

## **A COMPREHENSIVE GRASSLAND MANAGEMENT PLAN for Bayanjargalan soum of Dundgobi aimag**

In the result of subproject implementation in the Bayanjraglan soum of Dundgobi aimag, grassland management plan was developed with participation of herders communities, seen as a key step to implementation of community based grassland management. GMP was the core task of the subproject as an innovative attempt to involve herders in planning and implementation of the pasture management in cooperation with the local government. The soum level GMP aims to effectively plan the use of local grassland, ensuring natural and human induced impacts are not irreversible within management timeframe.

An integrated Pasture Management plan employs techniques to increase grass productivity such as regular pasture assessments, grazing rotations, seasonal and inter-annual movements, water point improvement management and proper management on livestock numbers and compositions in accord of annual rainfall, soil quality, erosion, shade and the type of vegetation present, and nutrients productivity.

Based on interactive partnership between local government and herders, GMP was prepared and approved to develop soum land use policy and to have an integrated planning approach for sustainable management of land resources.

Grassland management map and plan prepared in close consultation with herders, flexible and integrated management tool to improve the environmental condition and socio-economic well-being of the communities by the following components:

- i) Promoting institutional arrangements for participatory co-management;
- ii) Enhancing management of use and possession rights to pastures;
- iii) Implementing grassland conservation and rehabilitation plan;
- iv) Introducing grassland monitoring plan; and
- v) Improving early warning and risk management plan.

### **i) Promoting institutional arrangements for participatory co-management**

Institutional arrangement for the local grassland management is that herders groups would be the main planners and actors in sustainable pasture management. With the support of local authorities, land officers herders will be enabled to implement sustainable pasture management practices and develop the productivity of the pastureland and their herds. Therefore the formation of herders group was the initial step to implement GMP. As for project participants, 10 herders groups are mobilized to pilot participatory grassland management in the Soum.

### **ii) Management of use and possession rights to pastures**

According to amended Land Law, winter and spring pastures possession is set forth by soum, taking into account herders proposals, and the soum Governor provides permission to collective use of land for herders. Possessions of winters and spring camp were issued to herders upon relevant agreements. However there is no efficient institutional arrangement and practices were established in the Bayanjargalan soum for herders' intervention in decision-making on pastoral resource use. Thus subproject focused to establish more efficient and participatory approach in management of use and possession rights through community based GMP implementation. To promote group-based tenure options under the land law and herders possession rights to winter-spring grazing areas, project team has formulated the pasture mapping, clearly defining pasture possession boundaries of project herders groups and setting up each pasture area with size, variety, irrigation details and vegetation communities. Mapping of soum pasture resources and particularly herder groups' land use was the critical need for sustainable use of land resources. Moreover site-specific pasture assessments were carried out by project team to determine crop yielding capacity.

### **iii) Pasture conservation and rehabilitation plan**

Within the frame of GMP, below mentioned pasture improvement and rehabilitation activities are prioritized to carry out with herders joint efforts in the subproject Soum.

- Implementing pasture rotation and resting program, designed to enhance the growth of nutrients;
- Constructing and equipping water points development to improve herd distribution
- Adopting a flexible plan for reserve and paddock area;
- Rationalizing livestock number and composition to maintain correct proportions;
- Improving livestock distribution by developing and rehabilitating water wells
- Fencing patch area for forage plantation and hay making
- Promoting joint rodents control

### **iv) Pasture monitoring**

To sustain GMP implementation, Community monitoring, involving local beneficiaries is a powerful tool for better utilization and conservation of grassland resources. Continual monitoring of forage species and plant over density, grassland health to determine the need for grazing is important in pasture planning decisions such as pasture rotation and rest, inter annual movement. It is recommended to define crop yielding and pasture productivity preferably in every August in all pasture area, in order to appropriately plan the livestock grazing in winter or spring time, and incorporates it in the annual GMP of the Soum. Participatory monitoring is also important for estimating and adjusting to over-winter carrying capacity. Pasture management plans informed by the results of monitoring will provide important justification current pasture management plan is appropriate to continue in the future.

### **v) Improving early warning and risk management plan**

Early warning is an important part of risk management, and efforts to adopt an effective measures to be taken by herders and the administration against climatic extreme events such as flood and drought. With purpose to improve management planning for relief action under

climatic emergency situation, project team has supplied with computer equipment, which is installed with persona miss software data. This online meteorological data processing will provide with accurate weather forecasts to ensure early warning to take response measures against climatic extreme events, as well will facilitate monitoring predictions. Soum level risk management system would be concerned about the management elements: (i) first, clearly identifying who is responsible for each activity in the plan; (ii) the cost of the measures proposed, and (iii) how to maintain herdersqinterest and participation.

### Structure of GMP of Baynjargalan soum

Community based Grassland Management Plan at soum level pays a focus on establishing effective collaboration between stakeholders such as local land managers, environmental inspectors, rangers and herders groups. Accordingly the role and responsibilities of user groups were identified to jointly implement GMP. The GMP, developed within the project frame will replace the existing pasture management plan of the Soum. Consequently GMP will be updated on a regular basis every year in the future.

The approved GMP covers an urban land planning for household need for Ger districts and construction with industrial purposes in soum settlement area as shown by **Table 1** and **Table 2**.

**Table 1. Urban land planning for family need**

Name of bag	Location	Household Number	Land by ha	Dedication	Implementation period												Responsible officials
					/season and moths/												
					I			II			III			IV			
1	2	3	4	5	6	7	8	9	10	11	12						
3 rd bag	In the southeast of the Soum center settlement	8	0.72	For family need				+	+	+							Land officer, Soum governor
3 rd bag	In the south of Soum center settlement	12	1,08	For family need					+	+	+	+					Land officer
3 rd bag	In the west of Soum center settlement	5	0,45	For family need					+	+	+						Land officer
3 rd bag	In the north of Soum center settlement	6	0,54	For family need					+	+	+						Land officer

	<b>Total</b>	<b>31</b>	<b>2,79</b>																
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**Table 2. Urban land planning for construction of industrial and servicing purposes**

1	Name of bag	Location	Area /m <sup>2</sup> /	Defecation	Technical condition	Implementation period /óëèðàë, ñàðààð/				Responsible officials
						I	II	III	IV	
1	Third bag	In the southeast of Soum center settlement	0,05	Servicing						Land officer, Soum governor
		<b>Total</b>								

Basing on expressed suggestions and comments by herder communities, soum government officials, i) pasture allocation for winter and spring camp to herders groups; ii) fencing area for hay making and fodder plantation; iii) rodent control and destruction pasture area; iv) water development needed cropland for constructing and rehabilitating water wells and; v) paddock and reserve area pasture improvement measures are proposed to include in the GMP for 2012.

**A. Plan for winter and spring pasture possession to herders**

Based on interactive partnership between local government and herders, a total of 3.5 ha pasture was planned to be allocated for possession of 4 citizens from 4 herders groups, and additional 3 citizens, who are not part of herders group In Bayanjargalan soum.

**Table 2. Plan for winter and spring pasture possession to herders**

Number of pasture use unit field for pasture possession	Name of herders groups	Pasture allocation for possession of winter and spring camps					Implementation period /by seasons /				Responsible officials
		Name of places	Location		Area /by ha/	Water access and supply	1	2	3	4	
			Winter camp	Spring camp							
<b>Second bag of Shiliin ovoo</b>											

4	Tsagaan shim	Khar shoroo	+		0.5			+		Soum and bag governor, land officer	
1	Iredui	Tavan tolgoi	+		0.5				+	Soum and bag governor, land officer	
5	Bayandelgerekh	Khar shoroo	Paddock and shelter		0.5					+	Soum and bag governor, land officer
10	Uguumur		+		0.5			+		Soum and bag governor, land officer	
1st bag of Ekhen us											
1st bag	Do not belong to herders group	In the northeast of Zaraa mountain	+		0.5				+	Bag governor	
1st bag	Do not belong to herders group	Dush	+		0.5			+		Bag governor	
1st bag	Outside of herders groups	West part of Avdar mountain	+		0.5			+		Bag governor	
	<b>TOTAL</b>				<b>3.5</b>						

## B. Plan for pasture improvement activities

The location and size of area for pasture improvement measures are listed in details for each bags and every herders groups, which is shown by **Table 3**. Hereto:

The first of Ekhen us Bag, herders are more concerned to well development and fence for reserve area. While herders of second Shikiin gol Bag are stressed their intentions to construct winter and spring shelters or organize rodent destruction activities.

Under the financial support and low interest loan by project on %Sustainable livelihood-II +, All experimental plots were fenced to having good forage productivity and stand establishment by preventing grazing, and resulted satisfactory fodder storage. Therefore herders requested to fence pasture area with financial support of donor projects and local government fund. Plan for fencing pasture was shown by **Table 4**.

Pasture fencing demand higher fund, thus for locating pasture fencing area, selection criteria such as pasture yielding productivity, income generation capacity of the herder families, number of animal head, and financial contribution availability of the herders shall be taken into account.

**Table 4. Plan for pasture improvement in Bayanjargalan soum**

Number of pasture use unit	Number of herders group	Name of location	Name of user	Area, by ha	Planned measures	Timeframe	Responsible people	Budget, by thou.tug		
								Community fund	Local government budget	Donor projects and credits
<b>First bag of Ekhen us</b>										
1	Ireedui	Tavan tolgoi		3	fencing	3/15-2/15	Bag governor, herders			+
1 <sup>st</sup> bag		Nemnee		2	fencing	3/15-12/15	Bag governor, herders	Purchased poles of fence		+
1 <sup>st</sup> bag		Northeast of Bayanbor ovoo		2	fencing	3/15-11/15	Bag governor, herders	+		+
1 <sup>st</sup> bag		Shiliin khukh khad		2	fencing	3/15-2/15	Bag governor, herders			+
1 <sup>st</sup> bag		Khar tolgoi		2	fencing	3/15-11/15	Bag governor, herders			+
1 <sup>st</sup> bag		Shar mod		1	fencing	3/15-12/15	Bag governor, herders			+
<b>Second bag of Shiliin gol</b>										
3	Tsagaan shim	Bor tugrug		250 ÷2	fencing	3/15-12/15	Bag governor, herders	+		+
5	Bayandelgere kh	Khavtsuu		3	fencing	3/15-11/15	Bag governor, herders			+
10	Uguumur	Adgiin shovgor		8	fencing	3/15-12/15	Bag governor, herders	+		+
2 <sup>d</sup> bag		Bulshin khooloi		1	fencing	3/15-11/15	Bag governor, herders	Purchased poles of fence		+
2 <sup>d</sup> bag		Bayankhoshuu		2	fencing	3/15-2/15	Bag governor, herders			+

2 <sup>d</sup> bag		Elgen		1.5	fencing	3/15-2/15	Bag governor, herders			+
2 <sup>d</sup> bag		Shine us		1.5	fencing	3/15-2/15	Bag governor, herders			+
2 <sup>d</sup> bag		Khukh tolgoi		1	fencing	3/15-2/15	Bag governor, herders			+
2 <sup>d</sup> bag	33407 ha area, from south slope of Shuguuliin ulaan mountain to back slope of Argiin chuluu mountain	Back slope of Suudert		100	Destruction of rodents	April-June	Bag governor, herders, pasture expert of ÌÝ- Ò-		+	
		Northwest of Khavirgiin khudag		80	Destruction of rodents	April-June	Bag governor, herders, pasture expert of ÌÝ- Ò-		+	
		Southwest of Khar tolgoi		90	Destruction of rodents	April-May	Bag governor, herders, pasture expert of ÌÝ- Ò-		+	
		<b>TOTAL</b>		<b>301.025</b>						

## **B. Plan for use of paddock and reserve area**

Contractual arrangements for grazing land management should aim to recover and strengthen the informal arrangements of using seasonal and reserve pastures and take account of regional distinctions and the need for reciprocal grazing rights between community groups in case of natural disasters.

There had a general consensus among herders and local government authorities that improved management and seasonal protection of grasslands during growing season, better livestock distribution and herding practices would be the most appropriate ways to do rehabilitation of pasturelands. Thus agreed to establish soum level reserve pasture area for 2012 was mapped with participation of herders and bag governors, using GIS information system and determined that pasture carrying capacity for four seasonal crop lands.

Through GMP, grassland will be subdivided into paddock reserve areas to move livestock to graze in climatic emergency situations. Several herders of second Bag voiced their suggestions to set reserve area in the place of Khar shoroo, which is located in the southeast of First bag. This reserve paddock area has capacity to graze 898 animal head by sheep unit during the winter and spring season while in summer and autumn season can be grazed by 1097 animal head by sheep unit. Thus it planned to encamp 800 sheep unit in winter/spring time, and 1000 sheep units in summer/autumn season. However water availability in this paddock reserve area is limited. Thus installation of new water well is demanded here to improve grazing capacity in this place. This reserve area is possessed by Tsagaan shim herders group currently.

Another one paddock reserve area is identified in the area between Magnai mountain and Khamar shand that is located in the southern part of the second bag. The winter/spring pasture capacity is estimated at grazing of 1430 sheep unit livestock, planned to graze a total of 1600 sheet unit. In summer/autumn season a total of 1750 sheet unit livestock can be grazed and while 1600sheep unit will be encamped. Three herder families of Undurshil soum herds animal over year around here.

Basing on agreement with soum Citizens RepresentativesqKhural, the use of above mentioned paddock reserve pastures shall set forth by the decree of Soum governor, clearly indicating time of grazing, terms for letting or prohibiting and rehabilitation measures, list of herders families to access to reserve area in emergency period and pasture resting and rotation schedules.



**Table 5. Schedule for using paddock reserve area**

No	Name of place for paddock reserve area	Number of encamping households  By family head name	Number of pasture use unit	Area, by ha	Pasture types	Water supply availability and rank	winter-spring			summer-autumn		
							Crop yield per 1 ha	Pasture carrying capacity Animal number by sheep unit	Number of grazing animals By sheep unit	Crop yield per 1 ha	Pasture carrying capacity Animal number by sheep unit	Number of grazing animals By sheep unit
<b>First bag of Ekhen us</b>												
1	Khar shoroo			1796	Pasture communities of <i>grass mongolica-salsola</i> dominated and reaumuricai songarica, anabsisi brevifolia, <i>salsola passerine</i> , ajiana with stipa are prevalent.	One hand pump well and temporary lake	0.8	898	700	1.1	1097	1000
<b>Second bag of Shiliin gol</b>												
2	Area, extended from South of Magnai mountain to Khamar shand			2863	Pasture with communities of <i>grass mongolica</i> , <i>ajiana</i> with <i>stipa</i> , <i>reaumiria songarica</i> is dominated and plant species of <i>artemisia frigida-cleistogenes</i> , <i>cliestigenes-agriopyron</i> , <i>bunchgrass-forbs</i> , <i>achnaterum</i> can be found.	Abandoned and broken water wells	0.8	1431	1300	1.1	1749	1600

### **C. Plan for pasture resting, rotation and seasonal movements**

Taking into account provided recommendation by study on State certification on pasture quality on Pastureland Characteristic and quality, conducted in 2009, a total of 15705.3 ha degraded grassland in three plots such as of Khar tevch, adjacent to Second bag, southern part of Ukhaa hudag and southwest part of Khavirga ovoo is identified to rest in 2012. As well as another 4678.3 ha grassland, covering two places is planned to be rested where continuous grazing since 2009 resulted in lowest possible pasture yields since the forage not allowed to recuperate between grazing.

Pasture resting would enable pasture rehabilitation a number of advantages: i) greater yield potential; ii) higher quality forage available, and iii) decreases soil erosion. Therefore scheduling of seasonal migrations of the herders families, who has being grazed livestock in identified pasture for resting/rotating are urged by responsible Bag governors.

In order to enable pasture resting and rotation for pastureland rehabilitation in 2012, herders families, referred in above table are pursued to graze animals in identified paddock reserve area.

**Table 6 . Plan for pasture resting, rotation and seasonal movements**

Number of pasture use unit	Name of moving place	Number of pasture use unit for herders groups and pasture area by ha	Number of animals Actual head number	Head number of animals By sheep unit	Measures, to be taken	Timing	destination place	Number of pasture fractions and area, by ha	Pasture carrying capacity by sheep unit	Present number of animal heads, by sheep unit
1	Northwest of Tsagan Ereg	132 ha area of Ireedui herders, groups numbered by 1			Resting	4/15-9/15	Within poallocated pasture of herders group	-	-	-
2	Second bag vicinity of Khar tevch	11552,4 ha			Resting	2012.4/15 2013.4/15	Paddock Reserve area	2863	1431	-
3	Western part of Ukhaa teeg	789			Resting	2012.4/15 2013.2/15	Paddock Reserve area	2863	1431	-
4	Southwest of Khavirgiin Ovoo	3363,9			Resting	2012.4/15 2013.4/15	Paddock Reserve area	2863	1431	-
5	Southwest par of Tsagaan aimag	Approximately 4126,3			Resting	2012.4/15 2013.4/15	Paddock Reserve area	2863	1431	-
6	At 5km northeast of Bayantsagaan	552			resting	2012.4/15 2012.11/15	Paddock Reserve area	2863	1431	-
	<b>Бүгд</b>	<b>20515,6</b>								

#### **D. Plan for water point development and water supply improvement measures**

Water availability is the most important factor influencing livestock distribution and pasture availability. Lack of water access serves as one of the main reasons for overgrazing and land degradation in the arid Gobi desert region and pasture conflict between herders.

In the Bayanjargalan soum, as a Gobi desert region, lack of water wells is a major limiting factor to successful livestock production and livelihood sustainability. Many of the wells developed during the collective era, no longer function because pumps and water delivery systems are not functioning. Local herders expressed their satisfactory feelings and gratitude for *constructing* new water points and equipping groundwater wells as the most tangible result. Constructing new water points or rehabilitating old wells in waterless areas provides considerable benefit to herders as follows:

- Improved distribution of livestock thereby potentially reducing grazing pressure near existing wells;
- Improved living conditions of herders

According to the National Level Land Use Plan, between the period of twenty years 2003-2023 construction of 10000 new water wells and rehabilitation of 17000 existing wells will be accomplished in order to improve pasture irrigation and water supply, in particular 1000 abandoned and non-functioning water points will be updated in the Gobi desert region. In line with this national level well development program, 13 new water wells will be built in the territory of Bayanjargalan soum in 2012.

Under the project fund, a new groundwater well was drilled and installed with a solar pumping system in the pasture area of Baiagliin Uguuj herders groups, headed by Mungunkhug was the tangible support in well development and water improvement provided to the local herders. Due to the local meteorological condition of relatively long solar radiation which suits well for photovoltaic application, the project team had chosen a PV-driven water pumping system to install to groundwater wells and this was estimated as good experience in introducing renewable energy in well development. The reconstruction and installation of water wells made it possible to utilize 62.8 hectares of pastureland that was previously underutilized.

Based on the study on irrigation details and water well inventory, new water wells shall be drilled and equipped with renewable energy driven pumping systems in priority areas of paddock reserve areas or underutilized pastures to enable grassland access.

Location of water well construction in the second phase shall be determined by herders' communities in a participatory manner.

**Table 4. Plan for water point development in the territory of Bayanjargalan Soum**

Number pasture use unit	Name of herders groups or bag	Location	Pasture water supply from one water point /thou.ha/		Demanded Budget /thou.tug/	Responsible people
			Summer -autumn pasture	Winter-spring pasture		
10	Uguumur	Ukhaa tevsh		+	14.500	Herders, Soum and bag governors, agricultural specialist
4	Tsagaan shim	Khar shoroo /encampment area/		+	14.500	Herders, Soum and bag governors, agricultural specialist
1	Ireedui	Khar tolgoi		+	14.500	Herders, Soum and bag governors, agricultural specialist
5	Bayandelge rekh	Ariin bulag		+	14.500	Herders, Soum and bag governors, agricultural specialist
		Khukh am		+	14.500	Herders, Soum and bag governors, agricultural specialist
		Suudert		+	14.500	Herders, Soum and bag governors, agricultural specialist
		Shine us		+	14.500	Herders, Soum and bag governors, agricultural specialist
		Northeast of Khamriin shand			14.500	Herders, Soum and bag governors, agricultural specialist
		Southeast of Ajrikhai		+	14.500	Soum governor, agricultural specialist
		Northwest of Kharaat		+	14.500	Soum governor, agricultural specialist
		Bayankhoshuu		+	14.500	Soum governor, agricultural specialist
		In the north of Khamriin shand		+	14.500	Soum governor, agricultural specialist
		In the northwest of Nemnee lake		+	14.500	Soum governor, agricultural specialist