

## Community-Based Co-management of Pastureland and other Natural Resources in Mongolia

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### Introduction

Pastureland in Mongolia makes up about 82% of the land area and is currently home to more than 40 million head of livestock (83% as *bog*, or goats and sheep; and 17% as *bod*, or horses, cattle, and camels) and 172,000 herding families. This represents the largest remaining contiguous area of common pastureland in the world. Nomadic livestock producers are the backbone of the economy, and livestock production accounted for 45% of employment and 19% of GDP (NSO 2003). More than these numbers can indicate, herding is a way of life for Mongolians, rooted in the country's long history (Ykhanbai et al. 2004a).

Since 1992, in the transition period to a market economy, citizens and businesses have been primarily interested in short-term private benefits, rather than common or social concerns. Individuals compete amongst themselves in order to gain as much from their natural resources as they can. Most herders are interested in increasing their animal numbers, resulting in the overgrazing of pastures. Because integrated and sound policies are lacking, pastures and other common natural resources are increasingly being depleted. New practices and policies need to be established to ensure better natural resource management (NRM). One option is for herders and groups of herders to work towards the creation of some sort of co-management system for the sustainable use and management of common pastureland. Since 2000, action research has been underway to introduce, experiment with, and assess community-based co-management of pasture land in a number of the main Mongolian eco-systems.

### Pastureland as a Common Resource

In Mongolia, pastureland has always been state property. Historically (until 1921), open rangeland and pastureland were under the control of feudal officials, clans, and tribal groups. The *Great Yassa* (legal code), enacted in 1229, noted that specific groups of herders were explicitly linked with geographically defined territories, and designated leaders coordinated nomadic movements.

The *Khalka Djurim*, in 1709, defined further codification of customary law in the steppe. It contained explicit references to pasture rights, distinguishing between secular and monastery herds, made provisions for sacred sites and reserved camp sites, and formalized criteria for settling disputes over campsites (Whitten et al. 2003). Late in the eighteenth century, neighborhood groups enacted formal regulations, and long-distance movements across territorial boundaries were prohibited in some cases. Herder groups or family clans tended to use ranges in the vicinity of their seasonal camps, and traditional rights were widely recognized and respected. Herders used traditional seasonal movement of herds for a long time, adjusting their pastoral system to nature's own behavior. In the Mongolian case, herders keep to nomadism, not because they have no desire for change, but because they have no other option (Enk-Amgalan 1997).

Animal husbandry was linked with the socio-economic conditions of the time and the needs of society. For example, during the Genghis Khan period (the 13<sup>th</sup> century), the Ministry of Horses regulated nomadic pasture because of the importance of horses for imperial military and commercial purposes. During the Manchu dynasty (the 18<sup>th</sup> century), camels were important for their use in caravans on the "Silk Road" trade in Central Asia. At present, goat populations are quick increasing because of the high price of cashmere wool on the international market.

During the Soviet era (1921-1990), citizens had almost no right to own livestock and hold pastureland. They worked for the state and used pastureland to herd state-owned animals for salaries. Following the move away from the centralized, Soviet-style management system towards a more market-oriented one, which began in 1992, private ownership of animals was re-instituted. For the increasing number of the unemployed, herding became an easy entry option.

In the post-Soviet period, herders are no longer state employees. Herders began to migrate towards more central areas with better access to markets in order to reduce transaction costs (Mearns 2004). Currently, about 70% of herders of Mongolia have herds of less than 100 animals, which is considered poor (NSO 2003). These herders own only 25% of the national herd, thus 75% of the national herd is owned by only 30% of the richest herders. With the increase in herd size because of new entrants after privatization, there has also been an uncontrolled concentration of animals around water sources, settlement areas, hay lands, and seasonal camps.

Pasture management is strongly influenced by weather events. The unprecedented scale of recent *zhud*, or severe winters, has had a devastating impact on the livelihoods of most herders, particularly new and inexperienced ones. The consecutive *zhud* from 1999 to 2002 resulted in a combined loss of over 10 million animals, or over 30% of total livestock. Almost 12,000 herding households were left with no animals, and a further 18,000 were left with fewer than 100 animals (Ykhanbai et al. 2004b). But during last 3-4 years of more favorable winters and climate conditions animal numbers again quick rising, accounting more than 34 mln. head at the end of 2006.

### Tragedy of the Commons?

Pastureland ecosystems in the country are very dry, fragile, highly susceptible to degradation, and slow to recover. Some estimates show that more than 76% of the nation's pastureland is subject to overgrazing and desertification (MNE 2002). Pastureland degradation accounting, calculated by the net price of additional fodder for exceeded number of livestock, was about 9.5 billion MNT<sup>1</sup> per year (Ykhanbai, 2000). Our observations suggest that the degree of degradation is drastically increasing year by year.

Although rangeland degradation is a contested notion in range ecology, the long-term increase in livestock numbers creates the distinct possibility that rangeland is being overused (Banks and Doman 2001).

With increases in herd size and in herder family there are has been no control over the concentration of animals around water sources, settlement areas and hay lands, or seasonal camps. Herder families move less frequently for fear that others will move herds into an area once they move theirs out of it. As a result, where a joint management system is lacking, antagonism has been on the rise in various regions.

Another and very important reason for ongoing problems on pastureland degradation is the herders' desire to satisfy immediate economic or livelihood needs. Herders would like to increase their own herd sizes and livestock numbers as a means of survival in competitive market conditions, because pastureland is a common resource and herding has low entry costs compared with other opportunities.

Since the state's capacity for effective monitoring and management of all pastureland is limited in the transition period to a market economy, an open access situation is created in which everybody's property is potentially nobody's concern, and resulting in environmental degradation. Until recently, this may not have been a widespread situation in Mongolia because the pasture resource base was large enough to absorb the current level of its use and abuse. But the situation has changed rapidly after 10 to 15 years of the privatization of animals.

The situation seems to reflect Hardin's "tragedy of the commons" (Hardin 1968). The "tragedy of the commons" theory is that individuals have no regard for common resources except to maximize personal gain. Hardin (1968) illustrated this point by envisioning a pasture "open to all", or of open access. Hardin commented, "Each herdsman seeking individual gain wants to increase the size of his herd. But commons are finite, and sooner or later the total number of cattle will exceed the carrying capacity of the pastureland."

However, historically, pastureland in Mongolia was not characterized by open access, but used as a common property institution (CPI) in the sense used by Ostrom (1990). In many circumstances, CPIs serve as the focus and basis for community-based natural resource management (CBNRM). CPIs exist where one person's use of a resource subtracts from another's use, and where it is often necessary, but difficult and costly, to exclude other users outside the group from using the resource (Ostrom 1990). CPI theories have been useful to contextualize the "tragedy of the commons" theory.

There is now consensus that "the tragedy" theory is an overstatement, and that the process happens in a limited manner in open-access regimes (World Bank 1998). These regimes refer to a situation where there is an absence of well-defined property rights, or access is open to all, and locally agreed arrangements are lacking or dysfunctional; and when government capacity to control the use of natural resources is limited. According to Ostrom (1990), many enduring indigenous institutions have ensured for centuries the sustainable management of natural resources. Under the right conditions, people in a community "who are in an interdependent situation can organize and govern themselves to obtain continuing joint benefits when all face temptations to free-ride, shirk, or otherwise act opportunistically."

The work of CPI scholars such as Ostrom, Baland and Platteau, and others, sometimes known as "collective action scholars", has been important for identifying the shortcomings of "tragedy" thinking. However, the alternative they have put forward has been criticized for embracing a "deductive model of individual decision-making and rational choice to explain the ways in which different types of property rights arrangements emerge and change over time" (Johnson 2004, 409). Central to the criticism of their work has been a political economy approach concentrating on rights, negotiated access, and conflict over resources, including an analysis of socio-economic and gender inequality, and inclusion and exclusion in relation to natural resources. This "rights"- or "entitlements"-based approach also has a central interest in the relations between natural resources and poverty. This article acknowledges the contributions made by both theoretical schools, as both have a degree of applicability to the Mongolian case. Introduction of co-management arrangements with the clarifying roles and responsibilities of all stakeholders, including herders, their communities and local governments, under the state ownership of pasture land is a critical option to reduce ongoing degradation and overgrazing.

A good herder is said to constantly monitor both his herds and his pasture, seeking to "harmonize" the needs of his stock with daily, seasonal, and interannual changes in plants, weather, and water availability (Fernandez-Gimenez, M.E., 2000).

In the long run, movement reduces pasture degradation and impacts on sustainable management of pasture, but in the short run it is more costly to move and migrate to distance pasture and conflicts may arise on pasture use. Currently, in Mongolia, animals consume on average about 98% grass from natural pastures and only 2% from hay or forage, a clear example of an extensive pasture management system (Tserendash Ts., 2003).

Previously herders outlined the main difficulties encountered in pasture management with implementation of seasonal division, shifting, rotation and other appropriate methods as: inadequate joint decision-making among all herders for better management of pasture land, natural disasters, and scarcity of pastureland due to increasing numbers of animals (MNE 2005).

#### ***Introducing Co-Management of Pastureland: From Theory to Practice***

According to the literature, co-management can take a variety of forms, including group tenure over a large area (Fernandez-Gimenez, M.E, 2002), combination of pastureland use with protected areas management (Bedunah and Schmidt 2004), or institutional arrangements at local level with CBNRM approaches (Berkes 1991; Jentoft 1989; Pinkerton 1989). We believe that CBNRM is a main form of co-management, which is the sharing of authority and responsibility among government and stakeholders. It is a decentralized approach to decision-making that involves user groups as consultants, advisors, or co-equal decision-makers with government. Co-management means participation of all stakeholders in the decision-making and conflict solving on issues related to the use of pasture resources. The key stakeholders include individual herders, communities or groups of herders, local governments, central governments, civil society, non-governmental organizations (NGOs), neighborhoods, economic

units, and religious and other groups. Co-management groups, which are given and charged with the management of pastureland and other resources, need to be formalized and supported; and must include all stakeholders.

In Mongolia, the current capacity of national and local government for pastureland co-management needs to be strengthened in terms of policy development, implementation, and monitoring. In this article we highlight three interrelated key issues: (1) management of the rotating systems in pasture management; (2) dispute and conflict management; and (3) boundary management. A fourth issue concerns the management capacity development of resource users, in short, their ability to exercise decision-making power.

A more visible and appropriate policy support is needed for building on communal arrangements, where an identifiable community of users holds the resource and can exclude others from it and regulate its use. This means that, within the community, pastureland will be used as a CPI. However, when non-community herders are concerned, their inclusion will be regulated through the co-management arrangements, which the community will make with local governments and other stakeholders, according to the given legal rights and responsibilities of these stakeholders.

Decentralization, which is democratic in nature, aims to empower local governments, giving political rights to local citizens, where the market is the principal mechanism for the distribution of resources. According to democratic movements in the last decade, local governments and citizens legally have more rights on NRM, but currently they lack the means and methods on how to implement their given rights. Community management of pastureland and other natural resources is also important because herders now bear the main risks of pastoral agriculture, rather than the government, as during the Soviet era.

### Research Methodology

Two main approaches are followed on the design and implementation of the community-based co-management principles outlined above: (1) a multi-institutional and holistic approach on participatory research, and (2) a bottom-up approach on testing and implementation of co-management activities. This study is carried out by the Ministry for Nature and the Environment, which is responsible for the development of pasture conservation and a policy for its sound use, in close collaboration with other ministries, agencies, universities, NGOs, and local institutions. It focuses on community-based pasture and other types of common natural resource co-management, including interventions on capacity building, livelihood opportunities, ecosystem analysis, and policy support.

The objectives of the project are: to empower local communities and to improve their livelihood and livestock management opportunities through more efficient, sustainable, and equitable use systems for pasture and other natural resources by jointly designing and developing co-management options and appropriate improvements for pastures and other natural resources with herder groups, local officials, and other stakeholders; and to study and test appropriate policy options for NRM with herders, and local and higher levels of government.

The study is also based on modifications of customary systems with supportive arrangements and technological innovations where local reality is linked to the national policies that allow for more “bottom-up” management of common natural resources. Central to the policy work is the need to clarify roles and responsibilities of herder groups and local governments. The project considers the integration of local peoples’ ideas and customary methods with the laws and regulations and the decision-making procedures.

Participatory rural appraisal (PRA) was used as the general method for the study in order to understand in more depth issues and problems through a participatory approach. Various PRA tools, such as focus group meetings, semi-structured field interviews, household surveys, oral testimonies, mapping of herd movements, gender assessment study, seasonal diagramming, semi-formal interviews with individuals, were used for qualitative analysis. These tools were very effective in sharing information between stakeholders.

Participatory action research can contribute to the creation of fora for analysis, discussion and negotiation in which ideas can be exchanged and initiatives planned (Ronnie Vernooy, 2006).

This article addresses the challenge of CPI management through a combination of participatory and action-oriented field research in three of Mongolia’s major ecosystems (Figure 1). The Khotont *sum* (district) of Arkhangai *aimag* (province) represents the steppe-forest ecosystem, where herders are from the Mongolian major ethnic *khalkh* group. The Deluun *sum* of Bayan-Ulgii *aimag* and mountain and steppe ecosystem, where local herders are from the minority ethnic *kazakh* group is the second major ecosystem. Finally, the Lun *sum* of Central *aimag* represents the steppe and prairie ecosystem where local herders represent different regions of the country, having been drawn to the area because of its proximity to the capital city, Ulaanbaatar. In these three study sites, the existing number of animals exceeded the estimated pasture carrying capacity by 25% to 52% (Ykhanbai et al. 2004b), and during the last 3 years, animal numbers also have increased by 30% in Deluun, 18% in Lun, and 50% in Khotont (Project report, 2007).

Similar studies and development projects on CBNRM and CBFMR was carried out by GTZ, UNDP, FAO, World Vision and other donors.

### Creating a Social Basis for Co-Management

The study strategy is based on the idea that effective co-management requires a solid social basis. To operationalize this, our participatory action research focused on working with herders who live in the same area, watershed, mountain, or valley; who have pastures close to each other; and who are willing to modify their customary pasture management system for current conditions. Organizational efforts aim to interface economic aspects of group formation (herding together in one *khotail*, a group or camp of herders), social aspects (neighboring households), and ecological (same watershed or mountain valley) characteristics in terms of

ecosystem. Co-management becomes more practicable and effective when herder groups overlap with ecosystem similarity and social identity.

In the pastoral agriculture of Mongolia, “community” refers to a geographical area containing a number of herder households. “Community organization” refers to a local institution for managing joint activities of herder households that is facilitated by the researchers and projects. It is important to note that, before the study, these households herded individually outside of any community organization (Ykhanbai et al. 2003). Working toward the creation of new communities and community organizations has been central to our efforts.

In this process toward CM and CBNRM, herders learn how to represent themselves to the communities and local governors, and learn about democratic procedures by participating in decision-making on pasture and NRM. By joining the community organizations and co-management arrangements, herders and other stakeholders get to know one another’s views, aspirations, opportunities, and potentials for local development and NRM. Herder priority was to keep good neighborhood and familial connections, an aspect that the project also supported. Some herders joined community organizations later, once they understood that CM supports the participation of all herders, irrespective of their wealth or opinions.

Co-management actors or stakeholders for common pasture management are classified in this article as “primary” and “secondary”, and on this basis are accorded different roles and responsibilities. Primary actors are herders, communities, and local governors. All others (e.g., non-community herders, economic entities, and schools) can be classified as secondary actors. The roles and responsibilities of all stakeholders are agreed upon during the formal and informal meetings and discussions. Participatory rural appraisals (PRAs) and other communicative exercises at the start of the research allowed individuals and other stakeholders to understand one another better and then work together at a later stage.

The *sum*-level co-management teams were established in all study sites as local umbrella institutions. These teams aim to facilitate and monitor co-management arrangements among the concerned stakeholders. At the start, about two to four communities were established in each study site. At a later stage, the teams began to handle scaling-up of co-management activities in the *sum*, forming more communities. Currently, there are more than 10 communities in each study site formed by the facilitation of *sum*-level co-management teams. A team consists of 8 to 15 persons, headed by the *sum* governor, and includes representatives from herder community organizations, local governors, NGOs, schools, private companies, and the project team. The team usually meets twice a year, or as necessary. It discusses the *sum* level co-management activities through consensual decision-making processes. Based on the results of discussions and negotiations among the main actors, the following three-sided co-management contracts have been agreed upon: (1) between the community leader and community members, (2) between the *bag* (sub-district) governor and the community leader, and (3) between the *sum* (*district*) governor and the community leader.

The results of focus group discussions among the main stakeholders show that, local governors, as leaders of *sum*-level co-management team, listed the following as benefits of the co-management agreements and results of project measures (MNE, 2004, Ykhanbai H., et al ) :

- Herders have a good understanding of co-management, and co-management principles became popular among herders of the *sum* and *bag*.
- Herders evaluate pasture and NRM themselves; they identify the natural resource degradation factors; they establish co-management agreements with local governors; and they control the implementation of agreements.
- Using community members’ donations and a small-scale credit scheme provided by the project, the “community funds” are established in all communities.

### **Dispute Management**

Disagreements within the community usually take place related to seasonal pasture use periods. Some herders want to remain in autumn or spring pasture, when most would prefer to move to other pasture to allow for regeneration of grass. To resolve disagreement on this, the project facilitates discussions and meetings, such as the People’s *Khural* (Parliament) at *bag* level, with the involvement of all stakeholders, to agree on the best means of pasturing animals for the community as a whole.

Another type of disagreement is one that arises between the community and its neighbors. These disagreements on pasture use have a negative impact on community activities. The neighbors are often afraid that the community might take their pasture.

The most problematic issue during the project intervention period was relation between community herders and the herders not yet joining the communities or CM agreements. As shown the results of independent questionnaire among the members of *Arjargalant*, *Ikhbulag*, *Ikhburd* communities of *Khotont sum*, and the members of *Karatau*, *Buzaukol* community of *Deluin sum*, that 80% of all 126 respondents ( 69 male and 57 female herders ) on the question how the stakeholders following their responsibilities, response that non-community herders are laying and making artificial difficulties, because of non-community people living locally with community herders and their unplanned movements makes difficulties for the enforcement of community-made contracts on pasture use (Ykhanbai, H., et al , 2004). But, as a result of facilitation of negotiations between stakeholders and conducting awareness-building activities by the project, they begin to understand the importance and benefits of co-management.

Currently, one of the greater problems is the relation between the community and non-community herders, outsiders’ movements, and other neighborhoods. Therefore, given the condition of pasture management between community, *bag*, and *sum*, co-management agreements clearly also need to be widened to include primary stakeholders themselves and communities, *bags*, and *sums*, where the physical boundaries of community-based co-management of pasture and other natural resources will expand, with the clarification of roles and responsibilities of all stakeholders in this system.

Some local households do not agree to join the community organization for various reasons (newcomers, the rich, and those who misunderstand). They live in the area of the community, but are not involved in the co-management activities, and thus reduce the effectiveness of community decisions on pasture shifting or other joint activities. Good communication between herders and local authorities is key to co-management.

During PRA exercises, herders drew their pasture management and the location of seasonal pasture, water sources, natural resources, and infrastructure as a map. They themselves first attempt to define community boundaries in negotiation with others.

Our work with the local communities shows that, in the case of steppe and dry land ecosystems, effective community-based co-management approaches are more visible with the pasture boundaries arrangements between herder communities at a later stage it may become a base for group land tenure arrangements also. It means that negotiable or “fuzzy” boundaries arrangements between communities are an effective tool for co-management.

But in CPI theory, the most important issues regarding boundaries are exclusion and inclusion. Mapping and negotiation of boundaries between communities can help with conflict resolution.

As part of project interventions, several communities entered into contracts with the local government on pasture use, according to the new Community’s procedure. In these contracts, boundaries for seasonal pasture were clearly agreed to, in terms of topographic maps, and all regulatory measures, as well as responsibilities of protection and use rights, were then transferred to the community.

### ***Policy Support***

In the Mongolian pastureland management system, important roles and responsibilities are given to local government bodies, as primary stakeholders or co-management parties. For example, in the Land Law and in other legal documents, local *sum* governors are responsible and given rights to manage herders’ movements between neighboring herders *khotails*, communities on seasonal pasture and the *bags*, also in *zhud* time between the neighboring *sums*. Therefore, government policy on pasture management at local level should be more focused on environmental variability, and be more sensitive particularly of *zhud* periods. The *sum* government’s decisions directly relate to NRM, but *aimag* government decisions have a more general character, and the national government decisions on NRM are more policy oriented.

Although linking people to policies is explicit or implicit in the areas mentioned above it will in continue to remain an extremely important processes. “Amendments to Law on EP” ( 2005) and Forest Law (2007) gives new support for CBNRM, which is widely recognize the importance of CBNRM and legally supports communities by allocating Natural resources use and protection to the communities by CM agreement . According to the this Laws, the “Procedure for allocation of certain natural resources to the communities for their sound use and protection” was developed by the our project team and other CBNRM related projects and was approved by Minister’s Decree for the Nature and the Environment and enforcing since 2006. The procedure also includes draft of co-management contract between community and *Sum* Governor and the Certificate for Community ( NUKURLUL) organization, which will be issued by the Local (*Sum*) governors.

But we all know “laws” by themselves are not effective if enforcement is not possible. We believe that a co-management approach for the natural resources base is the only feasible option. This implies that laws need to be drafted that support co-management opportunities and processes, these need to be tested and implement with community or user groups and then based on a learning by doing approach it will be necessary to revise those laws or the chapters thereof. In regard of allocation of pasture to the communities are not fully resolved legally, and the project team has contributed to the development of new Pasture law, and other legal documents, as CBFMR procedure , on clarifying roles and responsibilities of co-management parties, as well as pasture land allocation issues.

So government policy should be more on decentralized pasture management with the participation of local herder institutions as main stakeholders. This will fill the gap on the mismanagement of pasture resources due to the weakness of local and central government bodies.

In the early stages of co-management arrangements, herder community actions on protection and sound use of pastureland faced the difficulties of ongoing climate change or desertification, droughts, and *zhuds*. The long-term benefits of pasture improvement activities also impact herders into thinking of its direct effectiveness. Therefore, the government should also lead and support by its direct actions for future improvement of pastureland ecosystems. The Mongolian national Green Wall Eco-Strip Program (a green belt that will traverse between steppe and desert regions ) has developed with the support and involvement of our project team. This recently implemented program has positive impact on scaling out citizen, NGO, and community actions to combat desertification, improve pastureland quality, and increase additional fodder production activities in the marginal areas and communities.

The project in collaboration with other projects ( such as GTZ, UNDP, FAO and WB projects) and institutions ( MNE, MOFA and others) influenced the opinions of government officials through dissemination of study results, such as: drafts of laws or its articles on pasture and NRM; national policy programs; action plans; procedures and manuals; and drafts of resolutions, which are developed with the participation of all stakeholders.

At the local level, project activities on policy support consider the establishment of co-management contracts between primary stakeholders and at a later stage between all stakeholders, as well as developing local-level procedures and regulations, according to national policies and programs, with the involvement of the *sum* level co-management team. These activities are supporting *bag*-level People’s *Khural* and People’s Representatives *Khural* at *sum* level.

### ***Exercising Power***

Because current conditions for transitional pastoral systems are difficult and the rural economy is still weak, we have learned that new management systems need to be built over time. Our research has also taught us that these newly established local institutions and practices need policy and legal support. Central to this is the empowerment of local people. Exercising power requires capacity. Capacity is not just skills that can be built through training or other facilitation activities. The ability to exercise power needs to be internalized by individuals and communities. In the sense of CPI management, as pastureland management in Mongolia, the policy of support and empowerment of herders' local institutions with the possible consideration of ecological variability can be more effective than improper land tenure policy arrangements. These arrangements, as we have tested, should come from bottom-up initiatives of herders and communities, than at a later stage it will become, as a main source for scaling up to the *bag*- and *sum*-level management structure.

Empowering the local communities and herders affects the better and sustainable management of pasture and natural resources. Through implementation of co-management arrangements, herders are learning to participate in decision-making for pasture and NRM at community level, and share ideas and thoughts with other stakeholders. They learn to estimate the carrying capacity of their seasonal pasture; evaluate community activity by participatory monitoring and evaluation (PM&E); follow community arrangements for seasonal pasture use, and introduce pasture shifting and rotation methods; and implement new economic opportunities (growing potatoes, making felt products, etc). Local governments learn to work closely with herders and communities; pay more attention to herders and other stakeholders; and link their requests to local policy making. Researchers learn to carry out participatory action research with herders and other stakeholders, use PRA and PM&E methods, and contribute to the planning and implementation of policies and programs and innovative technologies at local level (Ykhanbai et al. 2004a). New social and political relationships are being created and these are now functioning as the basis for co-management. This is perhaps the most important, but not so clearly visible, feature of our efforts to date.

About 75% to 98% of community members in our study sites are actively supporting co-management arrangements. Among the different stakeholders, the degree of enforcement of their co-management activities and roles and responsibilities vary by different ecosystem type and according to their own needs and interests.

Currently, about 20% of the herders in a *sum* belong to herder groups and are involved in co-management agreements and the testing of this system. In the country currently about 460 communities, herders groups, forest user groups, this is established by all donor and domestic projects. We are planning to involve more herders and other stakeholders in co-management activities, and there are requests for support in helping to form new groups. Ideally, 100% of all herders in a *sum* or *aimag* would belong to some group.

## Conclusions

With the designing, testing and implementation the CM policy currently is in a "adaptation phase". In the transition from a planned economy system to a market-oriented system, one must continuously review and adapt policies.

To date, our research has allowed formulating several important conclusions. First, successful co-management arrangements need the involvement and the participation of all neighborhood herders and stakeholders and needs permanent efforts to increase their social, economic and organizational capacities on CBNRM. Second, successful co-management also requires the establishment of joint co-management contracts at all levels. Third, through participatory policy formulation we have made progress in linking local realities to national policies and laws, which was one of success of this project.

We also found that successful co-management approaches, as entitlement scholars noted, need transparency and collective decision-making within the community, and the broad and active participation of all social groups of the community. Capacity building for shared understanding among all stakeholders is an important factor for the effective co-management of pastureland resources. The optimal size of communities and community organizations and their boundaries depends on ecosystem specifics, environmental variabilities and sustainable livelihood opportunities, and the traditions and culture of local people. Creating a strong social basis is crucial. We are trying to do this by "interfacing" as much as possible the socio-political, economic, and ecological aspects of herders' livelihood practices.

Government regulations and legal issues and customary methods should be incorporated for the co-management of pasture and natural resources in Mongolia. Strict bordering or fencing of pasture may increase the conflict between herders and communities in nomadic pastoral civilization, as it in Mongolia, but negotiable or "fuzzy" borders supports co-management arrangements between and within the communities.

In the current condition of the country, the local community should be established first by the wide participation and the initiation of herders, and in its later stages they may be more empowered with the support of central and local governments. The responsibility of local people will increase as they are empowered.

If all stakeholders strongly support co-management, then it also can be a tool to overcome the "tragedy of the commons". For this to happen, the roles and responsibilities of stakeholders need to be clearly established, and legal and policy support should be put in place. Introducing sustainable management methods, such as pasture improvements and better management methods, through the joint actions on learning by doing of herders and other stakeholders will reduce the degradation of pastureland and can cover the cost of environmental externalities. However, in the current case of Mongolia, where severe poverty and mismanagement of resources, outside facilitation for herders and stakeholders was required to promote collective action of the communities, and issues of exclusion and inclusion remain until the creation of adequate capacity and successful co-management institutions.

### *Constraints*

Here are some constraints encountered in designing and implementing co-management arrangements:

i) In the communities, common interest of herders for co-management pasture and natural resources has not yet been developed to the extent necessary. Creating sound CM and CBNRM in pastoral agriculture through agreement of the all herders and local people may need an adequate planning period, probably more than 5-10 years. During the past 60 years of centrally planned economy, herders in Mongolia followed instructions from the state. At present, they still find it difficult to solve problems independently and to apply the required management techniques.

ii) The current legal and administrative systems are not yet tailored towards co-management arrangements. There are for the changes to some legal and policy documents as well.

iii) At present, herders' income source is mainly from animal husbandry. This situation encourages individual herders to raise more and more animals to increase their income and welfare, which is some time neglecting importance of sustainable co-management of pasture land.

iv) The disconnected nature of the sectoral and local administrative structures do not adequately support CM and CBNRM approaches. For example, each sector is responsible for only one field: herders, for the pasture resources; hunting sector, for wildlife; forestry sector, for forest and its restoration. In case of Mongolia, sound use and protection of all these natural resources strongly interlinked, particularly pasture and forest resources.

#### **Note**

1. The Mongolian currency is the tugrik (MNT); 1 US\$ approximately equals 1,160 MNT.

#### **Glossary**

<i>Aimag</i>	an administrative unit – province
<i>Bag</i>	an administrative unit – sub-district
<i>Bog</i>	goats and sheep
<i>Bod</i>	horses, cattle, and camels
<i>Ger</i>	type of tent
<i>Khotail</i>	group or camp of herders
<i>Neg nutgiinkhan</i>	community of herders living in the same place
<i>Otor</i>	animal-fattening pasture
<i>Sum</i>	an administrative unit – district
<i>Zhud</i>	hard winter

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