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RANGELAND GOVERNANCE IN A SUBURBAN AREA OF POST-SOCIALIST MONGOLIA

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The way in which to ensure compatibility between development and environment preservation is one of the most crucial issues for pastoral societies. In suburban areas of the capital and secondary cities of Mongolia, the influx of herders who have migrated in search of a better life after Mongolia transitioned from a socialist to a market economy in the early 1990s, has caused problems in rangelands such as pasture degradation by overgrazing and shortages of water and forest resources. To address this problem, the “Peri-Urban Rangeland Project” was launched in 2008 by the Mongolian government with the help of funding from the U.S. The key objective of this project was to determine a sustainable environmental and economic model for the pastoral economy by changing the extensive, nomadic pastoral economy into an intensive, sedentary one. However, the specific objective of the project, which involves admitting a small number of herders to use land exclusively for long periods, differs from Mongolia’s tradition of open access pasture use that enables co-management of multiple, overlapping, and contingent resources. For example, in Orkhon district, a suburban area in Bulgan province, Mongolia, which is one of the project sites, many herder groups have already signed pasture land use contracts for fifteen years, and this has generated a new problem that these plots overlap with other herders’ seasonal campsites and public meadows. In this presentation, I will discuss how the introduction of settled and semi-settled herding impacts rangeland use and management in suburban areas of Mongolia based on the case of Peri-Urban Rangeland Project.

KEY WORDS: nomadic pastoralism; development; resource management; postsocialism; Mongolia

1. INTRODUCTION

The way in which to ensure compatibility between development and environment preservation is one of the most crucial issues for pastoral societies. Mongolia experienced a transition from a socialist economy to a market economy in the early 1990s. This has led to some environmental problems, such as pasture

degradation, which is caused by overgrazing and shortages of water and forest resources. Especially, in suburban areas of the capital and secondary cities of Mongolia, immigration of herders in search of a better life makes pasture degradation a more serious problem. To address this problem, the “Peri-Urban Rangeland Project” was launched in 2008 by the Mongolian government with the help of funding from the U.S. The key objective of this project was to determine a sustainable environmental and economic model for the pastoral economy by changing the extensive, nomadic pastoral economy into an intensive, sedentary one. However, the specific objective of the project, which involves admitting a small number of herders to use land exclusively for long periods, differs from Mongolia’s tradition of open access pasture use. Therefore, it is necessary to investigate how this project impacts natural resource management and use in suburban areas of Mongolia.

The purpose of this paper is to reveal how the change from nomadic herding to settled and semi-settled herding impacts pasture land use in suburban areas of Mongolia. This paper is based on research I conducted in the 2nd subdistrict, Orkhon district, Bulgan province, where it is one of the sites of the Peri-Urban Rangeland Project. In this paper, I first explain the historical change of pastoral society in Mongolia in the 20th century by focusing on the establishment and collapse of pastoral cooperatives. I then examine the characteristics and problems of the pastoral economy after the transition from a socialist to a market economy. Finally, I discuss how the introduction of settled and semi-settled herding impacts rangeland use and management in suburban areas of Mongolia based on the case of the Peri-Urban Rangeland Project.

2. PASTORAL SOCIETY IN TRANSITION

2-1. Modernization experience of herders

In Mongolia, there were two waves of collectivization during the socialist era. In the first, radical leftists of the Mongolian People’s Party (later renamed the Mongolian People’s Revolutionary Party) tried to defeat feudal authorities, such as nobles and monasteries, and collectivize traditional nomadic pastoralism. The old feudal authorities lost political power to the Mongolian People’s Republic, which was established in 1924; nevertheless, they maintained their economic power¹. Therefore, the government’s first challenge was to confiscate feudal property. The confiscation of feudal property was implemented in a concentrated manner between 1928 and 1931; moreover, the government tried to establish and force herders to join collective farms. However, they had to abandon this attempt

¹ According to the official records of the Mongolian People’s Revolutionary Party, feudal authorities—such as nobles and monasteries—had more than 3 million heads (i.e., about 35% of the total number of livestock heads at that time) [The Institute of History, the Mongolian Academy of Science 1988 (1969): 208]

because of fierce resistance from both feudal authorities and herders.

The Mongolian government restructured the national economy in order to enter the Second World War in alliance with the Soviet Union. The livestock procurement system was established for the first time under particular circumstances, such as wartime emergencies. Most livestock products were exported to Soviet Union [Sakamoto 1969: 28]. After the Second World War, the first and second five year plans (1948–52 and 1953–57, respectively) were formulated to stimulate the pastoral economy, which had been struck by the war and the harsh, cold weather. During this period, the government took measures to promote the pastoral economy and demanded payment of taxes and livestock products (e.g., meat, milk, and fiber) from herders. However, it did not achieve the expected results. As a result, the former system based on individual livestock production was accused of causing the slump in the pastoral economy².

In this situation, the Mongolian government began to collectivize agriculture again. The second wave of collectivization started in a 1955. The three year plan formulated in 1958 determined to join individual herding households into pastoral cooperatives. As a result, the number of households belonging to pastoral cooperatives increased from only 10.8% in 1955 to 97.7% in 1959.

The new form of the collective, which is called *negdel*, was considered as a considerably more advanced stage of collectivization than were the old voluntary associations. The government and the party came to play an important role in the instruction and supervision of pastoral cooperatives. Each pastoral cooperative had to fill the annual production quota set by the Ministry of Industrial Procurement. In this way, communization of the pastoral sector was successful in the late 1950s, but that did not necessarily expand pastoral production—in fact, the pastoral economy has languished for more than a few decades.

The Mongolian government first officially admitted the slump in the pastoral economy in 1987. It has implemented economic reforms, and some positive results were obtained. However, the government could not stop the transition to a market economy. The agricultural sector began to be privatized in 1991, when pastoral cooperatives were dismantled. Livestock products began to be traded under the principle of freedom of contract and price instead of the livestock procurement system, which has continued for about half a century. Of course, these “shock therapy” reforms caused confusion and difficulties in pastoral society.

2-2. Foundation of local community

In the Soviet Union and the other socialist countries, the structure of traditional society was changed to conform to socialist control after the socialist revolution. In Mongolia, the government established pastoral cooperatives as the basic unit

² One reason is the fact that most socialist states (except Poland) had collectivized agricultural sectors by the late 1950s [Futaki 1993: 116].

of social unity and pastoral production in the socialist era; these were intended to create new communities and a new economic structure.

The establishment of pastoral cooperatives changes the life of people in rural areas. The administrative village was constructed in the center of each pastoral cooperative; it enabled people who live in rural areas to take on jobs other than livestock raising. In fact, the population has grown rapidly, and they have worked at local government offices, hospitals, and schools newly constructed in the settlements. They have engaged in supplemental work, such as distribution and processing of livestock products. As a result, the settlements came to serve as social and economic hubs for rural areas. Livestock products from rural areas were sent to urban areas as food products and industrial materials, while various products and services were sent from urban to rural areas.

This production system based on the domestic division of labor between rural and urban areas formed the basis of the pastoral economy during the collective period. Although the pastoral economy during the collective period was maintained by this homogeneous productive system, there were also regional differences therein. The most important characteristic of Orkhon district is that located near Erdenet, a leading industrial city that was developed for a mining project during the socialist era. Before the 1960s, when the first geographical investigation was conducted by the government, this area was merely a rural countryside. The discovery of large copper and molybdenum deposits changed this situation drastically. Industrial plants other than mining-related facilities (e.g., carpet and food factories) were constructed for a few years, and Erdenet grew into one of the leading industrial cities of Mongolia. Similarly, state farms have been established in suburban areas of the capital and secondary cities since the late 1970s. These trends reflect urban and industrial development over a short period.

As mentioned above, the collectivization of agriculture in the late 1950s created new communities and a new economic structure in rural areas. This socialist modernization caused a large change in the traditional pastoral system, which continues to influence the way herders live today.

3. SOCIAL–ECONOMIC CHANGE AFTER THE TRANSITION TO A MARKET ECONOMY

3-1. Present situation and problems of pastoral economy

The collective production system was dismantled by the transition to a market economy from the early 1990s. Mongolia radically reformed its political and economic structure under pressure from international organizations and donor countries; however, the reform package they proposed was not based on the cultural and historical background of pastoral society. Therefore, people have become to suffer severe consequences.

This radical economic reform had considerable impact on people's lives. The privatization of state enterprises, such as state farms and pastoral cooperatives, yielded dumps that brought large-scale unemployment to Mongolia, especially in urban areas. Price inflation caused by the lifting of price controls made it difficult for people to buy food and daily commodities. Mongolia's traditional subsistence nomadic pastoralism has played an important role in mitigating social and economic chaos. In fact, the pastoral sector has accepted a large number of people who became unemployed due to privatization of state enterprises³. The total number of livestock heads has also increased from 22 million in 1987 to over 40 million in 2007; on the other hand, the sector is faced with the difficult problems of poverty and environmental degradation.

The rapid increase in animal husbandry negatively affects both the productivity and sustainability of pasture use. It was not caused by the rise in pastoral production but rather by the lack of markets and a distribution system. The domestic distribution system—which connected herders with factories processing meat, milk, and fiber—was dismantled after the transition to a market economy. Further, many factories were forced to shut down due to raw materials shortages. Although the total number of livestock heads increased, industries derived from livestock products remain sluggish.

There is one exception: cashmere (obtained from goats) is one of the biggest export products, comparable to mineral exports. However, excessive dependence on goat husbandry involves risks: goat husbandry imposes significant pressure on rangeland, because goats dig up and eat plants' roots [Fujita 2002: 568]. There is also the threat of mass death among goats, which are vulnerable to being damaged by snow and wind if harsh, cold weather occurs.

In fact, harsh, cold weather from 1999 to 2002—and more recently in 2010—inflicted enormous damage on the pastoral economy of Mongolia. The worst case is if heavy snowfall occurs alongside drought in the same year. Therefore, it is necessary to stock grass and forage crops in serious drought years. However, domestic fodder production has declined after the transition to a market economy⁴. The lack of a systematic response to harsh, cold weather also worsens this situation.

Furthermore, livestock infectious diseases, such as foot-and-mouth disease, anthrax, and brucellosis, are also serious. The number of livestock infected with foot-and-mouth disease has risen since 2000. Since veterinary service switched from a free to a pay service, the animal quarantine system has become weakened, especially in rural areas.

³ In 1998, agricultural laborers (most of them herders) constituted 48.7% of Mongolia's labor force. The number of workers engaged in agriculture decreased due to harsh, cold weather from 1999 to 2002, but agriculture still accounted for 29.9% of the labor force in 2011.

⁴ By 1999, Mongolian domestic fodder production had decreased by almost half of the 1987 value [Koibuchi 2002: 92-94].

After the transition to a market economy, various problems of pastoral production arose in Mongolia. Public support for livestock raising during the collective period—such as transportation, fodder supply, and veterinary service—was abolished, and herders have to shoulder it by themselves. This has increased the risk associated with natural disasters overall.

3-2. New movement for pastoral development

It is not that the Mongolian government has taken no measures against these problems, but the government has had to depend on foreign aid because of financial difficulties. Recently, there has been a change in the situation. In the national development strategy released in 2008, the government indicated its focus on both the achievement of food self-sufficiency and the development of the agriculture and food industries as top-priority issues. Furthermore, the national action plan (2008–2012) set the goal of ensuring a supply of safe, good-quality food products and increasing exportation of them. In this way, the government reveals its plan to tackle the development of agriculture.

The Mongolian parliament approved the National Livestock Program in May 2010; this is a decade-long development plan to achieve sustainable development of pastoral production. After this, related domestic policies and projects are coordinated and implemented under this program.

The National Livestock Program consists of the following activities: (a) improvement of the legal system, (b) increased quality and productivity of livestock, (c) expansion of veterinary service, (d) establishment of a livestock production system suitable to ecological and climate changes, and (e) building a processing and marketing network for livestock and livestock products. The numerical targets for each activity by 2015 and 2021 are established according to 2008 data. In addition, the government determined to allocate at least 3% of the national budget to this program every year.

These efforts are expected to lead to solutions to the issues facing pastoral society after its transition to a market economy. On the other hand, they have a potentially greater impact on herders' lifestyles and their methods of raising livestock. The National Livestock Program has adopted a plan to develop an intensive, sedentary pastoral economy in addition to an extensive, nomadic one. The former is based on settled and semi-settled methods of increasing the productivity of livestock raising. It is necessary to provide pastures for herders for long periods. However, individual possession of pastures is prohibited in Mongolia. Accordingly, international and national projects have been organized to form herder groups and provide them the right to possess pastures in order to manage rangeland sustainably. As of 2006, over 2000 herder organizations had been established nationwide by more than 12 donors and NGOs [Mau and Chantsallkham 2006]. In the following sections, I discuss whether instruction in terms intensive livestock raising contributes to the sustainable management of

rangeland in suburban areas. My discussion is based on the case of the 2nd subdistrict, Orkhon district, Bulgan province, which is one of the project sites of the Peri-Urban Rangeland Project, which receives funding from the Millennium Challenge account.

4. PASTURE IN SUBURBAN AREAS: OVERVIEW OF RESEARCH AREA

4-1. Environmental background

Orkhon district is located in Bulgan province. It is located nearly 300 km northwest of Ulaanbaatar, at 103° 32' E longitude and 48° 37' N latitude. It borders with Erdenet, which is the second largest city in Mongolia (Figure 1).

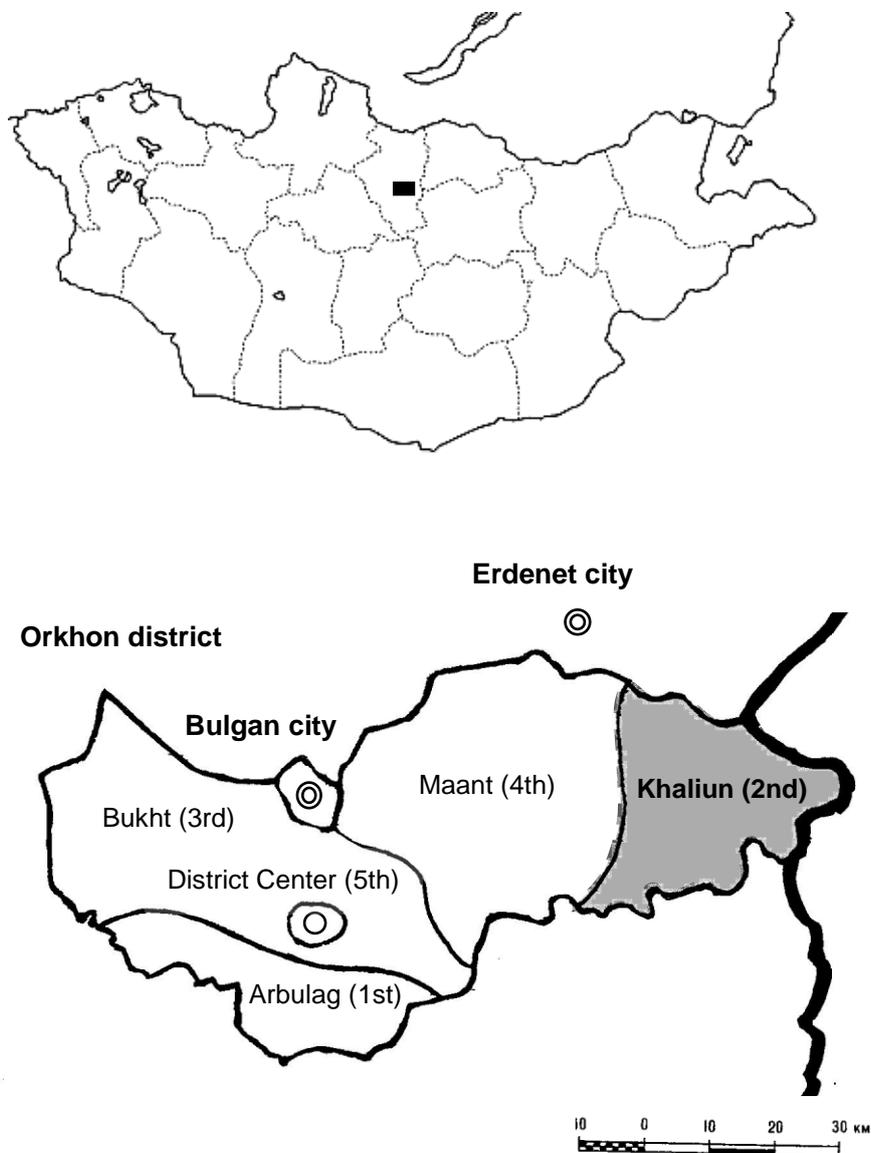


Fig.1. Location of Orkhon district, Bulgan, Mongolia.

The country is divided into three climate zones: the northern, middle, and southern zones (which consist of forest steppe, steppe, and desert steppe, respectively). The northern region of Mongolia is characterized by rugged terrain, abundant rainfall, and lush vegetation; it is also vulnerable to damage caused by fire and heavy snowfall. Orkhon district has a total area of 4214 km², with coniferous forests (which include larch and white birch trees) comprising one-third of its total area. It is located on a plateau between 1078 and 2940 m above sea level. The annual range of precipitation in Orkhon district is 200–300 mm. The mean temperatures in January and July are -20.5° C and 16.0° C, respectively.

There is no evidence that the natural environment has changed from the socialist era to the present day in Orkhon district. However, it is possible to point out the following changes through interviews with local people and a survey of previous studies. First, grassland has been severely degraded by overgrazing. The Geographical Institute of the Mongolian Academy of Sciences reported that this overgrazing is relatively serious in suburban areas [The Institute of Geography, the Mongolian Academy of Science 2007: 4]. Second, the quantity of water and forest resources has decreased. For example, a local resident explained that the decline in water-retaining function of the forest accompanied by illegal logging has caused shortages of groundwater and river water; such shortages are also affected by global warming and desertification on a national level⁵.

4-2. Rangeland use and its changes

Unlike agrarian societies and urban societies, which are based on investments of labor and capital in their land, pastoral societies have minimized these investments in the land in order to sustain the environment. The quality and quantity of pasture resources fluctuate continuously on arid and semiarid land. Therefore, subsistence pastoralism follows ecosystem dynamics, whereby herders adapt to large spatial and temporal variations in climate and vegetation. These strategies determine not only livestock and pasture management practices but also the cultural and social practices of Mongolia [Batkhisig et al., 2012: 121].

Before Mongolia's revolution in 1921, the allocation and use of pasture resources were subject to customary and formal tenure regimes enforced by nobles and monasteries as well as norms and customs enforced by local herder communities [Fernandez-Gimenez et al., 2007]. In those days, herders were allowed to graze their livestock within larger administrative territories. In fact, the northern area of Bulgan province was part of a vast administrative area called "Erdene Daichin chin Van" banner (*khoshuu*) under Manchu rule [Monkh-Ochir 2012: 40]. However, because of lack of data, the pre-revolutionary

⁵ Environmental changes, such as climate destabilization, change in rainfall patterns, and shortages of groundwater and river water caused by global warming and desertification [Kamimura 2008: 16-19].

seasonal movement pattern in the 2nd subdistrict of Orkhon district is unknown.

These administrative areas were further subdivided into smaller areas in the process of collectivization during the socialist era. The current administrative area of the research area was constructed in 1962, the year in which four small cooperatives established in the late 1950s were dismantled and incorporated into a new pastoral cooperative, called “Choibarsan.” During the collective period, pastoral cooperatives played a significant role in pasture management. Mongolian herders have traditionally kept and used five species of livestock: sheep, goats, cattle, horses, and camels. The pastoral cooperatives would organize

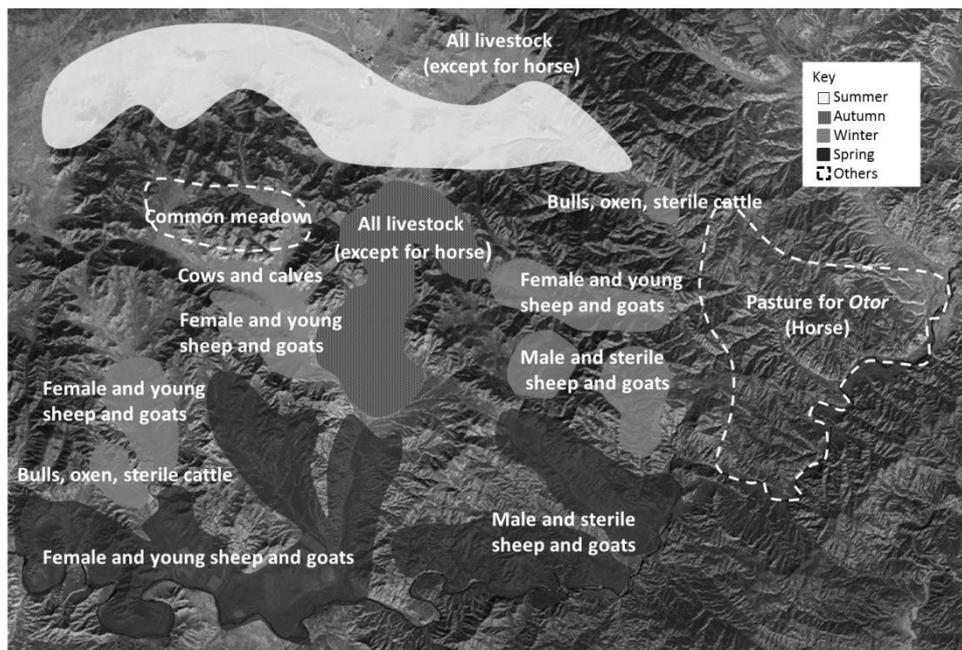


Fig.2. Pastoral land use during the collective period



Fig.3. Pastoral land use in the present day

herds according to species, sex, age, and so on and allot them to each herding group (*suur*) consisting of one or more households. Cooperatives also mandated the specific place where each herding group was expected to graze in each season. In this way, pastoral cooperatives made detailed subdivisions of land to expand livestock production, using natural resources rationally and effectively. Figure 2 is a satellite photo that shows pastoral land use in the 2nd subdistrict of Orkhon district during the collective period. The seasonal pastures are characterized as follows: summer pastures (where it is cool enough to live comfortably) in the north lowland, autumn pastures (where the grass is slow to dry up) in the middle east area, winter pastures (where it is possible to avoid the seasonal northwest winds) in the middle east mountainous area, and spring pastures (which have abundant water resources) in the south area along the Orkhon river.

Since the collapse of pastoral cooperatives in 1992, pasture land has been managed by each subdistrict. Figure 3 is a satellite photo that shows pastoral land use in the 2nd subdistrict. By comparing the two figures, it is clear that current pastoral land use reflects the subdivisions of the land during the collective period. However, there are two significant differences between them. The first is that the range of pastoral movement has decreased to approximately half that observed during the collective period; the second is that herders now stay in the same campsite from winter to spring.

One of reasons behind this is that part of the territory of the 2nd subdistrict was provided for immigrants to Erdenet. After the transition to a market economy, many herders migrated to Erdenet in search of a better life. However, herders in Erdenet could not secure sufficient pasture land because of the sudden population influx. Therefore, *mulchin bags*—or herders' subdistricts—were established in districts neighboring Erdenet, such as Orkhon, Bugat, Khangal, and Serenge. As a result, in the 2nd subdistrict, the population of the *mulchin bag* (272 households) is now bigger than the number of local residents (123 households) in 2008.

Another reason is that both institutions and public supports for rangeland use and management were lost with the collapse of the collective production system. During the socialist era (especially the collective period), pastoral sedentarization was promoted by the socialist pastoral development policy of maximally using livestock and land (which constitute common property). In those days, the economic and environmental sustainability of pastoral production was assured by the pastoral cooperatives and other related organizations. For example, cold weather facilities and wells were constructed to prevent the loss of livestock caused by the harsh, cold weather. The pastoral cooperative has continued to change the location of winter and spring campsites by constructing and dismantling several cold facilities every year in order to reduce grazing pressure on the land. However, herders currently have to shoulder these costs themselves. Thus, it became difficult to manage rangeland appropriately.

5. CASE STUDY DESCRIPTION

5-1. Project overview

The Mongolian government has decided to receive 2.85 billion dollars in aid from the U.S. Millennium Challenge Account (MCA) in Oct. 2007. It consists of six projects: (a) the Property Rights Project, (b) Peri-Urban Rangeland Project, (c) Vocational Education and Training Project, (d) Health Project, (e) Energy and Environment Project, and (f) Road Project. In total, 11.8 million U.S. dollars were allocated to the Peri-Urban Rangeland Project, which was launched in Sep. 2008.

The Peri-Urban Rangeland Project supposed that the tradition of open access pasture use combined with the influx of migrants' herds had led to overgrazing in suburban areas. To address this problem, it encouraged investment, improvements in land use, and higher agricultural productivity by introducing a new land use regime⁶.

Particularly, the project intended to introduce a system of leasing peri-urban pasture lands to herder groups consisting of a few herding households. A specific plot of land divided using the Geographic Information System is allocated to each herder group. Both herders and local governments should adjust the total number of livestock heads so as not to exceed the carrying capacity of the land, which is calculated according to conditions of climate, vegetation, and so on.

Each herder group is required to engage in livestock production, with a focus on raising dairy cattle. There are two types of livestock raising: intensive and semi-intensive. Intensive livestock raising is almost identical to dairy farming. Herder groups who engage in intensive livestock raising have to maintain annual milk production of 1950 liters/head and stock supplies of hay and fodder for no less than 180 days. On the other hand, semi-intensive livestock raising is more likely to be similar to traditional nomadic herding. Herder groups who engage in semi-intensive livestock raising have to maintain annual milk production of 1050 liters/head and stock hay and fodder for no less than 30 days.

The amount of land allocated to herder groups differs according to region. Under the contract with MCA, each herder group is allowed to lease a plot of 80 ha for intensive livestock raising or 170–340 ha for semi-intensive livestock raising in the suburban area of Erdenet. However, in the 2nd subdistrict, some herder groups have been allocated larger plots of land than specified in the contract. In each plot of land, pastoral infrastructure (e.g., wells and corrals) are newly established with the help of funding from MCA. Indeed, each herder group is obligated to raise livestock independently in its own space in 6 months to 1 year, according to the rules of the contract.

Currently, the Peri-Urban Rangeland Project has been implemented in 57

⁶ Millennium Challenge Account-Mongolia, 2011, "Peri-Urban Rangeland Project" (<http://www.mca.mn/en/index.php?option=view&parent=72> accessed on April 18, 2013.)

districts and regions of three major cities (Ulaanbaatar, Darkhan, and Erdenet) and eight prefectures (Tov, Serenge, Darkhan-uul, Orkhon, Bulgan, Ovorkhangai, Dornod, and Arkhangai). The project areas were selected according to ecological and climate conditions of rangeland and presence vs. absence of forests, protected forest areas, and mining regions [Kurumizawa 2011: 74]. Only herders who live in the project area are eligible to participate. All of the 404 herder groups in suburban areas signed 15-year pasture land use contracts by Oct. 2011.

5-2. Reaction to the project in suburban areas

In fact, seven herder groups (comprising 26 households) were newly organized in the 2nd subdistrict, Orkhon district, which is one of the project sites. Only one group engages in intensive livestock raising, while the other six engage in semi-intensive livestock raising. Here, I describe how each herder group raises its livestock according to survey data.

Intensive livestock raising

Case 1: “MS” group

MS group consists of five households. All members live and work in Erdenet. Instead of the group members themselves, hired herders have been raising this group’s livestock. Mr. D, a key member of MS group, owns a milk processing factory in Erdenet. He organized this herder group in order to secure a reliable milk supply for his factory. This herder group only raises foreign breeds and crossbred cattle for dairy production; they maintain stable milk production by controlling the timing of birth through artificial insemination.

The amount of land they lease is 410 ha. This area was used as a public meadow in the socialist era⁷; currently, they raise all of their cattle here for most of the year, except during summer (from June to August). However, there is a possibility that the total number of cattle (160 heads) exceeds the calculated carrying capacity. Therefore, they divide their cattle into one herd of cows and calves and one herd of bulls, oxen, and sterile cattle and move the latter herd to the other place the next year.

Semi-intensive livestock raising

Case 2: “O” group

O group consists of five households who belong to the same kin group. There used to be another household in this group, but they left the group 3 years ago. Four households out of this group live in Erdenet; Mr. Bd, the leader of this group, runs a small restaurant there. The other household raises livestock alone in the 2nd subdistrict.

The amount of land they lease is 971 ha; Mr. Bd took over this area (which

⁷ This area is not suited for the winter and spring campsites, because it is difficult for livestock to graze because of heavy snowfall.

has been used as a winter campsite since the socialist era) from his wife's parents in 2009. This group would like to engage in dairy farming; however, they hold only 50 head of local breed cattle. Their other livestock, which include sheep, goats, and horses, were raised by other households who live elsewhere.

Case 3: "T" group

T group consists of four households who belong to the same kin group. All of them raise livestock by themselves in the 2nd subdistrict.

The amount of land they lease is 1104 ha; this area has been used as a winter campsite since the socialist era by members of the same kin group. It seems to be difficult to raise livestock in the same campsites, because each member has many livestock heads. For example, Mr. G, the leader of this group, owns more than 1000 livestock heads. The total number of livestock owned by this group (about 3000 heads) exceeds the calculated carrying capacity; however, the members do not think it necessary to reduce their livestock holdings to the level of the carrying capacity. Mr. G said to me that "if this land is insufficient to feed our livestock, we only have to graze somewhere."

Case 4: "I" group

I group consists of three households who belong to the same kin group. There used to be another household in this group, but they left the group in order to migrate to another district 3 years ago. Instead of them, Mr. Dt, the son of a group member (Mr. D), joined this group.

The amount of land they lease is unknown; their area has been used as a public meadow, and it borders with the MS group's land (Case 1). There is a difference of opinion on livestock raising between members. Mr. Ch, the leader of this group, would like to engage in dairy farming with cross-bred cattle he bought himself; on the other hand, group members Mr. D and Mr. Dt have no intention to raise cattle together. They said that "we only lent our name to Mr. Ch in order to establish a herder group. We will raise livestock in the former way."

Case 5: "A1" group

A1 group consists of three households who belong to the same kin group; there used to be two other households in this group, but they left this group because one retired and the other migrated to another area. To replace them, Mrs. Bch, the daughter of another member (Mr. G), joined the group.

The amount of the land they lease is 686 ha. This area has been used as a winter campsite since the socialist era by the same kin group. This herder group plans to raise cattle together, while each household raises other livestock, such as sheep, goats, and horses, in the former way. However, they only hold 38 head of local breed cattle. Furthermore, the total number of livestock (654 heads, calculated in sheep) is below the calculated carrying capacity; however, they

presently have no intention to buy foreign breed or crossbred cattle for dairy purposes.

Case 6: “A2” group

A2 group consists of three households, which comprise parents and children. However, Mr. To (the eldest son) raises livestock in the 2nd subdistrict, while both Mr. J (father) and Mr. B (his second-eldest son) live in Erdenet for most of the year, except during summer. In addition, Mr. T (the third-eldest son), who is not a member of this group, has been raising livestock together with Mr. To for the past 2 years.

The amount of the land they lease is 573 ha; this area has been used by Mr. J and his family since the 1980s. However, at that time, it was only used as a winter campsite because of the lack of watering places. The construction of a well and a corral enabled them to stay here for most of year (except during summer). Their total number of livestock (625 heads, calculated in sheep) is below the calculated carrying capacity (800 heads in sheep). Especially, they hold only 27 head of local breed cattle. However, they presently have no intention to buy foreign breed and crossbred cattle for dairy purposes at present.

Case 7: “S” group

S group consists of three households comprised by brothers. There used to be another household in this group, but they left the group in order to migrate to Erdenet. To replace them, third-eldest brother joined this group. Presently, Mr. B (the eldest brother) raises their livestock alone, while both Mr. Kh (the second-eldest brother) and Mr. Bm (the third-eldest brother) live in Erdenet in order to send their children to school.

The amount of land they lease is 1068 ha; this area has been used as a winter campsite since the socialist era by their parents. Presently, Mr. B raises livestock here from November to June. This herder group plans for Mr. Kh and Mr. Bm to raise dairy cattle, while Mr. B plans to raise their other livestock, such as sheep, goats, and horses, in the former ways in the future. Their total number of livestock (785 heads in sheep), most of which is held by Mr. B, is below the land's calculated carrying capacity (i.e., 1000 heads in sheep). Especially, there are only 40 heads of local breed cattle. Although they bought a crossbred bull for beef in 2011, this will not increase annual milk production.

5-3. Characteristics of the Peri-Urban Rangeland Project and its effects

From these results, I indicate the following characteristics of the Peri-Urban Rangeland Project and its effects.

The relationships between members of herder groups

Herder groups consist of a small number of households (3–5 households) in the



Fig.4. Fenced land, the 2nd subdistrict, Orkhon district

research area. Currently, most of them belong to the same kin group. However, about half of the investigated herder groups were first organized among friends (i.e., Cases 2, 4, 5, and 7). There are many city dwellers in herder groups; in many cases (i.e., Cases 1, 2, 3, 4, 6, and 7), their livestock has been raised by other members and nonmembers of herder groups instead of members who live in Erdenet.

Characteristics of the land herder groups' leases

The amount of land leased by the land herder groups varies from 410 to 1104 ha. However, all investigated plots of land are larger than the land areas specified in the MCA contract (intensive livestock raising: 80 ha; semi-intensive livestock raising: 170–340 ha), perhaps because land plots were allocated to most herder groups based on customary land use. On the other hand, in some land plots, parts of public meadows were newly allocated to herder groups who engage in dairy farming (Cases 1 and 4). In such conditions, herder groups have stayed in the same campsites in most years; further, some fence their land plots (Figure 4).

Conditions of livestock production in the suburban area

Only one herder group engages in intensive livestock raising, while the other six herder groups engage in semi-intensive livestock raising in the research area. The former is almost identical to dairy farming, whereas the latter includes a wide range of livestock production (from something similar to dairy farming to something similar to traditional nomadic herding). Half of the studied herder groups plan for all members of the group to raise dairy cattle together, while each household raises other livestock (e.g., sheep, goats, and horses) in the former way

(Cases 2, 5, 7). Under the contract with MCA, each herder group engaged in semi-intensive livestock raising has to maintain annual milk production of 1050 liters/head. However, it is difficult for them to achieve this quota of annual milk production due to the low milk productivity of local breed cattle (whose annual milk production ranges 200–300 liters/head)⁸ [Gerelsaihan 2012: 70]. Therefore, it is necessary to buy foreign breed or crossbred cattle to increase annual milk production; this is a burden for the groups.

As mentioned above, the Peri-Urban Rangeland Project does not effectively reduce overgrazing in suburban areas. On the contrary, it threatens to disturb land use by local herders through allocation of land plots to city dwellers. Thus, reform of institutions and support systems to manage and protect rangeland have been delayed, while the construction of pastoral infrastructures, such as wells and corrals, has almost been completed with the help of funding from MCA.

6. CONCLUSIONS

On the basis of the above-mentioned results, I suggest that the Peri-Urban Rangeland Project does not necessarily exclusively contribute to the sustainable management of rangeland; it also causes some negative effects in the research area. The biggest reason is that there is inconsistency between the theory upon which the Peri-Urban Rangeland Project is based and the actual conditions of land use by local herders. This project was based on the premise that fixed-membership groups graze their livestock in certain areas. However, in fact, the groups' boundaries and pasture resources change flexibly according to changes in the natural and social environment.

For example, the composition of herds and groups has changed over both the short term and long term; this reflects not only life events, such as marriage, childbirth, and retirement, but also individual households' life strategies to survive amidst the social and economic chaos since the transition of the early 1990s. They have flexibly chosen jobs and residential locations from both the urban and rural areas. The boundary of pasture resources they use is not static either. Subsistence pastoralism follows ecosystem dynamics, whereby herders adapt to large spatial and temporal variations in climate and vegetation. In this way, the relationship between land, livestock, and herders is flexible in Mongolia.

The concept of "carrying capacity," which supposes stable land use by a fixed-membership group, differs from Mongolia's tradition of open access pasture use that enables comanagement of multiple, overlapping, contingent resources [Fernandez-Gimenez 2002]. In other words, the problem is that the project forces a solution based on "tight" rules about resource use on the pastoral society of

⁸ Khainag cow (the local breed), with relatively high milk yield, has annual milk production of 800–1000 liters/head.

Mongolia, which is based on corresponding “loose” rules.

However, development projects that intend to change the extensive, nomadic, pastoral economy into an intensive, sedentary one have already been conducted throughout the country. Therefore, the important question is how to balance the “tight” and “loose” rules about resource use. Pasture management by pastoral cooperatives may be helpful to answer this question. During the collective period, access to summer pasture was opened for all local herders because of high pasture growth and abundant rainfall, while the access to other seasonal pasture is restricted to specific herder groups (*suur*). Furthermore, the place where each herder group grazes its livestock was changed according to the number of livestock they held every few years. However, after the collapse of pastoral cooperatives, it has become difficult to maintain patterns of pasture use; thus, management of rangeland resources requires new approaches, such as the combination of “tight” and “loose” rules. For example, a way to manage rangeland resources based on medium-scale areas, such as subdistricts, may be more appropriate for the pastoral society of Mongolia.

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