants and non-migrants. We need to explore what development plans enable and disenable in order to see how they influence people’s decisions. A subsidy is a main support or compensation offered to migrants. Its amount is based on the contracted area of rangeland and it is given during the contract period (standard one to five years to be renewed). It attracts families with insufficient income. Lack of income can be caused by unemployment and failure to recover from big losses in previous disastrous years. Additionally, some families with big contracted areas of rangeland would compare the amount of subsidy with their income in the pastoral area. If the former is higher, it can become one of their migration motives.

Furthermore, favorable policies in nursery and education exempt migrants’ children of all fees and give scholarships in higher education. They are attractive to families with several children. Supportive policies for business and employment, including free training in raising milk cows or other job training, introducing job opportunities, exemption of fees and financial support in starting one’s own business, give people a high expectation of getting jobs in the cities. They are identified as important attractions by respondents. However, several migrant respondents indicated that they have had great difficulties in getting stable and permanent jobs, which they had anticipated from the initial policy proposals. This disappointment has turned a pull factor to a push factor in the destination.
Financial support was given to migrants who moved to milk-cow-raising villages. In the first resettlement program, all people were facilitated with loans to buy milk cows. Housing and land were also provided to migrants. In the milk-cow-raising village, each household was given a semi-detached house and a piece of land to cultivate silage. In Erenhot, migrants are offered apartments in the city. Better housing with supplies of water and electricity does improve their living conditions but few respondents feel they are important attractions in migration decisions.

In the following discussion of return migration, we find that unfulfilled expectations also become an important motive for return migration. Development programs also have negative effects upon herding animals in the pastoral area. Migrant pastoralists are required to stop any animal grazing activities on the areas of their contracted rangelands. Therefore, they usually either sold all the animals or kept or contracted some animals to relatives’ or friends’. Nevertheless, since most of the rangelands were not fenced after the migrants signed the contracts, they were used by their neighbors. Given the lack of a monitoring system, the de facto common use of rangelands by neighbors has been continued. Dissatisfaction with neighbors’ use of their resources becomes a motive for return for some migrant respondents.

Factor 2. Livelihood in places of origin and destination

Livelihood in the places of origin is very central for understanding migrants’ moving decisions, non-migrants’ potential of moving and plausible return migration. Animal herding is the dominant kind of livelihood for all the interviewed non-migrants and nearly all migrants in their places of origin. Animals and their products are the only source of income, food consumption and fuel. Although this sole livelihood involves a high risk of not making enough income, most families have followed this manner of life and they think this is the only and best way to survive in this fragile environment. Animal herding is a physically demanding job. Households with few young laborers and sick members have difficulties achieving prosperous livelihoods.

Pastoralists’ livelihoods are very sensitive to any factor that affects animal production, which not only includes unfavorable environmental factors like drought, lack or decrease of water, snow disasters, shortage of grass and poor quality of water, but also socio-economic factors like rangeland management policies. Pastoralists can improve their livelihoods by increasing the quantity of animals or the value per animal unit. All respondents confirm that their animal quantities have decreased in the past few years. The indicated reasons of decreased animal quantity are natural disaster, unavailability of fodder, selling animals in emergency cases, migration to urban area and strict stocking rate regulations. When respondents are asked if the government does anything to improve the situation with respect to the environment, many of them refer to the stocking rate regulation and seasonal grazing ban. Although de-stocking may
benefit the regeneration of degraded pasture, its social and economic effects are negative because it threatens the sustainability of livelihoods in the pastoral area. Some respondents frankly confess that their quantities of animals are above the standard but they have to take the risks because with the standard quantities they cannot make a living. Furthermore, loose checking in the last two years encourages them to take the risk. Similarly, the seasonal grazing ban is implemented if pastoralists can get free provision of fodder. If not, they choose to herd animals on the rangeland as usual. The impacts of rangeland policies on pastoral livelihoods are thus complicated by local interactions. As to the second method, raising the value of per animal unit, although it is greatly encouraged by the government, for example by introducing more productive breeds or ones with a high market value, most respondents had unsuccessful experiences with them.

It should also be noted that capacities to deal with natural hazards have been improved in the pastoral area. Nearly all households have warm sheds, some of which are financed by governmental projects. The government also helped in 2000 with providing fodder after disastrous years. However, since the launch of the resettlement programs, animal herding is not encouraged by the government, which has ended the financing of facility construction.

Because of the increase of meat prices in the past few years, it is more profitable to herd animals. This also becomes a motive for return migration.

Migration to urban areas and milk-cow villages has changed the roles of men and women. In the pastoral area, women take on much of the work, but in the urban area, men have many more opportunities to find jobs. This is especially the case for people above a particular age and with less education. Furthermore, the social hierarchy in the city gives people little possibility of helping others. Most people are concerned with their own livelihoods.

Because of the design of the questionnaires, we can not look into some interesting questions, like the sources of income of migrants. However, generally, people have several sources of income but at the same time, they still rely a lot on animals in the pastoral area both for food and income.

**Factor 3. Coping strategies in the pastoral area**

Life in the pastoral area became more difficult because of environmental problems and social and economic problems, but individuals, families and communities have a remarkable ability to adapt to changing and distressed conditions. The initial response is to develop stronger safety and coping mechanisms to deal with adverse ecological and economic circumstances (Lonergan 1998). We assume therefore that migration is not the first option but that people develop several coping strategies to deal with changes. The extent to which such strategies can be sustained influences whether people choose to stay in the pastoral area. Below are some of the coping strategies identified:
(1) Some non-migrant respondents whose summer pastures have not been in good condition stop seasonal migration between summer and winter pastures. Instead, they choose to stay on the winter pastures, although they are sandy and very hot in summer.

(2) Some non-migrant respondents in areas with shortage of water do not raise big animals and transport water frequently from distant places but this means that people can not consume big animals and their byproducts and with the increase of the diesel oil price, transport has become increasingly expensive.

(3) “Going Aoter” is the most important way to avoid natural hazards and solve the shortage of fodder but it is becoming more and more expensive and difficult.

(4) Some households have started to diversify livelihoods. A few households which are close to Erenhot city provide tourism activities; some produce dairy products to supply small shops in the city; and some contract migrants’ animals to increase income;

(5) Some pastoral households lacking sufficient labour employ shepherds to herd animals for them.

Factor 4. Perception of environment, projection of climate change and policies

The pastoral area in Erenhot is historically dry and experiences disasters every few years. Many respondents think coping with hazards is an important part of a pastoralist’s life, captured in the following statements:

We have more animals in good years and lose some in bad years. It has always been like this. We just managed to support the whole family.

We are very used to disasters but I can not really tell what techniques we have to cope with them. During snow storm or drought years, we lost some animals, but that is normal. If we can prepare better ahead, it is alright.

Non-migrant respondents’ perceptions of environmental change and their environmental identity affect the significance of environmental factors in their migration decisions.

Factor 5. Provision of services and financial support

From the interviews conducted, it appears that migrants have little access to formal financial channels. Financial services are mostly provided through inter-personal channels.
Factor 6. Help from organizations

This area is affected by a lack of cooperation amongst herders. Therefore, no help is available regarding financial services, food or jobs. It should be noted that all these are provided through the governmental system and thus non-governmental organization or other groups do not play any role in this area. There is no internal organization either.

Any organization is very foreign to this area. Few people in pastoral area have any idea of organization. In other pastoral areas, cooperation among pastoralists is encouraged.

People have little religious belief but they still keep many traditional beliefs. Oboo and Shaman ceremonies are still important rituals, though people can not really explain the functions of such rituals. They are nonetheless important gathering opportunities for pastoralists.

A milk cow raising association was established to organize a share-holding company. It is intended to solve many problems in the daily operation of individual household businesses.

From the jobs that the migrants have found, we find that many people choose to stay in the pastoral area instead of going to work in the city. Without any professional skills, it is hard for them to find a “danwei” or stable work. They only associate “a fixed job” to working in pastoral area. People encounter a lot of difficulties in adapting to the life in the city. Many migrants have difficulties in changing their means of living mainly because of their low level of education and lack of training and other support.

3.4. Future migration trends and return migration

All of the non-migrants think that migration from the village in the past years is temporary.

Two persons out of fifteen, who still live in the pastoral area, expect environmental problems in the future to make the person or his/her family want to migrate to a different place. From conversations which are not covered by the questionnaires, they mentioned their worries over the future policies towards the pastoral area and that the change of climate may still cause temporary migrations. Although few people think environmental problems will not be the reason for migration, eight out of fifteen people plan to migrate in the future. The reason for their migrations is the unemployment problem, others all plan to move back to their homes in the pastoral area. The reasons are:

1. many expenses and not enough income in the city
2. lack of medical care
3. nothing to do in the city, it is better to herd animals

Return migration is caused by a failed migration experience. The migration decision itself is not taken lightly, the procedure itself is not a big cost or obstacle in its implementation because it is easy to get help from friends or relatives for moving and it is easy for them to move with simple things. Furthermore, the distance from the city back to the pastoral area is fairly minimal. Transport facilities are generally available. People who do not plan to move from their new places of residence state different reasons for their decision:

1. Sufficient subsidies because of large rangeland area and ability to find a part time job
2. Family issues, such as children’s future in the city
3. Personal illness
4. Uncertainty of the future policies and children’s preference to stay in the city
5. Policies do not allow them to go back. Their expectation of the policy is also negative
6. Cumulative knowledge and capital in the destination Qiha

Projection of the migrants about their futures is based on their conditions in their present residences. The environmental improvement in the recent years in the pastoral area makes stayers happier while the movers are regretful, especially if their present conditions are not as good as they expected. The good income for 2007 was because of favorable climate in that year and the significant increase in the price of meat. Pastoral households who are totally dependent on government subsidies, are generally unwilling to move. Therefore, low subsidies and unemployment are important factors for pastoral migrants.

4. CONCLUSIONS AND FUTURE RESEARCH

Since this case study is carried out in just one township with a limited numbers of respondents, it is not possible to generalize the conclusions regarding the relationship between environmental change and migration in Inner Mongolia. Instead, this study aims to offer some points for further studies in this area. The primary findings are summarized below.

Firstly, environmental degradation rarely in and of itself causes migration but it is a contributing factor in most migration decisions. This confirms Lonnergan’s (1998) argument that the linkage between them is much more indirect and
“drawing a linear, deterministic relationship between environment degradation and migration is not only inappropriate but impossible”. In this case study, environmental degradation, including climate change and natural hazards, has reduced the productivity of rangeland and increased loss of animals. Consequently, pastoralists who can not get enough income have to migrate. Therefore, the migration motive directly for economic reason is actually indirectly driven by environmental degradation.

Secondly, given environmental degradation, migration is used as a coping strategy much more by the government than by individuals in this case. Although migration may reduce environmental stresses, it may increase and produce another set of economic and social stresses in the new places. Moreover, many pastoralists think they have several alternative ways of coping with environmental degradation other than migration. Coping with hazards is thought to be an important part of a pastoralist's life. Therefore, their perception of environmental change and their environmental identity affect the significance of environmental factors in their migration decisions.

Thirdly, resettlement programs set up the basic institutional structure in the migration processes and they affect the pastoralists' matrix of push and pull factors upon the migration decisions. Many migrants use resettlement programs as a way of reducing short-term social and economic stresses and to move is a temporary action. Some others have high anticipation of becoming better off in the destinations with supportive policies. Subsidies are important attractions and supportive policies give migrants high expectations for the destinations.

Fourthly, return migration is expected to become a typical pattern and better income by herding animals in an improved environment is a very important motive for many. Many pastoralists in the first resettlement program have returned to their homes. A large number of migrants moved by the second program also express their willingness to return in a few years. Several experts also confirm that return migration happens in most resettlement projects. Most resettlements around the world have sent the livelihoods of the majority of resettlers into a downward economic trajectory (McCully 1996). From the migrant respondents in this case, we find that unfulfilled expectations, maladjustment to life in the destination, improved environmental conditions at home in recent years and release of short-term stresses at the initial migration time all become motives for going back. However, there are also some persons who prospered in the destinations and some who are very dependent on subsidies that will not or can not return.

Fifthly, human-made environmental problems are expected to increase with the speed up of urbanization. Utilizing resources in the neighboring pastoral area to support the construction of city is becoming common. Encroachment of land, pollution of water and air and trampling rangeland all have the potential to create conflicts.
Sixthly, most migrants are still involved in resource use in the pastoral area. Part of their food consumption and income still relies on animals kept in the pastoral areas. Besides, migrants still hold the use rights of rangeland and when they stop obtaining subsidies, they can rent them to non-migrant pastoralists or employ shepherds to continue herding. Therefore, there is still a linkage between migrants and the environment in their home places.

Resettlement programs do promote the connection between rural and urban areas. More people have relatives in urban areas and many young people who finish studies in cities stay in the city. The migration pattern is expected to change with the demographic transition. However, to project the future scenario of migration in the pastoral area, we should first of all consider the government strategic planning. Some experts think that it is hardly possible that the government will produce any more “radical” environmental policies such as those of 1998 but at the local level, present environmental resettlement programs are to be maintained. People in this top-down social structure have fewer initiatives. Their behaviors and actions are mainly responses to the government’s actions.

Pastoralists have become more vulnerable. The main stress is not however from environmental degradation, but instead a host of other social, economic and institutional factors, the latter of which affect their abilities to adapt to a changing environment.
5. REFERENCES


China’s Ecological Environment, (新吉乐图主编，中国环境政策报告生态移民-来自中、日两国学者对中国生态环境的考察，内蒙古大学出版社，2005）
